Potential Adverse Impacts Under the Definition of Solid Waste Exclusions (Including Potential Disproportionate Adverse Impacts to Minority and Low-Income Populations)

Volume 1 – Hazard Characterization

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Table of Contents

1 Introduction 2

1.1 Background 2
1.2 Overview of Approach 3
1.3 EPA Response to Peer Review Comments 4
1.4 EPA Response to Public Comments 4
1.5 Purpose and Organization of Document 5

2 Hazard Characterization 7

2.1 Overview of Scenarios under the DSW Exclusion 7
2.2 General Hazards Associated with Hazardous Secondary Material 12
2.2.1 Types and Quantities of Hazardous Secondary Materials 13
2.2.2 Hazardous Properties of HSMs: Solvents and Electric Arc Furnace Dust 16
2.2.3 Media, Exposure Route, and Health Effects Hazard Associated with Recycling of HSM 17
2.2.4 Hazards Associated with Recycling of HSM 23
2.3 Regulatory Comparison - Summary of Comparative Results by Facility Type and Scenario 31
2.4 Summary of Comparative Results by Facility Type and Scenario 38
2.5 Likelihood of Hazards under Scenarios 47
2.5.1 Role of Non-Compliance in Potentially Increased Hazards 47
2.5.2 Potentially Increased Hazards under 2008 DSW Exclusions 48
2.5.3 Potential Reductions and Transfers of Hazards by Facility Type and Scenario 69
2.5.4 Other Impacts 71
2.5.5 Trade-Offs Between Increased and Decreased Hazards 88
2.5.6 Regulatory Changes In The 2014 DSW Final Rule That Address The Potential Adverse Impacts To Human Health And The Environment From The Current DSW Exclusions 88
2.5.7 Implementation Measures That Address The Potential Adverse Impacts To Human Health And The Environment From from Hazardous Secondary Material Recycling 91

Appendix A: Comparison of Regulatory Requirements under 2008 DSW Final Rule to RCRA and Other Federal Regulations
Appendix B: Acronyms and Abbreviations
Appendix C: Glossary
Appendix D: EPA Response to Peer Review Comments

1 Introduction

1.1 Background

Types of Exclusions Established by October 2008 DSW Final Rule

- **Generator-Controlled Exclusion (GCE)** - Materials that are generated and transferred to another company for legitimate reclamation under specific conditions;
- **Transfer-Based Exclusion (TBE)** - Materials that are generated and legitimately reclaimed under the control of the generator (i.e., generated and reclaimed on-site, by the same company, or under "tolling" agreements); and
- **Petition-Based Exclusion (PBE)**- Materials that EPA or an authorized state determines to be non-wastes through a case-by-case petition process.

On October 30, 2008, the U.S. Environmental Protection Agency (EPA) published final revisions to the definition of solid waste that excludes certain hazardous secondary materials[1] from regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA), as amended (73 FR 64663). Specifically, EPA amended 40 CFR Part 261 to provide that hazardous secondary materials (HSMs) reclaimed under the control of the generator are not solid wastes if specified requirements are met. EPA also amended Part 261 to provide that HSMs that are generated and then transferred to another person for the purpose of reclamation, including exports, are not solid waste, provided that specified conditions are met. In addition, EPA finalized other amendments to address particular issues (e.g., established standards in Part 260 to enable a person to apply to EPA for a formal determination that a HSM is not discarded (i.e., non-waste) and therefore not a solid waste).

On January 29, 2009, the Sierra Club submitted an administrative petition to EPA requesting that the definition of solid waste (DSW) rule be repealed. The petition argues that the revised regulations are unlawful and that they increase threats to public health and the environment without producing compensatory benefits and, therefore, should be repealed. In addition, the petition disagrees with the Agency's findings that the rule would have no adverse environmental impacts, including no adverse impact to minority or low-income communities.

Under the 2008 DSW final rule, EPA determined that the conditions of the rule would prevent any increase in risk, and therefore there would be no disproportionate adverse impacts to minority or low-income communities. However, the 2008 analysis did not take into account whether the conditions of the rule would operate as effectively in the real world as the more detailed requirements of the RCRA hazardous waste regulations. One of the most common criticisms of the January 2010 draft environmental justice methodology was that it glossed over some of the important protections of the hazardous waste regulations, particularly public participation requirements.

After receiving the petition and communicating with stakeholders, EPA proposed revision to the rule on July 22, 2011. The proposal modifies EPA's 2008 Definition of Solid Waste (DSW) rule to improve accountability and oversight of hazardous materials recycling, while allowing for

[1] A hazardous secondary material is any material that would be a hazardous waste if discarded.

important flexibilities that will promote its economic and environmental benefits. EPA proposed to improve safeguards through:

- Replacing the transfer-based exclusion with alternate hazardous recyclable materials standard.
- Adding a regulatory definition of "contained" and additional recordkeeping requirements for generator-controlled exclusion.
- Making all four legitimacy factors mandatory and requiring documentation.
- Applying the regulatory definition of legitimate recycling to all hazardous waste and hazardous secondary material recycling.
- Requesting comment on applying the contained standard, notification, and recordkeeping for speculative accumulation to existing recycling exclusions.

In addition, EPA proposed to encourage recycling through:

- Alternative standard that allows generators a longer accumulation time (one year) if there is a reclamation plan in place.
- Retaining the generator-controlled exclusion for recycling performed on-site, at the same company, or under certain tolling agreements.
- Providing a petition process for instances where legitimacy factors are not met, but recycling is still legitimate.
- Requesting comment on a targeted exclusion for higher-value hazardous solvents which are re-manufactured into commercial-grade products.

As part of the 2011 proposal, EPA published a draft Environmental Justice Analysis of the 2008 rule, which included an analysis of the potential disproportionate impacts of the 2008 DSW final rule. This report revises the EJ Analysis to reflect the 2014 final rule.

1.2 Overview of Approach

The methodology for the EJ Analysis described in this document is based on the one used in the 2011 draft analysis, modified based on:

- Comments from an external peer review of the draft EJ Analysis
- Comments from the general public and other stakeholders.
- Updated data.

The methodology also adheres to existing Federal and EPA-specific guidance on how to incorporate EJ into the Agency's process for developing regulations and how to conduct analyses that incorporate EJ considerations. This includes, in particular, EPA's Action Development Process and Interim Guidance on Considering Environmental Justice During the Development of an Action. This document describes the approach and results of the analysis. The draft analyses and results presented in this report will be used to inform the identification of potential preventive and mitigation strategies.

1.3 EPA Response to Peer Review Comments

From December 2010 to January 2011, an EPA contractor, organized and facilitated an independent letter peer review of EPA's *Preliminary Draft Definition of Solid Waste Final Rule Environmental Justice Analysis*, following the guidelines in *EPA's Peer Review Handbook*, Third Edition (http://www.epa.gov/peerreview/).

Three independent experts conducted the review:

- Dr. Dorothy M. Daley, University of Kansas
- Dr. Deeohn Ferris, Sustainable Community Development Group, Inc.
- Dr. Diane S. Henshel, Henshel EnviroComm Consulting and Indiana University

In general, the reviewers thought that the Draft *Definition of Solid Waste Final Rule Environmental Justice Analysis* adequately reviews, presents, analyzes, and summarizes the available data.

This document reflects EPA's response to these comments. EPA's response to specific peer review comments and how they were reflected in this document is contained in Appendix D.

1.4 EPA Response to Public Comments

Public comments were submitted on www.regulations.gov or in the Federal Register notice under docket number EPA-HQ-RCRA-2010-0742 for the 2011 DSW proposal. Specific changes to this document in response to those comments include:

- Separated the analysis into two volumes to help better distinguish the analysis of potential impacts to all potentially affected communities (Volume 1: Hazard Characterization) from the analysis of the potential for disproportionate impacts to minor and/or low-communities (Volume 2: Assessment of Disproportionate Adverse Impacts)
- Added examples of uncovered waste piles of electric arc furnace dust (K061) and additional documentation of risks posed by this material.
- Added a reference to ingestion pathway via contaminated produce and contaminated fish.
- Expanded discussion of risks from transboundary movement and exports
- Removed the derived-from rule from the potential impacts discussion
- Clarified language on potential impacts from smaller generators
- Added a discussion of the role of non-compliance in increased hazards
- Added an analysis of baseline impacts at non-recycling Subtitle C facilities and expanded the discussion of tradeoffs between increased and decreased hazards under the rule
- Expanded explanation of how the determine "disproportionate" is defined for the purposes of this analysis

- Expanded explanation of how certain sites served as surrogates for possible future DSW facility locations and should not be presumed to reflect actual DSW facility behaviors
- Updated the damage case facilities based on the revised damage case study
- Added a sensitivity analysis of impacts within a 1-kilomter radius
- Added documentation of the geocoding software
- Added a discussion of how water bodies are treated under the apportionment methodology
- Added documentation of the "affected population ratio" methodology
- Updated the analysis with the 2010 census data
- Updated the analysis using two times the poverty level to determine "low income" populations

A full discussion of EPA's response to comments on the environmental justice analysis can be found in Chapter 3 of the response to comment document, located in the docket for the 2014 DSW final rule.

1.5 Purpose and Organization of Document

This report presents EPA's characterization of the hazards addressed by the 2008 DSW exclusions (Volume 1 of the DSW environmental justice analysis). The remainder of this volume is organized as follows:

- Section 2 describes the hazards associated with HSMs when generated and managed under the current DSW exclusions, including the types, quantities, and health hazards associated with HSMs and the types of hazards (e.g., releases) that could occur at generator, transporter, and intermediate and reclaimer facilities managing such materials, including:
    - Section 2.1, Overview of Scenarios under the DSW Exclusion, describes the scenarios that EPA used to identify and analyze the hazards associated with managing HSMs under the hazardous waste regulations and under the current DSW exclusions.
    - Section 2.2, General Hazards Associated with Hazardous Secondary Material, describes the general hazards associated with HSMs when managed by recycling.
    - Section 2.3, Regulatory Comparison - Summary of Comparative Results by Facility Type and Scenario, presents the results of EPA's comparison of the full RCRA Subtitle C hazardous waste regulations (baseline scenario) to the federal regulations applicable to facilities operating under the current DSW exclusions.
    - Section 2.4, Summary of Comparative Results by Facility Type and Scenario, summarizes the key regulatory differences and consequences described in Section 2.3 of this report.
    - Section 2.5, Likelihood of Hazards under Scenarios, presents EPA's analysis of the likelihood of changes in hazards for each type of facility (generators,

transporters, and intermediate and reclamation facilities) and each scenario described in Section 2.1 of this report

2 Hazard Characterization

2.1 Overview of Scenarios under the DSW Exclusion

This section describes the scenarios that EPA used to identify and analyze the hazards associated with managing HSMs under the hazardous waste regulations and under the current DSW exclusions. Generators, transporters, and intermediate and reclamation facilities may manage HSMs in several different ways both under hazardous waste regulations, and under the current DSW exclusions. Each scenario represents a different combination (or set of combinations) of baseline and DSW practices. Hazardous waste management practices reflect ways that generators and facilities are managing HSMs under the existing hazardous waste regulations (i.e., before they claim an exclusion). The DSW practices reflect ways that these same generators and facilities are managing, or might manage, HSMs after they claim an exclusion under the current DSW exclusions.

In developing these scenarios, EPA first reviewed the current state of generation of recyclable hazardous wastes and management practices for those waste, including on-site and off-site storage, transportation, treatment, disposal, and recycling. For off-site recycling, EPA considered recycling in both domestic and foreign facilities. EPA then analyzed each provision of the DSW rule and identified how it might impact generation and management practices. EPA then grouped the possible changes in hazardous waste generation and management resulting from the rule into eight scenarios based on observed similarities.

Under the current DSW regulations, there are three types of conditional exclusions from the RCRA Subtitle C hazardous waste regulations for persons who generate or reclaim HSMs. These are described in the box to the right. EPA established different requirements for each type of exclusion. These different requirements are expected to affect how each type of generator/facility modifies its generation and management of HSMs based on the type of exclusion claimed. The scenarios below were developed based on the expected impacts of the Generator-Controlled Exclusion (GCE) and Transfer-Based Exclusion (TBE), and each scenario describes whether it is applicable to facilities operating under the GCE, TBE, or both. Petition-Based Exclusions are not considered in this analysis because they are granted on a case-by-case basis, and the exact nature of such exclusions cannot be determined until petitions are granted. In addition, at the time this report was prepared, no petitions for a non-waste exclusion have been submitted. The type of exclusion claimed under each scenario is used in Section 2.4 of this report to help compare the regulatory framework between hazardous waste regulations and the current DSW exclusions.

Types of Currently DSW Exclusions

- **Generator-Controlled Exclusion (GCE)** - Materials that are generated and transferred to another company for legitimate reclamation under specific conditions;
- **Transfer-Based Exclusion (TBE)** - Materials that are generated and legitimately reclaimed under the control of the generator (i.e., generated and reclaimed on-site, by the same company, or under "tolling" agreements); and
- **Petition-Based Exclusion (PBE)** - Materials that EPA or an authorized state determines to be non-wastes through a case-by-case petition process.

For each scenario, EPA also considered whether the facility is permitted under RCRA, and the descriptions below identify the potential RCRA-permit status of the facility. The RCRA permit status of facilities under each scenario is used in Section 2.4 of this report to help compare the regulatory framework between the hazardous waste regulations and the current DSW exclusions

EPA has identified the following eight scenarios that it considers likely to occur. Note that EPA identified additional potential scenarios, but deemed them unlikely to occur. These scenarios are briefly described at the end of this section, but are not addressed further in this document.

Scenario 1: Generator continues current recycling practices under GCE or TBE. This scenario involves a generator that has been reclaiming its HSM under the hazardous waste regulations, and opts to continue these practices under either the GCE or TBE. This could include, for example, a generator that reclaims onsite under hazardous waste regulations and claims the GCE to continue reclaiming on site, or a generator that exports its HSM under the hazardous waste regulations and claims the TBE to continue exporting the HSM.

Scenario 2: Generator switches from off-site treatment/disposal to on-site reclamation. This scenario involves a generator that has been shipping its HSM to an off-site Treatment, Storage, or Disposal Facility (TSDF) for treatment then disposal under the hazardous waste regulations, but opts to reclaim that HSM onsite under the GCE.

Scenario 3: Generator switches from off-site treatment/disposal to off-site recycling under the control of the generator. This scenario involves a generator that has been shipping its HSM to an off-site TSDF for treatment followed by disposal under the hazardous waste regulations, but opts to ship that HSM to an off-site facility that it controls for reclamation under the GCE.

Scenario 4: Generator switches from off-site treatment/disposal to off-site recycling at a RCRA-permitted facility. This scenario involves a generator that has been shipping its HSM to an off-site TSDF for treatment followed by disposal under the hazardous waste regulations, but opts to ship that HSM to an off-site RCRA-permitted TSDF for reclamation under the TBE.

Scenario 5: Generator switches from off-site treatment/disposal to off-site recycling at a U.S. facility without a RCRA permit. This scenario involves a generator that has been shipping its HSM to an off-site TSDF for treatment followed by disposal under the hazardous waste regulations, but opts to ship that HSM to an off-site facility in the U.S. without a RCRA permit for reclamation under the TBE.

Scenario 6: Generator switches from off-site disposal to exporting for recycling. This scenario involves a generator that has been shipping its HSM to an off-site TSDF for disposal under the hazardous waste regulations, but opts to ship that HSM to for recycling to a facility outside the U.S. for reclamation under the TBE.

Scenario 7: Generator switches from off-site recycling at a facility without a permit[2] to another type of recycling under the current DSW exclusions. This scenario involves a generator that has been shipping its HSM for reclamation to an off-site TSDF in the U.S. without a RCRA permit under the hazardous waste regulations, but opts to have the HSM reclaimed at a different type of facility under the TBE. This could include, for example, a generator that ships HSM offsite for reclamation at a TSDF in the U.S. without a RCRA permit under hazardous

[2] Under the RCRA hazardous waste regulations, facilities that recycle immediately without storing the hazardous waste do not need a RCRA permit.

waste regulations, but changes its practice to ship the HSM offsite for reclamation at a RCRA permitted facility under the TBE, or changes its practice to export the HSM for reclamation at a recycling facility outside the U.S. under the TBE.

Scenario 8: Generator switches from off-site recycling at a RCRA-permitted facility or exporting waste for reclamation to another country to another type of recycling under the current DSW exclusions. This scenario involves a generator that has been shipping its HSM to an off-site RCRA-permitted TSDF or exporting it to a foreign reclamation facility under the hazardous waste regulations, but opts to have the HSM reclaimed at a different type of facility under the GCE or TBE. This could include, for example, a generator that changes its practice to reclaim the HSM onsite or at an off-site facility (without a permit) under its control, and claims the GCE. The generator also may choose to ship its HSM offsite for reclamation at either a recycling facility in the U.S. without a RCRA permit or a reclamation facility outside the U.S. and claim the TBE. Similarly, a generator that exports HSM for reclamation at a reclamation facility outside the U.S. under hazardous waste regulations, may change its practice to reclaim the HSM onsite or at an off-site facility under its control, and claim the GCE. The generator also may choose to ship its HSM offsite for reclamation at either a RCRA-permitted TSDF or a recycling facility in the U.S. without a RCRA permit and claim the TBE.

Unlikely Scenarios: As mentioned above, EPA identified additional potential scenarios that it deemed unlikely to occur. These unlikely scenarios include:

- A generator that has been reclaiming HSMs onsite under the hazardous waste regulations, but opts to ship that HSM to an off-site facility that it controls for reclamation under the GCE. EPA believes this scenario is unlikely because switching from on-site recycling to off-site recycling is likely to result in additional transportation costs. Generators that make this type of change are unlikely to do so as a result of the current DSW exclusions.
- A generator that has been reclaiming HSMs onsite under the hazardous waste regulations, but opts to ship that HSM to an off-site RCRA-permitted TSDF, an off-site recycling facility in the U.S. without a RCRA permit, or a reclamation facility outside the U.S. for reclamation under the TBE. EPA believes this scenario is unlikely because switching from on-site recycling to off-site recycling is likely to result in additional transportation costs. Generators that make this type of change are unlikely to do so as a result of the current DSW exclusions.

Both of these unlikely scenarios are based largely on the assumption that transportation costs would discourage generators from switching from on-site to off-site reclamation under the exclusions. Although HSM under the exclusions is no longer a hazardous waste, it likely would still qualify as a DOT hazardous material and be subject to transportation requirements similar to those applicable to hazardous waste. Because of this, EPA assumes that, in general, generators under the exclusions face the same general level of transportation costs as under hazardous waste regulations, and therefore are unlikely to find a financial benefit to switching to off-site reclamation.

In addition, other factors also may discourage these generators from switching to off-site reclamation. EPA assumes that generators currently reclaiming HSM onsite have invested time and resources to purchase and operate reclamation equipment. The costs and inconvenience of shutting down such operations and dismantling and removing the equipment could be a disincentive to switching to off-site reclamation. In addition, some generators' reclamation

activities and equipment may be highly integrated into their manufacturing or other processes, such that a change in HSM management would be infeasible or impractical. For example, some generators may be operating distillation units and feeding the distillate back into production processes as a key ingredient. Further, some generators may have pre-existing agreements to receive HSM from off-site sources for reclamation or to supply the reclaimed HSM to third parties.

EPA recognizes that these assumptions may not apply to all generators performing reclamation onsite. EPA acknowledges that, in some instances, generators may have sufficient incentive to switch to off-site reclamation. For example, if the cost of off-site reclamation is low enough, these lower costs could offset the additional costs of transportation and other costs associated with switching to off-site reclamation, and provide the generator with an incentive to switch to off-site reclamation.

