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Hazardous Waste Determination Program Evaluation

Final Report

Promoting Environmental Results

Through Evaluation

This report was prepared by Industrial Economics (IEc), under contract to EPA (contract EP-W-10-002). IEc conducted an independent evaluation and review of EPA's hazardous waste determination program. The recommendations included in the report are IEc's recommendations to EPA. They do not necessarily reflect EPA's opinion. In this report, IEc summarizes facts and opinions that stakeholders conveyed to IEc over the course of the evaluation. In a few instances, EPA disagreed with or raised concerns regarding the accuracy of stakeholder statements. In those cases, EPA has asked IEc to include footnotes to provide clarification. Inclusion of a stakeholder's opinion in this report does not constitute agreement or endorsement by EPA of the stakeholder's opinion.

In the course of preparing this report IEc spoke to numerous stakeholders, including individual hazardous waste generators, trade associations, hazardous waste service providers, and state and Regional regulators. EPA is grateful to the many stakeholders for their time and generosity in allowing IEc to talk with them as part of this evaluation. EPA is particularly thankful to those stakeholders who opened their doors for facility tours and those who coordinated and facilitated meetings and site visits.

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EXECUTIVE SUMMARY

BACKGROUND

EPA's Resource Conservation and Recovery Act (RCRA) regulations are designed as a cradle-to-grave system to prevent serious environmental damages that might occur, as well as mitigate damages that have occurred, as a result of improper hazardous waste management. The first and most important step in the regulations requires waste-generating entities to use specific regulatory requirements to determine if their waste is a hazardous waste (HW) (40 CFR 262.11). EPA developed these HW determination requirements in 1980 and has not changed them substantially since that time.

If waste is determined to be hazardous, the HW generator must manage it in accordance with RCRA regulations, which include requirements for managing, tracking, recordkeeping, storage, transportation, treatment, and disposal. However, if a HW generator does not properly identify a waste as hazardous, the HW generator will not follow the relevant RCRA regulations, which may cause harm to human health and the environment. Given the importance of making accurate HW determinations, EPA is interested in determining the effectiveness of these regulations.

EVALUATION OF EPA'S HW DETERMINATION REGULATORY PROGRAM

In order to determine the effectiveness of EPA's HW determination regulatory program, EPA's Office of Resource Conservation and Recovery, Office of Compliance, and Office of Policy contracted with Industrial Economics (IEc) to conduct a third party program evaluation. EPA tasked IEc with developing recommendations for how EPA can improve its HW determination regulatory program and help generators improve compliance with HW determination regulations. However, it is important to note that although EPA can and should help facilitate compliance, the regulatory burden for making an accurate HW determination ultimately lies with the generator of the waste.

This evaluation seeks to answer the following six questions and, based on these findings, make recommendations for improving EPA's program:

1. What is the national non-compliance rate with the HW determination regulations? What is the non-compliance rate with the HW determination regulations by sector?
2. What obstacles or challenges do HW generators face in complying with the HW determination regulations?
3. What firm characteristics influence HW generators' compliance with the HW determination regulations?
4. How do state program activities influence HW generators' compliance with the HW determination regulations?
5. How do assistance providers/HW service providers/trade associations' activities influence HW generators' compliance with the HW determination regulations? and
6. What changes do stakeholders recommend to make the national HW program more successful?

The evaluation uses a mixed-method approach that combines available non-compliance data regarding HW determination violations, interviews and discussions with various stakeholders, a survey of federal facilities who generate HW, and state HW program case studies to answer the evaluation questions.

SUMMARY OF FINDINGS

The following bullets provide a brief summary response for each evaluation question:

- Evaluation Question 1: **The average non-compliance rate with RCRA HW determination regulations across the United States is 34 percent.** This figure is based on an analysis of HW determination violations identified during EPA- or EPA/contractor-led comprehensive evaluation investigations recorded in RCRAInfo over the last 10 years. HW determination violations are considered to be those recorded as violations under RCRA Part 262 Subpart A in RCRAInfo. Among the sectors with the greatest overall number of HW determination violations, the following five sectors have the highest HW determination non-compliance rates (i.e., the greatest number of violations per inspection conducted): 1.) printed circuit board manufacturing; 2.) copper foundries; 3.) hospitals; 4.) colleges, universities, and professional schools; and 5.) fabricated structural metal manufacturing. Uncertainties and limitations associated with these calculations (e.g., the inspections are not conducted at a representative sample of facilities) are detailed in Chapter 2 of the full report.

- Evaluation Questions 2 and 3: **Numerous challenges explain patterns of non-compliance with HW determination regulations. One of the most significant challenges generators cite is the difficulty making waste determinations for listed wastes.**
  Based on a review of 34 data sources that include information from numerous stakeholders (e.g., notes from stakeholder discussions and interviews), the evaluation identified 30 recurring themes that describe various obstacles, challenges, and factors that influence HW generators' compliance with HW determination regulations. These 30 themes fall into three overarching categories: (1) challenges related to the regulations; (2) challenges related to generators; and (3) challenges related to regulatory agencies. Overall, stakeholders identified the following top ten challenges leading to inaccurate HW determination:

    1. Difficulty making waste determinations for listed wastes
    2. Reliance upon third parties (HW service providers, suppliers, disposers) for information used to make determinations
    3. Lack of training/staff turnover at generators
    4. The need for industry specific guidance and outreach
    5. Lack of consistency of the regulations and how to interpret them at the different levels of government (federal, state, county)
    6. Generally confusing and difficult to follow regulations (e.g., narrative interpretations, references to previous sections)
    7. The need for more interpretation/guidance/definitive answers from EPA
    8. Difficulty understanding the HW recycling regulations

9. Lack of awareness on the part of generators that they are generating a HW at all and therefore are subject to RCRA

10. Cost constraints in making HW determinations (e.g., high cost associated with testing a waste sample)

- Evaluation Question 4: **States have developed a range of approaches to implement the federal HW requirements.** The three states profiled in this evaluation have different methods for providing generator assistance and conducting compliance monitoring.

    - In Minnesota, the state has an extensive online assistance presence. For example, the state lists over 140 fact sheets and resources on its webpage, which serve as a resource for the metropolitan counties as well as the state. This library of assistance materials is coupled with an extensive compliance monitoring presence, particularly in the Twin Cities metropolitan area. The state has delegated authority for the HW program to seven metropolitan counties, and these counties have a significant inspection and assistance presence at the local level.

    - Colorado's self-certification program, modeled after the Environmental Results Program, allows the state to contact far more generators than would be possible otherwise. The self-certification program raises awareness of compliance requirements, offers assistance, and incorporates statistically-based measurement to assess overall compliance levels. The state also has an active compliance monitoring, enforcement, and assistance program. For example, the state supports a Generator Assistance Program that provides businesses with free on-site technical assistance and information on the state's HW regulations.

    - Texas has implemented an audit program designed for a state with generators dispersed across a large geographic area. Under this program, generators in Texas are required to submit a profile of their individual waste streams; the state selects a random sample of these profiles to audit. The state also conducts on-site inspections and has a well-regarded small business assistance program.

- Evaluation Question 5: **Small business assistance providers, HW service providers, suppliers, and trade associations play an integral role in the HW determination process.** Assistance providers are often the first to alert generators to their HW management responsibilities, including HW determination. They provide generators with various tools and materials to help them comply with the regulations. Similarly, trade associations provide HW determination assistance but also lobby for regulations more favorable to their industry sector. However, the influence of trade associations on generators is limited to some degree by the size of their membership. Many HW generators choose not to join their sectors' trade association due to economic constraints and are not recipients of the services they provide. HW service providers and suppliers have a wide ranging influence on generators' HW determination compliance. For example, some HW service providers will make accurate HW determinations on behalf of a HW generator in situations where the generator, unassisted, would likely fail to do so. On other occasions, HW determination violations result from HW service providers or suppliers giving generators incomplete or incorrect information about a product or waste stream.

- Evaluation Question 6: **Stakeholders' top recommendation for making the national HW program more successful is to provide, improve, and/or increase sector-specific HW determination guidance.** Drawing on the comments provided by stakeholders during the interviews, discussions, and survey of federal partners, the evaluators identified 180

recommendations to improve the national HW determination process. The top five types of recommendations offered by stakeholders are to:

1. Provide, improve, and/or increase the guidance available for making HW determinations;
2. Simplify the regulations in general;
3. Define and clearly interpret specific sections of the regulations;
4. Address situations where applying the regulations is not practical; and
5. Increase collaboration with the regulated industries.

In addition to suggestions raised through the interviews and open discussions, EPA gathered recommendations through the federal facilities survey. Survey respondents were asked, "If you had an opportunity, what would you want EPA or your state to do to help facilities like yours make HW determinations more effectively?" The responses are shown in Exhibit ES-1.

EXHIBIT ES-1: Recommendations for EPA or States to Help Facilities Make HW Determinations More Effectively

RECOMMENDATION CATEGORY	PERCENT RANKING RECOMMENDATION AS MOST IMPORTANT
Provide user-friendly guidance	34%
Improve the clarity of the regulations and guidance	23%
Improve the readability of the regulations and guidance	16%
Provide a hotline dedicated to helping generators make more accurate determinations	12%
Other	11%
Provide on-site technical assistance upon request	8%
Offer periodic webinar training	8%

Several overarching themes emerge from this evaluation:

- **Many stakeholders would like EPA to simplify and improve the HW determination regulations.** Stakeholders indicated that the regulatory language sacrifices clarity in an attempt to cover all possible scenarios where the regulations apply. This degree of detail complicates the regulations, making them difficult for generators to interpret and apply. In addition, stakeholders expressed concern that listed wastes may not cover important types of waste that may be hazardous (e.g., chemotherapy drugs). Stakeholders also suggested that EPA reclassify some HW as universal waste.
- **Certain stakeholders expressed frustration with the non-intuitive, complex process of making HW determinations.** Stakeholders suggested that if people without experience or training in making HW determinations perceive the regulations to be overly complicated, not

logical, or overly time consuming, they may become discouraged and give up on their efforts to ensure proper waste determination. Stakeholders who are well trained and have years of experience with waste determinations are not as likely to raise this concern, though they also seek improvements to the regulations.

- **Generators seek greater clarity about how to apply the existing regulations to their operations.** Stakeholders said that it would be very helpful to have sector-specific guidance for typical waste streams, paired with an opportunity to ask detailed questions and get prompt feedback from EPA for non-typical waste streams. While EPA cannot make HW determinations for generators and requirements vary depending on state regulations, there appears to be an opportunity for EPA to share assistance materials and tools to supplement state resources.
- **In practice many generators have essentially "outsourced" the HW determination process (even though by law generators themselves must make HW determinations).** For a number of reasons including financial constraints, time constraints, and the complexity of the regulations, many generators hire HW service providers to manage their HW or rely on information from other third parties (e.g., suppliers) to make their determinations. Some HW service providers make HW determinations on behalf of their clients, while others simply offer information as to whether a waste stream is hazardous or not. HW service providers often have particular expertise and resources that enable them to make accurate HW determinations. However, if they are relying on incomplete or incorrect information from generators, or if they are motivated by financial incentives to under- or over-classify waste as hazardous, service providers may contribute to inaccurate HW determinations.
- **Stakeholders report that a combination of compliance monitoring and enforcement and compliance assistance is an effective approach to improving compliance with HW determination regulations.** This evaluation finds that many HW generators do not recognize their HW determination regulatory obligations until they have been contacted by EPA, the state, or an assistance provider. However, reduced funding at the state and federal level has prevented regulating agencies from expanding their compliance monitoring efforts and assistance providers from expanding their outreach and guidance efforts.
- **Current compliance data do not facilitate calculation of non-compliance rates pertaining to HW determination regulations.** Inspections tracked in RCRAInfo do not reflect representative samples of facilities, and may therefore provide inaccurate indications of compliance rates. Moreover, inspectors apparently may use 262.11 as a default violation during an inspection of a facility with numerous violations. Use of this code does not reflect the severity of the violation.

IEC'S RECOMMENDATIONS FOR EPA

Overall, IEc suggests changes to the HW determination process to address the interrelated challenges that lead to non-compliance with the HW determination regulations. For example, in addition to providing regulatory interpretations that clarify sections of the regulations, EPA should also disseminate the new information to the generators, ideally through assistance providers, HW service providers, and/or trade associations who already have relationships with generators.

Based on the lessons gathered during this evaluation, IEc suggests nine recommendations for EPA in two groups: changes EPA can make directly and opportunities to work with other stakeholders.

Changes EPA Can Make Directly

1. To the Extent Possible, Simplify and Improve the Regulations, and Provide Sector-Specific Guidance

The evaluators suggest EPA look for opportunities to simplify the regulatory language and revise it to include fewer references to previous sections and more focus on addressing the majority of applicable situations. Where it is not possible to simplify the regulations, IEc suggests that EPA provide more sector-specific plain language guidance, to help generators and stakeholders interpret the regulatory language.

The evaluators suggest that EPA also consider whether the listed wastes capture the appropriate wastes. We recommend that EPA consider incorporating newer chemicals on to the P- and U- lists, e.g., chemotherapy drugs. We suggest EPA consider making some wastes universal wastes (e.g., aerosol cans, pharmaceuticals, and expired or returned retail products). Further, EPA should consider clarifying the F- and P/U-listed wastes. In addition to clarifying the narrative process descriptions that result in an F-listed waste, IEc suggests EPA consider explicitly stating the common constituents regulated under each F-listing. We recommend that EPA consider addressing the confusion around the applicability of the P- and U-listings only to products in which the listed chemical is the sole active ingredient. (In other words, we suggest EPA consider clarifying why a commercial chemical product is not a U- or P-listed HW if it has two or more active ingredients, even if all the ingredients are listed on the U- or P-list.)

2. Establish a Direct Line of Communication between EPA and HW Stakeholders

Stakeholders indicated that opportunities for communication with EPA have decreased in recent years, contributing to the challenges generators face in complying with the HW determination regulations. They noted difficulty getting responses to HW determination questions from EPA and said that written inquiries often go unanswered. This perceived lack of communication seems to contribute to the distrust of the Agency some stakeholders harbor. We recommend the Agency consider creating avenues to facilitate better communication between EPA and stakeholders. Reinstituting the RCRA Hotline in one form or another is one potential mechanism.[1] Throughout this evaluation, stakeholders referred to the Hotline as an invaluable resource to the regulated community that enabled stakeholders to discuss difficult questions that inevitably arise when generators apply the regulations. Stakeholders experienced in making HW determinations lamented the loss of the RCRA Hotline, saying it was a vital resource, even for people who have been making accurate HW determinations for years. The Hotline's ability to connect stakeholders with another person to discuss questions about applying the RCRA regulations facilitated an interpersonal connection between the Agency and the regulated community that cannot be replicated by providing regulatory assistance documents and interpretations online.

[1] The RCRA Hotline was staffed by contractors to EPA, not actual EPA staff. Responses to questions were limited to the information available through existing documentation and interpretations. Staff did not provide callers with individualized interpretations for specific situations but assisted them in identifying available info applicable to their situation.

3. Make Guidance Documents Easily Accessible via RCRA Online and Make the Generator Website More User-Friendly

During the course of this evaluation, several stakeholders said that although RCRA Online contains some useful information it is often difficult to locate and the system is generally confusing to navigate. We recommend that EPA improve the visibility of guidance documents and interpretations on the site. For example, a generator visiting the site would likely be interested in specific pieces of information that are currently spread across four separate links on the front page. The Agency should consider making resources for generators more accessible, including generator guidance information and links to state and assistance provider websites.

4. Improve Tracking of Compliance Rates for HW Determination

We recommend that EPA revise RCRAInfo to allow tracking violations specifically related to 40 CFR 262.11 and encourage EPA inspectors to consistently use this code to track HW determination violations. EPA may also wish to consider tracking the severity of HW determination violations. In addition, we recommend that EPA consider flagging targeted inspections vs. regularly scheduled inspections, so as to enable improved data analysis. Ideally, if tracking compliance with HW determination regulations is a high priority for the Agency, EPA would support representative sampling of facilities to accurately measure compliance rates, either at the state or federal level. For example, EPA Regions could work with states to gather representative data on compliance, and track this information periodically to gauge progress. Overall, we recommend that EPA consider improving RCRAInfo and the compliance monitoring data it stores to facilitate accurate, comparable, and consistent tracking of non-compliance rates over time.

Opportunities to Work with Other Stakeholders

5. Identify Opportunities to Improve Communications with State Agencies to Inform Regulatory Interpretations

By communicating with the states, EPA's interpretations are more likely to reflect actual situations generators face since communication is greater between generators and the state than between generators and EPA.

6. Improve Coordination with Other Agencies whose Regulations Overlap with Those of EPA

On more than one occasion, stakeholders discussed specific situations where another agency's regulatory guidelines conflict with EPA's. For example, sometimes the local fire department will inform a generator that they can dispose of an item as solid waste (likely based on regulations from OSHA or DOT). However, the HW determination regulations may require this item to be characterized and handled as HW. To address these inconsistencies, we recommend that the Agency investigate the claims described in this evaluation and coordinate with the respective agencies to prevent distributing guidance to generators that conflicts with guidance from other agencies. EPA should also seek input from states, assistance providers, and generators about other instances of conflicting regulations and resolve these situations.

7. Encourage Best Practices among States

State agencies conduct a wide range of compliance monitoring and assistance activities. For example, generator self-certification programs, like those in Colorado, Massachusetts, and other states have the potential to increase generators' awareness of compliance requirements while also providing better compliance information to regulators. Hotlines devoted to answering generators' questions facilitate communication between industry and regulators and help generators apply the regulations to make accurate HW determinations. Coordination across state agencies can help inspectors identify new businesses subject to HW regulations. We recommend EPA facilitate communication between the states so they can learn from each other's approaches. We recognize that EPA provides competitive grants to fund the sector-based compliance assistance centers, and that these are good clearinghouses for compliance assistance materials. However we also encourage EPA to help states learn from each other with regard to best practices, such as approaches to targeting state inspections and making new generators aware of their obligations.

8. Promote Best Practices from Federal Facilities

EPA should use the federal facilities survey information, collected for this evaluation, to encourage HW determination best practices amongst generators. For example, EPA could issue a memo to assistance providers, trade associations, and other stakeholders that frequently interact with generators, stating that EPA's review of federal facilities revealed that federal HW generators that implement processes for making HW determinations are more likely to make accurate HW determinations. The memo could point to resources that could assist facilities in developing appropriate waste determination processes (e.g., a decision-tree, such as Texas has developed or example procedures developed by federal facilities themselves). The memo could also include other federal HW generator best practices the Agency has identified. This would help generators understand the actions they can take to improve HW determination compliance.

9. Develop a Communications Strategy to Increase Awareness of Compliance Monitoring Presence and Enforcement Actions Related to HW Determination

This evaluation revealed that the perception that they "will not get caught" lulls some generators into a sense of complacency, instead of taking the time and effort to make accurate HW determinations. Where possible, EPA and the states should increase their field presence and inspection frequency. In addition, the Agency should consider taking steps to increase awareness of its compliance monitoring and enforcement actions when they occur. EPA could alert trade associations and assistance providers about recent compliance and enforcement actions, so that awareness of EPA's presence would be magnified. In addition, EPA could provide information about the most common types of violations, and what generators can do to prevent them, and where they can get further compliance assistance. This communications strategy would broadcast EPA's compliance monitoring presence to an audience much larger than can be reached through inspections alone and would motivate generators to take steps to come into compliance.

CHAPTER 1 | INTRODUCTION

EPA's Resource Conservation and Recovery Act (RCRA) regulations require entities to determine whether waste they generate is a hazardous waste (HW). If it is, the HW generator must manage the HW under RCRA regulations, which include requirements for management, recordkeeping, tracking, transportation, treatment, storage, and disposal. The RCRA regulations are designed as a cradle-to-grave system to prevent serious environmental damages that might occur, as well as mitigate damages that have occurred, as a result of improper HW management. However, if a HW generator does not properly identify a waste as hazardous, the HW generator will not follow the relevant RCRA regulations, which may cause harm to human health and the environment. An EPA review of RCRA compliance data for 2008 and 2009 suggested that HW generators have twice as many violations associated with their HW determination process as any other type of RCRA violation. EPA's Office of Resource Conservation and Recovery (ORCR), with assistance from EPA's Office of Enforcement and Compliance (OECA) and EPA's Office of Policy's Evaluation Support Division (ESD) undertook a program evaluation to identify the underlying causes of these violations and assess the effectiveness of the RCRA HW determination regulations. ESD contracted with an independent evaluation firm, Industrial Economics Inc. (IEc), to conduct the evaluation. EPA asked IEc to develop independent recommendations describing how the Agency can help generators make accurate HW determinations, in compliance with the RCRA regulations. However, it is important to note that although EPA can and should help facilitate compliance, the regulatory burden and legal responsibility for making an accurate HW determination ultimately lies with the generator of the waste.

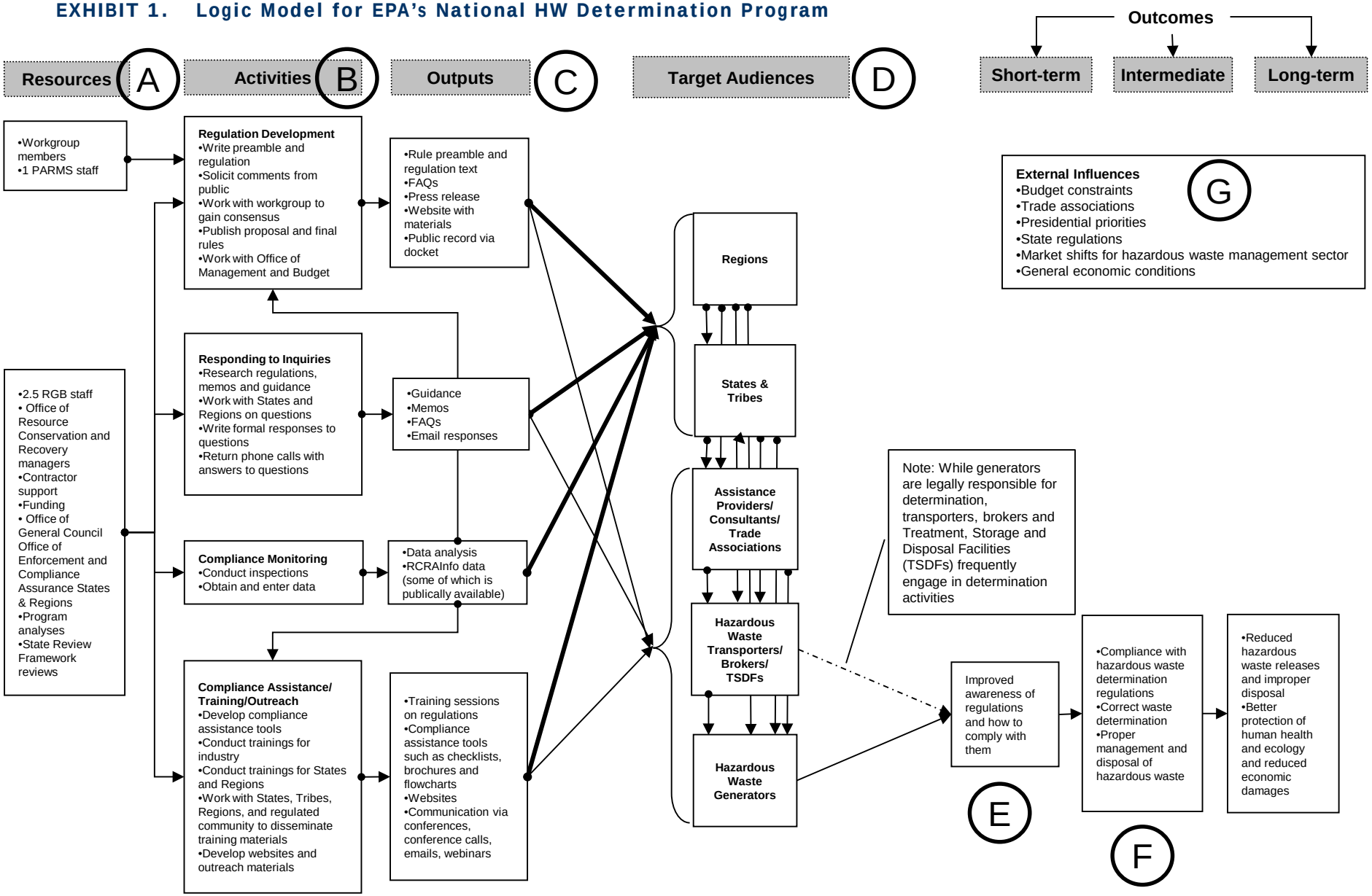
BACKGROUND

The basic structure and design of the national RCRA HW determination regulation (40 CFR 262.11) program, is captured by the logic model (Exhibit 1). EPA developed the regulations requiring HW determinations in 1980, and has made only minor changes to the regulations since then. Most states have been authorized to implement the RCRA regulations. EPA Headquarters and Regions set national regulation and policy, but primarily work in an oversight and support role, e.g., offering interpretation of the federal regulations, compiling and tracking compliance data, and providing compliance assistance materials and information. Circled letters in the logic model correspond to the questions the evaluation addresses, as described later in this chapter. Key components of the logic model include:

- **Resources:** basic inputs to the program including funds, program staff, and contractor support.
- **Activities/Outputs:** specific actions that are taken to achieve the program goals and the immediate result of those actions. For example, EPA receives inquiries about HW determination from HW generators, transporters, trade associations, and states and in response develops guidance, memos, and frequently asked questions documents.

- **Intermediate Outcomes**: changes in HW generator behavior that result in the proper determination of HW and lower non-compliance rates.
- **Long Term Outcomes:** outcomes that meet the overarching goals of the HW determination process, including proper management of HW and a potential reduction in the amount of HW generated (and thus increased protection of human health and the environment).

EXHIBIT 1. Logic Model for EPA's National HW Determination Program



- **Contextual/External Factors:** factors not directly controlled by the national HW determination process that may influence compliance. For example, market shifts in the HW management sector, specifically the trend toward HW generators outsourcing HW determination to waste haulers, may affect the accuracy of HW determinations.

EVALUATION PURPOSE, INTENDED USES, AND AUDIENCE

The specific goals of this evaluation are to determine the extent to which the federal HW determination program is working, identify potential problems that HW generators experience, and assess whether ORCR can improve the regulations and better assist HW generators in achieving compliance. The study is designed to evaluate how the federal HW determination program influences HW generator compliance. It is *not* designed to evaluate HW generators' approaches to making HW determinations. The evaluation results are intended help improve EPA's approach, methods, and activities designed to ensure compliance by HW generators as they make HW determinations.

In addition, the evaluation may inform state HW programs as they partner with EPA to ensure HW generator compliance. In particular, the evaluation highlights various state approaches to ensure compliance. However, the purpose of this study is *not* to evaluate or critique state programs. Moreover, the evaluation team recognizes that each state with delegated authority implements the RCRA regulations within the context of its own state regulations, authorities, and budget limitations.

The evaluation may also be of interest to additional stakeholders, such as trade associations, assistance providers, HW haulers, and HW generators themselves, although these groups are not the primary audience for the evaluation report.

EVALUATION QUESTIONS AND CONNECTION TO THE LOGIC MODEL

This evaluation seeks to address six primary questions, which EPA ORCR staff identified in conjunction with staff from EPA's OECA and ESD, with support from IEc. The evaluation questions are as follows:

1. What is the national non-compliance rate with the HW determination regulations? What is the non-compliance rate with the HW determination regulations by sector?
2. What obstacles or challenges do HW generators face in complying with the HW determination regulations?
3. What firm characteristics influence HW generators' compliance with the HW determination regulations?
4. How do state program activities influence HW generators' compliance with the HW determination regulations (i.e., are there particular state program approaches that are effective at increasing compliance)?
5. How do assistance providers/HW service providers/trade associations' activities influence HW generators' compliance with the HW determination regulations?
6. What changes do stakeholders recommend to make the national HW determination process more successful? Specifically:
    a. Proposed changes to EPA regulations?

b. Proposed changes to EPA assistance/training/outreach/support activities directed at:

   i. HW generators?

   ii. Assistance Providers/HW Service Providers/Trade Associations (i.e., those that influence HW generators)?

   iii. States?

c. Proposed changes to EPA compliance monitoring and enforcement mechanisms (including self-audit policy) to improve compliance?

Each of the evaluation questions corresponds to one or more points on the logic model, as shown in Exhibit 2. In this way, the evaluation tests whether the program is working as intended and described in the logic model.

EXHIBIT 2. Evaluation Questions and Connection to the Logic Model

EVALUATION QUESTION	CONNECTION TO THE LOGIC MODEL
1. What is the national non-compliance rate with the HW determination regulations? What is the non-compliance rate with the HW determination regulations by sector?	F
2. What obstacles or challenges do HW generators face in complying with the HW determination regulations?	C,D,E,G
3. What firm characteristics influence HW generators' compliance with the HW determination regulations?	D,G
4. How do state program activities influence HW generators' compliance with the HW determination regulations ?	D, G
5. How do Assistance Providers/HW Service Providers/Trade Associations' activities influence HW generators' compliance with the HW determination regulations?	D,G
6. What changes do stakeholders recommend to make the national HW determination process more successful? Specifically: a. Proposed changes to EPA regulations b. Proposed changes to EPA assistance/training/outreach/support activities directed at: i. HW generators ii. Assistance Providers/HW Service Providers/Trade Associations (i.e., those that influence HW generators) iii. States c. Proposed changes to EPA compliance monitoring and enforcement mechanisms (including self-audit policy) to improve compliance	A,B,C

The remainder of this report is organized as follows:

- **Chapter 2** describes the evaluation methodology, including sources of data and types of analysis conducted, as well as the limitations of this approach.
- **Chapter 3** discusses the findings from the evaluation. The chapter organization follows the six primary evaluation questions and is informed by interviews and discussions with generators, state officials, HW service providers, assistance providers, and other stakeholders, as well as a survey of federal facilities and an analysis of available information on compliance with HW determination regulations.
- **Chapter 4** provides overarching themes and the evaluators' recommendations.

Supporting material, including sample interview and discussion guides, are included in the Appendices:

- **Appendix A:** Hazardous Waste Determination Non-Compliance by Sector
- **Appendix B:** Theme Prevalence
- **Appendix C:** Stakeholder Recommendations, Organized by Recommendation Type
- **Appendix D:** Interview Guide for Industry/Trade Association Representatives
- **Appendix E:** Interview Guide for Hazardous Waste Service Providers

- **Appendix F:** Discussion Questions for Hazardous Waste Generators
- **Appendix G:** Discussion Questions for EPA Regional Compliance Assistance Coordinators
- **Appendix H:** Discussion Questions for Small Business Assistance Providers
- **Appendix I:** Discussion Questions for Sector-based Assistance Providers
- **Appendix J:** Discussion Questions for EPA Regional Enforcement Managers
- **Appendix K:** Discussion Questions for State Associations
- **Appendix L:** Discussion Questions for Case Study States

CHAPTER 2 | METHODOLOGY

This chapter summarizes the methodology used to answer the evaluation questions, including the data sources and approach to analyzing the data. The chapter also highlights limitations of this methodology.

DATA SOURCES

This evaluation draws on multiple data sources to answer the evaluation questions. The key sources of information include: (1) EPA's RCRAInfo database, (2) statistical compliance rate data, particularly drawn from the state Common Measures Project and state Environmental Results Programs (ERPs), (3) EPA meetings with state officials (4) interviews and discussions with various stakeholders, and (5) a survey of federal partners with first-hand experience in HW determination compliance. Most of the data used for the evaluation are qualitative in nature (e.g., input gathered during interviews, discussions, and surveys); the main sources of quantitative data are EPA's RCRAInfo database and state statistical compliance rates. The federal facilities survey provides both qualitative data (in the form of answers to open ended questions) and limited quantitative data (in the form of answers to close ended questions, where IEc could calculate the percentage of respondents selecting each answer choice). The data were gathered by both EPA and IEc, although IEc conducted all of the analysis and prepared the recommendations included in Chapter 4. The text below describes each of these data sources in more detail.

RCRAInfo

RCRA requires entities that generate, transport, treat, or store HW to provide information about their activities periodically to state environmental agencies. This information, along with information related to the characteristics of HW generators, is compiled in the RCRAInfo database. In addition, state and Regional EPA offices conduct inspections of HW generators and enter information about the inspections and any resulting violations into RCRAInfo. This database may be queried for a broad range of data, including compliance with federal and state regulations.[2]

IEc worked with EPA staff to query the RCRAInfo database as described later in this chapter (see the section on Data Analysis). The EPA Office of Enforcement and Compliance Assurance, Office of Compliance Enforcement Targeting and Data Division Media Systems ran the queries to extract the datasets requested by the evaluation team. IEc then summarized and described the data, and used it to inform the remainder of the evaluation.

[2] For more information on RCRAInfo, see http://www.epa.gov/enviro/facts/rcrainfo/index.html

Statistical Compliance Rates

In recent years, a number of states have undertaken initiatives designed to measure compliance using statistically-based samples. These efforts have typically targeted sectors characterized by a large number of small businesses (e.g., auto body repair shops and printers), where it is infeasible for state inspectors to visit each shop regularly. In many cases, states have combined statistical sampling with targeted compliance assistance efforts to improve sector compliance rates over time. IEc summarized available information from states about statistical compliance rates to complement the RCRAInfo analysis in answering evaluation question 1.

EPA Meetings with State Officals

ORCR program staff attended or held five meetings with state regulators responsible for managing delegated state HW programs; IEc attended four of these meetings. These meetings allowed state regulators, inspectors, and assistance providers to share feedback about their experience with HW determination. The session formats were generally similar; EPA asked states to comment on topics such as:

- Similarities and differences between the state and federal programs;
- Challenges HW generators face in HW determination;
- Factors that influence HW generators' ability to accurately conduct a HW determination, such as firm characteristics; state program characteristics; and influence of assistance providers, HW service providers, and trade associations;
- Approaches states use in implementing their programs; and
- Recommended changes to the HW program.

At all five meetings, EPA and/or IEc took detailed notes. IEc used the information collected during these meetings to inform responses to the evaluation questions and to help design interview and survey questions for use during subsequent data collection. Exhibit 3 lists the groups and states represented at each meeting. Overall, the general discussions allowed input from at least one representative from each of 20 states.

EXHIBIT 3. Overview of General Discussions

GROUP	STATE(S) REPRESENTED	DATE OF MEETING
Vermont state regulators*	VT	September 27, 2010
New Hampshire state regulators*	NH	September 28, 2010
Association of State and Territorial Solid Waste Management Officials (ASTSWMO) meeting	AL AR MA MI MO MT NV PA	April 19, 2011

GROUP	STATE(S) REPRESENTED	DATE OF MEETING
2011 Small Business Ombudsman/Small Business Environmental Assistance Program (SBEAP) State Partner Training	GA IA IL KY NH OH SC TN WI	May 4, 2011
Northeast Waste Management Officials' Association	NJ NY	May 24, 2011
* Notes for these meetings were combined into a single file.		

Interviews and Discussions with Stakeholders

Responses to interviews and open discussions with stakeholders provided information to address many of the evaluation questions. IEc and EPA gathered input from industry representatives, including trade associations, HW generators, and HW service providers whose clients are HW generators. IEc also conducted case studies in three states, consisting of interviews with state representatives and open discussions with individual generators and assistance providers. In addition, ORCR provided IEc with additional notes and comments from prior discussions with various stakeholders including, retailers, hospitals, and state agencies. Finally, IEc conducted a general discussion with EPA Regional representatives in order to get their perspective. Each of these data sources is described below:

1. **Industry representatives.** IEc selected eight industry trade associations to interview, based on information from the RCRAInfo queries about which sectors appear to have particular compliance issues. IEc interviewed seven of these industry representatives and EPA ORCR staff interviewed one. In addition to industry trade associations, IEc interviewed three HW service providers who consult with HW generators regarding HW determination. Questions for industry representatives addressed challenges they have experienced with HW determination, factors that influence their HW determination decisions (e.g., concerns about enforcement, availability of compliance information, and costs of compliance), sources of information about compliance, and recommended changes to the HW determination process. For all interviews, IEc or EPA sent the interview guides to the interviewees in advance to allow them to consider the questions before the interview. The interview guides included an introduction that briefly explained the background of the evaluation and how the information was to be used. To encourage candor, IEc offered interviewees anonymity (i.e., IEc did not include their names or attribute specific positions to them in the evaluation report). All of the industry representative interviews were conducted by telephone.

2. **EPA Regional representatives.** IEc participated in one regularly scheduled conference call with EPA enforcement and inspection staff working on HW issues in the Regions. Prior to the call, ORCR distributed a list of questions and requested feedback. During the call, IEc asked the representatives for their perspectives on evaluation questions 2 through 6.

3. **State case studies.** IEc and EPA conducted detailed case studies in three states that volunteered to participate: Minnesota, Colorado, and Texas. IEc selected these case study states based on their willingness to participate, characteristics of the program, and whether they were able to gather a group of generators for a general discussion. In each case, IEc and/or EPA traveled to the state to conduct interviews in person. The goal of the case studies was to gather information about the history and context of each state's HW determination programs, and explore the strengths and limitations of these programs with input from state representatives, individual generators, and other stakeholders. For the case studies in Minnesota and Texas, IEc conducted a two-day trip to the state. ORCR conducted a two-day trip for the Colorado case study and IEc participated by phone. Each case study included one or more interviews with state representatives to explore how the state programs operate, how state regulators interact with their federal counterparts at EPA, and feedback about EPA's federal HW program. In one case (Texas), ORCR also conducted an interview with the EPA Region. In each case, IEc conducted one or more group discussion(s) with local HW generators to hear their experiences with HW determination and identify what issues present particular challenges. (EPA and state representatives participated in part of the meetings with generators, but then left the room at the end of the session to allow generators to offer any additional feedback to the independent evaluators without regulators present.)

Survey of Federal Facilities

EPA surveyed HW generators that are federally owned and operated. The federal facilities specifically invited to participate in the survey include 402 large quantity generators (LQGs) and 357 small quantity generators (SQGs) in the RCRAInfo database for which EPA has email addresses. In addition, the survey was advertised in FedCenter.gov and a link was included in the FedCenter Daily Newsletter, which is sent via email to 10,000 subscribers, most of whom are federal environmental managers and staff.[3] The survey was open from August 11 through September 20, 2011, and 286 individuals responded to the survey. The survey recipients represented facilities from a wide range of government agencies. The greatest number of responses came from the US Department of Defense (47 percent of respondents), Department of Veterans Affairs (12 percent of respondents), and Department of Homeland Security (11 percent of respondents). Respondents were located in all but seven US states and territories. A majority of respondents were LQGs (57 percent of respondents), but SQGs were also represented (28 percent of respondents), as were conditionally exempt small quantity generators (CESQGs) (14 percent of respondents). EPA administered the survey and provided the results to IEc for analysis.

EPA asked survey respondents the following set of questions:

- What factors have helped you make more accurate HW determinations?
- Who generally makes your HW determinations?
- How helpful was the assistance in making HW determinations?
- How do you make HW determinations?
- How helpful was the method of making HW determinations?

[3] Since EPA is not subject to the Paperwork Reduction Act when surveying federal partners, these facilities represented a unique opportunity to gather information directly from a large number of generators in an efficient manner.

- What factors have helped you make more accurate HW determinations?
- If you had an opportunity, what would you want EPA or your state to do to help facilities like yours make HW determinations more effectively?
- Which federal agency are you a part of?
- In what state or territory is your federal facility located?
- What is your federal HW generator regulatory status?
- Please provide a rough estimate of number of different HW streams generated annually.
- Do you have any additional input about making HW determinations?

Summary of Data Sources

In total, when all data sources are included, IEc and/or EPA conducted 11 interviews and 16 open discussions and administered the survey of federal facilities as a part of this evaluation. Each open discussion included numerous participants. In addition, EPA ORCR provided notes from six additional data sources. Note that interview questions varied by the data source (e.g., the interview questions for industry representatives differed from the questions for HW service providers.) Appendices F through N provide a sample of the interview and discussion guides used. Exhibit 4 describes the 34 data sources.