Table 2.1. Scenarios under Baseline and DSW Exclusions

Baseline		DSW Practices
Scenario 1: Generator continues current recycling practices		
Generator reclaims material onsite under hazardous waste regulations	→	Generator reclaims material onsite under GCE
Generator sends material offsite for reclamation to RCRA-permitted facility under hazardous waste regulations	→	Generator sends material offsite for reclamation at a RCRA-permitted facility under TBE
Generator exports material under hazardous waste regulations for reclamation in another country	→	Generator exports material under the TBE for reclamation in another country
Scenario 2: Generator switches from off-site disposal to on-site reclamation		
Generator sends material offsite to a RCRA permitted facility for incineration or landfilling under hazardous waste regulations	→	Generator reclaims material onsite under GCE
Scenario 3: Generator switches from off-site disposal to off-site recycling under the control of the generator		
Generator sends material offsite to a RCRA permitted facility for incineration or landfilling under hazardous waste regulations	→	Generator sends material offsite for reclamation at a facility that it controls under GCE
Scenario 4: Generator switches from off-site disposal to off-site recycling at a RCRA-permitted facility		
Generator sends material offsite to a RCRA permitted facility for incineration or landfilling under hazardous waste regulations	→	Generator sends material offsite for reclamation at a RCRA-permitted facility under TBE

Table 2.1. Scenarios under Baseline and DSW Exclusions

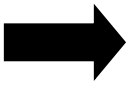
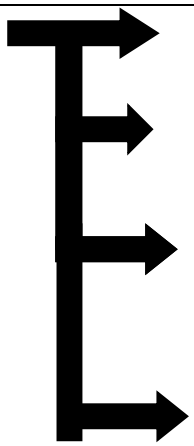
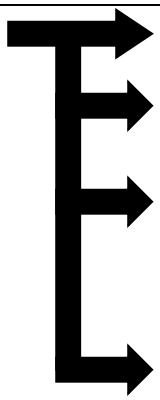
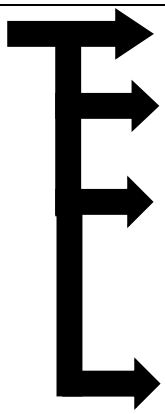
Baseline		DSW Practices
Scenario 5: Generator switches from off-site disposal to off-site recycling at a U.S. facility without a RCRA permit		
Generator sends material offsite to a RCRA permitted facility for incineration or landfilling under hazardous waste regulations		Generator sends material offsite for reclamation at a facility in the U.S. without a RCRA permit under TBE
Scenario 6: Generator switches from off-site disposal to exporting for recycling		
Generator sends material offsite to a RCRA permitted facility for incineration or landfilling under hazardous waste regulations		Generator exports material under the TBE for reclamation in another country
Scenario 7: Generator switches from off-site recycling at a facility without a permit to another type of recycling under the current DSW exclusions		
Generator sends material offsite for reclamation at a facility in the U.S. without a RCRA permit under hazardous waste regulations		• Generator sends material offsite for reclamation at a facility under GCE, *or* • Generator exports material under the TBE for reclamation in another country, *or* • Generator sends material offsite for reclamation at a RCRA permitted facility under TBE, *or* • Generator sends material offsite for reclamation at a facility in the U.S. without a RCRA permit under TBE

Table 2.1. Scenarios under Baseline and DSW Exclusions

Baseline		DSW Practices
Scenario 8: Generator switches from off-site recycling at a RCRA-permitted facility or exporting waste for recycling to another type of recycling under the current DSW exclusions		
Generator sends material offsite for reclamation to RCRA-permitted facility under hazardous waste regulations		• Generator reclaims material onsite under GCE, *or* • Generator sends material offsite for reclamation at a facility that it controls under GCE, *or* • Generator sends material offsite for reclamation at a facility in the U.S. without a RCRA permit under TBE, *or* • Generator exports material under the TBE for reclamation in another country
Generator exports material under hazardous waste regulations for reclamation in another country		• Generator reclaims material onsite under GCE, *or* • Generator sends material offsite for reclamation at facility under GCE, *or* • Generator sends material offsite for reclamation at a RCRA permitted facility under TBE, *or* • Generator sends material offsite for reclamation at a facility in the U.S. without a RCRA permit under TBE

2.2 General Hazards Associated with Hazardous Secondary Material

This section describes the general hazards associated with HSMs when managed by recycling.[3] In this section, EPA presents the potential hazards associated with HSMs independent of health and safety and regulatory controls that might be placed on HSMs. Communities in which generation, transportation, or reclamation of HSM under the DSW final rule is conducted may be at risk of exposure to the hazards associated with HSM. Section 2.2.1 identifies the types, quantities, and properties of HSM that are generated and reclaimed nationally and describes their chemical and physical properties. Because of the wide variety of HSMs that may be recycled, not all of them are addressed in this section. Section 2.2.1 also identifies the types of HSMs that are the focus of this section, and provides the reasoning behind why these materials were selected based on their quantities and properties. Section 2.2.2 contains a description of the hazards associated with selected HSMs based on their properties. While this section focuses on

[3] While the term recycling is used throughout this document, the current DSW exclusions is limited to reclamation activities.

the hazards associated with these HSMs, the EJ analysis presented in this report covers all HSMs that may be recycled under the DSW exclusions. Section 2.2.3 describes the processes associated with the generation, storage, and recycling of the selected HSMs, and how those processes can result in potential hazards to human health and the environment.

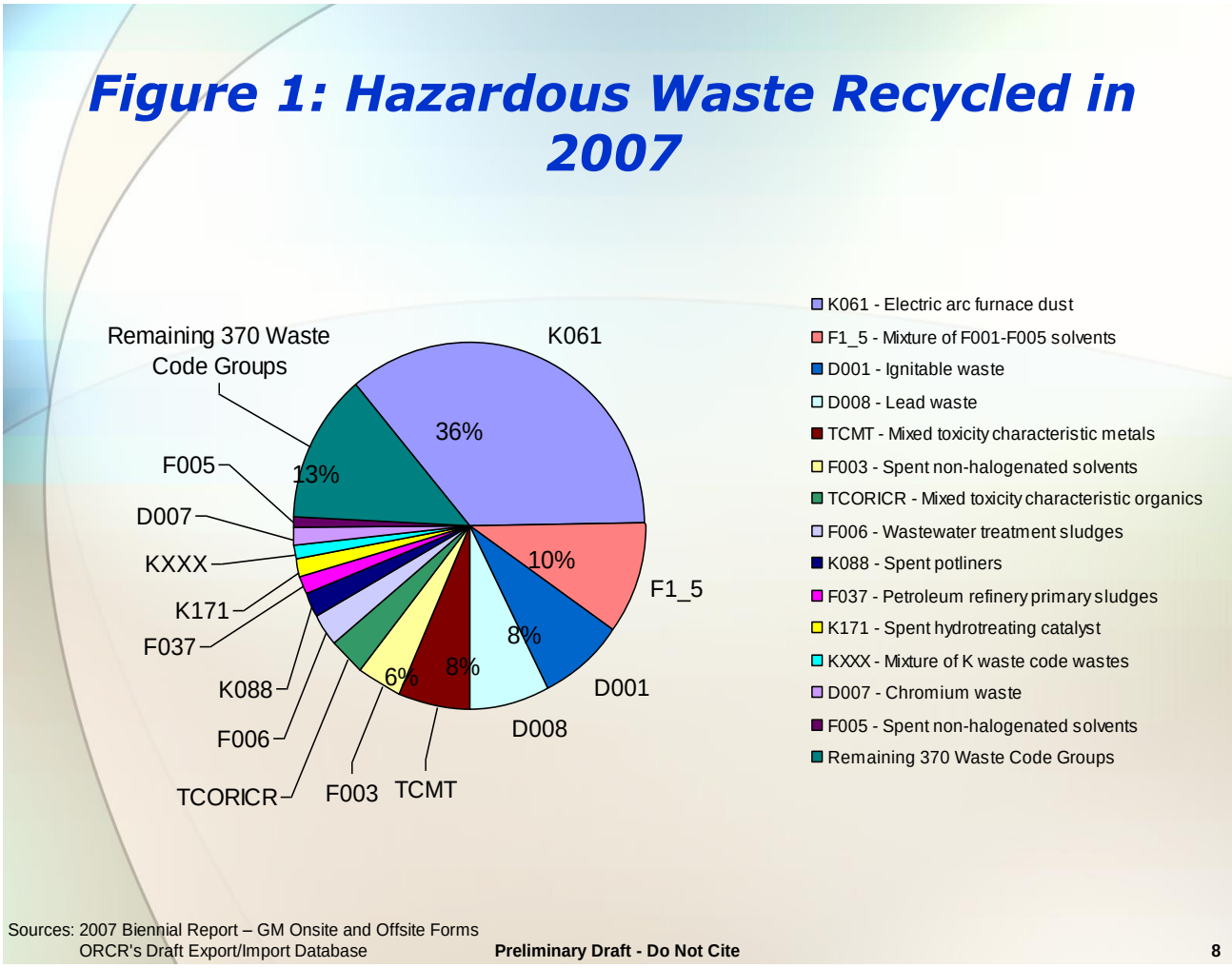
2.2.1 Types and Quantities of Hazardous Secondary Materials

This section describes the types, quantities, and properties of HSMs evaluated It identifies the types and quantities of HSMs generated, and using that information, identifies two specific HSMs that are the selected as the focus of this report—spent solvents and electric arc furnace dust. It also describes the quantities and characteristics of these two wastes that resulted in their selection as a focus of this report. For the selected wastes, Section 2.2.2 describes their properties, including the potential human health and environmental hazards they pose, contamination pathways, and human health effects.

Types and Quantities of Hazardous Secondary Material

Each year, many types of hazardous waste are recycled, each possessing distinct quantities and properties. In 2007, over 370 types of hazardous waste codes contained in 40 CFR Part 261 were recycled. These waste codes include a wide variety of materials, including aqueous streams referred to as wastewaters and streams that contain organic liquids or physically solid materials referred to as nonwastewaters. These materials also include a wide variety of wastes from manufacturing and other processes, and they contain many different chemicals, including halogenated organic compounds, non-halogenated organic compounds, metals, and other contaminants.

In 2007, about 16,000 facilities generated 32.3 million tons of hazardous waste. Of these 32.3 million tons of waste, about 2 million tons were recycled. Figure 1 shows that the waste codes associated with the largest amounts of recycled hazardous wastes in 2007 were electric arc furnace dust (i.e., waste code K061) and spent solvents (i.e., waste codes F001 through F005).



EPA's *An Assessment of Environmental Problems Associated With Recycling of Hazardous Secondary Materials* (hereafter referred to as the Environmental Problems Study) contains information about environmental damage cases and the types of potential hazards from the mismanagement of HSMs.[4] Specifically, the Environmental Problems Study examines 250 facilities in which environmental damage[5] of some kind occurred from some type of recycling activity, and that appeared to clearly fit within the scope of the study, which include the following types of cases: (1) cases where environmental damage can be attributed to some type

[4] This document was originally published in January 2007 in support of the 2008 DSW final rule. Since the Environmental Problems Study was published in 2007, EPA has continued to compile and assess new information on environmental problems associated with the recycling of HSMs (including information submitted through public comment as part of the DSW rulemaking process) and, based on this information, has updated the study on several occasions. The latest version of the Environmental Problems Study is dated December 2014.

[5] In this context, EPA used the term "environmental damage" broadly to include leaks, spills, dumps, or other types of releases of hazardous substances into the environment that were serious enough to require some type of cleanup action. The term also includes situations in which materials were abandoned (e.g., in warehouses) without having been actually released into the environment, but which posed potential threats and thus required removal actions that were conducted by one or more government agencies, and involved expenditure of public funds.

of recycling activity, (2) cases that have occurred within the current environmental regulatory and liability systems (i.e., cases in which some form of environmental damage appears to have occurred during or after the year 1982), and (3) cases involving recycling of regulated hazardous wastes or HSMs that are specifically excluded from RCRA regulation. Therefore, the Environmental Problems Study is not intended to assess environmental damage associated with facilities that are currently implementing the 2008 DSW final rule. This is because the limited number of notification facilities and the short amount of time these facilities have been employing the 2008 DSW final rule might not be representative of a full implementation of the regulation. The Environmental Problems Study, however, is intended to assess the potential for future environmental damage and EJ impacts under the current DSW exclusions.

The most common types of secondary materials associated with the damage cases evaluated in the Environmental Problems Study were scrap metals (25%), batteries (17%), spent solvents (17%), and used oil (16%).[6]

Selection of two HSMs as the Focus of this Report

EPA selected two materials, solvents and electric arc furnace dust, as a focus of this report because they represent a relatively large amount of HSMs that would be eligible for exclusion under the current DSW exclusions, as well as represent a variety of characteristics of HSMs, as described below.

Specifically, solvent wastes were selected as a focus of this report because of their prevalence in the damage cases documented in the Environmental Problems Study (i.e., 42 damage cases that involve the use of solvents in recycling operations, or identify solvents as a potential source of contamination), the large amount of solvents currently recycled (i.e., 3.23 million tons recycled in 2007), and the potential hazards posed by solvents. The potential hazards posed by solvents are discussed in Section 2.2.2 of this report. In addition, solvents that are recycled are typically in a liquid state, and usually contain volatile organic chemicals, which present particular management challenges associated with the storage of liquids and fugitive air emissions. Solvents also include both halogenated and non-halogenated organic chemicals, which represent a broad range of chemicals and associated hazards.

Electric arc furnace dust is a focus of this report because it was the most commonly recycled material in 2007 (i.e., 11.63 million tons recycled in 2007) . In addition, several damage cases documented in the Environmental Problem Study (i.e., a total of six damage cases) involve the use of electric arc furnace dust in recycling operations, or identify electric arc furnace dust as a potential source of contamination. Furthermore, selecting electric arc furnace dust complements the selection of solvent wastes because these two types of HSMs represent a variety of characteristics of HSMs. Electric arc furnace dust is usually in a solid state and presents different management challenges than liquid solvents. Electric arc furnace dust is also often present as a dust, which presents hazards associated with wind-blown dust. In addition, this HSM contains metals, a class of potential contaminants that is generally considered to pose hazards different from the organic chemicals found in solvents.

[6] EPA. 2012. *An Assessment of Environmental Problems Associated With Recycling of Hazardous Secondary Materials.*

By selecting solvents and electric arc furnace dust, this report can assess a variety of potential hazards and management challenges. The potential hazards associated with solvents and electric arc furnace dust and their recycling are discussed further below.

Other secondary materials associated with damage cases, including scrap metals and used oil, are not a focus of this report because they are already covered by exclusions or special management standards and their regulation and management are not expected to be significantly impacted by the current DSW exclusions. Batteries are not a focus because they are not currently recycled in the quantities similar to electric arc furnace dust and solvents. In addition, batteries are subject to the Universal Waste standards, which facilitate the environmentally sound collection and proper recycling or treatment of these wastes. The management of hazardous wastes already subject to the Universal Waste standards is not expected to be impacted by the current DSW exclusions as wastes subject to full hazardous waste regulatory controls prior to the DSW final rule promulgation.

2.2.2 Hazardous Properties of HSMs: Solvents and Electric Arc Furnace Dust

This section provides an overview of the hazardous properties of the two HSMs that are the focus of this report: solvents and electric arc furnace dust. It discusses the media, exposure routes, and health effects to understand the hazardous properties of these HSMs and how they can impact human health and the environment. It then presents an overview of the health effects associated with solvents and electric arc furnace dust, including the specific health effects associated with selected chemicals they contain, including whether they are expected to present a fire or explosion hazard.

The chemicals used as solvents can generally be classified into two broad groups: halogenated volatile organics and non-halogenated volatile organics. The chemicals within these groups tend to share similar characteristics, manufacturing processes, uses, and health effects. Because these groups contain a variety of chemicals, this report identifies a single chemical from each group that is generally representative of the characteristics and health effects of the group, and describes the specific health effects for them. More detailed information about the health effects for other solvent chemicals can be found in other sources, such as EPA's Integrated Risk Information System (IRIS) at http://www.epa.gov/IRIS/ and the Agency for Toxic Substances and Disease Registry Web site (http://www.atsdr.cdc.gov/).

For electric arc furnace dust, the health effects are expected to be related to the toxic metals it contains. 40 CFR Part 261, Appendix VII, "Basis for Listing Hazardous Waste," indicates that electric arc furnace dust is listed as hazardous because of lead, hexavalent chromium, and cadmium. This report describes the health effects associated with each of these metals.

Other hazardous properties of other secondary materials commonly associated with damage cases, such as scrap metals, used oil, non-ferrous metals, mercury lamps and mercury-containing equipment, and lead-acid batteries are not a focus of this report because they are already covered by exclusions or special management standards when recycled, and their management is not expected to be impacted by the current DSW exclusions.

2.2.3 Media, Exposure Route, and Health Effects Hazard Associated with Recycling of HSM

Toxic wastes are characterized using risk assessment; therefore, this section uses terminology that is common in risk assessment. A risk assessment usually begins with hazard identification, which is the process of determining whether exposure to a chemical agent can cause an increase in the incidence of a particular adverse health effect (e.g., cancer, birth defects) and whether the adverse health effect is likely to occur in humans. Exposure assessment includes the identification of which media, such as soil, air, or water, might come into contact with humans or other receptors. The media affects the exposure routes, such as inhalation or skin contact, that should be considered. The exposure route affects the type of symptoms the exposed person or other receptor experiences. For example, contamination in air could result in inhalation exposures that have respiratory effects, while contamination in water could result in ingestions that have gastrointestinal effects. For each example hazard within a category, the most prevalent exposure media are discussed below, as well as the health effects associated with different exposure routes. The media, exposure routes, and health effects are important to determining the extent to which recycling under the current DSW exclusions impacts the communities in which HSM generation, transportation, and reclamation occur.

Exposure Media (air, water, and soil) - Accidents and improper handling of HSMs have the potential to contaminate water, air, and soil. Of the recycling-related damage cases, soil contamination occurred at 75% of the sites, making it the most common type of damage to environmental media. Groundwater contamination occurred at 46% of the sites, surface water contamination occurred at 27% of the sites, and air contamination occurred at 26% of the sites. Note that sites may be counted more than once in these results, since in many cases more than one type of damage occurred.[7]

Exposure Route - Exposure routes include inhalation, dermal (skin), eye, and ingestion (oral). Ingestion can include ingestion of contaminated produce from home gardens, or ingestion of toxic constituents that are bioaccumulated in fish. The frequency and duration of potential exposure are also an important consideration. For example, acute exposures are short term, high dose exposures, while chronic exposures are long term, lower dose exposures.

Exposure Routes by Media

Contaminated Soil:
- Dermal (skin contact with contaminated soil)
- Oral (ingestion of contaminated soil)
- Inhalation (volatilization of contaminants from soil)
- Eye (windblown dust, volatilization of contaminants from soil)

Contaminated Air:
- Inhalation (windblown dust)
- Eye (windblown dust)
- Dermal (skin contact with contaminated air or windblown dust)
- Oral (ingestion of contaminated food)

Contaminated Water:
- Oral (ingestion of contaminated water or aquatic food sources)
- Dermal (skin contact with contaminated water)
- Inhalation (volatilization of contaminants from water)
- Eye (volatilization of contaminants from water)

[7] EPA. 2012. *An Assessment of Environmental Problems Associated With Recycling of Hazardous Secondary Materials.*

Health Effects – Ignitable and reactive wastes pose physical hazards, such as explosion and fire, which have the potential to directly cause bodily harm. Explosions and fire also can create exposure pathways for chemical exposures and sources of environmental contamination. For example, toxic fumes from a fire can have effects on a population nearby and toxic releases from the event can result in longer term lower level exposures that may be related to chronic effects.

Toxic wastes also can cause other types of adverse human health effects, which EPA breaks into two broad categories: cancer and non-cancer. The non-cancer health effects can be classified according to what biological system or organ is affected; for example, developmental, reproductive, neurological, immune system, circulatory system, liver, gastrointestinal, or other effects. Health effects also can have clinical descriptions, such as blurred vision, nausea, and headache. In general, the sometimes extensive list of clinical symptoms can be grouped based on what biological system is being affected to cause the symptom set.

Solvents

Solvents may contaminate soil or groundwater from leaks, spills, or other releases. Because they tend to be volatile, they also are likely to be released to the air by advection and dispersion into the atmosphere. Solvents may cause exposure by all of the routes considered in this report, including inhalation, dermal (skin), eye, and ingestion (oral). Solvent chemicals may have both acute and chronic health effects, and may be ignitable or explosive, presenting fire hazards.

Solvents can generally be divided between halogenated and non-halogenated based on their use and potential hazards. For halogenated and non-halogenated solvents, the sections below describe the chemicals typically contained in them, and the hazards associated with an example that is representative of the type of solvent.

Halogenated Solvents

Agents - Halogenated solvents used in degreasing include:[8] tetrachloroethylene (PERC), trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons.

Dry cleaning solvents and brake cleaners include halogenated solvents, such as tetrachloroethylene (PERC), trichloroethylene, methylene chloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, 1,1,2-trichloroethane, and chlorobenzene.

Examples of Halogenated Solvents Uses:

- Brake cleaners
- Dry cleaning
- Food processing
- Household cleaners
- Metal cleaning
- Synthesis of other chemicals
- Water repellants
- Silicone lubricants
- Spot removers

Example agent - tetrachloroethylene (PERC).

Environmental Fate[9] – Tetrachloroethylene is volatile and releases can be airborne. When released into the subsurface, it may contaminate soil and groundwater. Releases to surface soil and water also may volatilize resulting in releases to the atmosphere. Soil and water bacteria will break it down slowly, so in

[8] http://web.mit.edu/environment/ehs/topic/rcra_ref/epa_nonspecific.html

http://www.hsia.org/

[9] http://www.npi.gov.au/substances/tetrachloroethylene/environmental.html

soil and subsurface water, it may last for months to years. When released into the atmosphere, it may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

Environmental Toxicity – Based on fish studies, tetrachloroethylene is expected to be toxic to aquatic life. It does bioaccumulate in fish to a limited extent. Chronic and acute effects on plants, birds, or land animals have not been determined, but appear to be low.

Acute Exposure Human Health Effects[10] –

- Inhalation – Irritating to the upper respiratory tract. Giddiness, headache, intoxication, nausea, and vomiting may follow the inhalation of large amounts, while massive amounts can cause breathing arrest, liver and kidney damage, and death. Concentrations of 600 parts per million (ppm) and more can affect the central nervous system after a few minutes.
- Ingestion – Not highly toxic by this route because of low water solubility. Used as an oral dosage for hookworm (1 to 4 ml). Causes abdominal pain, nausea, diarrhea, headache, and dizziness.
- Skin Contact – Causes irritation to the skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.
- Eye Contact – Causes irritation, redness, and pain.
- Aggravation of Pre-existing Conditions – Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of this substance. The use of alcoholic beverages enhances the toxic effects.

Chronic exposure human health effects – May cause liver, kidney, or central nervous system damage after repeated or prolonged exposures. Reasonably anticipated to be a human carcinogen based on animal studies.

Fire - Not considered to be a fire hazard, but becomes hazardous in a fire situation because of vapor generation and possible degradation to phosgene (highly toxic) and hydrogen chloride (corrosive). Vapors are heavier than air and collect in low-lying areas.

Explosion - Not considered an explosive hazard. Containers may explode, however, when involved in a fire.

Non-Halogenated Solvents

Agents[11] - Paint thinners include: acetone, xylene, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl, ketone, n-butyl alcohol, cyclohexane, and methanol.