EXHIBIT 4. Overview of Data Sources

DATA SOURCE	DATA SOURCE TYPE
Industry Representative – retailers	Interview
Industry Representative – metal foundries	Interview
Industry Representative – paint and coatings manufacturers	Interview
Industry Representative – hospitals/pharmaceuticals	Interview
Industry Representative – automotive repair and maintenance	Interview
Industry Representative – printers	Interview
Industry Representative – printed circuit board manufacturers	Interview
Industry Representative – chemical manufacturers	Interview
HW Services Provider	Interview
Hazardous Waste Services Provider	Interview
HW Services Provider	Interview
New Hampshire and Vermont state representatives	Open Discussion
ASTSWMO Meeting	Open Discussion
SBEAP State Partner Training	Open Discussion
Case Study - Texas, Dallas Chamber of Commerce	Open Discussion

DATA SOURCE	DATA SOURCE TYPE
Case Study - Texas, Fort Worth Chamber of Commerce	Open Discussion
Case Study - Texas Commission on Environmental Quality (TCEQ)	Open Discussion
Case Study – TCEQ Small Business and Local Government Assistance	Open Discussion
EPA - Region 6	Open Discussion
Case Study - Minnesota, State and County Inspectors	Open Discussion
Case Study - Minnesota, Local Generators	Open Discussion
Case Study - Colorado, Local Generators	Open Discussion
Case Study - Colorado, Colorado Department of Public Health and Environment (CDPHE)	Open Discussion
EPA - Regional Enforcement Managers	Open Discussion
EPA - Regional Compliance Assistance Coordinators	Open Discussion
Northeast Waste Management Officials' Association	Open Discussion
EPA - Office of Enforcement and Compliance Assurance (OECA)	Open Discussion
Site Visit - Holy Cross Hospital, Silver Spring, MD	EPA Provided Data Source
ASTWMO Colorado Memo	EPA Provided Data Source
Wal-Mart Public Comment on Retrospective Review	EPA Provided Data Source
Home Depot Public Comment on Retrospective Review	EPA Provided Data Source
Site Visit - North Memorial Hospital, Abbot Northwestern Hospital and Capital Returns Inc. (MN, WS)	EPA Provided Data Source
ETC (trade association for HW handlers)	EPA Provided Data Source
Survey of Federal Facilities	Survey
TOTAL DATA SOURCES	**34**

DATA ANALYSIS

The general analytical approach for the evaluation included a qualitative content analysis of the responses from the 34 data sources, as well as a quantitative summary of RCRAInfo data, state data on statistical compliance rates, and the federal facility survey responses. Specifics of the approach vary for each evaluation question and are described below.

Evaluation Question 1: **What is the national non-compliance rate with the HW determination regulations? What is the non-compliance rate with the HW determination regulations by sector?**

Working with data extracted from the RCRAInfo database on federal comprehensive evaluation inspections, IEc calculated non-compliance rates as:

> The number of CEIs conducted by EPA or its contractors
>
> with RCRA Part 262 Subpart A violations
> *divided by*
> The total number of CEIs conducted by EPA or its contractors

IEc used "262.A" (RCRA Part 262 Subpart A) as the violation type in the RCRA queries because 262.11 is not an allowed value for the VIOL TYPE field. RCRA 40 CFR Part 262 Subpart A is a broader part of the regulations, which includes the **Purpose, scope, and applicability** of Part 262 (262.10), **HW determination** requirements (262.11), and **EPA identification numbers** (262.12). In order to ensure the most consistent data set, IEc limited its analysis to violations identified during Comprehensive Evaluation Inspections (CEIs) conducted by EPA or its contractors. IEc included only violations related to HW determination requirements, which are specified in RCRA regulations at Part 262 Subpart A. The analysis included data from a ten year period (5/27/2001 – 5/27/2011). IEc calculated national non-compliance rates overall, by generator class, and by sector.[4]

Note that inspectors often conduct targeted inspections (e.g., at facilities they believe are more likely to be out of compliance). Since EPA does not generally conduct CEIs at randomly selected facilities, the compliance rates derived from RCRAInfo are not representative of all regulated entities. Therefore, the non-compliance rates derived from EPA do not provide a good indication of the *absolute* rate of non-compliance for the total universe of regulated entities. Nevertheless, the compliance rate may be used to provide approximate *relative* information about the extent of compliance (e.g., across generator classes and sectors), with the understanding that inspection targeting protocols may vary in different EPA Regions.

IEc also considered statistical compliance rates calculated as part of the Common Measures Project and state Environmental Results Programs.

Evaluation Questions 2&3:

2. **What obstacles or challenges do HW generators face in complying with the HW determination regulations?**
3. **What firm characteristics influence HW generators' compliance with the HW determination regulations?**

IEc analyzed qualitative data from all 34 sources of information to understand what factors influence generators' compliance with the HW determination regulations. These sources of information include interviews and general discussions with states, EPA Regions, assistance providers, industry

4 IEc calculated non-compliance rates by sector for the 21 sectors with the highest overall number of hazardous waste determination violations. Additional details on the specifics of the analysis are included with the findings in Chapter 3 of this report.

representatives, generators and HW service providers, as well as open ended responses to a survey of federal facilities. IEc identified 30 recurring themes that describe various obstacles, challenges, firm characteristics, and situations that influence HW generators' compliance with HW determination regulations. Chapter 3 discusses these findings.

To facilitate analysis, IEc assigned a weight for each theme as reflected in each data source. Weights are based on the extent of discussion on each theme within a given data source, as follows:

- 0: Theme was not mentioned
- 1: Mentioned as an issue but not a focal point of discussion
- 2: Mentioned as an issue by multiple parties and/or focal point of some discussion
- 3: Noted as a major issue for multiple parties and focal point of a major discussion

IEc then calculated a *response index* for each theme by summing the weights of that theme across the 34 data sources. For example, if the theme "Generators have difficulty characterizing materials that are subject to different regulations by multiple entities" came up as an issue but not as a focal point of discussion (weight 1) in four data sources, and as a major issue for multiple parties (weight 3) in three data sources, the response index for this theme would be (1 * 4) + (3 * 3) = 13.

Evaluation Question 4: **How do state program activities influence HW generators' compliance with the HW determination regulations?**

IEc collected qualitative and anecdotal information during the interviews, discussion sessions, and federal facilities survey to identify how state program activities influence HW generators' compliance. For example, during interviews with HW generators, IEc explored the extent to which state program activities and other factors influence their HW determination practices. In addition, IEc conducted three case studies on states HW determination programs and the range of compliance assistance, monitoring, and enforcement practices these states use. These findings are summarized in Chapter 3 of the evaluation.

Evaluation Question 5: **How do assistance providers/HW service providers/trade associations' activities influence HW generators compliance with the HW determination regulations?**

Similar to the analysis conducted for Evaluation Questions 2 and 3, IEc analyzed qualitative responses to the interviews, open discussions, and the survey of federal facilities to assess the influence of assistance providers, HW service providers, and trade associations. In addition, IEc considered the results of a 2007 survey conducted by the Small Business Environmental Homepage.

Evaluation Question 6: **What changes do stakeholders recommend to make the national HW program more successful?**

Drawing upon information gathered during the interviews, open discussions, the case studies, and the federal facilities survey, IEc extracted and compiled stakeholder suggested recommended changes to make the federal HW determination process more successful.

LIMITATIONS OF THE EVALUATION

Throughout this study, IEc sought to use representative, objective, and robust data collection and analytical approaches to the extent possible. However, as with all program evaluations, data collection and analytical limitations exist, which we seek to make transparent in our findings. This study's limitations include:

- **Uncertainties associated with secondary data.** Due to the inability to interview more than nine HW generators directly (without preparing a formal Information Collection Request), IEc primarily relied upon states, trade associations, and assistance providers to report their perspectives about the challenges faced by individual HW generators. These reports may not completely and accurately represent the experiences of the overall population of HW generators.
- **Data may not be representative.** Given the limit on the number of interviews and open discussions IEc was able to conduct, the qualitative data collected for this evaluation are not comprehensive and may not fully represent the stakeholder groups of interest. However, IEc sought to ensure the interviews, discussion sessions, and survey of federal facilities represent a cross-section of sectors, regions of the country, and state program approaches. In addition, the RCRAInfo data are not representative of all regulated entities, since the inspections are often targeted, rather than conducted at a random sample of facilities.
- **Inability to fully characterize state programs.** It was not feasible for this evaluation to characterize all state HW programs. Based on discussions with EPA to date, we conclude there is no existing comprehensive categorization of state programs to draw on. Therefore, IEc was not able to identify different types of state programs (e.g., those focused more on enforcement vs. assistance, or those investing more or less resources in HW determination). Given this lack of state program categorization, IEc was not able to compare non-compliance rates for different types of state programs.
- **Potential uncertainties in data on compliance rates.** Quantitative data derived from the RCRAInfo database may not be completely accurate or consistent with regard to HW determinations. In particular, IEc understands that inspectors may code HW determination violations differently, with some treating these violations as a "default" violation code. IEc sought to ensure the greatest consistency in the RCRAInfo data by using only data from EPA inspectors or their contracts (rather than data from state inspections, which might follow different protocols).
- **Potential inaccuracies in information reported by stakeholders.** IEc summarized, but did not verify, information reported by stakeholders. There were a few instances in which EPA disagreed with stakeholders' characterizations of EPA actions or policies. IEc has noted these instances in footnotes in the text. IEc encourages readers to understand the qualitative findings as a summary of stakeholder perceptions. These perceptions are important as EPA gauges how its regulations are implemented and perceived by the regulated community.

CHAPTER 3 | FINDINGS

This chapter describes the findings for six evaluation questions relevant to EPA's HW determination program. The findings are based on interviews, discussions, and an analysis of compliance data at federal and state levels, as described in the evaluation methodology. Overall, the findings suggest a number of shared perspectives about the challenges associated with making HW determinations, and opportunities to optimize the program, which we will consider further in the Summary of Findings and Recommendations chapter.

QUESTION 1: WHAT IS THE NATIONAL NON-COMPLIANCE RATE WITH THE HW DETERMINATION REGULATIONS? WHAT IS THE NON-COMPLIANCE RATE WITH THE HW DETERMINATION REGULATIONS BY SECTOR?

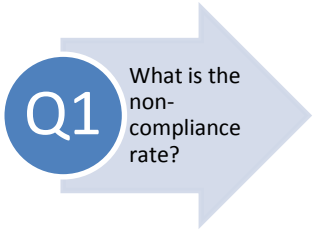
To develop an overall picture of the frequency of HW determination violations, IEc analyzed data in EPA's RCRAInfo database. As described in the evaluation methodology, the analysis is based on RCRA 262 Subpart A violations identified during Comprehensive Evaluation Inspections (CEIs) conducted by EPA or its contractors over a ten-year period (5/27/2001 – 5/27/2011). Note that these compliance rates are not based on a representative sample of all regulated entities.

HW Determination National Non-Compliance Rate

The analysis of non-compliance rates as determined by EPA/contractor-conducted CEIs shows a national average non-compliance rate for RCRA Part 262 Subpart A of 34 percent.[5] Exhibit 5 shows the number of CEIs conducted, the number of CEIs with RCRA Part 262 Subpart A violations, and the resulting national HW determination non-compliance rate.

EXHIBIT 5: National Overall HW Determination Non-Compliance Rate

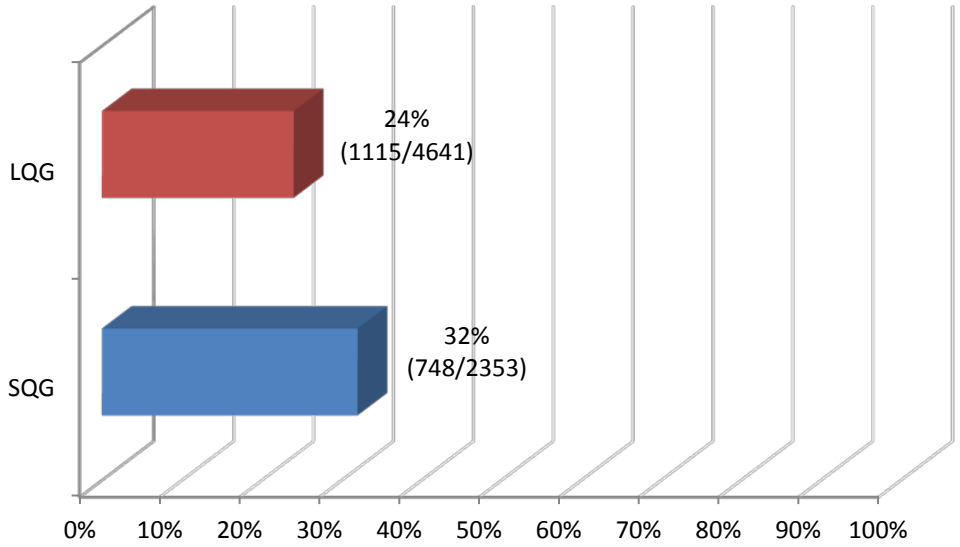
COMPLIANCE INFORMATION BASED ON EPA/CONTRACTOR-CONDUCTED INVESTIGATIONS REPORTED IN RCRAINFO		
TOTAL NUMBER OF CEIS CONDUCTED OVER 10 YEARS	NUMBER OF CEIS WITH RCRA PART 262 SUPBART A VIOLATIONS REPORTED OVER 10 YEARS	RATE OF NON-COMPLIANCE
8405	2887	34%



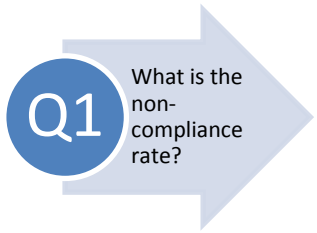
[5] This calculation is based on the total number of CEIs with violations reported is divided by the total number of CEIs for all 57 states, territories, and dependencies over the 10 year period analyzed. The calculation does *not* give equal weight to each state/territory. If the non-compliance rate were calculated based on the percentage of CEIs in each state with violations reported, and then an average calculated across all 57 states, territories, and dependencies, the rate would be 28 percent.

Further analysis of non-compliance data suggests that small quantity generators (SQGs) tend to have higher non-compliance with HW determination requirements than large quantity generators (LQGs).[6] Exhibit 6 shows non-compliance rates for LQGs compared to SQGs. [7]This analysis corroborates anecdotal information gathered in this evaluation, where regulators, assistance providers, and generators themselves suggested that larger, more sophisticated facilities with dedicated environmental staff were more likely to understand their compliance requirements than smaller, less sophisticated facilities.

EXHIBIT 6: National HW Determination Non-Compliance Rates by Generator Class



Percentage of federal CEIs that reported a 262 A violation (CEIs with violation/total Federal CEIs)



[6] EPA conducted an independent analysis of *overall* non-compliance with RCRA regulations over the past five years, and found that there were not substantial differences in compliance between LQGs, SQGs, or CESQGs. This difference between different classes of generators for overall non-compliance with RCRA requirements vs. non-compliance with HW determination requirements may merit further investigation.

[7] IEc also analyzed hazardous waste determination non-compliance rates for CESQGs, however, the number of inspections conducted at CESQGs was relatively small, and definitions of CESQGs vary. For this reason, we have not included the CESQG non-compliance rate in Exhibit 6.

In addition to information on non-compliance rates drawn from EPA's RCRAInfo database, IEc also compiled information from states that have conducted their own inspections at statistically-based samples of facilities in order to estimate compliance rates across a universe of facilities. The universe of facilities was in some cases all facilities within a sector (e.g., auto body), and in other cases was all facilities within a generator class (e.g., SQGs). IEc found data generated by 15 states related to whether regulated facilities in the universe had identified all of their HW streams, as determined by trained inspectors or site visitors. Exhibit 7 shows the observed percentage of facilities meeting this requirement in each state. Overall, most states included in the analysis found that a majority of entities inspected had identified all of their HW streams or had conducted a complete and accurate HW determination.

The results of this analysis of state data differ from the analysis of EPA's RCRAInfo data. The differences may be due to several reasons. First, EPA inspections covered both LQGs and SQGs from a wide variety of sectors, while the state inspections were primarily at smaller facilities (SQGs or auto body shops). Second, the state inspections were based on random samples, while the EPA inspections were likely targeted. Finally, the wording of the questions for the state inspections differed from the standards for determining compliance that EPA inspectors and contractors use. Most states asked about identifying all waste streams, but did not ask about accurate identification. The state that asked whether entities had "conducted a complete ***and accurate*** HW determination" (Delaware) reported a much lower percentage of entities that met this standard, compared to other states. Overall, the information from the analysis of state data and RCRAInfo data are not directly comparable, and it is also difficult to make direct comparisons in compliance rates between states that use different inspection questionnaires.

Non-Compliance Rates by Sector

IEc analyzed HW determination violations by sector. To conduct this analysis, IEc first identified the 21 sectors with the highest ***overall*** number of RCRA Part 262 Subpart A violations identified during CEIs conducted by EPA or its contractors during the 10 years between 5/27/2001 and 5/27/2011 (for a full list of these sectors, see Appendix C). Using data in RCRAInfo, IEc then worked with EPA to identify the number of CEIs conducted in these sectors and to calculate sector-specific non-compliance rates. Based on this analysis, Exhibit 8 shows the 10 sectors with the highest HW determination non-compliance rates amongst the 21 sectors. These sectors include both manufacturing industries and colleges and universities, which have long been a focus for EPA's HW determination program, as well as hospitals, which have been a more recent focus for EPA's program.

EXHIBIT 7: Percentage of Facilities That Had Identified All HW Streams, Based on Statistical Samples

STATE	SOURCE OF DATA	GENERATOR TYPES	# SAMPLED	OBSERVED % OF FACILITIES THAT HAD IDENTIFIED WASTE STREAMS
Maine	Common Measures Project: States collected data at random samples of SQG facilities in eight states between October 2007 and October 2008. Inspectors used a checklist of questions related to HW. One of these questions is relevant to HW determination: *Has the facility identified all of its HW streams*? Conformance was determined based on: review of production processes, type of wastes generated at these processes and whether or not they have been characterized as HW.[8]	SQG	55	100%
Massachusetts		SQG	54	94%
New Hampshire		SQG	51	94%
Colorado		SQG	57	91%
Vermont		SQG	44	91%
Connecticut		SQG	38	90%
New York		SQG	57	86%
Rhode Island		SQG	22	86%
EPA Region 5 (Michigan, Indiana, Ohio, Illinois, Wisconsin, and Minnesota)	Based on ERP baseline data collected in five states in 2010. Question wording: Have you identified all of your facility's HW (i.e., have documentation of wastes generated or have identified in some other manner wastes that are hazardous)?[9]	Auto Body	156	81%
Washington	Based on auto body ERP Baseline data collected in 2008 or 2009. Question wording: *Has the facility identified all of its HW streams*?[10]	Auto Body	296	73%
Delaware	Based on auto body ERP baseline data collected between 2003 and 2005. As part of its ERP, Delaware measured the *percentage of auto body shops that had conducted a complete and accurate HW determination*.[11]	Auto Body	47	36%

[8] The States Common Measures Project, Final Report June 19, 2009, Prepared by: Steven DeGabriele, Massachusetts Department of Environmental Protection, Susan Peck, Massachusetts Department of Environmental Protection and Tara Acker, Northeast Waste Management Officials Association.