Carburetor dip cleaner includes: cresols, cresylic acid, and nitrobenzene.

Lacquer thinners include: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane.

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[10] http://www.jtbaker.com/msds/englishhtml/t0767.htm; http://www.epa.gov/iris/subst/0106.htm; http://www.epa.gov/ttn/atw/hlthef/tet-ethy.html; and

http://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=265&tid=48

[11] http://www.dep.state.fl.us/northeast/waste/HWdeterminations.htm

Example agent - benzene.

Environmental Fate[12] – When released to the soil or water, benzene will rapidly begin to volatilize. However, benzene also migrates in soil and in groundwater. Its airborne levels can be reduced by rain or water spray. Benzene in the atmosphere will photo-degrade with a calculated half-life of 13.4 days. This is accelerated in polluted atmospheres containing nitrogen or sulfur oxides. By-products include phenol, nitrophenols, nitrobenzene, formic acid, and peroxyacetyl nitrate. It is a "precursor" hydrocarbon leading to the formation of photochemical smog. Benzene biodegrades in soils and groundwaters (half-life 16-28 days) under aerobic conditions. Limited degradation occurs under anaerobic conditions.

Environmental Toxicity[13] – Benzene has high acute toxic effects on aquatic life. Long-term effects on marine life can mean shortened lifespan, reproductive problems, lower fertility, and changes in appearance or behavior. It can cause death in plants and roots, and damage to the leaves of many agricultural crops.

Acute exposure human health effects[14] –

- Inhalation – Excessive inhalation may result in heartbeat irregularities and adverse central nervous system effects, including headache, sleepiness, dizziness, nausea, loss of coordination, and, in extreme conditions, coma and/or death. Additional adverse inhalation effects also may include long-term damage to the blood forming system, kidney and liver damage, and/or cancer (leukemia).
- Ingestion – Ingestion of benzene may result in adverse central nervous system effects, including headache, sleepiness, dizziness, nausea, loss of coordination, and, in extreme conditions, coma and/or death. Ingestion also may cause kidney and liver damage and blood disorders. Small amounts, if aspirated into the lungs, may cause mild to severe pulmonary injury.
- Skin – Benzene may be rapidly absorbed through the skin. Prolonged and/or repeated skin contact may cause mild to severe irritation/dermatitis and chemical blistering. Prolonged contact also may cause skin sensitization and secondary skin infections.
- Eye – Contact with liquid and high concentrations of vapors are irritating to the eyes.

Chronic exposure human health effects – Long-term exposure has been associated with certain types of leukemia. The International Agency for Research on Cancer (IARC) and the Occupational Safety and Health Administration (OSHA) consider benzene to be a human carcinogen. EPA has classified benzene as a Group A, known human carcinogen for all routes. Chronic exposures have been reported to cause bone marrow abnormalities and adverse blood effects, including anemia. Progressive deterioration of the hematopoietic function expressed as a decrease in absolute lymphocyte count is the most sensitive indicator of benzene exposure.

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[12] http://www.npi.gov.au/substances/benzene/environmental.html

[13] http://www.npi.gov.au/substances/benzene/environmental.html

[14] http://www.novachem.com/productservices/docs/Benzene_MSDS_EN.pdf

http://www.atsdr.cdc.gov/ToxProfiles/tp.asp?id=40&tid=14

http://www.cdc.gov/exposurereport/data_tables/Benzene_ChemicalInformation.html

Benzene also may cause fetotoxicity and teratogenicity. Chromosomal aberrations have been noted in animal tests.

Fire and Explosion - Fire and container explosion hazards are serious when benzene is exposed to heat or flame. Vapor is heavier than air and may spread long distances. Distant ignition and flashback are possible. Flammable liquid and vapor can accumulate static charge which can form an ignitable vapor-air mixture in a storage tank. Benzene will float on water and may travel to distant locations and/or spread fire.

Electric arc furnace dust

Agents[15]- Electric arc furnace dust is comprised of a variety of metals, including iron, cadmium, zinc, calcium oxide, magnesium oxide, lead, silicone, manganese, copper, chromium, and aluminum. This review focuses on electric arc furnace dust generally, as well as the hazards of hexavalent chromium, lead, and cadmium because these are the constituents for which electric arc furnace dust was listed as a hazardous waste. The specific composition of electric arc furnace dust varies depending upon the type of material production from which it was generated (e.g., carbon steel or stainless steel manufacturing) and furnace additives.

Environmental Fate[8] – Based on its various constituents, electric arc furnace dust is expected to be hazardous to the environment, and toxic to fish, animals, and plants. It is also likely to persist in the environment for a long time, due to the insoluble and non-biodegradable nature of the toxic metals it contains. Individual constituents (e.g., cadmium) may bioaccumulate in organisms via dissolved metal in the water column or through consumption of prey containing bioaccumulated metals.

Acute exposure human health effects[16] –

- Inhalation – Respiratory tract irritation and/or sensitization (development of an allergy or sensitivity to a substance) may occur from acute inhalation exposure.
- Ingestion – Though ingestion is unlikely, it can lead to abdominal pain, vomiting, fever, and diarrhea. Ingestion of large amounts also can elevate lead levels in the body; however, most health effects occur only after prolonged exposure to lead (see below).
- Eye – Electric arc furnace dust can cause irritation or inflammation of the eye; rubbing the eye upon exposure can damage the cornea.
- Dermal – Electric arc furnace dust can cause irritation, skin lesions, and/or allergic reactions of the skin.

Chronic exposure human health effects – Excessive, repeated exposure to electric arc furnace dust may cause allergic sensitization in the form of dermatitis and asthma, lung inflammation and damage (e.g., pneumonia, bronchitis, and siderosis [chronic inflammation of the lung]), nasal perforation and nasal cavity damage, eye inflammation, permanent central nervous system damage, kidney damage, liver damage, gout (inflammation of the joints), and lead poisoning.

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[15] Cascade Steel Rolling Mills, Inc. 2001. Material safety data sheet: Electric arc furnace dust. Available online at http://www.cascadesteel.com/documents/mill/msds/eaf_dust.pdf.

[16] Gerdau Amisteel. 2008. Material safety data sheet: steel mill electric arc furnace dust. Available online at http://www.gerdauameristeel.com/products/msds/docs/Mill-English/Steel%20Mill%20Electric%20Arc%20Furnace%20Dust%20MSDS%20(NA)%2012-8-08.pdf

The carcinogenicity of electric arc furnace dust as a whole has not been determined, though hexavalent chromium may cause cancer. Furthermore, a study by Garaj-Vrhovac[17] et al. indicates that electric arc furnace dust can cause deoxyribonucleic acid (DNA) damage.

Fire[18] – Electric arc furnace dust is not flammable.

Hexavalent Chromium[19]

Acute exposure human health effects –

- Inhalation – Chronic exposure via inhalation to hexavalent chromium may develop asthma or other respiratory problems, such as coughing, wheezing, chronic sneezing, bronchitis, and nasal perforation (holes). Intermediate and chronic occupational exposure to hexavalent chromium may cause death due to noncancerous respiratory disease. Occupational (work) exposure to hexavalent chromium can cause abdominal pain, nausea, and vomiting, most likely due to ingestion from breathing through the mouth. Workers exposed to hexavalent chromium have experienced severe liver effects, such as cirrhosis. Eye exposure to aerosols or dusts may cause eye effects, such as conjunctivitis (inflammation of the inner membrane of the eyelids). High-level acute exposure to hexavalent chromium may lead to dizziness, headache, and weakness. Workers exposed to hexavalent chromium have experienced changes in hormones and complications during pregnancy. Occupational exposure to hexavalent chromium also may cause respiratory system cancers, primarily in the bronchi and nose.
- Ingestion – Ingestion of hexavalent chromium may lead to death. Subjects who died of oral exposure experienced various symptoms, including respiratory effects, such as severe bronchitis and pulmonary edema (fluid in the lungs), cardiopulmonary effects, such as lowered blood pressure and heart rate, and gastrointestinal effects, such as nausea and vomiting. Acute ingestion may also affect the blood, leading to effects, such as anemia. Kidney damage and liver damage (evidenced by symptoms, such as jaundice) may occur upon acute, high-level oral exposure. In humans, evidence of cancer from oral exposure is mixed, while hexavalent chromium has caused cancer in animals. Chronic dermal exposure may lead to ulcerated skin, dermatitis, and burns.

Lead

Acute exposure human health effects –

Generally, the toxicity of lead does not depend on the route of exposure (e.g., inhalation or ingestion). Chronic exposure to high levels of lead may cause cerebrovascular disease, increased blood pressure and other cardiovascular problems, gastrointestinal effects, anemia (a blood disorder with symptoms, such as weakness and fatigue), dental caries (cavities) in children,

[17] Garaj-Vrohovac, V; Oreščanin, V; Ruk, D; et al. 2008. In vitro assessment of genotoxic effects of electric arch furnace dust on human lymphocytes using the alkaline comet assay. J Environ Sci and Health Part A 44:279-287.

[18] Cascade Steel Rolling Mills, Inc., 2001

[19] ATSDR. 2009. Toxicological profile for chromium. Available online at http://www.atsdr.cdc.gov/ToxProfiles/TP.asp?id=62&tid=17#bookmark07.

kidney effects, lowered intelligence quotient (IQ) and other neurotoxic effects (e.g., dizziness, memory loss), and hormonal effects.[20]

Cadmium[21]

Acute exposure human health effects –

- Inhalation – Short-term, high-level inhalation exposure to cadmium can cause death in humans several days after exposure, ultimately caused by respiratory failure or other respiratory disease. In general, inhalation exposure to large amounts of cadmium causes extreme respiratory irritation, which initially may begin with mild irritation of throat and mucous membranes, but up to 10 hours later becomes more severe with flu-like symptoms, such as chills and cough. Several days later, symptoms include wheezing, persistent cough, malaise, anorexia, nausea, and abdominal pain. The initial flu-like symptoms do not occur with a low-level, chronic exposure to cadmium. However, chronic inhalation exposure over years can lead to decreases in lung function, emphysema and dyspnea (shortness of breath), or possibly death. Lung function may recover after time, if exposure is removed. There is some evidence that bones may be affected (e.g., through the development of osteoporosis) after chronic exposure to cadmium. Cadmium is strongly linked to kidney effects when exposure levels are high, while there is weak evidence that cadmium can affect the immune system. Animal studies show that inhaled cadmium can affect the offspring of exposed mothers by lowering their body weight, their ability to survive, and their neurobehavioral function (e.g., motor activity). Long-term exposure to cadmium may cause cancer, most likely in the lung.
- Ingestion – Ingesting large quantities of cadmium can cause death. High oral cadmium exposure has been associated with cardiovascular effects, such as heart attack and high blood pressure. Human and animal studies show that large ingested amounts of cadmium cause gastrointestinal disturbances, such as nausea, vomiting, and abdominal cramps. Cadmium ingestion can cause anemia if dietary iron intake is low. Oral exposure is also associated with bone and kidney effects and neurological effects, such as lowered IQ. Reproductive effects similar to those seen after inhalation exposure may occur, but information on effects in offspring of orally-exposed animals/humans is limited. Most cancer studies have not found an increase in cancer among people or animals exposure orally to cadmium. Cadmium has been shown to cause DNA damage.

2.2.4 Hazards Associated with Recycling of HSM

This section describes some of the general activities that facilities commonly perform in handling HSMs, as well as some of the potential exposure media that may be associated with them. These hazards may impact the communities in which these facilities are located. The facilities described in this section include:

- Generators of HSM;

[20] ATSDR. 2007. Toxicological profile for lead: Health effects. Available online at http://www.atsdr.cdc.gov/toxprofiles/tp13-c3.pdf.

[21] ATSDR. 2009. Toxicological profile for cadmium: Health effects. Available online at http://www.atsdr.cdc.gov/toxprofiles/tp5-c3.pdf

- Transporters of HSM; and
- Intermediate and reclamation facilities of HSM.

Note that the descriptions in this section are intended to be general and do not capture all of the different handling practices and hazards that may occur at a given site.

This section also uses the hazard information from Section 2.2.2 of this report to identify potential hazards associated with the activities identified in this section. These hazards are being considered independently of any regulation to mitigate the potential effects of these hazards. Regulatory considerations are discussed in Section 2.3 of this report.

Potential hazards for solvents and electric arc furnace dust are summarized in Table 2.2.

Facility Type	HSM	Fire	Explosion	Soil	Water	Air	Particulate Wind Dispersal
Generators	Solvents	✓	✓	✓	✓	✓	
	Electric Arc Furnace Dust			✓	✓		✓
Transporters	Solvents	✓	✓	✓	✓	✓	
	Electric Arc Furnace Dust			✓	✓		✓
Intermediate/ reclamation facilities	Solvents	✓	✓	✓	✓	✓	
	Electric Arc Furnace Dust			✓	✓		✓

Generators

Activities

A generator may generate HSM from a variety of activities, such as manufacturing, processing, cleaning, degreasing, and service industries. Figure 1 shows the most commonly recycled HSMs. Generators may temporarily accumulate HSM at or near the point of generation (e.g., in containers) before transferring them to another location onsite (e.g., to centralized accumulation), or they may be transferred to another location onsite immediately after it is generated. HSM may be transferred onsite using manual equipment (e.g., a hand trolley or cart), machinery (e.g., forklift or truck), or piping, tanks and other interconnected equipment or means of conveyance.

At centralized accumulation areas onsite, HSM may be held in containers, tanks, or other units. Various operations also are performed (e.g., opening and closing containers to add HSM, filling tanks using piping or portable equipment). Periodically, off-site transporters will collect the HSM for off-site transportation. Some generators do not operate centralized accumulation areas; rather, the off-site transporter collects the HSM at or near the point of generation.

Some generators reclaim their HSM onsite. For solvents, distillation is the process used most frequently to recycle spent solvents. The process separates chemicals by the addition of heat, which causes the more volatile compounds, typically the solvent to be recovered, to vaporize. The vaporized solvent is then condensed back into liquid and reused. This process results in a residue that may contain solvents or other chemicals and may require subsequent management as a hazardous waste. Systems used for on-site distillation may include fixed or mobile trailer systems brought to the facility by a vendor.

When electric arc furnace dust is recycled onsite, the recycling typically consists of collecting electric arc furnace emissions in a bag filter, conveying dust to a hopper, physically processing it by briquetting and feeding it back into the electric arc furnace that generated the waste. Prior to recycling, it may be stored in bins, drums, or other containers.

Potential Hazards

Following are possible hazards associated with the generator activities described above for solvents and electric arc furnace dust:

Solvents

- Fires and explosions. Solvent wastes, especially non-halogenated solvents, are often highly flammable and can ignite to create fires and explosions. Because solvents also tend to be volatile, air emissions may ignite to cause fires and explosions if ignited, resulting in injury or property damage. Fires and explosions also may evolve other toxic or hazardous gasses.
- Volatile organic air emissions during accumulation and transportation onsite. Under certain conditions, solvents held in tanks or containers could volatilize and escape to the atmosphere through open container lids, uncovered tanks, leaks (e.g., from valves and pumps) and vents, container breathing (a process that can cause air containing solvents to move out of a container or tank as the air in a container expands and contracts due to changes temperature), and waste transfer.
- Wind dispersal of particulate matter during accumulation and transportation onsite. Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). Soil or other solid media contaminated with solvents may be susceptible to wind dispersal.
- Soil, groundwater, and air contamination from liquid releases during accumulation and transportation onsite. During accumulation, a number of factors could lead to a release, such as tank overflows or overtopping; leaks from damaged or deteriorated containers or tanks; complete failure of tank or container integrity; and run on/run off from the storage area. During transfer, releases could include spills, overflows, and leaks from human error or deterioration of transport equipment (e.g., leaking pipes). Solvent wastes are susceptible to such releases because they are commonly in la liquid state.
- Air emissions from reclamation. The solvent reclamation processes described above use the addition of heat to accomplish desired chemical reactions (e.g., vaporization of organics, melting of metals). These processes can produce air emissions from various locations, such as stacks, equipment leaks, and vents.

Electric Arc Furnace Dust

- Wind dispersal of particulate matter during accumulation and transportation onsite. Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). Electric arc furnace dust, in particular, might be susceptible to wind dispersal during accumulation or transfer, because it is often present in dust form.

  For example, one of the damage cases identified in the Environmental Problems Study identifies electric arc furnace dust as a potential source of contamination because the electric arc furnace dust waste pile at a manufacturing facility did not have wind controls.[22] Airborne exposure to lead, chromium, or cadmium particulate escaping from mismanaged emission control dusts is another pathway of concern.[23] These minute particles could be dispersed by wind if waste dusts are piled in the open.[24] As a result, the health of persons who inhale the airborne particulates would be jeopardized.[25] Note that, prior to its listing as a hazardous waste, electric arc furnace dust was stored in waste piles.[26] Although EPA does not believe that storage of electric arc furnace dust in waste piles is not a common practice currently, the exclusions promulgated in the 2008 Final Rule might result in such storage absent the legitimacy criteria.

- Soil and groundwater contamination may occur during accumulation and transportation onsite. During transfer, spills due to human error or deterioration of transport equipment also may occur.

Transporters

Activities

HSM may be shipped offsite by a variety of modes (e.g., highway, rail, water). The most prevalent is by highway using a wide variety of trucks (e.g., vacuum trucks or trailers, pump tankers, vans, dump trucks, tractor trailers). A transporter may pick up loads from multiple generators (i.e., less than truck load shipments) or it may pick up a full truckload from a single generator. During a shipment, a transporter may perform various activities, such as consolidating, re-routing, or transferring shipments.

Potential Hazards

Following are possible hazards associated with the transportation activities described above for solvents and electric arc furnace dust:

General (both solvents and electric arc furnace dust)

- Vehicle air emissions. Transportation vehicles emit pollution as a result of combustion of fuel and fuel evaporation. Primary air pollutants include carbon monoxide,

[22] The site was operational from 1970 until the late 1980's and produced liquid and dry zinc sulfate fertilizers utilizing electric arc furnace dust from the primary production of steel as a raw material.

[23] K061 Listing document, p. 11.

[24] Ibid.

[25] Ibid.

[26] K061 Listing document.

hydrocarbons, nitrogen oxides, and particulate matter. These pollutants can lead to adverse health effects in children and adults, and worsen environmental problems (e.g., increasing the amount of greenhouse gases in the atmosphere).

- Traffic accidents. Accidents involving trucks containing HSM may result in releases of the HSM. This can result in contamination of soil and water, air emissions, fires, and explosions. In addition, accidents during the transport of HSM may cause fatalities, injuries, and property damage ,even if the HSM is not released.
- Traffic congestion and noise. Transportation vehicles can contribute to increased levels of traffic congestion and noise along the transportation route. These effects can worsen the quality of life of people working or residing nearby.

Solvents

- Fires and explosions. Solvent wastes are often flammable, and can ignite to create fires and explosions. Because solvent HSM also tends to be volatile, air emissions may cause fires and explosions if ignited, causing injury or property damage. Fires and explosions also may evolve other toxic or hazardous gasses.
- Volatile air emissions. During loading, unloading, and transport, volatile air emissions may escape from valves, pumps, hoses, tank trucks, drums, and other containers. Under certain conditions, solvents held in tank trucks or drums could volatilize and escape to the atmosphere through open container lids, uncovered tanks, leaks and vents, container breathing (a process that can cause air containing solvents to move out of a container or tank as the air in a container expands and contracts due to changes in temperature), and container filling (as the air in a container is displaced by the liquid added to the container). Under some conditions, volatile air emissions may ignite to cause fires and explosions.

Electric Arc Furnace Dust

- Air emissions of metals. During the electric arc furnace dust recycling process, the high temperatures used may cause volatile metals, such as lead and zinc, to volatilize and be emitted in the flue gas from the facility.
- Wind dispersal of particulate matter during loading and transportation. Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). Electric arc furnace dust, in particular, might be susceptible to wind dispersal during loading or transfer, because it is often present in dust form. Airborne exposure to lead, chromium, or cadmium particulate escaping from mismanaged emission control dusts is another pathway of concern.[27] These minute particles could be dispersed by wind if waste dusts are improperly handled during transportation.[28] As a result, the health of persons who inhale the airborne particulates would be jeopardized.[29]

[27] K061 Listing document, p. 11.

[28] Ibid.

[29] Ibid.

Intermediate and Reclamation Facilities

Activities

Intermediate and reclamation facilities periodically receive HSM from off-site sources. The HSM may be placed in storage units at the facility until it is ready for reclamation or transfer to a reclamation facility. Facilities may store the HSM in containers, tanks, or other units in accordance with applicable regulations.

In addition, processing of the HSM may be performed before reclamation. This may include, for example, aggregation/consolidation of the HSM to facilitate the reclamation process, filtration of other physical processes to remove impurities, or other processing steps. This may be performed in tanks, containers, or other equipment. HSM may be transported from on-site storage and processing units to the reclamation unit using machinery (e.g., trucks) or pipes, tanks, and other equipment.

For solvents, distillation is the process used most frequently to recycle spent solvents. The process separates chemicals by the addition of heat, which causes the more volatile compounds, typically the solvent to be recovered, to vaporize. The vaporized solvent is then condensed back into liquid and reused. This process results in a residue that may contain solvents or other chemicals, and may require subsequent management as a hazardous waste.

Off-site management of electric arc furnace dust is most frequently conducted using processes to separate and recover metals, such as High Temperature Metals Recovery (HTMR). In the HTMR process, electric arc furnace dust is mixed with coal or coke, the mixture is pelletized, and heated in a furnace to reduce iron and nickel oxides. The resulting material is then fed to an electric arc furnace, where volatile metals, such as lead and zinc, are removed from the flue gas, and metal and slag are separated and removed.

Potential Hazards

The hazards for off-site recycling facilities are generally the same as those for on-site recycling processes, which are described in Section 2.2.1 of this report.

Solvents

- Fires and explosions. Solvent wastes are often flammable, and can ignite to create fires and explosions. Because solvent HSM also tends to be volatile, air emissions may cause fires and explosions if ignited, causing injury or property damage. Fires and explosions may also evolve other toxic or hazardous gasses.
- Volatile organic air emissions during accumulation and transportation on-site. Under certain conditions, solvents held in tanks or containers could volatilize and escape to the atmosphere through open container lids, uncovered tanks, leaks and vents, container breathing (a process that can cause air containing solvents to move out of a container or tank as the air in a container expands and contracts due to changes in temperature), and container filling (as the air in a container is displaced by liquid added to the container). Under some conditions, volatile air emissions may ignite to cause fires and explosions.
- Wind dispersal of particulate matter during accumulation and transportation on-site. Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong

wind gusts). Soil or other solid media contaminated with solvents may be susceptible to wind dispersal.

- Soil, groundwater, and air contamination from liquid releases during accumulation and transportation on-site. During accumulation, a number of factors could lead to a release, such as tank overflows or overtopping, leaks from damaged or deteriorated containers or tanks, complete failure of tank or container integrity, and run on/run off from the storage area. During transfer, releases could include spills, overflows, and leaks from human error or deterioration of transport equipment (e.g., leaking pipes). Solvent wastes are susceptible to such releases since they are commonly in a liquid state.
- Air emissions from reclamation. The solvent reclamation processes described above use the addition of heat to accomplish the desired chemical reactions (e.g., vaporization of organics, melting of metals). These processes can produce air emissions from various locations, such as stacks, equipment leaks, and process vents.

Electric Arc Furnace Dust

- Wind dispersal of particulate matter during accumulation and transportation on-site. Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). Electric arc furnace dust in particular might be susceptible to wind dispersal during accumulation or transfer, because it is often present in dust form. Airborne exposure to lead, chromium, or cadmium particulate escaping from mismanaged emission control dusts is another pathway of concern.[30] These minute particles could be dispersed by wind if waste dusts are piled in the open or placed in unsecure landfills.[31] As a result, the health of persons who inhale the airborne particulates would be jeopardized.[32] Note that, prior to its listing as a hazardous waste, electric arc furnace dust was typically dumped in the open at on-site or off-site disposal facilities (i.e., in waste piles).[33] However, electric arc furnace dust is no longer managed in waste piles.
- Soil and groundwater contamination may occur. For example, prior to its listing as a hazardous waste, electric arc furnace dust waste was typically disposed of by being dumped in the open; thus, posing a realistic possibility of migration of chromium, lead, and cadmium to underground drinking water sources. [34] During transfer, spills due to human error or deterioration of transport equipment also may occur.

References:

EPA. 2014. *An Assessment of Environmental Problems Associated With Recycling of Hazardous Secondary Materials*.

[30] K061 Listing document, p. 11.

[31] Ibid.

[32] Ibid.

[33] K061 Listing document, p. 5.

[34] K061 Listing document, p. 3.

EPA. 2008. Definition of Solid Waste Final Rule. Federal Register Volume 73 Page 64663. October 30, 2008. http://www.epa.gov/wastes/hazard/dsw/index.htm

EPA. Hazardous Waste List
http://www.epa.gov/epawaste/hazard/wastetypes/listed.htm
(link to 40 CFR 261.31 contains specific chemicals)

CDC. 2010a. National Report on Human Exposure to Environmental Chemicals, Halogenated solvents -
http://www.cdc.gov/exposurereport/data_tables/HalogenatedSolvents_ChemicalInformation.html
Other halogenated solvents -
http://www.cdc.gov/exposurereport/data_tables/OtherHalogenatedSolvents_ChemicalInformation.html

ATSDR. Toxic Substances Portal
Main page to access Tox Profiles
http://www.atsdr.cdc.gov/toxprofiles/index.asp#bookmark05

Source: Delisting Petition for Treated K061, Max Environmental Technologies, Inc. (Hazardous Waste Management Services), Yukon, PA, CEC Project 210966, 11/2003.
http://www.depweb.state.pa.us/pubpartcenter/lib/pubpartcenter/EQB/2004/yukon_delisting_petition.pdf

2.3 Regulatory Comparison - Summary of Comparative Results by Facility Type and Scenario

This section presents the results of EPA's comparison of the full RCRA Subtitle C hazardous waste regulations to the federal regulations applicable to facilities operating under the current DSW exclusions. This comparison also includes the Clean Air Act (CAA); the Clean Water Act (CWA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Emergency Planning and Community Right-to-Know Act (EPCRA); the Hazardous Materials Transportation Act (HMTA); and the Occupational Safety and Health Act (OSH Act). EPA compared the regulatory requirements under each of the scenarios described in Section 2.1 of this report for the three types of facilities that could manage HSMs under the current DSW exclusions:

1. Generators;
2. Transporters; and
3. Intermediate and Reclamation Facilities.

This section describes the key regulatory differences applicable to each type of facility (i.e., generator, transporter, and intermediate and reclamation facilities) under hazardous waste regulations and current DSW exclusions, identifies the possible consequences of these differences, and indicates, under which of the eight scenarios these differences and consequences could occur. It also notes where the differences are dependent on whether the DSW exclusion is the TBE or the GCE. The comparative results are presented in a table that summarizes the regulatory differences and consequences by facility type and scenario.

This section only summarizes the key regulatory differences that may lead to a change in impacts to human health and the environment under the current DSW exclusions. A more detailed comparative analysis of the regulatory provisions is presented in Appendix A.

DSW Regulations Compared to Full Subtitle C Regulation

Resource Conservation and Recovery Act (RCRA) Definition of Solid Waste Exclusions
- Generator-Controlled Exclusion
- Transfer-Based Exclusion

Clean Air Act (CAA)
- CAA Title V Air Quality Permitting Process
- CAA Standards for Area Sources Not Subject to Title V Permit
- Chemical Accident Prevention Provisions

Clean Water Act (CWA)
- Oil Pollution Prevention

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Release Notification (RQs)

Emergency Planning and Community Right-to-Know Act (EPCRA)
- Release Notification

Hazardous Materials Transportation Act (HMTA)
- Overview and Applicability
- Hazardous Materials Regulations
- Transportation of Hazardous Materials
- Driving and Parking Rules

Occupational Safety and Health Act (OSH Act)
- Process Safety Management of Highly Hazardous Chemicals
- Hazardous Waste Operations and Emergency Response
- Hazard Communication

DSW Scenarios

1. Generator continues current recycling practices
2. Generator switches from off-site disposal to on-site reclamation
3. Generator switches from off-site disposal to off-site recycling under the control of the generator
4. Generator switches from off-site disposal to off-site recycling at a RCRA-permitted facility
5. Generator switches from off-site disposal to off-site recycling at a U.S. facility without a RCRA permit
6. Generator switches from off-site disposal to exporting for recycling
7. Generator switches from off-site recycling at a facility without a permit to another type of recycling under the current DSW exclusions
8. Generator switches from off-site recycling at a RCRA-permitted facility or exporting waste for recycling to another type of recycling under the current DSW exclusions

Generators

Following is a discussion of the key differences and consequences in the federal regulation of generators of hazardous waste and generators of HSM under the DSW exclusions.

The DSW exclusions allow generators to accumulate HSM onsite for longer periods of time than the hazardous waste regulations, which could lead to greater quantities being accumulated at any given time (All scenarios).[35] The hazardous waste regulations and the DSW exclusions set forth time limits for generators to accumulate HSM onsite. Specifically, the hazardous waste regulations require generators to ship hazardous waste offsite every 90 or 180/270 days (depending on generator size and type of activity involved), whereas the DSW exclusions require generators to recycle (or ship for recycling) 75% of their HSM within one calendar year. This means that generators under the DSW exclusions could accumulate 75% of their HSM onsite for a calendar year and 25% for potentially longer periods. In addition, the DSW exclusions do not include a quantity limit for on-site accumulation, in contrast to the hazardous waste regulations for small quantity generators (SQGs).

The DSW exclusions require that material be "contained," but do not prescribe specific technical standards for containment in contrast to the hazardous waste regulations (All scenarios). The hazardous waste regulations and the DSW exclusions require containment of HSM in the unit. The hazardous waste regulations prescribe specific design, installation, operating, and closure standards to address containment (e.g., storage limits, standards for container and tank design, operation, and inspection frequency). Prescriptive requirements tend to facilitate inspection and enforcement, which helps to prevent releases. The DSW exclusions do not include prescriptive requirements. The DSW exclusions allow more flexibility in how HSMs can be contained. Some generators and facilities under the DSW exclusions may choose to follow the hazardous waste regulations for their units, particularly if they operate other units that are subject to the hazardous waste regulations.

In addition, the GCE allows generators to manage their HSM in land-based units (e.g., surface impoundments, piles), but the exclusion does not prescribe containment standards. The

[35] For generators that switch from off-site management to on-site recycling (Scenarios 2 and 8), there is the possibility that there might be smaller volumes of HSM accumulated, if recycling can occur more quickly than accumulation of enough material for a shipment to be sent offsite.

hazardous waste regulations do not allow generators to manage hazardous waste in land-based units, unless they have a permit or interim status, which prescribe facility and unit design, operating and other standards.

The DSW exclusions do not include requirements for generators to control air emissions from their operations, in contrast to the hazardous waste regulations (All scenarios). While the DSW exclusions require containment of the HSM, they do not include explicit requirements for control of air emissions. The hazardous waste regulations prescribe specific design, operating, and other standards for controlling air releases from process vents, equipment leaks, and storage units by large quantity generators, whereas the DSW exclusions do not include such prescriptive requirements.[36]

Some generators operating under the DSW exclusions may be required to get a permit under the CAA regulations. Where facilities are subject to the CAA, requirements to control air emissions are comparable to the hazardous waste regulations. However, facilities not subject to the CAA permitting requirements would not be required to provide a comparable level of control for air emissions from process vents, leaks, and storage units as the hazardous waste regulations.

Regulatory Requirements Considered

- Legitimate Recycling
- Storage Time Limit
- Containment
- Air Emissions
- Emergency Preparedness and Response
- Personnel Training
- Reporting and Recordkeeping
- Offsite Transportation
- Exports
- Security
- Financial Assurance
- Requirement for a Permit
- Public Involvement

As a result of the DSW exclusions, the hazardous waste generators status of some generators may change under the hazardous waste regulations and be subject to less stringent hazardous waste regulation (All scenarios). Under the hazardous waste regulations, a site that generates hazardous waste must determine its generator status by counting the quantity of hazardous waste that it produces during any given calendar month:

- It is a large quantity generator (LQG) if it generates 1,000 kg or more of hazardous waste in a calendar month, more than 1 kg of acute hazardous waste in a calendar month, or more than 100 kg of any residue, soil, waste or other debris resulting from the cleanup of any acute hazardous waste.
- It is a small quantity generator (SQG) if it generates greater than 100 kg but less than 1,000 kg of hazardous waste in a calendar month.
- It is a conditionally exempt small quantity generator (CESQG) if it generates 100 kg or less of hazardous waste in a calendar month, 1 kg or less of acute hazardous waste in a

[36] Air emission regulations for process vents, equipment leaks, and storage units are applicable to 90-day generators/TSDFs managing hazardous secondary materials having a time-weighted, annual average total organic concentration of 10 parts per million by weight (ppmw) or greater, organic concentrations of at least 10 percent in contact or contained in "equipment" for at least 300 hours/calendar year, and/or an average volatile organic concentration equal to or exceeding 500 ppmw, respectively. While spent solvents are expected to equal or exceed these thresholds triggering organic air emission controls, it is highly unlikely units handling K061 will be subject.

calendar month, or 100 kg or less of any residue, soil, waste or other debris resulting from the cleanup of any acute hazardous waste.

LQGs are generally subject to more stringent requirements than SQGs. For example, LQGs must prepare and follow a contingency plan for emergencies, conduct recurring personnel training on emergency procedures, and comply with the full breadth of tank systems standards and air emission controls as applicable, whereas SQGs do not. SQGs are subject to more stringent requirements than CESQGs, who are exempt from the hazardous waste regulation, provided they meet certain requirements.

A generator operating under a DSW exclusion would not be required to count its excluded HSM in determining its generator status under the hazardous waste regulations. As a result, the generator may change to a different status (e.g., from LQG to SQG or CESQG) because it would have less hazardous waste to count and therefore, would be subject to less stringent hazardous waste requirements.

Generator on-site reclamation may be less stringently regulated under the GCE than the hazardous waste regulations (Scenarios 1, 2, and 8). The hazardous waste regulations require LQG reclaimers to comply with the air emission controls (e.g., for process vents on reclamation units). In addition, generators that reclaim hazardous waste onsite are required to obtain a permit if they store the waste for longer than 90 days for LQGs, or 180/270 days for SQGs (depending on type of activity involved), pending reclamation. The permitting process requires public involvement. The GCE does not include prescriptive requirements for air emissions; rather it requires that the material be "contained." It also does not require a permit or public involvement. In addition, it allows generators to manage their HSM in land-based units without a permit or interim status, unlike the hazardous waste regulations, which require a permit or interim status for the management of hazardous waste in land-based units.

The hazardous waste regulations and TBE require comparable procedures for exports (Scenario 1). The hazardous waste regulations require an exporter of hazardous waste to fulfill the notice-and-consent requirements prior to export, submit an annual report summarizing export activities, and keep specified records. The TBE also requires generators to perform notice-and-consent, annual reporting, and recordkeeping. It also requires generators to perform reasonable efforts to audit the reclaimer. Note that the GCE does not address exports because it requires that the material be generated and reclaimed within the U.S. and territories.

Some generators may switch from off-site reclamation or treatment/disposal at a RCRA-permitted facility to reclamation under the GCE, which does not require a permit (Scenarios 2, 3, and 8). Some generators may divert their HSM from off-site reclamation or treatment then disposal at a RCRA-permitted facility to on-site reclamation. RCRA-permitted facilities are subject to prescriptive standards/conditions covering the design, construction, operation, financial assurance, emergency preparedness, and closure of the facility. They also are subject to public involvement in the permitting process. The GCE does not require prescriptive standards, a permit, or public involvement. In addition, it allows generators to manage their HSM in land-based units without a permit or interim-status. Reclaimers and treatment and disposal facilities must have a permit to manage hazardous waste in land-based units.

The DSW exclusions require all generators to notify EPA of their HSM generation and management activities biennially, whereas the hazardous waste regulations require

biennial reporting only for LQGs (All Scenarios). The hazardous waste regulations and DSW exclusions have comparable requirements for initial and biennial submittals in regard to frequency and types of information submitted. However, the DSW notification requirement applies to generators regardless of size. The biennial reporting requirement in the hazardous waste regulations applies only to LQGs. Notifications or other types of reporting helps the regulatory agency to plan and prioritize inspections, making enforcement more effective and potentially increasing compliance.

Transporters

Following is a discussion of the key differences and consequences in the federal regulation of hazardous waste shipments and shipments of DSW-excluded HSMs.

Off-site transport of DSW-excluded material that qualifies as a DOT hazardous material is generally subject to transportation-related regulation comparable to hazardous waste shipments (Scenarios 1, 3, 4, 5, 6, 7, and 8). The DOT regulations set forth requirements for DOT hazardous material shipments in regard to the use of shipping papers, packaging, labeling, marking, placarding, parking, and driving. The DOT regulations apply to all hazardous wastes, as well as other materials, including commercial products, that qualify as a DOT "hazardous material."[37] A material qualifies as a DOT hazardous material if it: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR 172.101,[38] or (3) meets one or more of the hazard classifications (e.g., flammable liquid).

Following is a further discussion of the DOT requirements with regard to the GCE and the TBE:

- GCE. Prior to and during off-site transport, hazardous HSMs that qualify as a DOT hazardous material would be subject to comparable transportation requirements as hazardous waste in regard to packing, labeling, marking, placarding, parking, and driving. Specifically, the DOT regulations apply similarly to hazardous waste and other types of DOT hazardous materials, such as excluded HSM, in regard to these activities. An exception, however, is that the excluded material would not be subject to the hazardous waste manifest requirements for chain-of-custody tracking and confirmation of receipt.
- TBE. On-site handling and off-site shipments of HSMs that qualify as a DOT hazardous material would be subject to DOT regulation and must comply with comparable transportation requirements as hazardous waste in regard to packaging, labeling, marking, placarding, parking, driving, and tracking. Note that the TBE requires recordkeeping of all off-site shipments by the generator and reclamation facility, and a confirmation of receipt must be sent from the reclaimer to the generator. These recordkeeping and transmittal requirements are comparable to the hazardous waste manifest requirements for chain-of-custody tracking and confirmation of receipt.

On-site handling and off-site transportation of DSW-excluded material that no longer qualifies as a DOT hazardous material would not be subject to regulation comparable to

[37] All hazardous wastes are listed in Part 172 as DOT hazardous material and therefore are automatically subject to the DOT regulations as applicable.

[38] A hazardous substance (including hazardous wastes and other substances) listed in the appendices must comply with DOT packaging, labeling and other regulations if it exceeded its reportable quantity (RQ).

hazardous waste shipments (Scenarios 1, 3, 4, 5, 6, 7, and 8). Under the GCE or TBE, transportation requirements for excluded HSMs that do not qualify as a DOT hazardous material would not be comparable to those for hazardous waste in regard to packing, labeling, marking, placarding, parking, or driving (or tracking, for shipments under the GCE). An excluded material would not need to comply with the DOT regulations if it is not listed in the Table in 49 CFR 172.101, is not listed in (or otherwise does not exceed its reportable quantity in) the Appendices to the table, and does not meet any hazard classification.

Further, the Reportable Quantities (RQs) contained in 49 CFR Part 172 that trigger the DOT hazardous materials requirements are potentially different for hazardous waste and non-waste. A material-specific RQ is used to determine whether a hazardous waste or other hazardous substances must comply with the DOT requirements (i.e., if the hazardous substance exceeds its RQ, it must comply). In some cases the RQ for a hazardous waste would be lower because it is a hazardous waste than the RQ if the material were not considered a hazardous waste. In these cases, a greater quantity of material would be required to exceed the RQ if the material were a non-waste. This could result in some excluded materials not triggering the RQ requirements (at the lower level) and therefore, not needing to comply with RQ-related DOT packaging and other regulations.

The GCE does not require tracking of off-site shipments, in contrast to the hazardous waste regulations (Scenarios 3 and 8). The hazardous waste regulations require the manifesting of all off-site shipments, which provides for chain-of-custody tracking of shipments and generator confirmation that the shipment has been received by the designated facility. By contrast, the DSW GCE does not require tracking of shipments (e.g., from the generating site to an off-site reclamation facility owned by the generator) or recordkeeping that could serve a comparable purpose. Further, if the shipment were subject to DOT regulation, a shipping paper must accompany it. However, the destination facility need not keep a copy of it for three years or transmit to the original generator site (or place in its company files) the confirmation of receipt. Therefore, a generator making off-site shipments under the GCE would not be documenting that its excluded material reached the intended destination intact, as is required by the manifest regulations.

Intermediate and Reclamation Facilities

Following is a discussion of the key differences and consequences in the federal regulation of hazardous waste storage facilities and HSM intermediate and reclamation facilities under the TBE.

The provisions on residuals under the TBE are intended to clarify that residuals from reclamation are subject to the waste characterization requirements and cannot simply be discarded as non-hazardous waste. However, designating the residuals as a newly generated waste raises the possibility that some residuals from the recovery process that were considered hazardous under full RCRA Subtitle C regulation would no longer be considered hazardous upon exiting recovery units operated under the current DSW exclusions.

Some HSMs may be diverted from off-site reclamation, treatment then disposal at a permitted facility under the hazardous waste regulations to off-site reclamation under the TBE, which is allowable without a RCRA permit; however, generator audits are required in those cases (Scenarios 5 and 8). Permitted facilities are subject to prescriptive permit requirements and self-imposed conditions covering the design, construction, operation, financial

assurance, closure, and post-closure of the facility and hazardous waste management units. They also are subject to public involvement during the permitting process. Reclamation under the TBE would be subject to fewer requirements, including no requirement for a permit or public involvement. Thus, reclamation under the TBE is not subject to emergency preparedness and response, personnel training, or prescriptive requirements for containment. However, the TBE requires the generator to perform a "reasonable efforts" audit of facilities that do not have a RCRA permit covering management of the material. The generator audit must focus on specified areas (e.g., the reclaimer's compliance history). In addition, facilities must obtain financial assurance. In general, however, facilities under the TBE would be subject to fewer prescriptive requirements, no public involvement, and possibly less regulatory oversight than permitted facilities.

The TBE requires that material be "contained," but does not prescribe specific standards for containment in contrast to the hazardous waste regulations (Scenarios 5 and 8). The hazardous waste regulations and TBE require containment of the HSMs in the unit. The hazardous waste regulations prescribe specific design, installation, operating, and closure and post-closure standards to address containment. Prescriptive requirements could facilitate inspection and enforcement, which could help to prevent releases. The TBE does not contain prescriptive requirements for containment. The exclusion requires that the material be managed in a manner that is at least as protective as that employed for analogous raw material and be contained. As such, the TBE is performance oriented and allows more flexibility in how HSMs can be managed and contained.

The TBE does not include standards for controlling air emissions from process vents, equipment leaks, or storage units in contrast to the hazardous waste regulations (Scenarios 5 and 8). While the TBE requires containment of HSMs, it does not include explicit requirements for control of air emissions whereas the hazardous waste regulations set forth prescriptive design, operating, and other standards to control air releases from process vents, leaks, and storage units. The TBE does not include such prescriptive requirements.