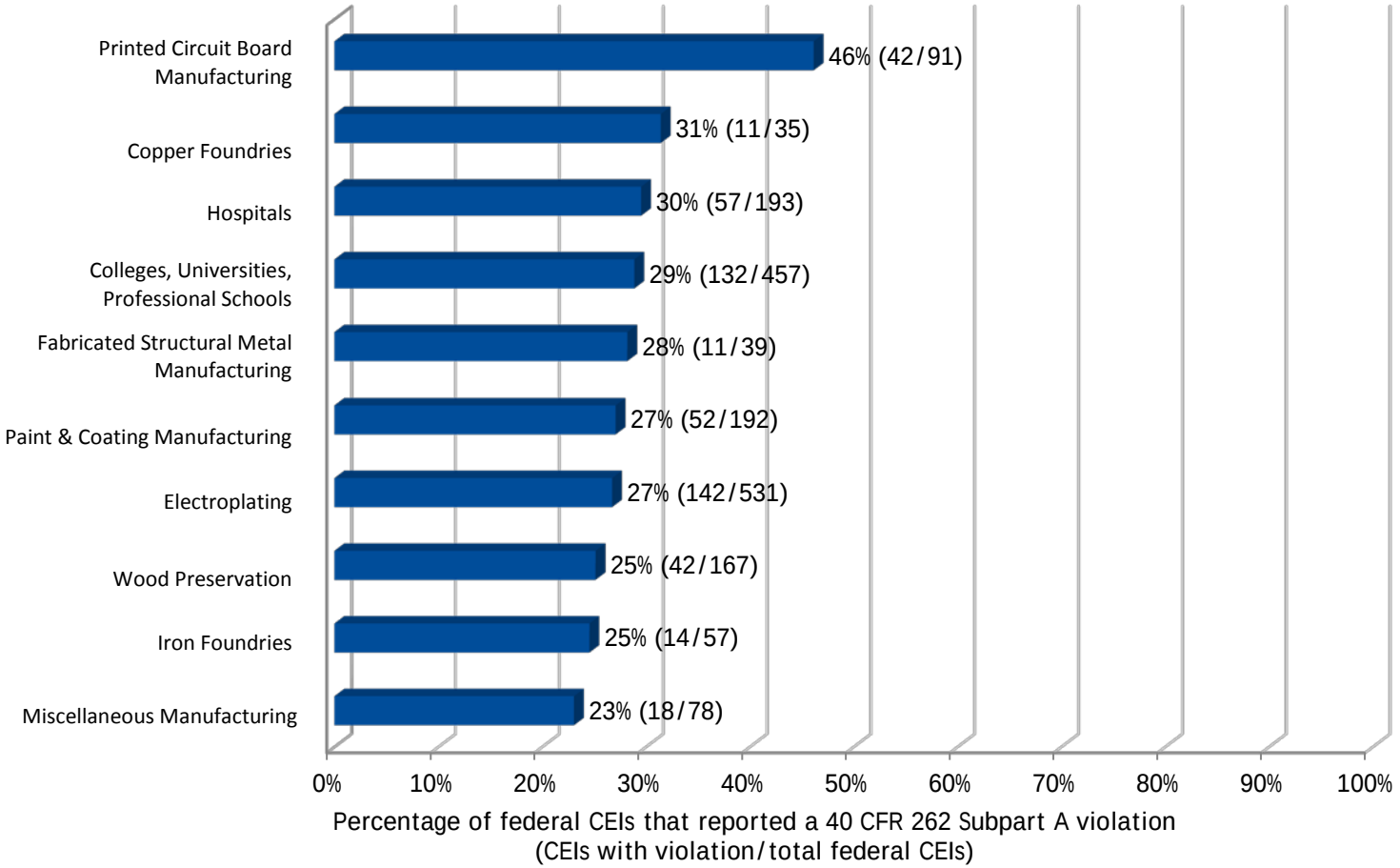
[9] Personal communication, Renee Lesjak Bashel, Policy Development and Business Specialist-Engineer, Permits and Modeling Section, Bureau of Air Management Wisconsin Department of Natural Resources, Renee.Bashel@Wisconsin.gov. Spreadsheet "Copy of ChecklistAnswerImport_Final9-1-11.xls", tab Round 1 All, shows that 156 shops were inspected in the baseline sample, and inspectors marked "yes" on Question D2 (Have you identified all of your facility's HW (i.e., have documentation of wastes generated or have identified in some other manner wastes that are hazardous) for 127 of these shops. The presentation "Baseline results R5ERP-SEC11162011.ppt" provides additional background on the project.

[10] Auto Body Pilot Project Evaluation Assessing the Environmental Results Program in Washington State August 2011 Washington Department of Ecology

[11] Evaluation of Three Environmental Results Programs (ERPs) Final Report, prepared by IEc for US EPA's Evaluation Support Division, August 2009

EXHIBIT 8: HW Determination Non-Compliance Rates for the Ten Sectors with the Highest Non-Compliance Rates

Q1 What is the non-compliance rate?



QUESTIONS 2 & 3: WHAT OBSTACLES, CHALLENGES, AND FIRM CHARACTERISTICS INFLUENCE HW GENERATORS' COMPLIANCE WITH THE HW DETERMINATION REGULATIONS?

IEc analyzed qualitative data from 34 sources of information to understand what factors influence generators' compliance with the HW determination regulations. These sources of information include interviews and general discussions with states, EPA Regions, assistance providers, industry representatives, generators and HW service providers, as well as open-ended responses to a survey of federal partners.[12] IEc identified 30 recurring themes that describe various obstacles, challenges, firm characteristics, and situations that influence HW generators' compliance with HW determination regulations. The following sections discuss these findings.

To facilitate analysis, IEc assigned a weight for each theme as reflected in each data source. Weights are based on the extent of discussion on each theme within a given data source, as follows:

- 0: Theme was not mentioned
- 1: Mentioned as an issue but not a focal point of discussion
- 2: Mentioned as an issue by multiple parties and/or focal point of some discussion
- 3: Noted as a major issue for multiple parties and focal point of a major discussion

IEc then calculated a ***response index*** for each theme by summing the weights of that theme across the 34 data sources. For example, if the theme "Generators have difficulty characterizing materials that are subject to different regulations by multiple entities" came up as an issue but not as a focal point of discussion (weight 1) in four data sources, and as a major issue for multiple parties (weight 3) in three data sources, the response index for this theme would be (1 * 4) + (3 * 3) = 13. Appendix D shows the response index for each of the 30 themes, as well as the number of data sources with a weight of 1, 2, and 3, and the overall percentage of data sources which mentioned the theme.

Many of the themes we identified are interrelated. To organize these findings, we characterize the themes using three overarching categories of challenges to generator compliance: (1) challenges related to the regulations, (2) challenges related to generators, and (3) challenges related to regulatory agencies. In the following sections, we break down each category into more detailed sub-categories, and elaborate on each theme as described by the respondents. Within each sub-category, the themes are ordered by their response index (which is shown in parenthesis), from highest to lowest.

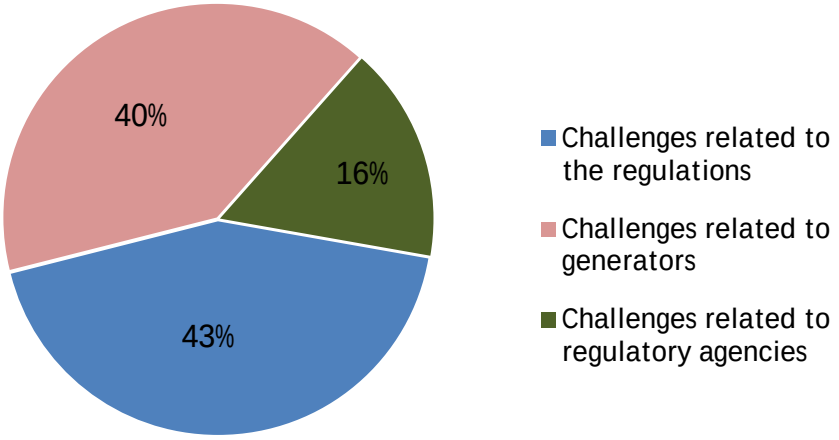
Note that in some instances, stakeholders raised questions or concerns that ORCR believes it has addressed (though stakeholders may not have been aware of this). This report includes information on ORCR's guidance or resources in the footnotes, for general reference.

Exhibit 9 illustrates the prevalence of each overarching category of themes. The percentage represents the sum of the response indices for all themes in the category divided by the sum of the response indices for all themes in all categories. Stakeholders identified challenges related to the regulations themselves as the most

[12] Collectively, we call the individuals who provided feedback as part of this evaluation "respondents" or "stakeholders.

prevalent theme, closely followed by challenges related to generator characteristics. Challenges related to regulatory agencies were less prevalent. The following sections consider each of these types of challenges in turn.

EXHIBIT 9: Prevalence of Different Types of Challenges Generators Face Complying with HW Determination Regulations*

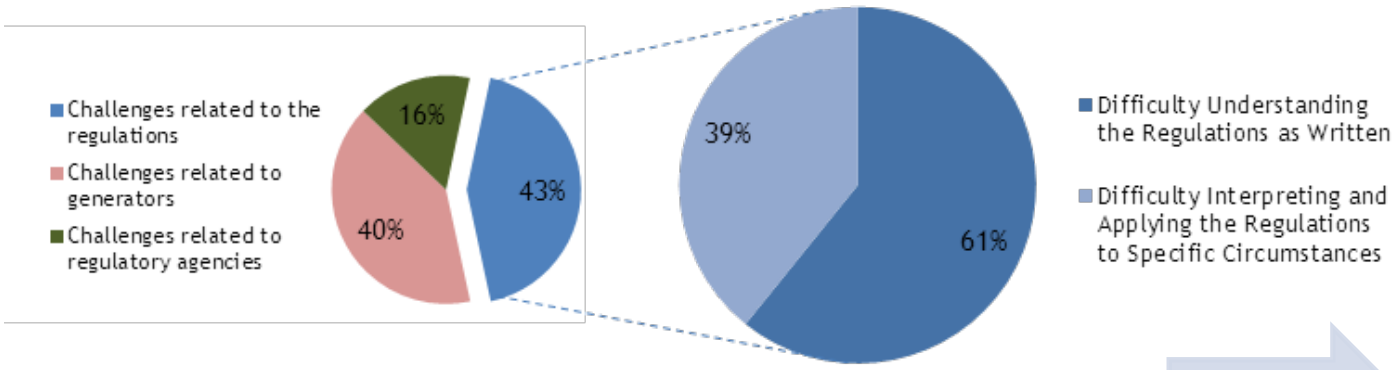


* Percentage represents the sum of the response indices for each theme in the category, as a percentage of the sum of all response indices in all categories

Challenges Related to the Regulations

The interviews and discussions suggest two overarching types of challenges to compliance related to the regulations themselves: (1) difficulty understanding the regulations as written, and (2) difficulty interpreting and applying the regulations to specific circumstances. Exhibit 10 illustrates that general difficulty in understanding the regulations is more prevalent than the difficulty in applying the regulations to specific circumstances.

EXHIBIT 10: Prevalence of Different Types of Challenges Related to the Regulations*



*Percentage represents the sum of the response indices for each theme in the sub-category, as a percentage of the sum of all response indices in the category

Q2&3 What factors influence compliance?

Difficulty in Understanding the Regulations as Written

The following themes demonstrate the challenges generators face with the language, writing style, and substance of the HW determination regulations and their associated guidance documents. The response index for each theme is included in parentheses.

- (41) **Industry specific guidance and outreach would be most helpful**: Stakeholders frequently noted the importance of developing guidance documents and outreach materials for specific sectors. Stakeholders seek guidance that references specific materials and equipment used and situations encountered, so the individuals making the waste determination can understand precisely how the regulations apply to them. Assistance providers report that they write nearly all of their guidance in this manner and they believe it is the most useful approach.

- (38) **HW determination regulations are generally confusing and difficult to follow (e.g., narrative interpretations, references to previous sections)**: Many stakeholders indicated that generators struggle with the language used in the HW determination regulations. The regulations are not linear and contain frequent internal references and in some cases use narrative descriptions to identify HWs, instead of explicitly stating them. Generators find this writing style vague and easy to misinterpret. A generator's inability to read the regulations and confidently make a HW determination can lead to non-compliance.

> "EPA's convoluted and conflicting language poses problems for experienced jurists, much less for lay persons attempting to apply them in the everyday workplace."
>
> -- Industry Representative

- (37) **There is a need for more interpretation/guidance/definitive answers from EPA**: Given uncertainties about how to interpret the regulations as written, generators and other stakeholders seek direct and definitive answers to questions about regulatory interpretations by EPA. One HW services provider indicated that the RCRA Hotline used to serve this function, but now that it is no longer available it is much more difficult to get a direct answer to questions about HW determinations from EPA.[13]

Difficulty Interpreting and Applying the Regulations to Specific Circumstances

The following themes demonstrate the difficulties generators face with specific sections of the regulations. In addition, stakeholders discuss specific situations that frequently cause generators to make incorrect HW determinations.

- (49) **Generators have difficulty making waste determinations for listed wastes**: Making waste determinations for listed wastes is the number one challenge faced by HW generators in the waste determination process. This theme received the highest response index, was the most frequently mentioned issue, and was a primary focus of interviews and discussions more often than any other theme. Stakeholders cited all of the listed wastes as problematic, but they mentioned difficulties with F-listed and P-listed wastes more than any other.

[13] EPA points out that the Agency does not make HW determinations for generators, and that EPA staff and contractors who used to staff the RCRA Hotline cannot tell generators whether their site-specific waste is a HW.

The narrative descriptions used for the F-listings present a major source of confusion for generators. For example, whereas U-listed wastes are specific substances (i.e., Acetone – U002), F-listed wastes are not explicitly stated. The F-listed wastes include substances derived from specific processes (e.g., quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process – F010), where the resulting waste is ambiguous. On more than one occasion, respondents said the F006 listing is particularly confusing because the narrative describes only those wastes which are exempt from the regulation, not those that are subject to it.

> "Change F006 nomenclature from "electroplating" to be more descriptive of the listing by identifying all of the processes covered in the F006 definition (i.e., cleaning, stripping, etching, milling, anodizing, and electroplating.) Change the F006 listing description to identify what processes were included in the listing, not just those that were excluded."
>
> -- State Regulator

Stakeholders attributed confusion surrounding P-listed wastes to the logic of the regulation, as opposed to the way it is written. For example, according to one group we spoke with, a used nicotine patch containing 80 percent of the original nicotine is not a P-listed waste. However, the foil wrapper that the patch came in is considered a P-listed waste because it contains nicotine residue. Additionally, one stakeholder indicated there is frequent confusion about characterizing wastes from experiments at academic labs as P-listed HW. [14]

- (34) **Generators struggle with understanding the HW recycling regulations**: Generators, assistance providers, and regulators agree that HW determination regulations are particularly tricky with regard to recycling. For example, one stakeholder noted that the regulations do not clearly indicate if a retailer is considered the generator when they collect used consumer electronics and ship them to a third party to evaluate their recycling potential. Retailers say this lack of clarity deters them from recycling consumer electronics because they are uncertain whether they must ship them to the third party as HW. [15] Generators and Regional inspectors also struggle to understand whether a material awaiting recycling must be characterized and managed as HW until that time when it is actually recycled.

- (22) **Generators have difficulty making waste determinations for characteristic wastes**: Although not as problematic as listed wastes, stakeholders noted that sometimes generators have difficulty making determinations for characteristic wastes. One example is the practicality of conducting a TCLP test on large or bulky items (e.g., Klystrons, tubes used for the generation and amplification of ultrahigh-frequency current, which weigh up to 450 pounds).

[14] EPA notes that if a chemical is used in an experiment, the resulting waste would not be P-listed since the chemical would be used and a P-listed HW by definition is an unused commercial chemical product.

[15] See Tonetti, Robert. "EPA's Regulatory Program for 'E-Waste'" Office of Solid Waste, October 2007. This EPA presentation explains used electronics are not wastes until determined by a third party. Available online at http://www.epa.gov/osw/conserve/materials/ecycling/docs/e-wasteregs.pdf

- (19) **HW generators often mischaracterize peripheral waste**: Stakeholders report that generators often accurately characterize their primary waste streams but neglect to make a determination for supplementary waste streams that come into contact with the primary HW stream. For example, dry cleaners often do not think to evaluate lint from the cleaning process that is contaminated with perchloroethylene as potential HW.

- (15) **Generators have difficulty knowing when to make a waste determination during the production process**: Stakeholders frequently noted that EPA's definition of "point of generation" causes significant confusion in HW determinations. In particular, members of the retail sector struggle to apply this portion of the regulations to their reverse distribution process, whereby retailers send unsold products to a central location and receive financial credit from the manufacturer. The retailer decides the fate of these products at a central location and if the retailer discards or recycles the products, the retailer must make a waste determination. However, according to the EPA regulations, the retailer is in violation of the HW determination regulations because the determination was not made at the "point of generation." In addition to this concern, one stakeholder reported that the literal interpretation of the "point of generation" definition means that the person present when the waste is created must make the determination, thus potentially preventing the appropriately trained employee (who may not be present) from making the determination.[16]

> "It is currently unclear which party is considered the 'generator' if a retailer collects used consumer electronics and sends them to be evaluated by a third-party that possesses the expertise to determine whether they can be refurbished or recycled. If some of the electronics are recycled by the third-party instead of refurbished, retailers may face an enforcement action for illegally transporting hazardous waste."
>
> -- Industry Representative

- (15) **Generators are often confused about the rules/interpretations with regard to empty containers:** A number of stakeholders reported having difficulty interpreting EPA's definition of empty containers. Of particular concern is their application with regard to pharmaceuticals. One generator stated that it is illogical to require that an empty pill bottle in a hospital setting be "triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate"(40 CFR 261.7). In addition, more than one stakeholder noted difficulty applying the empty container rules to aerosol cans, saying that often generators will forget to depressurize cans, therefore not rendering them empty.

[16] For information about who can make HW determinations, see EPA memo regarding "Hazardous Waste Generated in Laboratories," from Elizabeth Cotsworth, Director Office of Solid Waste (name changed to Office of Resource Conservation and Recovery on January 18, 2009) to RCRA Senior Policy Advisors, EPA Regions I-X dated August 16, 2002. Available online at: http://www.epa.gov/osw/hazard/generation/labwaste/memo-lab.htm

- (**13) Generators inappropriately apply RCRA exclusions/exemptions:** Stakeholders report that generators find the rules concerning wastes that are exempt or excluded from the definition of solid waste and HW confusing and vague. Some generators inappropriately apply exemptions to their waste streams, to avoid managing them as HW. Others fail to apply the exemptions and exclusions in legitimate situations because they don't understand the regulations.

> "Large quantity generators may have the resources but often times use them to interpret the laws in ways which are economically favorable to them. For example, many large firms will inappropriately use RCRA exclusions to avoid making a hazardous waste determination."
>
> -- Federal Assistance Provider

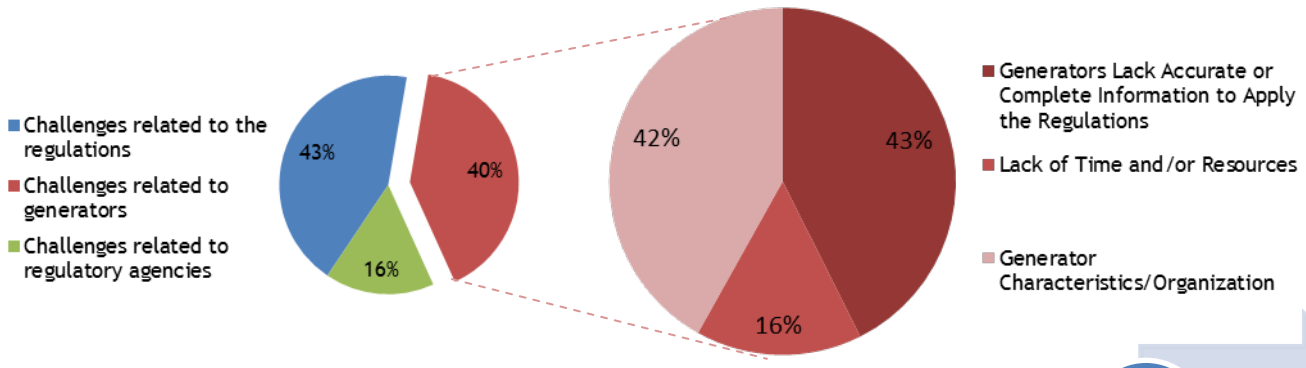
- (7) **Generators don't understand how to apply the "derived-from" rule:** Stakeholders reported that generators are confused by the "derived-from" rule which requires residues from treating listed wastes to be classified as listed HW. One stakeholder claimed that according to the "derived-from" rule, water considered safe under the Safe Drinking Water Act may be considered HW.

- (6) **Generators don't understand how to apply the "mixture rule":** The "mixture rule" confuses generators because like the derived-from rule, substances that may not test positive for hazardous constituents are still considered HW.

Challenges Related to Generators

The interviews and discussions suggest three overarching types of challenges to compliance related to generators: (1) lack of accurate or complete information to apply the regulations, (2) lack of time and/or resources, and (3) generator characteristics/organization. Exhibit 12 shows that lack of information and generator characteristics are the most prevalent types of challenges associated with generators themselves.