Some reclaimers operating under the DSW exclusions may be required to get a permit under the CAA regulations. Where such facilities are subject to the CAA, requirements to control air emissions are comparable to the hazardous waste regulations. However, facilities not subject to CAA permitting would not be required to provide a comparable level of control of air emissions from process vents, leaks, and storage units as the hazardous waste regulations.

Some HSM may be diverted from permitted off-site facilities to being exported for reclamation under the TBE, which does not require a permit. However, the importing facility must pass generators' "reasonable efforts" audit (Scenarios 6 and 8). As described above, permitted facilities are subject to prescriptive permit requirements covering the design, construction, operation, air emission controls, financial assurance, and closure and post-closure of the entire facility. They also are subject to public involvement during the permitting process. Under the TBE, the HSM may be exported to a foreign facility, which is not subject to a permit or public involvement. However, the exclusion would require generators to make reasonable efforts to audit the facility before exporting the material to a foreign facility. In addition, the TBE requires generators to perform notice-and-consent activities. Note that, even though hazardous wastes are currently exported to other nations for reclamation, EPA has not received any notification indicating that HSMs will be exported under the 2008 DSW final rule. Based on

this facility behavior, EPA does not anticipate that a significant amount of HSMs will be exported under the TBE of the current DSW exclusions.

Some HSMs may be diverted from unpermitted off-site reclaimers under the hazardous waste regulations to different off-site reclaimers under the TBE (Scenario 7). Under the hazardous waste regulations, reclaimers that do not store hazardous waste pending reclamation are not subject to the prescriptive hazardous waste requirements (e.g., for design, operation, financial assurance, closure of the facility or units), except as otherwise specified.[39] They also are not subject to a hazardous waste permit or public involvement.

Under the TBE, off-site reclaimers are, among other things:

- Required to manage the HSM in a manner that is at least as protective as analogous raw material, contain the material, have financial assurance, and keep specified records. In addition, unless it has a RCRA permit covering management of the material, it must pass a generator audit before it can receive the generator's material.
- Allowed to store HSM without a permit or prescriptive standards, unlike hazardous waste reclaimers, which are subject to a permit if they store HSM.

The TBE generally includes more stringent requirements than the hazardous waste regulations for reclaimers that do not store the HSM before reclamation. It includes less stringent requirements for reclaimers that store the HSM before reclamation.

2.4 Summary of Comparative Results by Facility Type and Scenario

Table 2.3 summarizes the key regulatory differences and consequences described in Section 2.3 of this report. They are summarized by facility type and scenario.

[39] In some cases, reclaimers can be subject to prescriptive requirements. For example, reclamation units at a facility subject to RCRA permitting must comply with applicable air emission controls for process vents, as specified.

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
1. Generator continues current reclamation practices (where allowed under DSW)[c]	HSM can be accumulated onsite for longer periods of time under exclusions, resulting in potentially greater aggregate quantities onsite at any given time Exclusions require containment, but do not include prescriptive standards, whereas HWRs are prescriptive GCE allows management of HSM in land-based units without a permit or interim-status, unlike HWRs Generators could change in status (e.g., LQG to SQG) as a result of exclusions and be subject to less stringent HWRs Export procedures under HWRs and TBE are comparable DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only for LQGs	When transported offsite, excluded HSMs that qualify as DOT hazardous material would be subject to DOT transportation regulations that are comparable to HWRs Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	There is no change in storage methods or recycling practices for HSM that has been diverted from off-site RCRA permitted facility under HWRs to off-site RCRA permitted facility under TBE

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
2. Generator switches from off-site treatment then disposal at a RCRA facility to on-site reclamation under GCE	HSM can be accumulated onsite for longer periods of time under GCE, resulting in potentially greater quantities onsite at any given time The GCE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive GCE allows management of HSM in land-based units without a permit or interim-status, unlike HWRs Generators could change in status (e.g., from LQG to SQG) as a result of exclusion and be subject to less stringent HWRs Off-site management at permitted facility is more stringently regulated than reclamation under the GCE (e.g., no permit or public involvement is required) DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	N/A	N/A

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
3. Generator switches from off-site disposal at a RCRA facility to off-site reclamation under GCE [d]	HSM can be accumulated onsite for longer periods of time under GCE, resulting in potentially greater quantities onsite at any given time The GCE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive GCE allows management of HSM in land-based units without a permit or interim-status, unlike HWRs Generators could change in status (e.g., from LQG to SQG) as a result of exclusions and be subject to less stringent HWRs Off-site management at permitted facility is more stringently regulated than reclamation under the GCE (e.g., no permit or public involvement is required) DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	Excluded materials that qualify as DOT hazardous material would be subject to comparable DOT transportation regulations as hazardous waste, except that the GCE does not require manifest or other tracking of off-site shipments to same-company reclaimer or between tolling contractor and toll manufacturer Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	N/A

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
4. Generator switches from off-site disposal at a RCRA facility to off-site permitted reclamation at a U.S. facility under TBE	HSM can be accumulated onsite for longer periods of time under exclusion, resulting in potentially greater quantities onsite at any given time The TBE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive Generators could change in status (e.g., from LQG to SQG) as a result of exclusion and be subject to less stringent HWRs DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	Excluded materials that qualify as DOT hazardous material would be subject to comparable DOT transportation regulations as hazardous waste Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	There is no change in storage methods or recycling practices under the exclusion (off-site recycler still RCRA permitted)

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
5. Generator switches from off-site disposal at a RCRA facility to off-site reclamation at a U.S. facility without a RCRA permit under TBE	HSM can be accumulated onsite for longer periods of time under exclusions, resulting in potentially greater quantities onsite at any given time The TBE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive Generators could change in status (e.g., from LQG to SQG) as a result of exclusions and be subject to less stringent HWRs DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	Excluded materials that qualify as DOT hazardous material would be subject to comparable DOT transportation regulations as hazardous waste Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	Facilities under the TBE would not have a permit and thus, would be less stringently regulated than permitted facilities (e.g., no public involvement, fewer prescriptive requirements). However, facilities must pass "reasonable efforts" audit and obtain financial assurance under TBE TBE requires HSM to be "contained" and managed in a manner that is at least as protective as that employed for analogous raw material, but does not include prescriptive standards, whereas HWRs are prescriptive

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
6. Generator switches from off-site disposal at a RCRA facility to exporting for reclamation under TBE	HSM can be accumulated onsite for longer periods of time under exclusion, resulting in potentially greater quantities onsite at any given time The TBE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive Generators could change in status (e.g., from LQG to SQG) as a result of exclusions and be subject to less stringent HWRs Export procedures under HWRs and TBE are comparable DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	Excluded materials that qualify as DOT hazardous material would be subject to comparable DOT transportation regulations as hazardous waste Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	Facilities that receive imports under the TBE are not required to obtain a permit. However, facility must pass "reasonable efforts" audit under TBE

Table 2.3. Key Differences in Regulatory Requirements Between Hazardous Waste Regulations (HWRs) and the Definition of Solid Waste (DSW) Exclusions by Scenario [a]

Scenarios	Generators [b]	Transporters	Intermediate and Reclamation Facilities
7. Generator switches from off-site reclamation at a facility without a permit (no storage) to off-site reclamation under TBE [e]	HSM can be accumulated onsite for longer periods of time under exclusions, resulting in potentially greater quantities onsite at any given time The TBE requires HSM to be "contained," but does not include prescriptive standards, whereas HWRs are prescriptive Generators could change in status (e.g., from LQG to SQG) as a result of exclusions and be subject to less stringent HWRs Export procedures under HWRs and TBE are comparable DSW exclusions require all generators to notify EPA biennially, whereas HWRs require biennial reporting only LQGs	Excluded materials that qualify as DOT hazardous material would be subject to comparable DOT transportation regulations as hazardous waste Some excluded material may no longer qualify as a DOT hazardous material and be subject to DOT transportation regulations (e.g., no standards for packaging, marking, labeling)	The TBE is more stringent than the HWRs in situations where HSM is not stored before reclamation (e.g., the TBE requires financial assurance, containment, protective management and generator audit, whereas HWRs do not require a permit, financial assurance, etc.). However, the HWRs are more stringent in some aspects than the TBE in situations where the HSM is stored before reclamation (e.g., the HWRs require a permit, whereas the TBE does not).
8. Generator switches from off-site reclamation at a RCRA facility to another type of reclamation under the current DSW exclusions	Refer to Scenarios 2 through 6 for regulatory differences and consequences applicable to Scenario 8. Scenarios 2 through 6 involve generators switching from off-site permitted disposal to another type of reclamation under the DSW exclusions. Scenario 8 involves generators switching from off-site permitted reclamation to another type of reclamation under DSW exclusions. As such, Scenarios 2 through 6 include the same types of regulatory differences and consequences as Scenario 8.		

[a] Abbreviations used in the above table include the following: HSM = hazardous secondary material; HWRs = hazardous waste regulations; GCE = generator-controlled exclusion; TBE = transfer-based exclusion; LQGs = large quantity generators; SQGs = small quantity generators.

[b] Under the GCE, generators may perform reclamation onsite or send it offsite to a same-company reclaimer or toll manufacturer under its control. This column addresses these off-site facilities (i.e., same-company reclaimers and toll manufacturers) as generators.
[c] This scenario includes generators that continue their current practices under the exclusions by either reclaiming onsite; shipping to a permitted, off-site reclamation facility; or exporting the material for reclamation.
[d] This scenario includes generators switching from off-site disposal to sending the material to either a same-company reclaimer or toll manufacturer under the GCE.
[e] This scenario includes generators switching from off-site reclamation at a facility without a permit to another type of reclamation under the TBE, including either off-site reclamation at a RCRA-permitted facility, off-site reclamation at a facility without a permit, or export of the material to a company in another country.

2.5 Likelihood of Hazards under Scenarios

This section presents EPA's analysis of the likelihood of changes in hazards under the current DSW exclusions for each type of facility (generators, transporters, and intermediate and reclamation facilities) and each scenario described in Section 2.1 of this report. The analysis was based on the changes in management practices for HSM described in Section 2.1, the hazards identified in Section 2.2, and the regulatory comparison presented in Section 2.3. The discussion includes a description of each hazard, and whether the likelihood of the hazard is increased, decreased, or might be transferred between communities.

2.5.1 Role of Non-Compliance in Potentially Increased Hazards

Some of the potential increased hazards discussed in Section 2.5.2 are related to EPA's ability to oversee and enforce against non-compliant facilities. The analysis of how enforcement is linked to potential increased hazards is not meant to imply that all facilities are assumed to be non-compliant under the 2008 scenarios, but rather it evaluates the potential for increased non-compliance in the subset of facilities that may choose it when feasible. The role of compliance monitoring in influencing environmental behavior both as a specific deterrence and a general deterrence to bad behavior is well documented.[40]

Moreover, as discussed in more detail in EPA's recycling market forces study[41], because of the low commercial value and the high potential liability cost associated with most types of hazardous secondary materials (i.e., spent materials and listed hazardous waste by-products and sludges), the economic incentive for "sham recycling" is particularly high for these types of materials, particularly at third-party recyclers. As opposed to manufacturing, where the cost of raw materials or intermediates (or inputs) is greater than zero and revenue is generated primarily from the sale of the output, hazardous secondary materials recycling can involve generating revenue primarily from the receipt of the hazardous secondary materials. Recyclers of hazardous secondary materials in this situation thus respond differently than traditional manufacturers to economic forces and incentives, accumulating more inputs (hazardous secondary materials) than can be processed (reclaimed). In addition, commercial recyclers have less flexibility than in-house recyclers in changing how they manage their hazardous secondary materials (e.g., during price fluctuations, in-house recyclers can more easily switch from recycling to disposal or from recycled inputs to virgin inputs, while commercial recyclers cannot switch to disposal without obtaining a RCRA permit). In other words, third-party recyclers have economic incentives to accumulate waste beyond their ability to deal with it, which can lead to non-compliance even at facilities that accepted the hazardous secondary materials for recycling with good intentions.

The manner in which market forces can contribute to adverse impacts at commercial hazardous secondary materials recyclers is illustrated by the current situation with Cathode Ray Tube (CRT) recycling. The CRT final rule conditionally excluded CRTs and CRT glass from being a solid waste under the hazardous waste regulation when sent to recycling. (40 CFR 261.4(a)(22)). By all accounts, implementation of CRT recycling under the CRT rule went smoothly for a

[40] See 2010 EPA *Definition of Solid Waste Rulemaking: Compliance Research Background Document*, EPA-HQ-RCRA-2010-0742-0014.

[41] See 2006 EPA *A Study of Potential Effects of Market Forces on the Management of Hazardous Secondary Materials Intended for Recycling* (EPA-HQ-RCRA-2002-0031-0358)

number of years, primarily because CRT glass had positive value and could be easily recycled into new CRTs. However, as demand for flat panel technologies has replaced consumer demand for CRTs, the market for CRT recycling has recently collapsed, and recyclers who in 2004 would receive $200/ton in payment for processed CRT glass now are faced with a greater than $200/ton cost for disposing of it.[42] Because of rising costs, negative economic incentives, and shifts in CRT glass markets, some CRT processors and recyclers are choosing to collect and store the glass indefinitely rather than pay to recycle (or dispose) the CRT glass, which have led to cases of stockpiling, mismanagement, and abandonment.[43]

2.5.2 Potentially Increased Hazards under 2008 DSW Exclusions

EPA analyzed the information in the preceding sections of this report to determine whether the hazards associated with the generation, transportation, and reclamation of HSM would potentially increase under the DSW exclusions. EPA considered hazards to **increase** where it determined that either the probability of the hazard occurring **or** the potential magnitude of the hazard increased. In some cases, the hazard may increase at one facility, while decreasing at another facility. For example, changing the management of their HSM from off-site incineration to on-site reclamation is likely to increase potential hazards at the reclamation facility, while decreasing them at the incineration facility. This section discusses only the potential increases in hazards. Potential decreases in hazards are discussed in Section 2.5.3, and an analysis of trade-offs between is discussed in Section 2.5.4.

This analysis was based on the changes in management practices for HSM described in the Scenarios in Section 2.1; the general hazards associated with the generation, transportation, storage, and reclamation of HSM presented in Section 2.2, and the regulatory differences between the hazardous waste regulations and DSW exclusions identified in Section 2.3. Through this analysis of hazards, EPA determined that these regulatory differences (e.g., differences in stringency and scope), and the resulting changes in behavior by facilities generating and managing HSMs, could result in an increase in potential hazards under the DSW exclusions. EPA presents this analysis for generators, transporters, and intermediate and reclamation facilities. For each type of hazard, the Scenarios from Section 2.1 under which it might increase are identified.

Generators

Fires and Explosions (Scenarios 1 through 8). Some HSMs, such as solvents, are often flammable, and can ignite to create fires and explosions. HSMs also may contain volatile chemicals, which can be released to the air, and if flammable, these air emissions may cause fires and explosions if ignited, causing injury or property damage. Fires and explosions also may

[42] March 18, 2013, New York Times, "Unwanted Electronic Gear Rising in Toxic Piles" http://www.nytimes.com/2013/03/19/us/disposal-of-older-monitors-leaves-a-hazardous-trail.html?pagewanted=all&_r=0 (last accessed 4/11/13).

[43] See EPA (2014) *Federal Response to CRT Recycling Concerns*. Powerpoint presentation at 2014 e-SCRAP Conference, October 22, 2014, p 6.

involve other toxic or hazardous gasses. Fire and explosion hazards under the 2008 DSW exclusions could increase for generators because of the following:

- HSM can be accumulated longer, and potentially greater quantities can be accumulated onsite.[44] A longer accumulation period means that there is a greater likelihood for release of the HSM. For example, there is a greater likelihood that solvents could be inadvertently commingled in a container or storage area with incompatible materials and wastes, such as oxidizers, which could cause an explosion or fire hazard. There is also a greater likelihood that solvents could be stored near ignition sources (e.g., open flames) or be stored in excessive heat, which could increase fire and explosion hazards. Longer storage also increases the likelihood that drums or other containers could leak due to corrosion, accidents, or other causes over time. The leaked material could then volatilize or be exposed to an ignition source, resulting in a fire or explosion.

  Greater accumulation quantities also mean that the magnitude of a potential fire or explosion could be greater. Generators also could be responsible for managing a greater number of tanks and containers to contain the greater volume or may overload/overfill accumulation units while attempting to manage the greater volume using existing tank and container capacity, which could make it more difficult to ensure the HSM is contained. For example, the generator may need to spend more effort to make sure the covers of a greater number of containers are kept tightly closed to prevent the escape of potentially combustible vapors.

- No explicit containment standards. The 2008 DSW exclusions do not include explicit standards for containment of HSM in tanks and containers, in contrast to the hazardous waste regulations. In addition, the GCE allows management of HSM in land-based units without a permit or interim-status, unlike the HWRs. Consequently, generators might not take the same steps to minimize the potential for fires and explosions. The hazardous waste regulations prescribe specific design and operating standards and air emission controls for tanks and containers, including keeping these units tightly covered and using vent systems (e.g., fixed roof, flares) if needed. In addition, the hazardous waste regulations require that certain units be provided with a means to protect against the formation and ignition of vapors within the tank if the waste being stored or treated is ignitable or reactive. These controls, which could be helpful in preventing fires and explosions and the emission of potentially combustible vapors to the atmosphere, are not specifically required under the DSW exclusions. The hazardous waste regulations also include procedures for segregating reactive, ignitable and incompatible wastes, and for locating ignitable and reactive wastes at least 15 meters from the facility's property line, which can reduce the likelihood of fires and explosions, or reduce the risk of them impacting nearby properties and individuals on those properties. Finally, unlike the hazardous waste regulations, the DSW exclusions allow generators to accumulate their HSMs in land-based units, including surface impoundments and waste piles, provided the HSMs are contained in such land-based units. The hazardous waste regulations, on the other hand, provide that only permitted and interim-status facilities can operate these

[44] For generators that switch from off-site management to on-site recycling (Scenarios 2 and 8), there is the possibility that there might be smaller volumes of HSM accumulated, if recycling can occur more quickly than accumulation of enough material for a shipment to be sent offsite.

land-based units, and they must follow explicit requirements for containment of the waste during operation, closure and post-closure care. The DSW exclusions do not require explicit containment requirements for these or other unit types.

- Generator drop in status. A generator operating under a DSW exclusion would not be required to count its excluded HSM in determining its hazardous waste generator status. As a result, the generator's classification may change from a LQG to a SQG or CESQG because it would have less hazardous waste to count toward its monthly total and therefore, be subject to less stringent hazardous waste requirements. For example, SQGs are subject to less stringent requirements for tank systems, the control of air emissions, personnel training, contingency planning, and emergency procedures. As a result, a generator that drops from LQG to SQG generally would become less stringently regulated in regard to the prevention and control of fire and explosion hazards. Examples of regulatory differences between LQGs and SQGs that might impact fire and explosion hazards include:
    - The SQG's HSM and hazardous waste would no longer be subject to air emission controls that are designed to prevent the escape of potentially combustible vapors from containers and tanks.
    - The SQG would not be required to provide on-going personnel training in emergency procedures (e.g., fire control), or to maintain a contingency plan that spells out these procedures and identifies the location of emergency equipment (e.g., fire equipment).
    - Some LQGs and SQGs could become CESQGs under the exclusion. CESQGs generally are not subject to the full hazardous waste regulations provided they meet certain requirements.
- Generator on-site reclamation under the GCE may be less stringently regulated than permitted reclamation or treatment then disposal under the hazardous waste regulations. Unlike the hazardous waste regulations, the GCE does not require a permit, public involvement, or explicit HSM management requirements. For example, the GCE does not require generators to follow explicit standards for containment (e.g., no explicit standards for secondary containment, run-on/run-off controls, and inspections), contingency planning or procedures, or personnel training for emergencies (e.g., how to address fires and explosions). If HSM is diverted from permitted reclamation or treatment then disposal under the hazardous waste regulations to reclamation under the GCE, there is no assurance that the generator will carry out comparable activities.
- HSM could be increasingly diverted from hazardous waste management and disposal to on-site reclamation under the GCE. On-site reclamation could increase the risk of fires and explosions at generator facilities due to increased volumes accumulated and air emissions from reclamation processes, the use of heat in reclamation processes, and the potential mixing of wastes for reclamation. For example, the reclamation of solvents typically involves the use of distillation, which requires the application of heat. Solvents generally become more volatile as the temperature increases, which could lead to greater air emissions that, if not adequately captured, recovered, or destroyed could be a source for a fire or explosion.

Soil and Water Contamination (Scenarios 1 through 8). During on-site accumulation, HSM releases can occur from factors, such as spills due to human error or deterioration of equipment; tank overflows or overtopping; leaks from damaged or deteriorated containers or tanks; complete failure of tank or container integrity; and run on/run off from the storage area. During on-site transfer, releases could include spills, overflows, and leaks from human error or deterioration of transport equipment (e.g., leaking pipes). Solvent wastes are especially susceptible to such releases because they are commonly in a liquid state. Soil and water contamination hazards under the DSW exclusions could increase because of the following:

- HSM can be accumulated longer, and potentially greater quantities can be accumulated onsite.[45] A longer accumulation period means that there is a greater likelihood for inadvertent mismanagement of the HSM, such as spills and leaks due to human error or equipment malfunction. There is also a greater likelihood that over time, accumulation units could deteriorate due to corrosion, accidents, or mishandling, which could cause a release.

  Further, greater accumulation quantities mean there is greater likelihood that accumulation units could be filled beyond capacity and release HSM from overtopping. In addition, a greater quantity of HSM to be managed could make it more difficult for the generator to contain and detect releases, and the potential magnitude of a release could be greater.

- No explicit containment standards. The DSW exclusions do not include explicit standards for containment of HSM in tanks, containers, containment buildings, and land-based units as do the hazardous waste regulations. The hazardous waste regulations, for example, include land-based unit design requirements for liners and leachate collection and removal systems, dikes, and run-on/run-off systems. They also include operating controls and practices to prevent spills and overflows (e.g., maintenance of sufficient freeboard in uncovered tanks), as well inspection requirements (e.g., tank owner/operators must inspect overfill/spill control equipment and tanks to detect corrosion and releases). Because the DSW exclusions do not include such explicit requirements, there is less assurance that generators will adopt comparable controls and procedures to prevent release and respond to them if they occur. Finally, unlike the hazardous waste regulations, the DSW exclusions allow generators to accumulate their HSM in land-based units including surface impoundments and waste piles, provided the HSMs are contained in such land-based units. However, the DSW exclusions do not require explicit containment requirements for these or other unit types. The use of land-based units may increase the likelihood of releases to soil, groundwater, and surface water. For example, precipitation and run-on/runoff from land-based units may cause contaminants to leach or be carried out of the unit and contaminate environmental media.

- Generator drop in status. A generator under a DSW exclusion would not be required to count its excluded HSM in determining its hazardous waste generator status under the hazardous waste regulations; and therefore, it could drop in status (e.g., from LQG to

[45] For generators that switch from off-site management to on-site recycling (Scenarios 2 and 8), there is the possibility that there might be smaller volumes of HSM accumulated, if recycling can occur more quickly than accumulation of enough material for a shipment to be sent offsite.

SQG) and be subject to less stringent requirements. Examples of regulatory differences between LQGs and SQGs include:

  - SQGs would no longer need to comply with as many explicit tank design and operating requirements (e.g., liner, leachate collection and removal system, controls and practices to prevent spills and overflows).
  - SQGs would no longer need to provide on-going personnel training in emergency procedures (e.g., response to groundwater contamination), or to maintain a contingency plan that spells out these procedures and identifies the location of emergency equipment.
  - Some LQGs and SQGs could become CESQGs under the exclusion. CESQGs generally are not subject to the full hazardous waste regulations provided they meet certain requirements.

- Generator on-site reclamation under the GCE may be less stringently regulated than permitted reclamation or treatment then disposal under the hazardous waste regulations. Unlike the hazardous waste regulations, the GCE does not require a permit, public involvement, or explicit HSM management requirements. For example, the GCE does not require generators to follow explicit standards for containment (e.g., no explicit standards for secondary containment, run-on/run-off controls, or inspections), contingency planning or procedures, or personnel training for emergencies (e.g., how to address groundwater releases). If HSM is diverted from permitted reclamation or disposal under the hazardous waste regulations to reclamation under the GCE, there is no assurance that the generator will carry out comparable activities.
- HSM could be increasingly diverted from off-site hazardous waste management to on-site reclamation under the GCE. The additional processing required for on-site reclamation could result in more releases to soil and water at generator facilities. For example, recycling by distillation of a solvent may require filtration, distillation, condensation, or other processing. As the solvent is passed through the pipes, valves, and other equipment used in the distillation process, the likelihood of a release through leaks and spills increases.

Volatile Air Emissions (Scenarios 1 through 8). Volatile organic air emissions can occur during accumulation and transportation onsite. For example, solvents held in tanks or containers could volatilize and escape to the atmosphere through open container lids, uncovered tanks, leaks and vents, breathing losses, and container filling and emptying. Volatile emission hazards under the DSW exclusions could increase because of the following:

- HSM can be accumulated longer, and potentially greater quantities can be accumulated onsite. A longer accumulation period could increase the inadvertent mismanagement of the HSM, such as leaving container lids off of containers, which would allow greater escape of emissions. In addition, it is possible that there could be greater opening and closing of tanks and containers as HSM is added, transferred, and removed from units. There is also a greater likelihood that accumulation units could deteriorate due to corrosion, accidents, or mishandling, which could cause a release. In addition, a greater quantity of HSM to be managed could make it more difficult for the generator to contain and detect releases, and the potential magnitude of a release would be greater.

- No explicit containment standards. The DSW exclusions do not include explicit standards for containment of volatile organic emissions as do the hazardous waste regulations. For example, LQGs may need to install a fixed roof to help control air pollutant emissions from tanks, or use containers that meet applicable DOT regulations. Because the exclusions do not include explicit requirements, there is less assurance that generators will follow controls that will be comparable to the hazardous waste requirements.
- Generator drop in status. A generator under a DSW exclusion would not be required to count its excluded HSM in determining its hazardous waste generator status under the hazardous waste regulations; therefore, it could change its regulatory status (e.g., from LQG to SQG) and be subject to less stringent requirements. For example, SQGs would no longer need to comply with air emission controls described above. This could result in increased air emissions.
- Generator on-site HSM management prior to on-site reclamation under the GCE may be less stringently regulated than permitted reclamation or treatment then disposal under the hazardous waste regulations. Unlike the hazardous waste regulations, the GCE does not require a permit, public involvement, or explicit HSM management requirements. For example, the GCE does not require generators to follow explicit standards for containment (e.g., no explicit standards for secondary containment, run-on/run-off controls, or inspections), contingency planning or procedures, or personnel training for emergencies (e.g., how to address fires). If HSM is diverted from permitted reclamation or disposal under the hazardous waste regulations to reclamation under the GCE, there is no assurance that the generator will carry out comparable activities.
- HSM could be increasingly diverted from hazardous waste management and disposal to on-site reclamation under the GCE. The additional processing required for on-site reclamation could result in more air emissions at generator facilities. For example, recycling by distillation of a solvent may require filtration, distillation, condensation, or other processing. As the solvent is passed through the pipes, valves, and other equipment used in the distillation process, volatile emissions from fittings, valves, and process equipment could increase. In addition, many reclamation processes, such as distillation of solvents, require the application of heat. Solvents generally become more volatile as the temperature increases, which could lead to greater air emissions. Changes in temperature also can increase breathing losses from tanks and equipment, leading to increased air emissions.

Particulate Wind Dispersal (Scenarios 1 through 8). Wind dispersal can occur during accumulation and on-site movement of the HSM if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). For example, electric arc furnace dust might be susceptible to wind dispersal, because it is often present in dust form and may be accumulated in land-based units such as waste piles. Wind dispersal hazards under the DSW exclusions could increase because of the following:

- HSM can be accumulated longer, and potentially greater quantities can be accumulated onsite. A longer accumulation period means that there is a greater likelihood for inadvertent mismanagement of the HSM, such as failure to ensure waste piles are covered

or wet to control dust. Further, greater accumulation quantities mean there is greater likelihood that accumulation units could be filled beyond capacity and release HSM. In addition, a greater quantity of HSM to be managed could make it more difficult for the generator to contain and detect releases, and the potential magnitude of a release could be greater.

- No explicit containment standards. The DSW exclusions do not include explicit standards for control of wind dispersal of particulates as do the hazardous waste regulations. For example, generators must keep their containers closed when not filling or emptying them. In addition, tank systems of LQGs must have wind dispersal controls, if needed. Further, the GCE allows generators to manage their HSM in land-based units without a permit or interim status, unlike the hazardous waste regulations. The GCE does not prescribe wind dispersal controls for land-based units as do the hazardous waste regulations. For example, the hazardous waste regulations require that surface impoundments be designed and operated to prevent wind and wave action. Because the exclusions do not include explicit requirements, there is less assurance that generators will follow controls that will be comparable to the hazardous waste management unit requirements.
- Generator drop in status. A generator under a DSW exclusion would not be required to count its excluded material in determining its hazardous waste generator status under the hazardous waste regulations; therefore, it change its regulatory status (e.g., from LQG to SQG) and be subject to less stringent requirements. For example, SQGs would no longer need to comply with the wind dispersal requirements for tanks, which only apply to LQGs.

Abandoned Materials (Scenarios 1 through 3 and 8). A significant number of the environmental damage cases evaluated by EPA involve abandoned materials. EPA believes that bankruptcies and other business failures were responsible for a number of the cases involving abandoned materials. Abandoned HSMs under the DSW exclusions could increase because of the following:

- HSM can be accumulated longer, and potentially greater quantities can be accumulated onsite. A greater accumulation quantity could mean that the quantity of material abandoned could be greater, increasing the magnitude of problems associated with abandoned materials, such as the extent of contamination of environmental media and cleanup costs. In the case where a generator goes out of business, there may be potentially greater quantities of accumulated, non-processed, and possibly not appropriately contained HSM on the property.
- Generator on-site reclamation under the GCE may be less stringently regulated than permitted reclamation or disposal under the hazardous waste regulations. The GCE does not require financial assurance for reclamation under the generator's control. Similarly, the hazardous waste regulations do not require financial assurance for generators that perform reclamation in their 90- and 180-day tanks and containers. In this respect, the likelihood for abandonment of materials due to financial hardship under the GCE and the hazardous waste regulations is comparable. However, unlike the hazardous waste regulations, the GCE does not require a permit, public involvement, or explicit HSM management standards. The hazardous waste regulations do require generators to obtain

a permit if they store their hazardous waste for longer than 90 days for LQGs or 180/270 days for SQGs (depending on type of activity involved), pending reclamation onsite. These generators would be subject to a number of permit conditions that would reduce the likelihood of abandoned materials (e.g., financial assurance requirements, corrective action, closure notification and plans). Hence, the likelihood for abandonment of HSMs due to financial hardship under the GCE is not comparable to the hazardous waste regulations when the HSM is stored (for more than 90 or 180/270 days, depending on generator size and type of activity involved), pending on-site reclamation.

Table 2.4. Potential Incremental Hazards under the Current DSW Exclusions: Generators

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards				
	Fire/ Explosion	Soil/Water Contamination	Volatile Air Emissions	Particulate Wind Dispersal	Abandoned Materials
Scenario 1: Generator continues current reclamation practices [b]					
HSM accumulated longer, potentially greater quantities onsite	X	X	X	X	X
No explicit containment standards	X	X	X	X	
Potential generator change in regulatory status	X	X	X	X	
On-site generator reclamation potentially less stringently regulated	X	X	X	X	X [c]
Scenario 2: Generator switches from off-site disposal to on-site reclamation					
HSM accumulated longer, potentially greater quantities onsite	X	X	X	X	X
No explicit containment standards	X	X	X	X	
Potential generator change in regulatory status	X	X	X	X	
On-site generator reclamation potentially less stringently regulated	X	X	X	X	X
Scenario 3: Generator switches from off-site disposal to off-site recycling under the control of the generator [d]					
HSM accumulated longer, potentially greater quantities onsite	X	X	X	X	X
No explicit containment standards	X	X	X	X	
Potential generator change in regulatory status	X	X	X	X	
Scenarios 4 through 8: Generator switches to off-site recycling [e]					
HSM accumulated longer, potentially greater quantities onsite	X	X	X	X	
No explicit containment standards	X	X	X	X	

Table 2.4. Potential Incremental Hazards under the Current DSW Exclusions: Generators

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards				
	Fire/ Explosion	Soil/Water Contamination	Volatile Air Emissions	Particulate Wind Dispersal	Abandoned Materials
Potential generator change in regulatory status	X	X	X	X	
On-site generator reclamation potentially less stringently regulated	X	X	X	X	X

[a] These differences were identified by comparing the federal regulations applicable to hazardous waste generators and generators of DSW-excluded materials. See Section 2.3 of this report for additional information.

[b] Abandonment of HSMs could be more likely to occur under the GCE than hazardous waste regulations for reclaimers that store their HSM pending reclamation.

[c] This scenario includes generators that continue their current practices under the exclusions by either reclaiming onsite; shipping to a permitted, off-site reclamation facility; or exporting the material for reclamation.

[d] This scenario includes generators switching from off-site disposal to sending the material to either a same-company reclaimer or toll manufacturer under the GCE.

[e] Scenario 7 includes generators switching from off-site reclamation at a facility without a permit to another type of reclamation under the TBE, including either off-site reclamation at a RCRA-permitted facility, off-site reclamation at a facility without a permit, or export of the material to a company in another country.

Transporters

Fires and Explosions (Unlikely for all Scenarios). Some HSMs, such as solvents, contain volatile chemicals, which can be released to the air, and, if flammable, these air emissions may cause fires and explosions if ignited, causing injury or property damage. Fires and explosions also may evolve other toxic or hazardous gases.

HSM that is flammable or explosive would qualify as a DOT hazardous material and be subject to comparable DOT regulation (e.g., for packaging, labeling, marking, placarding, parking, and driving) when transported offsite, regardless of whether the material is regulated as hazardous waste or DSW-excluded material. Note, however, that the DSW exclusions do not require the use of a manifest or other document that provides RCRA waste codes at 40 CFR Part 261. All hazardous waste off-site shipments must be accompanied by a manifest that includes waste codes. Waste codes could be helpful to emergency responders in fully characterizing the hazards of a released material and taking an appropriate response action during a fire or explosion. However, the DOT hazardous material requirements are specifically designed to help emergency responders to characterize the hazards of materials being transported, so it is unlikely that the lack of waste codes would seriously impede an emergency response.

Volatile Air Emissions, Soil, Water, and Particulate Wind Dispersal (Scenarios 1, 3, 4, 5, 6, 7, and 8). During loading, unloading, and transport, volatile air emissions from solvents may escape from valves, pumps, hoses, tank trucks, drums, and other containers. Under certain conditions, solvents held in tank trucks or drums could volatilize and escape to the atmosphere (e.g., through open container lids, uncovered tanks, leaks and vents). Leaks and spills during transfer of HSM, leaky or improperly closed containers, or accidents could result in release of HSM to loading area soil, groundwater, or surface water. Further, wind dispersal of HSM (e.g., electric arc furnace dust) can occur if it is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). For example, dust in hopper rail cars or roll-off dumpsters that are not properly covered could blow out and result in inhalation exposures (when traveling through communities) and/or contaminate the surrounding environment during transport. Contaminated soil or other solid media also may be susceptible to re-suspension and wind dispersal.

HSM under the DSW exclusions that qualifies as a DOT hazardous material would be subject to generally comparable transportation requirements as hazardous waste in regard to packing, labeling, marking, placarding, parking, and driving. Specifically, the DOT regulations impose comparable requirements on hazardous waste as it does on other types of DOT hazardous materials in regard to these activities. Therefore, such DOT-regulated shipments of hazardous waste and excluded material would address releases of materials in comparable ways.

However, excluded HSM that does not qualify as a DOT hazardous material would not be subject to transportation requirements that are comparable to hazardous waste in regard to packing, labeling, marking, placarding, parking or driving, or reporting releases of RQs to the National Response Center. Transporters of such excluded HSM would not be required to follow comparable procedures to address potential releases of materials, including vapors, liquids, solids, or particulate matter. For example, transporters might

use less expensive packaging that is more likely to leak or be ruptured in an accident, contaminating soil and water, or releasing volatile emissions.

Abandoned Materials (Scenario 3). A shipment of HSM may be abandoned during transit for a number of reasons. Abandonment could occur, for example, if there is a transportation accident and released/contaminated materials are left by the roadside, the transporter cannot find the destination facility, or the transporter otherwise decides not to fulfill its obligation to deliver the HSM. EPA established the hazardous waste manifest system as a means of ensuring that hazardous wastes are tracked from "cradle to grave." Under the manifest system, each party to the shipment must sign and keep a copy of the manifest, and the generator must be notified of its receipt by the destination facility, increasing each party's accountability over the shipment and reducing the likelihood of abandoned shipments. The GCE does not include a requirement for a hazardous waste manifest. Where generators reclaim HSM under the GCE, but the generation and reclamation facilities are in different locations, the HSM must be transported offsite. Similarly, generators may transport HSM to an unaffiliated off-site reclaimer under the TBE. In such cases, the likelihood of HSM being abandoned could increase.

Table 2.5. Potential Incremental Hazards under the Current DSW Exclusions: Transporters

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards		
	Fire/Explosion	Volatile Air, Emissions, Soil/ Water Contamination, and Wind Dispersal	Abandoned Materials
Scenario 1: Generator continues current reclamation practices [b]			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
Scenario 2: Generator switches from off-site disposal to on-site reclamation			
Not applicable			
Scenario 3: Generator switches from off-site disposal to off-site recycling under the control of the generator [c]			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
No tracking document required			X
Scenario 4: Generator switches from off-site disposal to off-site recycling at a RCRA-permitted facility			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
Scenario 5: Generator switches from off-site disposal to off-site recycling at a U.S. facility without a RCRA permit			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
Scenario 6: Generator switches from off-site disposal to exporting for recycling			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
Scenario 7: Generator switches from off-site recycling at a facility without a permit to another type of recycling under DSW [d]			
No waste codes on shipping papers			

Table 2.5. Potential Incremental Hazards under the Current DSW Exclusions: Transporters

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards		
	Fire/Explosion	Volatile Air, Emissions, Soil/ Water Contamination, and Wind Dispersal	Abandoned Materials
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	
Scenario 8: Generator switches from off-site recycling at a RCRA-permitted facility to another type of recycling under DSW			
No waste codes on shipping papers			
HSM that no longer qualifies as DOT hazardous material or triggers RQ		X	

[a] These differences were identified by comparing the federal regulations applicable to hazardous waste shipments and shipments of DSW-excluded materials. See Section 2.3 of this report for additional information.

[b] This scenario includes generators that continue their current practices under the exclusions by either reclaiming onsite; shipping to a permitted, off-site reclamation facility; or exporting the material for reclamation.

[c] This scenario includes generators switching from off-site disposal to sending the material to either a same-company reclaimer or toll manufacturer under the GCE.

[d] This scenario includes generators switching from off-site reclamation at a facility without a permit to another type of reclamation under the TBE, including either off-site reclamation at a RCRA-permitted facility, off-site reclamation at a facility without a permit, or export of the material to a company in another country.

Intermediate and Reclamation Facilities

Fires and Explosions (Scenarios 1, and 4 through 8). Some HSM, such as solvents, are often flammable, and can ignite to create fires and explosions. HSM also may contain volatile chemicals, which can be released to the air, and, if flammable, these air emissions may cause fires and explosions if ignited, causing injury or property damage. Fires and explosions also may evolve other toxic or hazardous gasses. Fire and explosion hazards under the DSW exclusions could increase because of the following:

- Change from RCRA-permitted to unpermitted management facilities (Scenarios 1, 5, and 8). Some HSMs may be diverted from off-site reclamation or disposal at a facility permitted under the hazardous waste regulations to off-site reclamation, which does not require a permit. Permitted facilities are subject to prescriptive permit requirements covering the design, construction, operation, financial assurance, closure and post-closure of the facility, including hazardous waste management units. They also are subject to public involvement in the permitting process. Reclamation under the DSW exclusion would be subject to fewer requirements, including no requirement for a permit or public involvement. For example, reclamation under the exclusion is not subject to emergency preparedness and response, personnel training, or prescriptive requirements for containment. These requirements could reduce the likelihood of fires and explosions, reduce their magnitude, or increase the ability of facilities to respond to them and reduce the damage caused.

- No explicit containment standards (Scenarios 1, 5, and 8). The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations prescribe design, installation, operating, closure and post-closure standards to address containment, whereas the TBE does not. The exclusion requires that the HSM be managed in a manner that is at least as protective as that employed for analogous raw material and be contained. As such, the TBE allows more flexibility in how HSMs can be managed and contained. These controls, which could be helpful in preventing fires and explosions and the emission of potentially combustible vapors to the atmosphere, are not specifically required under the DSW exclusions.

- No explicit standards for controlling air emissions (Scenarios 1, 5, and 8). The TBE does not include standards for controlling air emissions from process vents, equipment leaks, or storage units as do the hazardous waste regulations. While the DSW exclusions require containment of HSM, they do not include explicit requirements for control of air emissions. The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations set forth prescriptive design, operating and other standards to control air releases for process vents, leaks, and storage units. The TBE does not include prescriptive requirements. These controls, which could be helpful in preventing fires and explosions and the emission of potentially combustible vapors to the atmosphere, are not specifically required under the DSW exclusions.

- HSM could be increasingly diverted from hazardous waste management to reclamation under the TBE (Scenarios 1, and 4 through 8). Increased reclamation

could increase the risk at reclamation sites of fires and explosions due to increased air emissions, the use of heat in reclamation processes, and the potential mixing of wastes for reclamation. For example, the reclamation of solvents typically involves the use of distillation, which requires the application of heat. Solvents generally become more volatile as the temperature increases, which could lead to greater air emissions that could be a source for a fire or explosion.

Soil and Water Contamination (Scenarios 1, and 4 through 8). Soil and groundwater contamination from HSM releases can occur during accumulation and transportation onsite. During accumulation, a number of factors could lead to a release (e.g., run-off from the storage area, tank overflows, leaks from damaged or deteriorated containers or tanks, or complete failure of tank). During transfer, releases could include spills, overflows, and leaks from human error or deterioration of transport equipment (e.g., leaking pipes). For example, solvents are susceptible to such releases because they are commonly in a liquid state. Soil and water contamination hazards under the DSW exclusions could increase because of the following:

- Change from RCRA-permitted to unpermitted management facilities (Scenarios 1, 5, and 8). Some HSMs may be diverted from off-site reclamation or disposal at a permitted facility under the hazardous waste regulations to off-site reclamation under the TBE, which does not require a permit. Permitted facilities are subject to prescriptive permit requirements covering the design, construction, operation, financial assurance, closure and post-closure of the facility, including hazardous waste management units. They also are subject to public involvement in the permitting process. Reclamation under the TBE would be subject to fewer requirements, including no requirement for a permit or public involvement. For example, reclamation under the TBE is not subject to emergency preparedness and response, personnel training, or prescriptive requirements for containment. These requirements could reduce the likelihood of leaks and spills that could result in soil or water contamination, reduce their magnitude, or increase the ability of facilities to respond to them and reduce the damage caused.