EXHIBIT 11: Prevalence of Different Types of Challenges Related to the Generators*



Q2&3 What factors influence compliance?

* Percentage represents the sum of the response indices for each theme in the sub-category, as a percentage of the sum of all response indices in the category

Generators Lack Accurate or Complete Information to Apply the Regulations

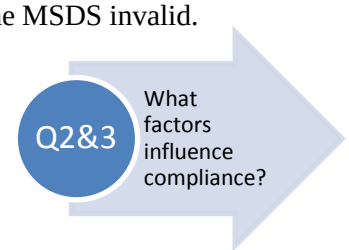
The following themes demonstrate how inaccurate or incomplete information can prevent generators from correctly interpreting and applying the regulations. This lack of information may result in generators making uninformed decisions about HW determinations, or relying upon inaccurate information provided by third parties.

- (44) **Reliance upon third parties (HW service providers, suppliers, disposers) for information used to make determinations can result in generator determination violations**: Stakeholders indicate that generators regularly seek information from third parties when making a HW determination due to their own lack of understanding with regard to the regulations. Sometimes, third parties provide inaccurate information leading to HW determination violations. This may happen because the supplier is also uninformed about the regulations, or in some cases it may be due to a financial incentive. For example, respondents suggested that suppliers, who sell products containing hazardous constituents, will tell generators that their product does not have to be treated as HW when discarded, in the hope they will be convinced to purchase from them instead of a competitor. Stakeholders also described this situation with regard to HW service providers, reporting that they will offer generators a lower price to manage their waste than competitors by determining it not to be hazardous. This topic is discussed in greater detail later in this chapter (See Question 5)

- (30) **Generators are often unaware that they are generating a HW at all and therefore subject to RCRA**: Stakeholders report that when many small businesses open, the owner is typically not aware of the environmental regulatory obligations. Businesses such as auto body shops and dry cleaners often do not understand that the waste they produce is hazardous and therefore do not notify as generators, nor manage their waste as HW.

- (18) **Generators often use the MSDS for waste determinations but fail to account for materials that have been mixed or altered during the production process**: A number of stakeholders, including both generators and assistance providers, expressed frustration over the role of the MSDS in the HW determination process. Generators often assume that the MSDS provides all the information needed to make an accurate determination, and may only learn this is not the case when they fail an inspection. They often overlook the fact that a product's hazardous constituents may be altered or become more concentrated during the production process, thus making the information on the MSDS invalid.

> "The MSDS isn't the end point. If a product constituent is less than 1 percent, it's not listed on the MSDS. When you point out that the MSDS isn't the answer, people get very frustrated."
>
> -- State Regulator



- (14) **Generators do not understand when a waste should be analyzed in order to make a HW determination vs. when process knowledge is sufficient**: Stakeholders report that the lack of clear guidance as to what constitutes "generator knowledge" leads to non-compliance, since generators and inspectors sometimes disagree about when generator knowledge is sufficient to make a determination.

- (12) **Generators have difficulty understanding and/or applying the analytical results of sampled waste streams:** Generators with little knowledge of their waste streams and/or the HW determination regulations may not know what tests to ask the lab to perform on their sample. In addition, the lab may report the results of a sample in units not consistent with those used in the regulations, requiring the generator to convert the results into the appropriate units before making a determination.

> "Sometimes when a company has something tested, test results come back but companies don't know what it means. The test results don't say explicitly that it is hazardous or not. Generators wait for us to tell them, or their vendor. Sometimes vendors use invalid tests for making decisions (or partially valid, like total metals) without explaining their reasoning to the generator."
>
> -- State Regulator

Generator Characteristics/Organization

A firm's characteristics, including its organizational structure can influence its compliance with HW determination regulations. The following themes describe this relationship.

- (43) **Lack of training/staff turnover**: As many generators do not have staff focused on environmental issues, staff who are not trained or specifically focused on HW management often end up conducting HW determinations. Stakeholders reported that fewer generators have dedicated environmental staff than in the past. Also, staff turnover, particularly during trying economic times, leads to unqualified employees making HW determinations.

- (28) **The size and/or sophistication of a firm may play a role in its ability to make accurate determinations**: Some stakeholders suggested that the size of the firm correlates to their compliance with HW determination regulations because they are more likely to have the staff and resources needed to be sophisticated about their waste streams and the regulations. Other stakeholders disagree, and say that small businesses that take the time and make the effort to understand the regulations can do very well on compliance. Thus size and/or sophistication of a firm ***may*** play a role in the ability to make accurate determinations, but it may depend greatly on the individual facility.

> "We don't have big brother who is going to come and show us how to do it. Frankly, a lot of us don't care until we get into trouble."
>
> -- HW Generator

- (23) **Generators are not concerned with HW determination unless they are fined for non-compliance**: On a few occasions generators and other stakeholders stated that unless they are fined for non-compliance, generators simply do not concern themselves with the management of their HW streams, including proper waste determination.

- (16) **Generators do not have procedures in place to ensure proper waste determination**: Generators without set procedures in place to make waste determinations may fail to catch hazardous constituents that are introduced to the waste stream when the generator changes the production process.

- (6) **Facilities that have varying waste streams have difficulty with waste determination compliance**: Some generators report that they produce highly variable waste streams throughout their business cycle, causing their generator status to fluctuate. This leads to general confusion about the regulations and potential compliance violations because the generator must adhere to different standards depending on their monthly generator status. While the stakeholders did not say so explicitly, it appears likely that these fluctuations in waste streams cause difficulty for making proper HW determinations because the constituents, as well as volumes, of waste are subject to change. According to stakeholders, this issue is most prevalent amongst CESQGs that generate quantities of HW which render them SQGs.

Quantitative information from the federal facilities survey also supports the idea that generator characteristics and organization influence generators' likelihood of making accurate HW determinations. The survey identified the factors that help federal facilities make more accurate HW determinations.

- As shown in Exhibit 12, survey respondents report that having processes and procedures in place at the facility are top contributors to accurate HW determinations.
- Further, federal facilities indicated that knowing which analytical test to request was a strong contributor to making accurate HW determinations.

EXHIBIT 12: Top 5 Factors That Help Federal Facilities Make More Accurate HW Determinations

CONTRIBUTING FACTOR	% STRONGLY AGREE OR AGREE
Processes & procedures in place to help characterize wastes	79%
Knew which analytical test to request when testing waste	71%
Considered waste streams besides those associated with production processes	59%
Waste streams generated are easy to characterize	56%
Production process is straightforward	54%

Lack of Time and/or Resources

Many generators have difficulty making HW determinations because they lack the time and/or resources to apply the regulations effectively to their business operations. The following themes discuss these difficulties.

- (29) **Cost constraints can lead to HW determination violations**: Generators sometimes avoid having a waste stream analyzed or fail to characterize something as hazardous due to the high cost associated with testing a waste sample, and transporting and disposing of HW.

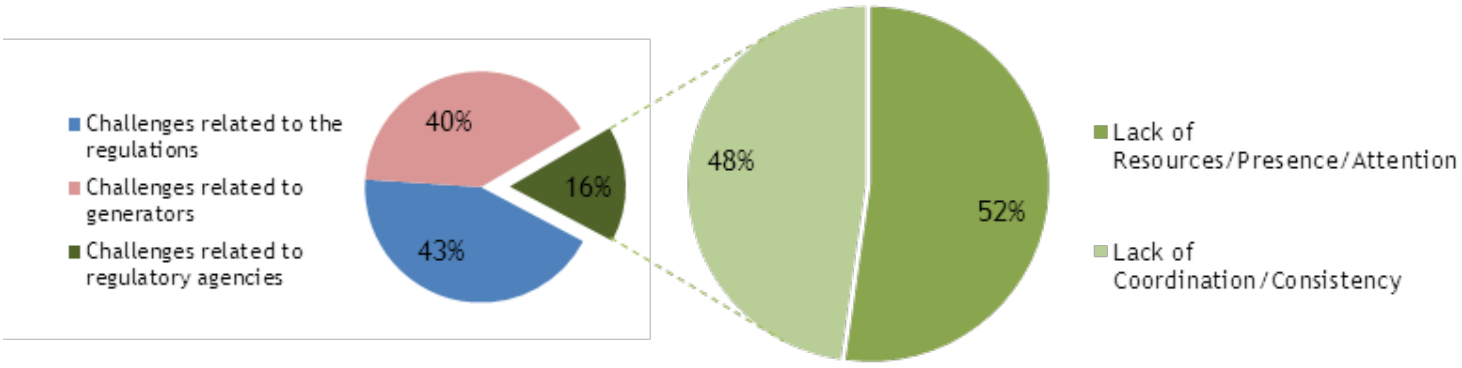
> "Analytical testing is very expensive. Often times, customers don't want to pay for that, so you have to rely on customer knowledge."
>
> -- HW Service Provider Representative

- (14) **Generators are too busy or overwhelmed to keep up with compliance requirements**: Generators must be diligent in managing their waste streams to avoid falling into non-compliance. Many generators simply do not find the time to do this, resulting in incorrect HW determinations. This situation is more prevalent amongst small businesses where the employee responsible for making HW determinations often has many other duties to fulfill. Producing multiple waste streams further complicates the issue, since the generator must characterize each of these waste streams individually. As a result of this situation, many generators hire HW service providers to characterize, manage, transport, and dispose of their HW. While hiring these contractors does not necessarily lead to inaccurate HW determinations, this can be the outcome when generators do not have the capacity to give service providers correct information about their waste streams.

Challenges Related to the Structure and Limitations of Regulatory Agencies

The interviews and discussions suggest two overarching types of challenges to compliance related to regulatory agencies: (1) lack of resources/presence/attention and (2) lack coordination/consistency. Exhibit 13 shows that both issues are common, but that lack of regulator resources/presence is a slightly more prevalent concern.

EXHIBIT 13: Prevalence of Different Types of Challenges Related to Regulatory Agencies*



* Percentage represents the sum of the response indices for each theme in the sub-category, as a percentage of the sum of all response indices in the category

Q2&3 What factors influence compliance?

Lack of Regulator Resources/Presence/Attention

The following themes illustrate how regulating agencies' lack of resources, presence, and attention devoted to the HW determination process can influence generators' compliance with the regulations.

- (23) **Reduced funding at the federal, state, and county level has eliminated many generator outreach and training programs**: Several stakeholders indicated that budget cuts have eliminated programs designed to aid generators' compliance with RCRA both at the state and federal level. Most notable of these is the EPA RCRA Hotline, which generators, assistance providers, and EPA representatives praised as being an effective tool for increasing compliance.

- (18) **RCRA does not keep up with changes to products and/or technology**: Stakeholders report that industry technology advances more rapidly than the regulations which govern the management of their wastes. Some of these advances eliminate the hazardous constituents traditionally generated by industrial processes. However, the narrative descriptions of F-listed wastes require the byproducts of certain processes to be characterized as hazardous, regardless of the presence of hazardous constituents. This confuses and frustrates generators, as changes to cleaner and safer technology do not translate to less stringent waste regulations. Adding to this confusion is the fact that some wastes, which industry representatives believe are hazardous and should be regulated as such, are not regulated as HW. For example, several people who deal with the pharmaceutical industry expressed frustration that certain chemotherapy drugs are not regulated as HW, despite the fact that these substances are harmful to the environment and human health.

> "EPA should be nimble enough to handle wastes that are likely to damage the environment but are not covered under federal hazardous waste laws. EPA should take the lead on emerging wastes."
>
> -- State Regulator

- (14) **A lack of presence by regulating entities dissuades generators from being attentive to waste determinations**: Some generators are willing to risk that they will not be inspected rather than make the necessary effort to make an accurate HW determination. The fact that state and EPA inspectors rarely or never visit some generators exacerbates this situation.

- (3) **Regulators lack the expertise needed to make effective interpretations of HW determination regulations**: Several respondents to the federal facilities survey raised concern that their local or state regulators need additional training on how to make HW determinations, and that their interpretations of the requirements are inconsistent or incorrect. Others point out the need for EPA staff to have both broad and deep experience in industry when writing the regulations and answering questions from generators.

Lack of Coordination/Consistency

The following themes describe the challenges generators face making HW determinations due to a lack of coordination and consistency amongst regulations and regulatory agencies.

- (39) **Lack of consistency of the regulations and how to interpret them at the different levels of government is confusing to generators, leading to HW determination violations**: Some generators do not realize that they not only have to comply with federal regulations and guidance, but also with their state waste determination regulations and regulatory interpretations that may be more stringent or broader in scope. Those generators who are aware of this responsibility may have difficulty, in part because they must reference multiple sources (state/federal) in order to make a HW determination. In some states (e.g., Minnesota), local regulations that are more stringent than those of the state confound the issue. Businesses that operate in multiple states face the greatest challenge since they must comply with multiple states' regulations. This situation makes it more difficult for these generators from setting unified waste determination guidelines throughout their company.

- (14) **Generators have difficulty characterizing materials that are regulated by multiple authorities (e.g., EPA, DOT, FDA, OSHA)**: Materials that are regulated by multiple authorities cause confusion among generators. For instance, although a fire department may tell an auto body shop that a rag previously containing a solvent can be dried and thrown out, EPA requires the rag to be managed as an F-listed HW and kept in a covered, labeled container.

> "The FDA requires us to maintain an explanted product [i.e., an implanted medical device that has been removed] for 10 years… It's a hazardous waste that we must dispose of according to the EPA, but the FDA doesn't allow us dispose of it. Who do we listen to, EPA or FDA?"
>
> -- HW Generator

QUESTION 4: HOW DO STATE PROGRAM ACTIVITIES INFLUENCE HW GENERATORS' COMPLIANCE WITH THE HW DETERMINATION REGULATIONS?

This section examines the experience of a few states to explore how their program activities influence HW determination, and to identify whether there are particular state program approaches that are effective at increasing compliance. Three states -- Minnesota, Texas, and Colorado -- volunteered to assist EPA with the evaluation by convening a group of generators and a group of state inspectors to provide their perspectives on the HW determination regulations and how the programs in their state operate. The diversity of state program features lends insight into the different ways that the federal HW determination regulations are implemented at the state level. This section begins by summarizing the characteristics of the three state programs, and then provides more detailed descriptions of each state's program .

Summary of State Approaches

The three state case studies suggest there is a wide range of state approaches to implementing the federal HW determination requirements. For example, Texas has state requirements that match the federal requirements, while Colorado and Minnesota have requirements beyond the federal rules (e.g., Minnesota regulates wastes that meet the definition of its lethality characteristic). Minnesota's program emphasizes both assistance (through an extensive array of online fact sheets) and compliance monitoring (through inspections at the state and county level). Colorado's program emphasizes integrated compliance assistance and enforcement, whereby, for certain sectors, generators are required to complete a self-certification questionnaire designed to raise awareness of the requirements. Generators that do not return the questionnaire are subject to inspections and

enforcement. Colorado also offers extensive training, on-site assistance, and a customer assistance hotline. Texas' program conducts audits of waste profiles generators submit as a way to extend its coverage, since the state is only able to inspect a small percentage of the regulated universe each year. Like Colorado, Texas provides a hotline and training, and offers compliance assistance to help generators understand their compliance requirements.

Common challenges across all three states include: (1) raising awareness of HW determination requirements, particularly among small businesses and new businesses that may be completely unaware of their obligations, and (2) maintaining sufficient inspection "coverage" to motivate facilities to make the effort to comply. All three states described here have made efforts to translate the federal and state requirements into "plain language," and two of the three states have undertaken sector-specific initiatives to focus on translating the requirements as they apply to specific waste streams and industries.

Minnesota

The following section describes the Minnesota HW determination program, including the relationship of the state to the EPA Region and local regulators, compliance monitoring and enforcement activities, assistance activities, and information on compliance.

Relationship between State and Co-Regulators

The Minnesota Pollution Control Agency (MPCA) regulates HW generators in Minnesota, in cooperation with EPA and county level regulators in the Minneapolis/St. Paul metropolitan area. Minnesota has delegated authority for the RCRA HW program. MPCA holds monthly conference calls with EPA Region 5 to share information, such as the status and outcomes of inspections. MPCA also meets with the Region at the end of each year. The Regional EPA Criminal Investigation Division coordinates with the MPCA and counties through quarterly meetings; MCPA also coordinates with the EPA Superfund Regional representative. MPCA and the Region do coordinate to some extent on sector-specific initiatives, though recent coordination has been less formalized than in past years, and in some cases MPCA undertakes initiatives independently (e.g., the plater initiative). MPCA staff do not typically accompany EPA Regional staff on inspections or enforcement actions, since this is seen as an inefficient use of resources; however, county staff do typically accompany EPA staff. EPA Region 5 has not coordinated with MPCA on compliance assistance efforts. The state reports that in some cases Regional assistance has been based on federal requirements, which led to inaccuracies since the state's HW regulations are sometimes different than the federal requirements.

MPCA regulations go beyond the federal requirements. In particular, MPCA has created an additional class of characteristic wastes (i.e., the lethality characteristic), which are defined as those that can cause severe health effects when ingested, inhaled, or absorbed through the skin. Examples include wastes containing bulk chemotherapy wastes and used solutions containing more than 20 percent formaldehyde.[17] The state-only lethality characteristic regulates more wastes as HW than the federal requirements. In addition, MPCA regulates very small quantity generators (VSQGs) that generate 220 pounds or less of HW

17 For more information see the Lethality Characteristic factsheet (Waste/Hazardous Waste #2.05 • May 2009) available online at http://www.pca.state.mn.us/index.php/view-document.html?gid=4002

per month.[18]

When adopting federal requirements, MPCA has traditionally transcribed the full language of the requirements into the state rules. This means that any changes in federal rules do not take effect automatically in Minnesota. More recently, the state has begun adopting some federal rules by reference; in particular MPCA has adopted the federal universal waste rules. This has benefits in that any changes at the federal level are adopted more quickly into the state regulations; however, MPCA has had to weigh the efficiency of adopting federal rules by reference with the implications for state regulations. For example, when MPCA adopted the federal universal waste rules, the existing state storage requirements for lead-acid batteries as well as fluorescent and high-intensity discharge lamp management requirements were no longer in effect. In general, the MPCA is hesitant to adopt federal rules by reference where doing so would preempt existing state-specific requirements. Therefore the state prefers to have some flexibility in adopting the federal requirements.

Minnesota is unusual in the degree of county involvement in HW regulation. The state legislature enacted a statute that requires the seven counties in the Minneapolis/St. Paul metropolitan area to operate HW regulatory programs, while the MPCA's HW program covers the 76 counties in the rest of the state. The county programs were authorized by the state of Minnesota in 1980, prior to the start of the state RCRA program. Each county has its own HW ordinance; these are at least as stringent as the state regulations (and in a few cases, they are more stringent). For example, in some cases counties regulate Freon as HW, which is not regulated as HW at the state level. The counties regulate all sizes of businesses (LQGs, SQGs, and VSQGs), licensed treatment storage and disposal facilities (TSDFs), and facilities that are processing appliances and electronics. The counties conduct joint enforcement with the state, and most counties can write criminal citations.

In Minnesota, the seven Minneapolis/St. Paul metropolitan counties generally have more resources than the state. Most of the counties' programs are self-funded (e.g., through fees and fines paid by generators) for a majority of their program costs. In contrast, MPCA relies primarily on state funding. In part as a result of state budget cuts, the MPCA staff devoted to HW has declined, the state has fewer inspectors and permitting engineers, and the state no longer has staff devoted to technical assistance.

The counties and MPCA coordinate closely with each other to ensure consistency in their interpretation of the regulations. However, there are some differences in interpretation between the counties and the state. For example, regarding recycling parts washers, MPCA and some counties differ on the appropriate approach to evaluating the solvent in the upper basin of parts washers (the state says this solvent should be counted as HW, whereas certain counties do not count the parts washer solvent toward generator size or charge any HW fees for this waste in order to encourage recycling). MPCA and the metropolitan counties participate in monthly meetings to identify and seek to resolve any potential differences in interpretation.