- No explicit containment standards (Scenarios 1, 5, and 8). The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations prescribe specific design, installation, operating, closure and post-closure standards to address containment, whereas the TBE does not. The exclusion requires that the material be managed in a manner that is at least as protective as that employed for analogous raw material and be contained. As such, the TBE allows more flexibility in how HSMs can be managed and contained. These controls, which could reduce the likelihood of leaks and spills that could result in soil or water contamination, reduce their magnitude, or increase the ability of facilities to respond to them and reduce the damage caused, are not specifically required under the DSW exclusions.

- HSMs could be increasingly diverted from hazardous waste management to reclamation under the TBE (Scenarios 1, and 4 through 8). Increased reclamation could increase the risk at reclamation sites of leaks and spills that could result in soil or water contamination or increase their magnitude. The additional processing required for on-site reclamation could result in more releases to soil

and water. For example, recycling by distillation of a solvent may require filtration, distillation, condensation, or other processing. As the solvent is passed through the pipes, valves, and other equipment used in the distillation process, the likelihood of a release through leaks and spills increases.

Volatile Air Emissions (Scenarios 1, and 4 through 8). Volatile organic air emissions can be released during accumulation, transportation, and reclamation onsite. Under certain conditions, solvents held in tanks or containers could volatilize and escape to the atmosphere (e.g., through open container lids, uncovered tanks, leaks and vents, and breathing losses). This also could occur during the reclamation process. Volatile emission hazards under the DSW exclusions could increase because of the following:

- Change from RCRA-permitted to unpermitted management facilities (Scenarios 1, 5, and 8). Some HSMs may be diverted from off-site reclamation or disposal at a permitted facility under the hazardous waste regulations to off-site reclamation under the TBE, which does not require a permit. Permitted facilities are subject to prescriptive permit requirements covering the design, construction, operation, financial assurance, closure, and post-closure of the facility, including hazardous waste management units. They also are subject to public involvement in the permitting process. Reclamation under the TBE would be subject to fewer requirements, including no requirement for a permit or public involvement. For example, reclamation under the exclusion is not subject to emergency preparedness and response, personnel training, or prescriptive requirements for containment. These requirements could reduce the likelihood of volatile air emissions or reduce their magnitude.

- No explicit containment standards (Scenarios 1, 5, and 8). The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations have explicit design, installation, operating, closure, and post-closure standards to address containment, whereas the TBE does not. The exclusion requires that the HSM be managed in a manner that is at least as protective as that employed for analogous raw material and be contained. As such, the TBE allows more flexibility in how HSMs can be managed and contained. These controls, which could be helpful in preventing volatile air emissions, are not specifically required under the DSW exclusions.

- No explicit standards for controlling air emissions (Scenarios 1, 5, and 8). The TBE does not include standards for controlling air emissions from process vents, equipment leaks, or storage units as do the hazardous waste regulations. While the DSW exclusions require containment of HSM, they do not include explicit requirements for control of air emissions. The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations set forth explicit design, operating and other standards to control air releases for process vents, leaks, and storage units. These controls, which could be helpful in preventing volatile air emissions, are not specifically required under the DSW exclusions.

- HSM could be increasingly diverted from hazardous waste management to reclamation under the TBE (Scenarios 1, and 4 through 8). The additional

processing required for on-site reclamation could result in more air emissions at reclamation sites. For example, recycling by distillation of a solvent may require filtration, distillation, condensation, or other processing. As the solvent is passed through the pipes, valves, and other equipment used in the distillation process, volatile emissions from fittings, valves, and process equipment could increase. In addition, many reclamation processes, such as distillation of solvents, require the application of heat. Solvents generally become more volatile as the temperature increases, which could lead to greater air emissions. Changes in temperature also can increase breathing losses from tanks and equipment, leading to increased air emissions.

Particulate Wind Dispersal (Scenarios 1, and 4 through 8). Wind dispersal can occur if the HSM is in the form of a dust or small, dry particles, adequate controls are not in place, and certain climatic conditions prevail (e.g., strong wind gusts). Soil or other solid media contaminated with solvents or other contaminants may be susceptible to wind dispersal. Electric arc furnace dust, in particular, might be susceptible to wind dispersal because it is often present in dust form and may be stored in waste piles. Wind dispersal contamination hazards under the DSW exclusions could increase because of the following:

- Change from RCRA-permitted to unpermitted management facilities (Scenarios 1, 5, and 8). Some HSMs may be diverted from off-site reclamation or disposal at a permitted facility under the hazardous waste regulations to off-site reclamation under the TBE, which does not require a permit. Permitted facilities are subject to explicit permit requirements covering the design, construction, operation, financial assurance, closure, and post-closure of the facility and hazardous waste management units. They also are subject to public involvement in the permitting process. Reclamation under the TBE would be subject to fewer requirements, including no requirement for a permit or public involvement. For example, reclamation under the exclusion is not subject to emergency preparedness and response, personnel training, or explicit requirements for containment. These requirements could reduce the likelihood of wind dispersal of HSM, reduce their magnitude, or increase the ability of facilities to respond to them and reduce the damage caused.
- No explicit containment standards (Scenarios 1, 5, and 8). The hazardous waste regulations and TBE require containment of HSM in the unit. The hazardous waste regulations contain explicit design, installation, operating, closure and post-closure standards to address containment, whereas the TBE does not. The exclusion requires that the HSM be managed in a manner that is at least as protective as that employed for analogous raw material and be contained. As such, the TBE allows more flexibility in how HSMs can be managed and contained. These controls, which could reduce the likelihood of wind dispersal of HSM, or increase the ability of facilities to respond to them and reduce the damage caused, are not specifically required under the DSW exclusions.

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Abandoned Materials (Scenarios 5 and 8). A significant number of the environmental damage cases evaluated by EPA involve abandoned materials. EPA believes that bankruptcies and other business failures could be responsible for a number of these cases. Abandoned materials at intermediate and reclamation sites under the DSW exclusions could increase because of the following:

- The TBE requires facilities to obtain financial assurance for closure and accidents. By obtaining financial assurance, a facility is demonstrating that even if events beyond its control make its operations uneconomical, funds will be available to cleanup abandoned materials.

  These requirements are more stringent than the hazardous waste regulations that apply to reclaimers that do not store the hazardous waste pending reclamation; such reclaimers are not required to obtain financial assurance. In addition, they are comparable to the financial assurance requirements applicable to permitted reclaimers. However, permitted reclaimers also are subject to other requirements that could prevent abandonment of HSM, including corrective action during each permit renewal. They also are subject to periodic inspections by EPA and state regulatory personnel.

- HSM could be increasingly diverted from hazardous waste management to reclamation under the TBE, which may result in greater quantities accumulated onsite at these facilities. A greater accumulation quantity could mean that the quantity of HSM abandoned could be greater, increasing the magnitude of problems associated with abandoned materials, such as the extent of environmental contamination and cleanup costs.

Table 2.6. Potential Incremental Hazards under the DSW Final Rule: Intermediate and Reclamation Facilities

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards				
	Fire/ Explosion	Soil/Water Contamination	Volatile Air Emissions	Particulate Wind Dispersal	Abandoned Materials
Scenario 1: Generator continues current reclamation practices [b]					
Change from RCRA-permitted to unpermitted management facilities	X	X	X	X	X
No explicit containment standards	X	X	X	X	
No explicit standards for controlling air emissions	X		X		
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	
Scenario 2: Generator switches from off-site disposal to on-site reclamation					
Not applicable					
Scenario 3: Generator switches from off-site disposal to off-site reclamation under the control of the generator [c]					
Not applicable					
Scenario 4: Generator switches from off-site disposal to off-site recycling at a RCRA-permitted facility					
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	X
Scenario 5: Generator switches from off-site disposal to off-site recycling at a U.S. facility without a RCRA permit					
Change from RCRA-permitted to unpermitted management facilities	X	X	X	X	X
No explicit containment standards	X	X	X	X	
No explicit standards for controlling air emissions	X		X		
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	

Table 2.6. Potential Incremental Hazards under the DSW Final Rule: Intermediate and Reclamation Facilities

Regulatory Differences under the DSW Final Rule [a]	Potential Incremental Hazards				
	Fire/ Explosion	Soil/Water Contamination	Volatile Air Emissions	Particulate Wind Dispersal	Abandoned Materials
Scenario 6: Generator switches from off-site disposal to exporting for reclamation					
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	
Scenario 7: Generator switches from off-site reclamation at a facility without a permit to another type of recycling under DSW [d]					
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	
Scenario 8: Generator switches from off-site reclamation a RCRA-permitted facility to another type of recycling under DSW					
Change from RCRA-permitted to unpermitted management facilities	X	X	X	X	X
No explicit containment standards	X	X	X	X	
No explicit standards for controlling air emissions	X		X		
HSM increasingly diverted from hazardous waste management and disposal to reclamation under the TBE	X	X	X	X	

[a] These differences were identified by comparing the federal regulations applicable to storage facilities operating under the hazardous waste regulations and intermediate/reclamation facilities operating under the DSW exclusions. See Section 2.3 of this report for additional information.

[b] This scenario includes generators that continue their current practices under the exclusions by either reclaiming onsite; shipping to a permitted, off-site reclamation facility; or exporting the material for reclamation.

[c] This scenario includes generators switching from off-site disposal to sending the material to either a same-company reclaimer or toll manufacturer under the GCE.

[d] This scenario includes generators switching from off-site reclamation at a facility without a permit to another type of reclamation under the TBE, including either off-site reclamation at a RCRA-permitted facility, off-site reclamation at a facility without a permit, or export of the material to a company in another country.

2.5.3 Potential Reductions and Transfers of Hazards by Facility Type and Scenario

Generators

Abandoned Materials (All Scenarios). The hazardous waste regulations and DSW exclusions have comparable requirements for initial and biennial submittals in regard to frequency and types of information submitted, such as quantities and types of HSMs. However, the biennial reporting requirement in the hazardous waste regulations applies only to LQGs. The DSW notification requirement applies to generators regardless of the amount of waste generated.

Under the DSW exclusions, EPA and state regulators will have a greater knowledge of the types and quantities of HSMs being generated and managed by SQGs. They could use this information when developing compliance activities, such as inspections and outreach, resulting in better compliance and reduced risk of abandoned materials. In addition, a greater knowledge of HSM types and quantities at these smaller sites will give regulators a better idea of how to remove and cleanup HSMs in a protective manner if it were abandoned. The biennial notification requirement, along with the requirement for sites to notify EPA if they cease to operate under the exclusions, will give regulators an indication when these SQGs are closing or have closed so that the regulators can take appropriate action at these sites at that time (e.g., compliance assistance) to ensure the HSM is not abandoned. The information submitted in notifications also is publicly available. The general public can use this information to better understand the generation and management of HSM in their communities.

Transporters

Reduction in Transportation Accidents, Pollution, Traffic, and Noise (Scenarios 1 through 8). Following are potential changes under the DSW exclusion that could result in a reduced frequency of off-site shipments from generator sites and a decrease in transportation hazards:

- Longer generator accumulation periods are allowed, reducing the number of shipments made to reclaimers (Scenarios 1, 3, 4, 5, 6, 7, and 8). Under 40 CFR Part 262, LQGs and SQGs are prohibited from accumulating hazardous waste onsite for more than 90 or 180/270 days (depending on type of activity involved), respectively, without a permit or interim status. SQGs also must ensure that the quantity of hazardous waste accumulated onsite does not exceed 6,000 kilograms. To avoid exceeding these accumulation limits, generators may need to make numerous off-site shipments of hazardous waste during the year (e.g., less than every 90 days for LQGs).

  Generators operating under an exclusion of the DSW final rule are not subject to the 40 CFR Part 262 generator standards, including the accumulation volume or time limits, for their HSMs managed under the DSW final rule. Rather, these generators would manage their materials in accordance with the current DSW exclusions. In regard to on-site accumulation, they must ensure that their HSMs are not "speculatively accumulated." This means that a generator accumulating HSM must be able to show that, during a calendar year, the amount of such material that is recycled or transferred to a different site for recycling is at least 75% by weight or volume of the amount of the HSM present at the beginning of the period.

This speculative accumulation provision gives generators greater flexibility to determine the appropriate timing of their off-site shipments. This could allow them to take advantage of economies of scale in transporting their HSM. In general, unit transportation costs decrease as the amount of material transported increases. Generators that make fewer, larger shipments will pay less in transportation costs than those that must rely on more, smaller shipments for the same amount of waste.

For example, a generator that had to make four small off-site shipments each year under the 90-day accumulation time limit might be able to make one or two larger off-site shipments each year under the DSW exclusion, provided the speculative accumulation provision is satisfied.

Fewer shipments would result in a reduction in the total number of trucks on the road and a decrease in the total number of miles traveled by trucks carrying the HSM. This would cause a corresponding decrease in the incidence of transportation-related accidents, and adjacent community exposures to air emissions from the waste on the roads, air emissions from truck operation, and traffic.

These hazard reductions could occur, for example, when generators switch from off-site reclamation under the hazardous waste regulations to off-site reclamation under the current DSW exclusions. They also could occur when generators switch from off-site treatment and disposal under the hazardous waste regulations to off-site reclamation under the DSW final rule.

- Generators may switch to on-site reclamation, reducing or eliminating their off-site shipments of HSM (Scenarios 2 and 8). Some generators might opt to switch from off-site treatment, disposal, or reclamation under the hazardous waste regulations to on-site reclamation under the DSW final rule. On-site reclamation could reduce the number of off-site shipments each year. For example, the generator would not need to ship its reclaimed materials offsite within the 90 days (for LQGs) or 180/270 days (for SQGs) as required for hazardous waste. Rather, it could ship the HSM offsite less frequently. Less frequent shipments could result in a corresponding decrease in the incidence of transportation-related accidents, air emissions from the waste on the roads, air emissions from truck operation, and traffic.

- Change in generator status results in fewer off-site shipments of all hazardous waste produced by that facility (Scenarios 1 through 8). A generator that reclaims onsite or offsite under the DSW final rule might change its hazardous waste generator status and thereby make fewer off-site hazardous waste shipments each year. For example, a generator that drops from being a LQG to a SQG would be able to ship its hazardous wastes offsite under the 180/270-day accumulation time limit instead of every 90 days. Fewer off-site shipments could result in the hazard reductions described above.

Intermediate and Reclamation Facilities

Releases from Reclamation (Scenario 7). The TBE requires facilities to obtain financial assurance for closure and accidents. By obtaining financial assurance, a facility is demonstrating that even if the facility declares bankruptcy, funds will be available to cleanup abandoned HSMs. These requirements are more stringent than the hazardous waste regulations that apply to reclaimers that do not store the hazardous waste pending reclamation; such reclaimers are not

required to obtain financial assurance. The financial assurance requirements will decrease the likelihood that the economic burden for the cleanup of abandoned materials will fall on the public.

In addition, the TBE requires generators to make reasonable efforts to evaluate a reclamation facility before shipping excluded material to it when the facility's management of the HSM would not be addressed under a RCRA Part B permit or interim-status standard. The hazardous waste regulations do not require such reasonable efforts. For example, the TBE requires generators to determine that the facility has not been classified as a significant non-complier with RCRA Subtitle C and that it has the equipment and trained personnel to safely recycle the HSM. The generator must affirmatively answer these and other questions listed at 40 CFR 261.4(a)(24)(v)(B) for the facility. EPA expects these determinations by generators to motivate reclaimers to improve their environmental performance (e.g., properly train their personnel) and address outstanding violations and prevent future ones. These efforts also will help to ensure that the HSMs are managed at facilities that are qualified to reclaim them safely. In this respect, the TBE could reduce environmental hazards in comparison with the hazardous waste regulations for reclamation facilities that are not subject to a RCRA permit. EPA recognizes that not all generators will have the same ability to perform efforts audits, and the efficacy of these efforts will depend on their ability. For example, small or independent generators may have fewer financial resources or staff to use to conduct such audits, and may be more likely to miss indications that reclaimers are not legitimately recycling HSM.

Abandoned Materials (Scenario 7). EPA believes that bankruptcies and other business failures (intended or unintended) could be responsible for abandonment of HSM at a number of former reclamation facilities. Abandoned materials at intermediate and reclamation sites under the current DSW exclusions could increase due to reduced regulatory requirements under the DSW exclusions. However, the TBE requires facilities to obtain financial assurance for closure and accidents. The financial assurance demonstrates that even if a facility goes into bankruptcy, funds will be available to cleanup abandoned materials, and the financial burden for cleanup will not fall on the public. These requirements are more stringent than the hazardous waste regulations that apply to reclaimers that do not store the hazardous waste pending reclamation; such reclaimers are not required to obtain financial assurance.

2.5.4 Other Impacts

Environmental Hazards from Hazardous Waste Treatment and Disposal (Scenarios 2 through 6). The current DSW exclusions could make reclamation more appealing than treatment and disposal for some generators. For example, the rule would lessen the barriers to reclamation, such as regulatory burdens and manifesting/permitting costs, and thereby make reclamation more cost-competitive. In addition, the rule lessens the stigma associated with reclaiming "hazardous waste" because the material to be reclaimed is considered to be "hazardous secondary material." As a result, HSMs might be diverted increasingly from treatment and disposal to reclamation under the current DSW exclusions. This could shift hazards associated with the management of HSM from some communities to others. For example, a reduction of hazards in one community (e.g., HSM diverted away from a distant incinerator) could translate to an increase in hazards in another community (e.g., HSM redirected to a nearby reclaimer using distillation). Thus, diversion of HSMs from treatment and disposal to reclamation may result in some environmental justice benefits.

Greater reclamation could reduce the quantity of hazardous wastes sent to incineration, burning for energy recovery, and landfilling. This could reduce the amount of emissions from incinerators, boilers, and industrial furnaces, reducing emissions of hazardous air pollutants and greenhouse gasses. It also could reduce the risk of contamination of groundwater and air emissions from landfills. However, there could be some offsetting environmental impacts from increased reclamation. For example, there could be air emissions and increased energy use from such reclamation methods as solvents distillation.

Environmental Hazards from Mining Operations and Air Pollution from Energy Usage (Scenarios 2 through 6). As indicated earlier, HSMs might be diverted increasingly from treatment and disposal to reclamation under the current DSW exclusions. As the quantity of a reclaimed material increases, the demand for the corresponding virgin material could decrease. This, in turn, could result in a reduction in the exploration, development, extraction, refining, and processing of the virgin material, which could help to preserve the natural environment and generate less air, water, and soil pollution associated with extraction and processing activities. For example, etchant suppliers could increasingly receive and recycle electroplating sludge from printed circuit board manufacturers, lessening the demand for copper from mining and the associated environmental footprint and effects of mining operations.

In addition, when increasing quantities of HSMs are reclaimed, less energy might be needed to extract, transport, and process the raw materials. When energy demand decreases, fewer fossil fuels are burned and less contaminants from energy generation and material transportation are emitted into the atmosphere. For example, less energy is normally needed to re-melt metals for recycling than to produce virgin metal from ore; hence, less greenhouse gases and other air emissions could be generated from recycling than using raw materials to produce similar products.

Finally, some manufacturing plants generate large quantities of waste while producing a “virgin” product. These wastes must be managed in accordance with applicable solid and hazardous waste regulations, which could involve incineration and landfilling. Greater reclamation could reduce the demand for virgin products, and hence, lessen the generation of solid and hazardous wastes from their manufacturing.

Table 2.7. Potential Reduction in Hazards under the Current DSW Exclusions

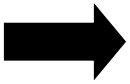
Differences under the DSW Final Rule [a]	Potentially Decreased Hazards					
	Transportation Accidents, Pollution, Traffic, Noise	Releases from Reclamation (e.g., fires, soil contamination)	Abandoned Materials	Environmental Hazards from Treatment and Disposal	Air Pollution from Energy Usage	Environmental Hazards from Mining Operations
Scenario 1: Generator continues current reclamation practices [b]						
Longer generator accumulation periods, fewer off-site shipments of HSM	X					
Change in generator status, fewer shipments of hazardous waste	X					
Biennial notifications from SQGs to EPA under DSW exclusions			X			
Scenario 2: Generator switches from off-site disposal to on-site reclamation						
Change in generator status, fewer shipments of hazardous waste	X					
HSM increasingly diverted from treatment and disposal to on-site reclamation under exclusion	X			X		
Reduced mining and energy use because of increased reclamation					X	X
Biennial notifications from SQGs to EPA under DSW exclusions			X			
Scenario 4: Generator switches from off-site disposal to off-site recycling at a RCRA-permitted facility						
Longer generator accumulation periods, fewer off-site shipments of HSM	X					
Change in generator status, fewer shipments of hazardous waste	X					

Table 2.7. Potential Reduction in Hazards under the Current DSW Exclusions

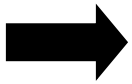
Differences under the DSW Final Rule [a]	Potentially Decreased Hazards					
	Transportation Accidents, Pollution, Traffic, Noise	**Releases from Reclamation (e.g., fires, soil contamination)**	**Abandoned Materials**	**Environmental Hazards from Treatment and Disposal**	**Air Pollution from Energy Usage**	**Environmental Hazards from Mining Operations**
Scenario 7: Generator switches from off-site reclamation at a facility without a permit to another type of recycling under DSW [d]						
Longer generator accumulation periods, fewer off-site shipments of HSM	X					
Change in generator status, fewer shipments of hazardous waste	X					
HSM increasingly diverted from unpermitted reclamation under HWRs to reclamation under the TBE, which may be more stringent		X	X			
Biennial notifications from SQGs to EPA under DSW exclusions			X			
Scenario 8: Generator switches from off-site reclamation a RCRA-permitted facility to another type of recycling under DSW						
Longer generator accumulation periods, fewer off-site shipments of HSM	X					
Change in generator status, fewer shipments of hazardous waste	X					
Biennial notifications from SQGs to EPA under DSW exclusions			X			

[a] These differences were identified by comparing the federal regulations and potential consequences under the hazardous waste regulations and the DSW exclusions.
[b] This scenario includes generators that continue their current practices under the exclusions by either reclaiming on-site; shipping to a permitted, off-site reclamation facility; or exporting the material for reclamation.
[c] This scenario includes generators switching from off-site disposal to sending the material to either a same-company reclaimer or toll manufacturer under the GCE.
[d] This scenario includes generators switching from off-site reclamation at a facility without a permit to another type of reclamation under the TBE, including either off-site reclamation at a RCRA-permitted facility, off-site reclamation at a facility without a permit, or export of the material to a company in another country.