Compliance Monitoring and Enforcement Approach

MPCA points out that generators who have never had contact with regulatory authorities do not always think to identify their wastes. While this was especially true during the 1980s, it still happens today. MPCA reports that

[18] For information on MPCA's requirements for VSQGs, see the factsheet for Minimal Quantity Generators of Hazardous Waste (Waste/Hazardous waste #1.50 • May 2011) available online at http://www.pca.state.mn.us/index.php/component/option,com_docman/task,doc_view/gid,9006

inspectors are often the driver for generators to evaluate their wastes. Thus, MPCA and its co-regulators in the metropolitan counties place particular emphasis on reaching out to as many generators as possible through inspections.

As a general rule, EPA expects states to inspect at least 50 percent of non-government TSDFs and at least 20 percent of LQGs in their jurisdictions each year.[19] In addition to its commitments to inspect TSDFs and LQGs, MPCA also seeks to inspect each SQG every five years when the state has the resources to do so. MPCA also responds to complaints outside the metro area, while county inspectors respond to complaints within the metro area. When possible, MPCA prefers to focus on risk-based initiatives (e.g., targeted inspections of health care facilities). MPCA reports that it is sometimes able to pursue these initiatives under a "flex plan" with EPA (e.g., conducting an inspection at a health care facility instead of an LQG), but that EPA does not always allow this flexibility, and the Agency is generally "driven by the numbers."

The metropolitan counties vary in their compliance monitoring approaches, though all seven counties report that they undertake initiatives focused on perceived risk. The counties with the largest number of generators, Hennepin and Ramsey, report that they assign risk factors to companies, and that each category of risk is inspected on a specified frequency. For example, Hennepin County assigns a risk factor between one and nine to each company, based on company size, types of wastes generated, and compliance history. Higher risk facilities get inspected once per year, lower risk once every five years, and minimal generators[20] may be inspected every seven years or less often (some are never inspected). Hennepin County has conducted sector initiatives targeting scrap yards, healthcare, retail stores and wholesalers, drycleaners, metal finishers. Ramsey County takes a similar approach to applying risk factors, with a focus on the industry type and amount and types of wastes generated. Ramsey County has identified drycleaners, metal finishers, health care, scrap yards, and auto body shops as relatively risky sectors for HW. The county inspects each risk category at a specified frequency: high risk generators are inspected once per year, medium risk generators every 18 months, and low risk generators every three years. Dakota County also bases its

[19] U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance Compliance Monitoring Strategy for the RCRA Subtitle C Program, January 2010, page 26. http://www.epa.gov/compliance/resources/policies/monitoring/rcra/rcracms.pdf

[20] Minimal generators are a subset of VSQGs generating less than 100 pounds per year of non-acute HW and no acute HW. Although minimal generators are regulated as such by the MPCA, not all counties recognize this classification. See http://www.pca.state.mn.us/publications/w-hw1-50.pdf

inspection frequency on generator risk and size. In the metropolitan counties with smaller numbers of generators (Washington, Carver, and Dakota), county inspectors seek to attain a certain coverage (e.g., inspecting SQGs and LQGs every year in Carver and Scott Counties, and inspecting all generators every year in Washington County).

All counties take active approaches to identify all generators in their jurisdictions. For example, Hennepin County uses a self-audit program, whereby the county purchases lists of companies from vendors, follows up with phone calls to see which of these companies may be HW generators, and then mails out a self-audit form to potential generators to alert them of their regulatory requirements. If a facility does not return the self-audit form, the county will follow up. This approach allows the county to identify companies that are avoiding the regulatory system altogether. The smaller counties also focus on identifying new generators through means such as reviewing HW manifests, gathering referrals from other businesses, getting a list of businesses applying for new EPA ID numbers each month, coordinating with city planning departments that require HW licenses, purchasing software with a list of all businesses in the county, and just driving around looking for new businesses.

Exhibit 14 shows the number of generators and inspectors in each of the six metropolitan counties that participated in a discussion as part of this evaluation, along with the number of inspections that these counties conduct per year. (One metropolitan county, Anoka County, was not available to participate in this discussion.)

EXHIBIT 14: Generators and Inspectors in Minnesota Metropolitan Counties

COUNTY	NUMBER OF COUNTY INSPECTORS	NUMBER OF LICENSED GENERATORS	NUMBER OF INSPECTIONS PER YEAR	PERCENTAGE OF LICENSED GENERATORS INSPECTED PER YEAR
Hennepin	6	5,000	1,000	20%
Ramsey	5	1,900	1,600	84%
Dakota	3	1,500	450-500	30% - 33%
Washington	3	475	475	100%
Carver	1	400	125-130	31% - 33%
Scott	1	400	100-120	25% - 30%

MPCA notes that enforcement is one of the most powerful tools to motivate compliance, but that it is one of the weaker aspects of its program. MPCA points out that the Agency is currently limited to a 30-day window for requiring corrective actions (a state-specific requirement), which is often difficult to meet given the time needed to get lab results back. Moreover, Administrative Penalty Orders are limited to $10,000 (another state-specific limitation), which does not provide sufficient deterrence according to MPCA. The state can negotiate settlements or take violators to court, but MPCA is limited by resources (e.g., the state is losing attorney staff). MPCA would consider putting together a legislative package to strengthen its enforcement tools, but the Agency worries that this could result in unintended consequences (e.g., lower penalty amounts) if the issue is opened up for debate in the legislature. MPCA believes that depending on the industry, enforcement can be more effective than outreach, but that the Agency needs better enforcement tools and support from EPA. For example, it would be helpful from MPCA's point of view if EPA would over-file in enforcement cases, to demonstrate the seriousness of the violation.

> "When MPCA takes action, it has reverberations, and the counties see deterrence. We know that the 'gorilla in the room' is EPA Region 5 or the MPCA. That's hard to measure but it's there."
>
> -- State regulator

Assistance Approach

MPCA has invested considerable effort in providing fact sheets for generators covering a range of topics (e.g., general requirements, guidelines on HW identification, sector-specific guidelines, and waste-specific information).[21] MPCA lists over 140 fact sheets and resources on its webpage, which serves as a resource for the metropolitan counties as well as the state. MPCA will often refer generators with questions to the fact sheets, but will make staff available for phone consultations to respond to questions that the fact sheets do not address.. MPCA previously provided substantial outreach and training (e.g., up to nine full-day workshops each year), but as resources have dwindled, the state has focused its efforts on providing a comprehensive set of fact sheets in lieu of other outreach. MPCA points out that while the state has provided considerable outreach in the past, in times of reduced budgets, the agency has had to limit compliance assistance, monitoring, and enforcement activities focused on generators that are not aware of their obligations or are seeking to evade them.

> "Generators do a better job of evaluating wastes now than they did 20 years ago, but [HW determination] is still a common violation, even at generators that have been visited repeatedly over the years by inspectors. Some generators don't get it at all and will not evaluate their wastes until they are visited. The more sophisticated the generator, the fewer evaluation problems."
>
> -- County regulator

The metropolitan counties do offer generator training, as well as sector-specific outreach (e.g., in the health care sector and in scrap yards). Ramsey County offers at least two or three sector-specific trainings in high-risk sectors each year (e.g., metal finishers, health care, drycleaners, and auto parts). Ramsey County also offers a general training twice per year, as well as onsite training.

MPCA points out that a strength of its program is efforts, such as

[21] See MPCA's Hazardous Waste Publication page for a complete listing of fact sheets: http://www.pca.state.mn.us/index.php/waste/waste-permits-and-rules/waste-permits-and-forms/hazardous-waste-publications.html

the health care initiative, that focus on emerging RCRA issues. In that effort, the state and counties coordinated to focus first on education before following up with enforcement. MPCA viewed the initiative as very successful. The state has also had success with initiatives in the plating industry. In both of these cases the state conducted meetings with sector representatives. EPA helped support these outreach programs through grants. MPCA and the counties report there are more initiatives they would like to pursue (e.g., with the retail sector) if they had sufficient resources.

Information on Compliance

MPCA reports that the most common HW violations are labeling violations, lack of weekly inspections, and manifest violations, and that all of these categories of violations are more common than HW determination violations. However, HW determination violations do still occur, particularly for less obvious wastes (e.g., peripheral wastes) or for new processes.

MPCA rarely cites generators for failing to evaluate their wastes within 60 days of generation (a state specific requirement that is largely ignored), unless they are disposing a large quantity of HW.

When MPCA places new emphasis on a sector (e.g., health care), generators are typically resistant at first. But with persistent outreach, generators eventually accept their compliance requirements.

Texas

The following section describes the Texas HW determination program, including the relationship of the state to the EPA Region, compliance monitoring and enforcement activities, assistance activities, and information on compliance.

Relationship between State and Co-Regulators

Texas is located within EPA Region 6, and the state and Region cooperate to conduct inspections. The Region and the state share responsibility for training inspectors, while the state takes primary responsibility for conducting outreach to generators. The Region offers guidance to state inspectors as needed with regard to HW determinations and RCRA applicability. Typically, Texas Commission on Environmental Quality (TCEQ) staff will accompany the Region on EPA inspections, and the Region will sometimes accompany TCEQ on state inspections (however, the Region is limited by the number of inspectors it has: a total of eight for the five-state Region). The Region conducts a limited number of inspections each year (48 in 2010, 20 in 2011) focused on LQGs and more complex operations like centralized HW treatment facilities (TSDFs).

Among the Region 6 states, Texas has the largest volume of HW generated, and the largest number of Large Quantity Generators (878 in Texas, compared to 329 in Louisiana, 138 in Oklahoma, 123 in Arkansas, and 31 in New Mexico).[22]

The TCEQ headquarters in Austin, Texas charges fees to generators, writes permits, takes enforcement actions, issues regulations, and provides guidance, while TCEQ field offices around the state conduct investigations for compliance with HW permits and regulations.

> "If you look at the numbers, there are nearly 300,000 business entities in Texas. And how many enforcement agents [are there]? So if you're off the radar screen, no one will ever find you."
>
> -- HW Generator

[22] This information was provided during an interview with EPA Region 6 staff.

TCEQ requirements are generally consistent with federal requirements. TCEQ has a small business assistance program that reports directly to the Executive Director of the Commission (rather than to the program office) to ensure confidentiality of assistance. The Small Business Environmental Assistance Division (SBEA) provides statewide compliance assistance services and has staff in most TCEQ field offices.

Compliance Monitoring and Enforcement Approach

TCEQ inspects approximately 400 generators each year. TCEQ's goal has been to inspect at least 20 percent of Large Quantity Generators a year (which would equal 175 LQGs) , although TCEQ reports that Region 6 recently approved an alternative plan, whereby the state will inspect 10 percent of LQGs and conduct the remainder of its inspections at a combination of SQGs and CESQGs. The state acknowledges that there are so many generators in the state that TCEQ does not get to some of the smaller generators very often, if at all. Given this limitation in coverage, the state also conducts paper audits of waste characterizations that generators submit. Generators in Texas are required to submit a profile of their individual waste streams. TCEQ then randomly picks 560 of these profiles to audit each year.

> "It's not hard to find free help if you know to look; generators are grateful when the state helps them."
>
> -- HW Generator

In fiscal years 2009, 2010, and 2011, TCEQ piloted an EPA-approved three-year risk-based inspection strategy approach to identify the highest risk facilities to inspect (this pilot program was implemented in Air, Water and Waste compliance monitoring programs at TCEQ). However, as of fiscal year 2012, TCEQ's inspection targeting strategy for HW is based upon the "Compliance Monitoring Strategy for the Resource Conservation and Recovery Act Subtitle C Program" (RCRA CMS), issued by EPA in 2010. The RCRA CMS calls for states to inspect at least 50 percent of non-government operating TSDFs and at least 20 percent of LQGs in their jurisdictions each year.[23] After TCEQ headquarters provides each field office with a list of registered generators in their jurisdiction, the field offices select generators for inspection based on the date of the most recent inspection, compliance history, and other factors.

> "We've heard some peers say, 'I just keep my head down and hope [the inspectors] don't come by.'"
>
> -- HW Generator

When TCEQ finds a violation, the state will issue either a Notice of Violation (for less serious violations) or a Notice of Enforcement (for more serious violations). TCEQ has developed a guidance document that categorizes violations according to their severity and provides field office inspectors with criteria for initiating enforcement actions.

The Small Business Advisory Committees (SBACs) are made up of small business representatives, trade associations and environmental professionals and provide feedback to the TCEQ on regulatory issues facing small businesses. SBACs report that often small businesses are unaware of the RCRA regulations until an investigator goes out to the site. For this reason, it is important for regulators to get out into the

[23] U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance Compliance Monitoring Strategy for the RCRA Subtitle C Program, January 2010, page 26. http://www.epa.gov/compliance/resources/policies/monitoring/rcra/rcracms.pdf

field to as many small businesses as possible. TCEQ's SBEA Division conducts outreach to registered businesses and trade associations to try to educate them about environmental regulations, but acknowledges that facilities that have not registered with the state and do not belong to a trade association are hard to find. These businesses tend to occur in rural areas (though they can be in urban areas as well), and while they are required to identify their HW, they are often unaware of these requirements and assume regulators will alert them of what they need to do. Businesses do alert each other when inspectors are active in an area. Businesses also know who is registered and who is not among their peers. Sometimes they will turn each other in through a complaint process.

Assistance Approach

TCEQ's SBEA Division, Field Operations and Waste Permits Divisions provide several resources to HW generators to assist in making HW determinations, including one-on-one compliance assistance from SBEA staff, assistance resources, and a range of assistance programs. For example, one resource is an electronic checklist that provides a yes/no decision tree to assist generators in identifying if they have a HW. EPA Region 6 reports that the checklist is helpful, provided that generators provide correct information to answer the questions. SBEA also has prepared a booklet on HW geared toward Small Quantity Generators.[24] The TCEQ's Waste Permits Division has created a guidance document for generators to assist them in classifying HW. This 53-page document offers an explanation of the regulations, though it is not sector-specific or focused on particular waste streams.[25] TCEQ does translate some of its outreach material into Spanish but does not have the resources to translate all its outreach documents into Spanish or other languages. TCEQ also offers a Compliance Commitment (C2) program, which involves a multi-media audit (including HW management requirements) conducted by a third-party contractor using industry-specific checklists. At the conclusion of the audit, the contractor provides the regulated entity with a copy of the completed checklist indicating where they are in compliance, where they are deficient, and actions necessary to correct any deficiencies and achieve compliance. Approximately 300 site visit audits are completed each year. In addition, through the EnvirMentor Program (EM), regulated entities who demonstrate a financial need may be matched with a HW service provider willing to provide services for free.

> "Most of the time it's industrial facilities that don't have the staff person to deal with hazardous waste that are in violation; it's small businesses more than anything else, schools universities and hospitals, [who have problems with HW determination.] They are not as aware that they're subject to regulations [as large businesses]."
>
> -- State regulator

SBEA offers a toll-free confidential hotline through which regulated entities can speak directly with a compliance assistance specialist without fear of enforcement. SBEA receives questions ranging from schools dealing with lab chemicals to complex questions regarding waste management. SBEA receives about 7,000 calls a year on their hotline (though this figure covers all topics relevant to TCEQ, not just HW).

[24] Texas Commission on Environmental Quality, Small Business and Environmental Assistance Division, Industrial and Hazardous Waste: Rules and Regulations for Small-Quantity Generators. July 2009.

[25] Texas Commission on Environmental Quality, Waste Permits Division, Guidelines for the Classification and Coding of Industrial and Hazardous Wastes, February 2005. http://www.tceq.texas.gov/publications/rg/rg-022.html/at_download/file

TCEQ also hosts an annual trade fair each year to which generators and enforcement agencies are invited. The two-day conference offers an opportunity for education and information sharing. The HW program provides information on waste classification at the conference and offers an opportunity for generators to get to know state contacts with whom they can follow up if they need help.

Every three to four years SBEA conducts RCRA Recordkeeping and Reporting workshops across the state. Small businesses are the workshops' primary intended audience. TCEQ also offers abbreviated training on demand. For example, TCEQ provided such training to metal finishers. The state reports that while there is always high demand for training, it is sometimes hard for generators to get to the training.

SBEA coordinates with field inspectors to provide offers of assistance following inspections. SBAC staff tries to build relationships with investigators, so that when they are aware that an issue came up during an inspection, they can proactively follow-up with the generator to offer help. SBAC generally provides multi-media assistance that gives small businesses an overall picture of their environmental compliance requirements. SBEA also provides templates to assist generators in compiling needed information.[26]SBEA has, on occasion, offered inspector checklists to generators, but will always provide them upon request to help generators understand what inspectors are looking for.

SBEA has tried in the past to do mailings to all facilities in particular industry sectors, using lists of businesses from the state Comptroller's office. However, SBEA got a very low response rate. SBEA does believe that training needs to be sector specific, and presented in plain language.

EPA Region 6 reports that Texas has a more active assistance program than any of the other states in the Region.

Information on Compliance

TCEQ reports that violations regarding HW determinations are fairly common, as are problems with lack of documentation (e.g., missing laboratory reports). In TCEQ's experience, smaller, less sophisticated facilities are more likely to have violations. Small facilities generally do not have a good understanding of terms like "hazardous" or "toxic." These generators commonly use hazardous products and do not perceive them to be dangerous; they also expect someone to tell them if they are not allowed to throw something away. However, sometimes even larger facilities will miss an aspect of the analysis or their process knowledge will be incomplete, leading to inaccurate determinations. Overall, TCEQ finds that the most competent firms are those that have been investigated and are (therefore) educated about the rules.

Texas currently has 5,237 active generators. During fiscal years 2007 through 2011, TCEQ conducted 1,170 generator inspections, resulting in 125 enforcement actions. (In other words, approximately 11 percent of inspections resulted in enforcement actions.) The most common violations during this period pertain to accumulation time, notification requirements, record keeping and annual reporting, and HW determination.

[26] These forms include a blank waste stream profile, HW generation chart, HW management unit form, HW management unit inspection log, daily drum inspection log, emergency plan, emergency responder notification form, emergency site plan, facility site plan, transporter profile, and disposal facility profile.

Colorado

Colorado has developed a self-certification approach to addressing HW compliance, integrating assistance, compliance monitoring, and enforcement. Therefore, this section begins by discussing the relationship between Colorado and the EPA Region, and then goes on to describe the self-certification program. The section also describes additional compliance monitoring, enforcement, and assistance activities aside from the self-certification program. The section concludes with a discussion of HW determination compliance in the state.

Relationship between State and Co-Regulators

Colorado is located in EPA Region 8, and the Colorado Department of Public Health and the Environment (CDPHE) has a fully delegated RCRA HW program. The state and Region have a good working relationship. Colorado's HW regulations, implemented through the state rulemaking commission, are consistent with but in some cases more stringent than the federal regulations. CDPHE has staff focused on corrective action, inspections, enforcement, technical assistance, data management, and permitting. CDPHE HW staff are all located at its central office in Denver, which is in close proximity to 80 percent of the state's population and its HW generators. CDPHE staff travel to sites outside of the Denver Region frequently. Enforcement and compliance assistance staff from two media programs (Hazardous Material and Waste Management Division and the Air Pollution Control Division) partner to improve environmental compliance throughout the state. This integrated enforcement/assistance and multi-media approach allows the staff to be more efficient and effective.

The Environmental Results Program (ERP) is an integrated system of (1) Plain-language compliance assistance that promotes pollution prevention, (2) Facility self-assessment and self-certification, (3) Agency inspections to verify certifications and assess performance, and (4) Statistically-based performance measurement.

ERP combines these tools in a repeating process to improve or sustain overall sector performance. Compliance assistance materials explain what facilities need to do, facility certifications state that they are doing it, and agency inspections of a representative sample of facilities document and verify overall sector performance. Performance data, in turn, inform and help states improve the next round of compliance assistance and better target enforcement actions.

Source: States ERP Consortium (www.erpstates.org)

CDPHE's HW program is funded primarily by state HW fees, though EPA provides a quarter of the program's budget through the Performance Partnership Grant. Even though the state legislature authorizes CDPHE to spend its funding, the Department does not depend on the legislature for funding from the state's general fund.

Self-Certification Approach

Colorado uses a self-certification approach, modeled after the Environmental Results Program developed in Massachusetts, to address environmental compliance among HW generators.[27] CDPHE sees self-certification as an important tool to leverage limited resources and maintain contact with facilities that notify the state they are generating HW. CDPHE requires certain sectors (e.g., dry cleaners and SQGS, including surface coaters and healthcare facilities) to participate in a self-certification initiative each year.

For each target sector, the state mails all known generators a brief questionnaire listing the requirements the generators must follow. The SQG questionnaire is broadly applicable and includes questions such as "Have you determined what HW you generate at your facility?" and "Do you label your HW drums?" Sector-specific questionnaires address issues unique to generators in the target sector. For example, the drycleaner questionnaire alerts generators of issues such as, "Typical HWs at dry cleaners include: muck, separator water, vacuum water, used filters and lint from the perc [perchloroethylene] machines."[28] The questionnaires are included in sector-specific booklets, calendars and other compliance assistance and guidance materials. Some of the questionnaires are translated into languages other than English to assist businesses in understanding their requirements. For example, the dry cleaner questionnaire is translated into Korean to assist the many Korean dry cleaners in Colorado. Generators are supposed to be able to complete the questionnaires in approximately 30 minutes. Generators are then required to send the questionnaire back to the state. Colorado encourages generators to submit the questionnaire electronically, though it can also be submitted in hard copy.[29]

CDPHE does not view the questionnaires as an accurate measure of compliance (nearly all generators report they are in compliance). Rather, the questionnaires are designed as a way to raise awareness of the requirements and encourage facilities with questions to seek assistance. CDPHE follows up with statistically-based inspections to project actual compliance rates for the overall sector. Compliance rates are compared over time.

Generators that do not return the self-certification form in a timely manner are issued an informal enforcement action known as a compliance advisory to prompt participation. If there is still no response, CDPHE proceeds with a formal enforcement action with a penalty.

CDPHE believes the self-certification approach has many benefits. The most important of these is the partnership the program has created between the businesses and the state. In the wake of the self-certification program, generators are more likely to call the state with questions. CDPHE views the self-certification form as an avenue to build trust with generators, while achieving better coverage of the target sectors.

In addition, the program has allowed the state to better characterize its universe of generators. Before undertaking self-certification, the state thought it had more than 1,000 SGQs, along with 115 LQGs and 8 TSDs. After reaching out to these entities through the self-certification program, the state found it only had 650 SQGs. The state also tracks the most

[27] For more information on ERP, see http://erpstates.org/

[28] Source: CDPHE 2012 Dry Cleaners Regulations & Best Management Practices Self Certification Checklist, available online at https://www.formrouter.net/forms01@CODPH/dccert.pdf

[29] For more information see the CDPHE Hazardous Materials and Waste Management Division Self-Certification Checklists webpage at http://www.cdphe.state.co.us/hm/certify/index.htm

common violations based on statistically representative inspections. For example, for SQGs, the four top types of HW violations were related to requirements for training, labeling, open containers, and emergency response. CDPHE and then uses this information to focus the content of its workshops and other outreach initiatives.

CDPHE staff in the Hazardous Material and Waste Management Division and the Small Business Assistance Program in the Air Pollution Control Division work together to provide outreach not only to businesses but also to trade associations and suppliers. For example, in the surface coating sector, the compliance assistance programs conducted train-the-trainer workshops and created a multi-media questionnaire that suppliers distribute to their clients. CDPHE found this approach to be very successful because it generated many calls to the state from businesses that had been contacted by their suppliers.

CDPHE found it was resource intensive to initiate the self-certification program, but once the program was established it has been easier to maintain. EPA Region 8 supported the launch of Colorado's self-certification programs. EPA Headquarters has supported similar programs in other states in the past.[30]

Additional Compliance Monitoring and Enforcement

In addition to conducting statistically-based inspections as part of its self-certification program, Colorado conducts regular, targeted inspections in accordance with EPA's requirements. One of the greatest compliance monitoring challenges CDPHE reports is identifying new businesses. As with other states, Colorado has found it is difficult and time intensive to locate all generators in the state. CDPHE uses a database of all businesses that have applied for a business license in the state in order to develop the mailing lists for its self-certification program. CDPHE is developing a checklist for new businesses that it is distributing to planning departments, chambers of commerce, fire departments, the Small Business Administration, and the Secretary of State and other outreach partners. The checklist outlines general environmental requirements new businesses should be aware of, and provides agency contacts.

CDPHE reports that some of the state's enforcement actions with regard to HW determination come from non-notifiers. These businesses are typically SQGs who fail to notify the state they are generating HW. CDPHE may identify these non-notifiers through complaints, but it is difficult to systematically identify them. CDPHE does review HW manifests to look for generators who have not notified the state; however, CDPHE does not view this method as optimal because it takes considerable resources, and it does not address all non-notifiers.

Additional Assistance

Colorado offers training, direct assistance, and guidance materials to educate generators about their requirements.

CDPHE offers multi-media training. For example, CDPHE has offered training with health care workers to increase awareness of HW issues regarding proper disposal of medications. The state has also worked with suppliers in the health care industry, such as pharmaceutical companies, on improving environmental compliance. In addition to sector-specific training, CDPHE offers an all-day training session once per quarter focused on HW. The state provides training in all regions of the state. CDPHE reports the training is

[30] For more information on EPA's past support of ERP, see http://www.epa.gov/erp/

extremely popular and receives excellent reviews from participants. The training is relatively inexpensive and represents a cost-effective approach to generator outreach.

CDPHE has developed general guidance documents addressing HW identifications[31] and exclusions.[32] In addition, the state has developed fact sheets for HW in specific sectors, such as surface coating, auto body, printing, plating, and healthcare.

CDPHE supports a Generator Assistance Program (GAP) that provides businesses with free on-site technical assistance and information on the state's HW regulations. GAP partners with the Small Business Assistance Program to provide multi-media outreach and assistance. Any compliance deficiencies noted during the GAP site visit will not result in any enforcement action (unless they are deemed as imminent and a substantial endangerment to public health or the environment).

CDPHE also runs a hazardous and solid waste technical assistance hotline. One staff person answers the hotline six hours a day, receiving about 10 to 15 calls a day from facilities, HW service provider and members of the public. Callers can remain anonymous.

Information on Compliance

CDPHE reports that for the decade from 2000 – 2009, HW determination violations were the fifth most common type of violations for both LQGs and SQGs, and both groups had an average 87 percent compliance rate with HW determination violations over the ten year period (this is equivalent to a 13 percent non-compliance rate). In any given year, the compliance rate might be higher or lower (for example in 2009, CDPHE reports that SQGs had 75 percent compliance rate with waste determination requirements, and LQGs had a 95 percent compliance rate). As noted earlier, for SQGs, the four top types of HW violations were related to requirements for training, labeling, open containers, and emergency response. (CDPHE did not report the top four types of violations for LQGs.)

CDPHE has found compliance rates vary by sector. For example, drycleaners tend to have lower compliance rates with HW determination violations than the cross-sector average. While the compliance rate has improved considerably over the years, drycleaners continue to have problems.

QUESTION 5: HOW DO ASSISTANCE PROVIDERS/HW SERVICE PROVIDERS/TRADE ASSOCIATIONS' ACTIVITIES INFLUENCE HW GENERATORS' COMPLIANCE WITH THE HW DETERMINATION REGULATIONS?

To determine how assistance providers, HW service providers, and trade associations' activities influence HW generators' compliance with HW determination regulations, IEc participated in discussion sessions with 16 assistance providers (most of whom participated in a single workshop discussion with Small Business Environmental Assistance Providers and Small Business Ombudsman), interviewed three HW service providers, and interviewed eight trade association representatives. The following

> "Generators will say, 'I had no idea where to get any information. I got my business license and that's all I thought I needed. Where was I supposed to find out I needed to do something else?'"
>
> -SBEAP Representative

[31] See the CDPHE Hazardous Waste Identification Guidance Document, October 2008 available online at http://www.cdphe.state.co.us/hm/hwid.pdf

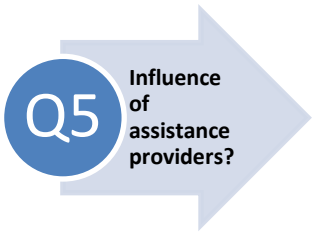
[32] See the CDPHE Hazardous Waste Exclusions Guidance Document, April 2009, available online at http://www.cdphe.state.co.us/hm/hwexcl.pdf

section describes our findings from these interviews and discussion sessions.

Small Business Assistance Providers

IEc spoke with assistance providers who are beneficiaries of state funded programs mandated by the 1990 Clean Air Act. These state funded programs comprise Small Business Ombudsmen (SBO), Small Business Environmental Assistance Providers (SBEAP), and a Compliance Advisory Panel (CAP). All of the state funded providers work exclusively with small businesses.[33] IEc also spoke with the EPA Asbestos and Small Business Ombudsmen, a representative from the EPA Office of Enforcement and Compliance Assurance (OECA), two EPA Regional assistance providers (Regions 4 and 10), and a representative from an environmental and energy services firm that works with EPA to audit federal facilities, small businesses, and hospitals. IEc also reviewed the results of a 2007 survey conducted by the Small Business Environmental Homepage.[34] These discussions and survey results suggest that small business assistance providers influence generators' HW determination compliance in several ways:

- **Assistance providers are often the first line of information about HW management for generators:** Assistance providers reported many small businesses are not aware they produce HW subject to regulation. Many of them first learn of their responsibilities when they meet with an assistance provider. Understanding this, assistance providers actively seek out small businesses that are likely violating HW management regulations. Some assistance providers work with state and municipal officials to identify new businesses and inform them of their HW management obligations.
- **Assistance providers operate at the sector level:** Several assistance providers mentioned they develop guidance materials specific to situations that arise in a particular industry. They create fact sheets that translate regulatory language into laymen terms and assist generators with HW determination issues common to specific industries and materials. For example, the SBEAP for the Minnesota Pollution Control Agency devotes a section of their website to "Industry Specific Waste Management Information." The site provides links to guidance documents and fact sheets for different industries, including the transportation services industry, where one can find information on how to properly manage oil and filters, aerosols, batteries, solvents, and other hazardous materials frequently used in the industry.
- **Assistance providers find resources for generators to get further HW management assistance:** The Small Business Environmental Homepage survey showed that 92.5 percent of the surveyed assistance providers who offer HW assistance provide *referrals* to generators, where *referrals* is defined as: providing your client with contact names and phone numbers outside your SBAP/SBO (Small Business Assistance Provider/Small Business Ombudsman) program.



[33] The definition of a small business varies depending on industry, number of employees, and annual revenue.

[34] *http://www.smallbiz-enviroweb.org/SharingInformation/surveys/multimedia07.aspx*- The Small Business Environmental Homepage – responses from an online survey conducted in January-February 2007

- **Assistance providers will seek information from outside sources to assist generators:** The Small Business Environmental Homepage survey showed 82.5 percent of the surveyed assistance providers who offer HW assistance provide *personal contact* to generators, where *personal contact* is defined as: making contact with resources outside your SBAP/SBO program and getting back to your client for further discussion or arrangements. For example, some of the assistance providers said they regularly interact with EPA and state offices, facilitating communication between small businesses and the regulators. Generators often avoid asking regulators compliance questions due to a fear of enforcement, so the assistance providers, whom generators are more comfortable speaking with, help bridge the communication gap by reaching out to regulators on the generators' behalf.

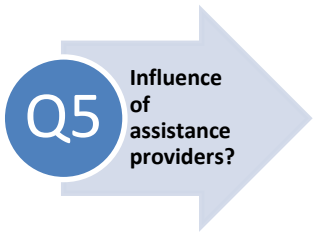
> "A small number of companies can monopolize small business assistance providers' time. Getting to them early on means they can monopolize my time. We need a lot more help if we're going to provide assistance to everyone."
>
> -SBEAP Representative

- **Assistance providers offer expertise on HW management:** The Small Business Environmental Homepage survey showed 70 percent of the surveyed assistance providers who offer HW assistance provide *expertise* to generators, where *expertise* is defined as: providing your client with expertise (answers to questions, fact sheets, site visits, hands-on technical assistance, etc.) from within your SBAP/SBO program. For example, through the Small Business Technical Assistance Program, the New Hampshire Small Business Ombudsman conducts site visits for small businesses, helping them to come into compliance with various environmental regulations, including HW determination.
- **Assistance providers' influence on HW determination compliance is limited by their ability to reach generators:** Many of the assistance providers who provided input for this evaluation said their efforts are limited by the ability to reach small businesses. Despite working with state and municipal organizations to identify HW generators, many small businesses remain "off the radar" to assistance providers as well as state and federal inspectors. The sheer volume of small businesses prevents assistance providers from identifying all those who need help. Furthermore, they do not have the personnel or budgetary capacity to assist everyone.

HW Service Providers

For this evaluation, IEc interviewed three HW services firms of varying sizes. All of the firms service generators of all classes, with one serving primarily SQGs and LQGs and one serving primarily CESQGs. Two of the firms make HW determinations on behalf of their clients. The other focuses on hauling and disposing their clients' waste, rarely making determinations; however, this firm is utilized by many small businesses and as such, is uniquely attuned to HW service providers' influence on small generators' HW determinations. HW service providers influence HW determination compliance in the following roles:

- **HW service providers are integral to the HW determination process for many generators:** A large number of generators indicated they rely upon HW service providers to make their determinations because they do not have the time or expertise to comply with the HW determination regulations. In addition, seven of the eight trade association representatives said their members



utilize HW services companies. Many businesses do not have dedicated environmental management staff, leaving the HW determination process to employees with many other responsibilities. Rather than risk improper HW management and the associated penalties, many businesses subcontract with HW service providers to handle their HW management, including making HW determinations, transportation, and disposal.

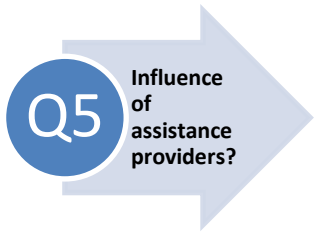
- **HW service providers are better positioned to make accurate HW determinations than many generators:** All three of the HW services representatives mentioned various technical resources they can access to make HW determinations for their clients. For example, one company maintains its own chemical database, housing approximately 50,000 records of appropriate HW characterizations for various chemicals and chemical mixtures. All three of the firms interviewed noted they train their employees in making HW determinations. In addition, employees of these firms have access to colleagues with technical expertise and years of experience managing HW. Generators that choose to make their own HW determinations generally do not have access to such resources.
- **HW service providers over-characterize waste streams as hazardous:** Two of the three HW service providers indicated that in some cases they will err on the side of caution when making a HW determination. Many generators do not want to pay for expensive analytical testing on their waste streams. As a result, the service providers have to rely on generator knowledge to make the determination. If they cannot confidently make an accurate determination based upon this knowledge, they will characterize the waste as hazardous to ensure that it is managed safely.

> "Analytical [testing] is very expensive. Often times, customers don't want to pay for that, so we have to rely on customer knowledge. I'm sure we over-classify in order to be sure it's being managed."
>
> -Hazardous Waste Services Representative

- **There is a perception that financial incentives lead HW service providers to mischaracterize waste streams:** Some of the stakeholders suggest HW service providers over-characterize waste as hazardous so they can collect higher fees for managing a larger volume of HW. Stakeholders also report that HW service providers have an incentive to under-characterize HW. They suggest service providers will not classify waste as hazardous so they can offer clients a lower price to manage their waste, leaving the unsuspecting generator vulnerable to fines due to incorrect determinations.

Trade Associations

IEc interviewed eight trade association representatives for this evaluation. The selection of trade associations was based on information from the RCRAInfo queries about which sectors appear to have particular compliance issues, as well as trade associations specifically requested by EPA ORCR and OECA. Trade associations influence generator compliance with HW determination regulations through several pathways:



- **Trade associations serve the role of assistance provider to their members:** All of the trade association representatives stated their members seek HW determination guidance from their organization. Many of them provide guidance documents, training materials, and personal expertise with regard to making HW determinations. In

addition, trade associations will set up educational conferences for their members that often have a HW management component. For example, the Printing Industries of America maintains an Environment, Health, and Safety division, which offers members access to industry-specific environmental compliance fact sheets, training programs, staff trained in EHS, and a consulting service that audits facilities to ensure regulatory compliance.

- **Trade associations work with regulators to assist their members with HW determination compliance:** A number of the trade associations stated they previously collaborated with EPA to develop guidance documents and training materials geared towards their industry. This includes working together to develop regulatory interpretations and translating the regulations into layman terms. In some cases, trade associations invite EPA representatives to speak at industry conferences about specific HW issues. A few of the trade associations employ consultants or other HW experts to offer direct guidance about HW issues to their members.
- **Trade associations lobby for HW regulations favorable to their industry**: Some of the trade association representatives mentioned they work to protect their industry's interests in Washington, suggesting lobbying for favorable environmental regulations is part of their service to members. For example, the American Coatings Association has a Government Affairs Committee which oversees the Paint Council Network, described as "a network of grassroots organizations representing the association in its efforts to promote the interests of the paint and coatings industry at the state level. ACA's Paint Councils provide a forum for companies doing business in those states to interact with each other and their elected officials."[35] In addition, the association also runs its own Political Action Committee called PaintPAC. PaintPAC makes monetary contributions to political candidates and advises elected officials on issues of interest to the industry.
- **Trade associations seek more cooperation with EPA:** Several trade association representatives stated they would like more interaction with EPA when it comes to developing and interpreting HW regulations. A few individuals noted the relationship between industry and EPA has faded in recent years as some industry outreach programs have been cut. For example, one industry representative noted EPA no longer employs a sector outreach specialist to work directly with specific industries in order to help businesses come into compliance.
- **Trade associations' influence on generators is generally limited to their members:** A number of stakeholders indicated that while the trade associations are an excellent resource for generators, only a small portion of businesses belong to one. Due to membership fees, many small businesses forego joining trade associations and do not have access to the HW determination assistance they provide.

QUESTION 6: WHAT CHANGES DO STAKEHOLDERS RECOMMEND TO MAKE THE NATIONAL HW DETERMINATION PROCESS MORE SUCCESSFUL?

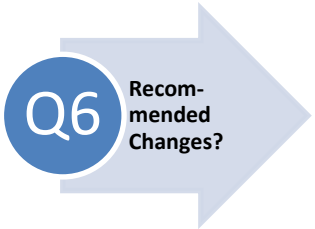
Drawing on the comments provided by stakeholders during the interviews, discussions, and survey of federal partners, IEc identified 180 stakeholder recommendations to improve the national HW determination process. IEc organized these recommendations into 13 categories, as shown in Exhibit 15. The most common types of recommendation, by far, related to enhancing or expanding guidance available for making HW determinations. The following section describes each category of

[35] http://www.paint.org/programs/paint-council-network.html

recommendation in more detail. In addition, Appendix E lists all of the recommendations identified during this evaluation organized by recommendation category.

EXHIBIT 15: Recommendations to Improve the National HW Determination Process

RANK	RECOMMENDATION CATEGORY	COUNT OF RECOMMENDATIONS IN THE CATEGORY
1	Provide, improve, and/or increase the guidance available for making HW determinations	52
2	Other (see Appendix E for more detail)	29
3	Simplify the regulations in general	17
4	Define and clearly interpret specific sections of the regulations	15
5	Address situations where applying the regulations is not practical	14
6	Increase collaboration with the regulated industries	10
7	Specific waste stream issues	9
8	Revisit listed wastes	8
9	Improve consistency between regulating agencies as well as the regulations themselves	8
10	Address unregulated waste streams known to be harmful to the environment	5
11	Increase enforcement	5
12	Require manufacturers to provide more product information to generators via the MSDS or other means	4
13	Require more documentation of the waste determination procedures	4
	TOTAL RECOMMENDATIONS	180



- **Provide, improve and/or increase the guidance available for making HW determinations:** Many of the requests for guidance focused on providing industry-specific information. For example, multiple people requested EPA develop a document that calls out the most common waste streams generated by specific industries and provides their associated waste codes. They also recommended definitive guidance on specific products that are notoriously difficult for generators to characterize, such as aerosols and solvents, improving the accessibility of existing assistance resources, and reinstating the RCRA Hotline.

> "When a business is registered, provide a fact sheet that says 'these are what your typical waste streams will be.'"
>
> -State Agency Representative

> "Back when EPA ran the 1-800 hotline to answer questions, I used it pretty often. That was a good thing. Those old answers are posted on an EPA web site but it is almost impossible to find the site."
>
> -Federal Facility Representative

- **Other:** Stakeholders provided many recommendations that stand on their own and do not fit well into the other categories. These recommendations cover a wide range of topics including: creating alternative methods for calculating generator status; providing generators with a list of labs certified to sample waste streams; increasing the budget of state agencies; switching the determination responsibility from generators to the EPA; and creating economic incentives for correct determinations. Appendix E provides a full listing of these recommendations.

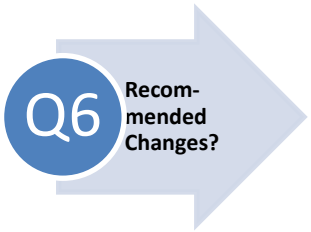
> "Simplify regulatory determination requirements. There are far too many intricacies in determining whether a solid waste is a hazardous waste, many of which have no bearing on whether they are potentially harmful to the environment if improperly disposed."
>
> -Federal Facility Representative

- **Simplify the regulations in general:** Many recommendations suggested that EPA simplify the language and writing style of the HW determination regulations. For example, stakeholders frequently remarked that EPA should make the regulations linear to eliminate the constant referencing of previous sections and write them in "plain English," to enable generators to understand them. Some stakeholders requested more fundamental changes such as eliminating listed wastes and making the HW determination irrespective of how the waste is used (e.g., recycled or reused).

> "Provide consumer product relief under the Universal Waste rules allowing consumer product waste determinations to be made at a consolidation or returns processing facility or provide a specific ruling on when waste determination must be made in the retail returns process."
>
> -Industry Representative

- **Define and clearly interpret specific sections of the regulations:** A number of respondents recommended EPA make clear and definitive interpretations for sections of the regulations they consider vague. For example several people suggested EPA better define the terms "generator knowledge" and "point of generation." They also recommend EPA disseminate these definitions to the regulated parties and be more accessible to

provide interpretations for generators that have questions about the regulations.



- **Address situations where applying the regulations is not practical:** Generators and other stakeholders regularly discussed the need for EPA to address the impracticality of the regulations when applied to certain situations and industries. Specifically, they recommend EPA take action to ease the regulatory burden of the HW determination regulations as they pertain to pharmaceuticals and consumer products. We heard on multiple occasions that the classification of these waste streams as universal waste would be an effective measure in this regard. Respondents also noted that due to the outstanding concerns of this regulatory burden, there is a need for EPA to provide prompt responses to questions from people making HW determinations for these products.

> "Eliminate outdated and unnecessary hazardous waste listings. If hazardous wastes were determined solely on objective analytical criteria, most problems could be avoided."
>
> -Industry Representative

- **Increase collaboration with the regulated industries:** Generators, regulators, and assistance providers said EPA should work more closely with industry when developing regulations, issuing interpretations, and providing guidance. They expressed concern that EPA sometimes fails to adequately engage the industries they regulate, thus missing out on opportunities to coordinate efforts to increase generator compliance.

> "The fire department says one thing and allows material to be thrown away but RCRA says differently, such as the evaporation of solvents used on rag, which could be an F-listed waste. I recommend outreach on every level, [including] talking with the fire department.
>
> - State Regulator

- **Specific waste stream issues:** A number of individuals recommended improving the regulations for specific waste streams. Those waste streams mentioned on more than one occasion include acetone, aerosol cans, and pharmaceuticals.

- **Revisit listed wastes:** Several stakeholders recommended EPA make changes to the listed waste regulations. In particular, they suggest that EPA remove outdated listings, base the listings on the presence of toxic constituents as opposed to a narrative description of the waste generation process used for the F-listed wastes, and clean up and streamline the regulatory language in general.

- **Improve consistency between regulating agencies as well as the regulations themselves:** A number of stakeholders recommend that all states develop consistent HW determination regulations to eliminate the difficulties generators experience trying to comply with different regulations for each state. (Given the delegated nature of the program, implementing this recommendation would be outside of EPA's control.) Stakeholders also recommend EPA and the states develop consistent guidance on specific issues such as satellite accumulation. Furthermore, they recommend coordination with other agencies that regulate the same materials, so they do not

give generators conflicting guidance. For example, EPA and the local fire department regulate some of the same materials for different purposes. However, the compliance requirements differ between agencies.

- **Address unregulated waste streams known to be harmful to the environment:** Stakeholders recommend EPA take the lead on regulating wastes known or suspected to be environmentally damaging but not currently regulated, such as nanoparticles and certain pharmaceuticals. In addition, they recommend adding new chemicals to the listed wastes.

- **Increase enforcement:** A few stakeholders recommend that EPA increase its enforcement efforts to help encourage greater compliance with the HW determination regulations. They also recommend increasing the number of inspections and having them conducted on a routine basis, so generators are less willing to risk non-compliance because they are unlikely to be inspected. One person said that EPA should create a penalty for "over coding," where generators classify non-HW as hazardous when they are uncertain of the correct determination.

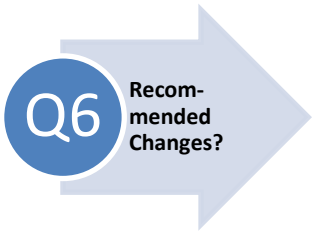
> "Audit our facilities & enforce non-compliance occasionally. Management doesn't recognize non-compliance as a problem!"
>
> -Federal Facility Representative

- **Require manufacturers to provide more product information to generators via the MSDS or other means:** Stakeholders recommend EPA encourage manufacturers to provide more product disposal information to generators. Specifically, they ask that RCRA waste codes and end of life disposal information be included on the MSDS. In addition, one person requested that the information on the MSDS be tailored for the specific industry using the product.[36]

- **Require more documentation of the waste determination procedures:** Stakeholders recommend EPA require generators to document their HW determination process, including the names of individuals who make the determination.

In addition to suggestions raised through the interviews and open discussions, EPA gathered recommendations through the federal facilities survey. Exhibit 16 shows responses to the federal facilities survey question: If you had an opportunity, what would you want EPA or your state to do to help facilities like yours make HW determinations more effectively?

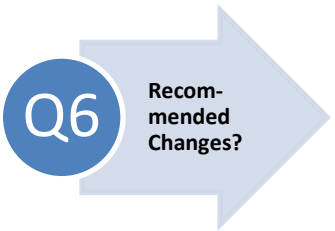
The recommendations are in accord with those provided during the interviews and discussion sessions. In both cases, improving guidance and assistance for generators is the most frequent recommendation and clarifying the content and language of the regulations is highly recommended. However, the responses are not directly comparable because respondents to the federal facilities survey ranked a list of pre-established answers as opposed to offering independent recommendations, as respondents in interviews and discussion sessions did.



[36] EPA points out that it does not have authority over MSDSs, and that the specifications for MSDSs are set by OSHA. EPA could, however, advocate for such changes with OSHA.

EXHIBIT 16: Recommendations for EPA or States to Help Facilities Make HW Determinations More Effectively

RECOMMENDATION CATEGORY	PERCENT RANKING RECOMMENDATION AS MOST IMPORTANT
Provide user-friendly guidance	34%
Improve the clarity of the regulations and guidance	23%
Improve the readability of the regulations and guidance	16%
Provide a hotline dedicated to helping generators make more accurate determinations	12%
Other	11%
Provide on-site technical assistance upon request	8%
Offer periodic webinar training	8%



CHAPTER 4 | OVERARCHING THEMES AND RECOMMENDATIONS

This evaluation compiled information from a wide range of stakeholders along with analysis of available data in order to assess the effectiveness of EPA's HW determination program. The evaluation suggests that there are many inter-related factors influencing compliance with HW determination regulations, and that aside from the regulations themselves, many of the greatest influences on generator compliance are beyond EPA's direct control. Nevertheless, EPA has the opportunity to make some direct changes to improve its program. In addition, EPA can use its influence with states, assistance providers, trade associations, and other stakeholders to increase communication, resources, and attention to the issue in order to maximize compliance.

OVERARCHING THEMES

Several overarching themes emerge from this evaluation:

- **Many stakeholders would like EPA to simplify and improve the HW determination regulations.** Stakeholders indicated that the regulatory language sacrifices clarity in an attempt to cover all possible scenarios where the regulations apply. This degree of detail complicates the regulations, making them difficult for generators to interpret and apply. In addition, stakeholders express concern that listed wastes may not cover important types of waste that may be hazardous (e.g., chemotherapy drugs). Stakeholders also suggested that EPA reclassify some HW as universal waste.
- **Certain stakeholders expressed frustration with the non-intuitive, complex process of making HW determinations.** Stakeholders suggested that if people without experience or training in making HW determinations perceive the regulations to be overly complicated, not logical, or overly time consuming they may become discouraged and give up on their efforts to ensure proper waste determination. Stakeholders who are well trained and have years of experience with waste determinations are not as likely to raise this concern, though they also seek improvements to the regulations.
- **Generators seek greater clarity about how to apply the existing regulations to their operations.** Stakeholders said that it would be very helpful to have sector-specific guidance for typical waste streams, paired with an opportunity to ask detailed questions and get prompt feedback from EPA for non-typical waste streams. While EPA cannot make HW determinations for generators and requirements vary depending on state regulations, there appears to be an opportunity for EPA to share assistance materials and tools to supplement state resources.
- **In practice many generators have essentially "outsourced" the HW determination process (even though by law generators themselves must make HW determinations).** For a number of reasons, including financial constraints, time constraints, and the complexity of the regulations, many generators hire HW service providers to manage their HW or rely on information from other

third parties (e.g., suppliers) to make their determinations. Some HW service providers make HW determinations on behalf of their clients, while others simply offer information as to whether a waste stream is hazardous or not. HW service providers often have particular expertise and resources that enable them to make accurate HW determinations. However, if they are relying on incomplete or incorrect information from generators, or if they are motivated by financial incentives to under-or over- classify waste as hazardous, HW service providers may contribute to inaccurate HW determinations.

- **Stakeholders report that a combination of compliance monitoring and enforcement and compliance assistance is an effective approach to improving compliance with HW determination regulations.** This evaluation finds that many HW generators do not recognize their HW determination regulatory obligations until they have been contacted by EPA, the state, or an assistance provider. However, reduced funding at the state and federal level has prevented regulating agencies from expanding their compliance monitoring efforts and assistance providers from expanding their outreach and guidance efforts.
- **Current compliance data do not facilitate calculation of non-compliance rates pertaining to HW determination regulations.** Inspections tracked in RCRAInfo do not reflect representative samples of facilities and may therefore provide inaccurate indications of compliance rates. Moreover, inspectors apparently may use 262.11 as a default violation during an inspection of a facility with numerous violations. Use of this code does not reflect the severity of the violation.

IEC'S RECOMMENDATIONS TO EPA

Based on the lessons gathered during this evaluation, IEc has developed nine recommendations for EPA, which we group into two categories: (1) improvements EPA can make directly to its own program; and 2) opportunities to work with other stakeholders to influence generators. We summarize each of these recommendations below.

Overall, IEc suggests changes to the HW determination process to address the interrelated challenges that lead to non-compliance with the HW determination regulations. For example, in addition to providing regulatory interpretations that clarify sections of the regulations, EPA should also disseminate the new information to the generators, ideally through assistance providers, HW service providers, and/or trade associations who already have relationships with generators.

1. To the Extent Possible, Simplify and Improve the Regulations, and Provide Sector-Specific Guidance

The evaluators suggest EPA look for opportunities to simplify the regulatory language and revise it to include fewer references to previous sections and more focus on addressing the majority of applicable situations. Where it is not possible to simplify the regulations, IEc suggests that EPA provide more sector-specific plain language guidance, to help generators and stakeholders interpret the regulatory language.

The evaluators suggest that EPA also consider whether the listed wastes capture the appropriate wastes. We recommend that EPA consider incorporating newer chemicals on to the P- and U-lists, e.g., chemotherapy drugs. We suggest EPA consider making some wastes universal wastes (e.g., aerosol cans, pharmaceuticals, and expired or returned retail products). Further, EPA should consider clarifying the F-

and P/U-listed wastes. In addition to clarifying the narrative process descriptions that result in an F-listed waste, IEc suggests EPA consider explicitly stating the common constituents regulated under each F-listing. We recommend that EPA consider addressing the confusion around the applicability of the P- and U-listings only to products in which the listed chemical is the sole active ingredient. (In other words, we suggest EPA consider clarifying why a commercial chemical product is not a U- or P-listed HW if it has two or more active ingredients, even if all the ingredients are listed on the U- or P- list.).

2. Establish a Direct Line of Communication between EPA and HW Stakeholders

Stakeholders indicated that opportunities for communication with EPA have decreased in recent years, contributing to the challenges generators face in complying with the HW determination regulations. They noted difficulty getting responses to HW determination questions from EPA and said that written inquiries often go unanswered. This perceived lack of communication seems to contribute to the distrust of the Agency some stakeholders harbor. We recommend the Agency consider creating avenues to facilitate better communication between EPA and stakeholders. Reinstituting the RCRA Hotline in one form or another is one potential mechanism.[37] Throughout this evaluation, stakeholders referred to the Hotline as an invaluable resource to the regulated community that enabled stakeholders to discuss difficult questions that inevitably arise when generators apply the regulations. Stakeholders experienced in making HW determinations lamented the loss of the RCRA Hotline, saying it was a vital resource, even for people who have been making accurate HW determinations for years. The Hotline's ability to connect stakeholders with another person to discuss questions about applying the RCRA regulations facilitated an interpersonal connection between the Agency and the regulated community that cannot be replicated by providing regulatory assistance documents and interpretations online.

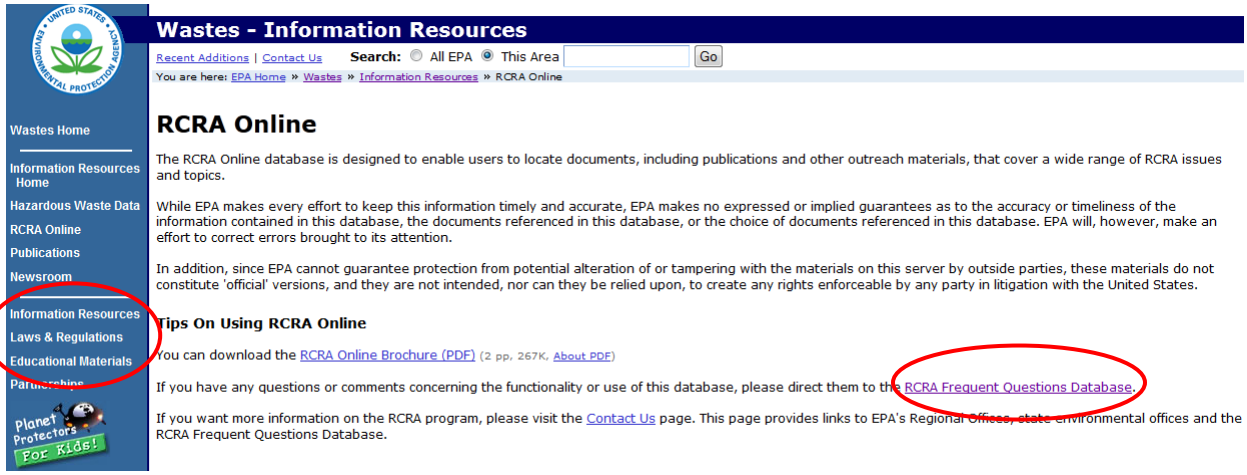
3. Make Guidance Documents Easily Accessible via RCRA Online and Make the Generator Website More User-Friendly

During the course of this evaluation, several stakeholders said that although RCRA Online contains some useful information it is often difficult to locate and the system is generally confusing to navigate. We recommend that EPA improve the visibility of guidance documents and interpretations on the site. For example, a generator visiting the site would likely be interested in specific pieces of information that are currently spread across four separate links on the front page:

- Sector specific guidance documents are available under the RCRA in Focus section, which is reached by clicking the Laws & Regulations link.
- Fact sheets about specific hazardous materials are located under the Publications section within the Information Resources link.
- The Educational Materials link provides access to the RCRA Orientation Manual and RCRA Training Modules.
- The RCRA Frequent Questions Database is accessed by a separate link in the text of the front page (see Exhibit 17).

The Agency should consider making resources for generators more accessible, including generator guidance information and links to state and assistance provider websites.

EXHIBIT 17: EPA's Current RCRA Online Website



4. Improve Tracking of Compliance Rates for HW Determination

We recommend that EPA revise RCRAInfo to facilitate tracking of violations specifically related to 40 CFR 262.11 and encourage EPA inspectors to consistently use this code to track HW determination violations. EPA may also wish to consider tracking the severity of HW determination violations. In addition, we recommend that EPA consider flagging targeted inspections vs. regularly scheduled inspections, so as to enable improved data analysis. Ideally, if tracking compliance with HW determination regulations is a high priority for the Agency, EPA would support representative sampling of facilities to accurately measure compliance rates, either at the state or federal level. For example, EPA Regions could work with states to gather representative data on compliance, and track this information periodically to gauge progress. Overall, we recommend that EPA consider improving RCRAInfo and the compliance monitoring data it stores to facilitate accurate, comparable, and consistent tracking of non-compliance rates over time.

Opportunities to Work with Other Stakeholders

5. Identify Opportunities to Improve Communications with State Agencies to Inform Regulatory Interpretations

By communicating with the states, EPA's interpretations are more likely to reflect actual situations generators face since communication is greater between generators and the state than between generators and EPA. For example, Minnesota praised EPA ORCR for recently pre-emptively seeking comments to a regulatory interpretation, noting that in its opinion EPA interpretations are usually issued without state input.

6. Improve Coordination with Other Agencies whose Regulations Overlap with Those of EPA

On more than one occasion, stakeholders discussed specific situations where another agency's regulatory guidelines conflict with EPA's. For example, sometimes the local fire department will inform a generator that they can dispose of an item as solid waste (likely based on regulations from OSHA or DOT).

However, the HW determination regulations may require this item to be characterized and handled as HW. To address these inconsistencies, we recommend that the Agency investigate the claims described in this evaluation and coordinate with the respective agencies to avoid distributing guidance to generators that conflicts with guidance from other agencies. EPA should also seek input from states, assistance providers, and generators about other instances of conflicting regulations and resolve these situations.

7. Encourage Best Practices among States

State agencies conduct a wide range of compliance monitoring and assistance activities. For example, generator self-certification programs, like those in Colorado, Massachusetts and other states have the potential to increase generators' awareness of compliance requirements while also providing better compliance information to regulators. Hotlines devoted to answering generators' questions facilitate communication between industry and regulators and help generators apply the regulations to make accurate HW determinations. Coordination across state agencies can help inspectors identify new businesses subject to HW regulations. We recommend EPA facilitate communication between the states so they can learn from each other's approaches. We recognize that EPA provides competitive grants to fund the sector-based compliance assistance centers, and that these are good clearinghouses for compliance assistance materials. However, we also encourage EPA to help states learn from each other with regard to best practices, such as approaches to targeting state inspections and making new generators aware of their obligations.

8. Promote Best Practices from Federal Facilities

EPA should use the federal facilities survey information, collected for this evaluation, to encourage HW determination best practices amongst generators. For example, EPA could issue a memo to assistance providers, trade associations, and other stakeholders that frequently interact with generators, stating that EPA's review of federal facilities revealed that federal HW generators that implement processes for making HW determinations are more likely to make accurate HW determinations. The memo could point to resources that could assist facilities in developing appropriate waste determination processes (e.g., a decision-tree, such as Texas has developed or example procedures developed by federal facilities themselves). The memo could also include other federal HW generator best practices the Agency has identified. This would help generators understand the actions they can take to improve HW determination compliance.

9. Develop a Communications Strategy to Increase Awareness of Compliance Monitoring Presence and Enforcement Actions Related to HW Determination

This evaluation revealed that the perception that they "will not get caught" lulls some generators into a sense of complacency, instead of taking the time and effort to make accurate HW determinations. Where possible, EPA and the states should increase their field presence and inspection frequency. In addition, the Agency should consider taking steps to increase awareness of its compliance monitoring and enforcement actions when they occur. EPA could alert trade associations and assistance providers about recent compliance and enforcement actions, so that awareness of EPA's presence would be magnified. In addition, EPA could provide information about the most common types of violations, what generators can do to prevent them, and where they can get further compliance assistance. This communications strategy would broadcast EPA's compliance monitoring presence to an audience much larger than can be reached through inspections alone and would motivate generators to take steps to come into compliance.