Summary of Potential Impacts the Current DSW Exclusions under Different Recycling Scenarios

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
Scenario 1: Generator continues current recycling practices				
Generator recycles material onsite under hazardous waste regulations		Generator recycles material onsite under generator-controlled exclusion	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators and permit-exempt recyclers** due to greater reporting and self-disclosure.
Generator sends material offsite for recycling to RCRA-permitted facility under hazardous waste regulations		Generator sends material offsite for recycling at a RCRA-permitted facility under transfer-based exclusion	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk during transportation** due to less frequent offsite

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
			Potential increased risk during transportation if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks include environmental contamination and potential human exposure. **No change** in risk at recycling facility.	shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure
Generator exports material under hazardous waste regulations for recycling or reclamation in another country		Generator exports material under the transfer-based exclusion for recycling in another country	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environment contamination and human exposure, and abandoned materials. **Potential increased risk during transportation** if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks include environmental	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
			contamination and potential human exposure. **No change** in risk at recycling facility.	include fewer transportation accidents, and less pollution, traffic and noise.
Scenario 2: Generator switches from off-site disposal to on-site reclamation				
Generator sends material offsite to a RCRA permitted facility for treatment followed by landfilling under hazardous waste regulations		Generator recycles material onsite under generator-controlled exclusion	**Potential increased risk to human health and the environment at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise.

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
				Potential reduced risk in communities surrounding existing off-site treatment/disposal facilities. **Potential increased resource conservation and environmental benefits** due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption.
Scenario 3: Generator switches from off-site disposal to off-site recycling under the control of the generator				
Generator sends material offsite to a RCRA permitted facility for treatment followed by landfilling under hazardous waste regulations		Generator sends material offsite for recycling at a facility that it controls under generator-controlled exclusion	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials. **Potential increased risk during transportation** if	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
			HSM no longer qualifies as DOT hazardous material, does not trigger RQ, and/or is not accompanied by a tracking document. Potential increased risks include environmental contamination and potential human exposure, and abandoned materials. **Potential increased risk** in communities surrounding generator off-site recycling facilities	**Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk** in communities surrounding existing off-site treatment/disposal facilities. **Potential increased resource conservation and environmental benefits** due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption
Scenario 4: Generator switches from off-site disposal to off-site recycling at RCRA-permitted facility				
Generator sends material offsite to a RCRA permitted		Generator sends material offsite for recycling at a RCRA-permitted facility	**Potential increased risk at generator** due to longer accumulation times, greater	**Potential reduced risk at small generators** of

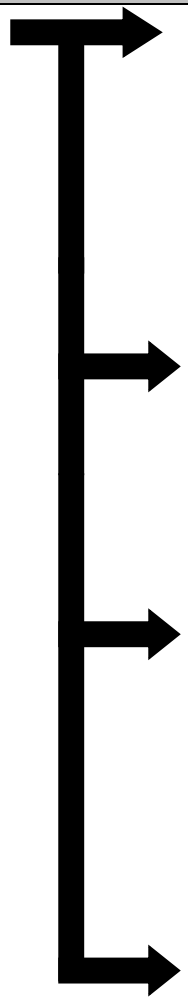
Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
facility for treatment followed by landfilling under hazardous waste regulations		under transfer-based exclusion	quantities, lack of explicit preventative measures. Potential increased risks included fires/explosions, environmental contamination and human exposure, and abandoned materials. **Potential increased risk during transportation** if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks include environmental contamination and potential human exposure.	abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk** in communities surrounding existing off-site treatment/disposal facilities. **Potential increased resource conservation**

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
				and environmental benefits due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption
Scenario 5: Generator switches from off-site disposal to off-site recycling at a U.S. facility without a RCRA permit				
Generator sends material offsite to a RCRA permitted facility for treatment followed by landfilling under hazardous waste regulations		Generator sends material offsite for recycling at a facility in the United States without a RCRA permit under transfer-based exclusion	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials. **Potential increased risk during transportation** if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks include environmental contamination and potential human exposure.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk at recycler** due to requirements for financial

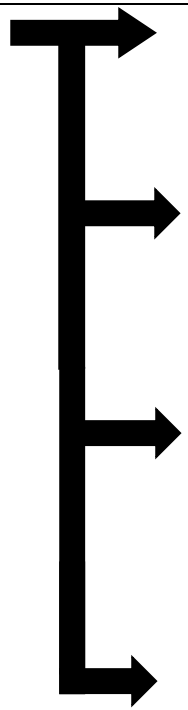
Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
			Potential increased risk at recycler due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fire/explosion, environmental contamination, and human exposure.	assurance and generator audits of recyclers under transfer-based exclusion. Potential reduced risks include fewer releases from reclamation and reduced frequency of **Potential reduced risk of non-compliant behavior at small generators and permit-exempt recyclers** due to greater reporting and self-disclosure **Potential reduced risk** in communities surrounding existing off-site treatment/disposal facilities. **Potential increased resource conservation and environmental benefits** due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
Scenario 6: Generator switches from off-site disposal to exporting for recycling				
Generator sends material offsite to a RCRA permitted facility for treatment followed by landfilling under hazardous waste regulations		Generator exports material under the transfer-based exclusion for recycling in another country	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental continuation and human exposure, and abandoned materials. **Potential increased risk during transportation** if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks include environmental contamination and potential human exposure. **Potential increased risk at recycler** due to greater quantities of HSM being received. Potential increased risks include fires/explosions, environmental contamination and human exposure.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk** in communities surrounding existing off-site treatment/disposal facilities.

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
				Potential increased resource conservation and environmental benefits due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption
Scenario 7: Generator switches from off-site recycling at a facility without a permit to another type of recycling under the 2008 DSW final rule				

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
Generator sends material offsite for recycling at a facility in the United States that recycles without a RCRA permit under hazardous waste regulations		Generator sends material offsite for reclamation at a facility under generator-controlled exclusion, *or* Generator exports material under the transfer-based exclusion for reclamation in another country, *or* Generator sends material offsite for reclamation at a RCRA permitted facility under transfer-based exclusion, *or* Generator sends material offsite for reclamation at a facility in the United States without a RCRA permit under transfer-based exclusion.	**Potential increased risk at generator** due to longer accumulation times, greater quantities, lack of explicit preventative measures. Potential increased risks include fires/explosions, environmental contamination and human exposure, and abandoned materials. **Potential increased risk during transportation** if HSM no longer qualifies as DOT hazardous material or does not trigger RQ. Potential increased risks included environmental contamination and potential human exposure. **Potential increased risk at new recycler** due to longer accumulation times, and greater quantities accumulated. Potential increased risks include fires/explosions, environmental contamination and human exposure under GCE.	**Potential reduced risk at small generators** of abandoned materials due to more frequent reporting and increased data on generator activities, HSM quantities and types. **Potential reduced risk of non-compliant behavior at small generators** due to greater reporting and self-disclosure **Potential reduced risk during transportation** due to less frequent offsite shipments of HSM. Potential reduced risks include fewer transportation accidents, and less pollution, traffic and noise. **Potential reduced risk at recycler** due to requirements for financial assurance and generator audits of recyclers under transfer-based exclusion. Potential reduced risks

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
			Potential reduced risk at new recycler due to "contained" standard, legitimacy condition and (for the transfer-based exclusions) reasonable efforts audit and financial assurance conditions.	include fewer releases from reclamation and reduced frequency of abandoned materials. **Potential reduced risk** in communities surrounding previously used off-site recycling facility. **Potential increased resource conservation and environmental benefits** due to greater quantities of HSM being reclaimed and less environmental damage from mining and energy consumption

Hazardous Waste Regulations		Current DSW Practices	Summary of Increases in Risks	Summary of Reductions in Risks/Other Benefits
Scenario 8: Generator switches from off-site recycling at a RCRA-permitted facility or exporting waste for recycling to another type of recycling under the 2008 DSW final rule				
Generator sends material offsite for reclamation to RCRA-permitted facility under hazardous waste regulations or exports waste for reclamation in another country		Generator reclaims material onsite under generator-controlled exclusion, *or* Generator sends material offsite for reclamation at a facility that it controls under generator-controlled exclusion, *or* Generator sends material offsite for reclamation at a facility in the United States without a RCRA permit under transfer-based exclusion, *or* Generator exports material under the transfer-based exclusion for reclamation in another country	Same as corresponding scenarios 2 – 6	Same as corresponding scenarios 2 – 6, but with no resource conservation benefits.

2.5.5 Trade-Offs Between Increased and Decreased Hazards

EPA finds that, overall, the potential for an increase in hazards under the 2008 DSW rule resulting in adverse impacts to adjacent communities outweighs the potential decrease in hazards. Increased hazards include events that can directly impact risk to human health and the environment from hazardous secondary materials, including fires, explosions, soil and groundwater contamination, volatile air emissions, and particulate wind dispersal. In contrast most of the decreased hazards are indirect, either in their potential risks or their impacts to public health, or both, and are of a lower magnitude (for example, reduction in transportation accidents, pollution, traffic, and noise).

The decreased hazard associated with the 2008 DSW rule most directly associated with the hazards posed by the hazardous secondary material itself is increased hazardous waste treatment and disposal. However, the hazards posed by additional shipments to these already-established facilities are not comparable to the potential risks from the establishment of new recycling facilities without the Subtitle C controls under the 2008 DSW rule. The RCRA Subtitle C facilities are already integrated into the community, and have gone through the appropriate RCRA permitting process, including public participation, and are subject to requirements necessary to ensure protection of human health and the environment. In contrast, the potential for recycling facilities without RCRA permits to be established without prior regulatory oversight or community involvement carry a high risk of over-accumulation and abandonment of hazardous secondary materials, due to the economic incentives of commercial recycling and lack of restrictions on these materials that a permit would provide.

2.5.6 Regulatory Changes In The 2014 DSW Final Rule That Address The Potential Adverse Impacts To Human Health And The Environment From The Current DSW Exclusions

The 2014 DSW final rule includes regulatory changes to the 2008 DSW final rule that address the potential adverse impacts from the current DSW exclusions, including potential adverse impacts to minority and low-income communities. As discussed in further detail in the preamble to the 2014 DSW final rule, these changes were made according to EPA's authority under RCRA to regulate discarded material. Because of these changes, the 2014 DSW final rule is expected to increase the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

Below is a summary of the major changes to the current DSW exclusions promulgated in the 2014 DSW final rule, and how they address the potential adverse impacts to human health and the environment (including impacts to minority and low-income populations).

Replacement of the Transfer-Based Exclusion with Verified Recycler Exclusion

The withdrawal of the transfer-based exclusion and its replacement with the verified recycler exclusion addresses the concerns regarding third-party recyclers. Under the new exclusion, generators must send their hazardous secondary materials to a RCRA-permitted reclaimer or to a

verified hazardous secondary materials reclaimer who has obtained a solid waste variance from EPA or the authorized state.

For reclaimers without a RCRA permit, in order to obtain a variance and become verified, the third-party reclaimer must address criteria that essentially mirrors the criteria under the reasonable efforts condition in the transfer-based exclusion. This includes: (1) demonstrate their recycling is legitimate, (2) must have financial assurance in place to properly manage the hazardous secondary material, (3) must not have had any formal enforcement actions for RCRA violations in the previous three years and is not classified as a significant non-complier with RCRA Subtitle C, or must provide credible evidence that the facility will manage the hazardous secondary materials properly, (4) must have the proper equipment, trained personnel, and meet emergency preparedness and response requirements to safely reclaim the material, (5) must manage the residuals from reclamation properly, and (6) must address risk to nearby communities from potential releases of the hazardous secondary material and in consideration of existing environmental stressors.

Before a variance can be granted, it will also go through a public notice and comment process, allowing communities the opportunity to have a voice in the environmental decisions that may affect them.

Because of the additional oversight, public participation and controls under the verified recycler exclusion, the potential for increased adverse impact under Scenarios 4, 5, and 6 and the off-site options under Scenarios 1, 7, and 8 is minimized.

Codified "Contained" Standard

In addition, the codification of the "contained" standard addresses the lack of preventative measures and the lack of RCRA air standards under the generator-controlled exclusions. Under the 2014 DSW final rule, the HSM must be contained in a unit (including a land-based unit) that meets the following criteria:

> (1) The unit is in good condition, with no leaks or other continuing or intermittent unpermitted releases of the hazardous secondary materials to the environment, and is designed, as appropriate for the hazardous secondary material, to prevent releases of the hazardous secondary materials to the environment. Unpermitted releases are releases that are not covered by a permit (such as a permit to discharge to water or air) and may include, but are not limited to, releases through surface transport by precipitation runoff, releases to soil and groundwater, wind-blown dust, fugitive air emissions, and catastrophic unit failures;
>
> (2) The unit is properly labeled or otherwise has a system (such as a log) to immediately identify the hazardous secondary materials in the unit; and
>
> (3) The unit holds hazardous secondary materials that are compatible with other hazardous secondary materials placed in the unit and is compatible with the materials used to construct the unit and addresses any potential risks of fires or explosions. Hazardous secondary materials in units that meet the applicable requirements of 40 CFR parts 264 or 265 are presumptively contained.

This contained definition provided both the regulated community and the implementing agencies with an approach that helps address the potential for fires/explosions, environmental contamination and human exposure under the generator-controlled exclusions in Scenarios 1, 2, 3, 7 and 8.

Emergency Preparedness

New emergency preparedness and response requirements under the generator-controlled exclusion and the verified recycler exclusion address the risk of fires, explosions and other accidents. Specifically, EPA is requiring that generators that accumulate less than or equal to 6,000 kg of hazardous secondary material on site comply with the emergency preparedness and response requirements equivalent to those in part 265 subpart C, which discuss maintaining appropriate emergency equipment on site, having access to alarm systems, maintaining needed aisle space, and making arrangements with local emergency authorities. A generator must also have a designated emergency coordinator who must respond to emergencies and must post certain information next to the telephone in the event of an emergency. For generators that accumulate more than 6,000 kg of hazardous secondary material on site, EPA is requiring that generators comply with requirements equivalent to those in part 265 subparts C and D, which includes all the requirements already discussed above for those accumulating less than or equal to 6,000 kg, as well as requiring a contingency plan and sharing the plan with local emergency responders.

These new requirements help address the potential for fires/explosions, environmental contamination and human exposure under in Scenarios 1, 2, 3, 4, 6, 7 and 8.

Additional Recordkeeping Requirements For Speculative Accumulation and for Transfers Under the Tolling and Same-Company Provisions Under the Generator-Controlled Exclusion

Under the 2014 DSW final rule, all persons subject to the speculative accumulation requirements of 40 CFR § 261.1(c)(8) (including, but not limited to, persons operating under the generator-controlled exclusion)) must place materials subject to those requirements in a storage unit with a label indicating the first date that the material began to be accumulated. If placing a label on the storage unit is not practicable, the accumulation period must be documented through an inventory log or other appropriate method. This provision will allow inspectors and other regulatory authorities to quickly ascertain how long a facility has been storing an excluded hazardous secondary material, and, therefore, whether that facility is in compliance with the accumulation time limits..

In addition, the 2014 DSW final rule includes revisions to the generator-controlled exclusion for tolling and "same-company" recycling that require recordkeeping for shipments sent and received under the exclusion. The records must contain the name of the transporter, the date of the shipment, and the type and quantity of hazardous secondary material shipped or received. These records may consist of normal business records. Such recordkeeping will facilitate enforcement of the exclusion and will allow tracking of hazardous secondary materials to ensure that these materials remain within the control of the generator and are not discarded.

Together, these provisions help address the concern that the HSM could become abandoned under the generator-controlled exclusions in Scenarios 1, 2, 3, 7 and 8.

2.5.7 Implementation Measures That Address The Potential Adverse Impacts To Human Health And The Environment from Hazardous Secondary Material Recycling

In addition to the regulatory changes to address potential adverse impacts of hazardous secondary materials recycling, EPA can take non-regulatory steps to help mitigate the potential adverse impacts. These steps include closely monitoring the facilities notifying under the 2014 DSW final rule, making information about the DSW facilities available to the public, and working with states and EPA Regions to ensure they have the information they need to ensure compliance with the provisions of the rule, and making available to the public information about the facilities that have notified. EPA has begun this process for the states and territories currently operating under the 2008 DSW final rule, and plans to continue these efforts in order to help prevent potential adverse impacts under the 2014 DSW final rule.

In particular, the notification condition will allow EPA (and the public) to know exactly who is operating under the DSW exclusions. EPA has the authority to inspect these facilities and enforce Subtitle C regulations if the facilities are not meeting the conditions of the exclusions. This enforcement authority, coupled with the new condition that EPA is imposing requiring third-party recyclers be verified prior to operating under the exclusion, will help ensure that recyclers operating the DSW exclusions are capable of safely and legitimately recycling hazardous secondary materials prior to beginning operations, and that they continue to do so as long as they operate under the exclusions.

Appendix A: Comparison of Regulatory Requirements under 2008 DSW Final Rule to RCRA and Other Federal Regulations

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1. Introduction

This Appendix presents a comparison of the federal regulations applicable to: (1) generators and permitted storage facilities operating under the federal hazardous waste regulations and (2) generators, intermediate facilities, and reclamation facilities operating under the current Definition of Solid Waste (DSW) exclusions. The purpose of the comparison is to determine if the federal regulations applicable to generators and facilities operating under the current DSW exclusions are "comparable" to the federal regulations applicable to hazardous waste generators and permitted storage facilities operating under the federal hazardous waste regulations. For purposes of this analysis, a regulation is "comparable" to another regulation if they both have the same general objectives and apply to the same types of facilities.

Section 2 of this Appendix describes the methodology used to develop the comparison, Section 3 summarizes the key findings of the comparison, Section 4 presents the tables used to compare the regulations, and Section 5 presents a summary of the federal regulations included in the comparison.

2. Methodology

EPA developed three tables for purposes of comparing the federal regulations:

- Table 1 compares the federal regulations applicable to generators of hazardous waste and generators of hazardous secondary material (HSM) under the generator-controlled exclusion (GCE).
- Table 2 compares the federal regulations applicable to generators of hazardous waste and generators of HSM under the transfer-based exclusion (TBE).
- Table 3 compares the federal regulations applicable to hazardous waste storage facilities and HSM intermediate and reclamation facilities under the TBE.[46]

Each table includes three columns. Column 1 of the tables presents the hazardous waste regulations and other federal regulations applicable to hazardous waste generators or storage facilities. Column 2 presents the conditions and requirements of the current DSW exclusions and other federal regulations applicable to HSM generators and facilities operating under the exclusions. Column 3 briefly compares these regulations to determine if the federal regulations applicable to generators and facilities operating under the current DSW exclusions (Column 2) are comparable to the federal regulations applicable to hazardous waste generators and permitted storage facilities operating under the federal hazardous waste regulations (Column 1).

To prepare the tables, EPA first reviewed the federal hazardous waste regulations and identified those requirements most relevant to the generation, storage, and reclamation of HSM (e.g., storage time limits for generators). EPA then summarized these requirements in Column 1 of the

[46] EPA compares hazardous waste storage facilities to HSM facilities because hazardous waste storage facilities are the most analogous type of facility under the hazardous waste regulations. Specifically, if an intermediate facility operated under the hazardous waste regulations (i.e., by storing hazardous waste), it would be subject to the hazardous waste storage requirements, including a storage permit. If a reclamation facility stored hazardous waste pending reclamation, it would be subject to the hazardous waste storage requirements, including a storage permit.

tables and included a heading above each requirement (or group of requirements) to briefly describe it (e.g., "storage time limit," "personnel training").

EPA then reviewed the current DSW exclusions to see if they contain any conditions or requirements that generally correspond to the hazardous waste requirements in the table. EPA summarized the exclusions' requirements and conditions in Column 2 of the table where relevant, to present a side-by-side comparison of the hazardous waste requirements and corresponding DSW conditions and requirements. In Column 3 of the table, EPA briefly examines the hazardous waste requirements and the DSW conditions and requirements to clarify the extent to which they are comparable.

In addition, EPA reviewed other federal regulations to determine if they contain requirements that have a similar objective as these hazardous waste and the current DSW exclusions requirements (e.g., federal regulations that require personnel training and/or emergency response similar to the hazardous waste regulations). EPA summarized these federal requirements in the tables where appropriate. Specifically, if a federal requirement applies to generators and/or storage facilities operating under the hazardous waste regulations, it is summarized in Column 1 of the tables, where relevant. If it applies to generators and/or facilities operating under the current DSW exclusions, it is summarized in Column 2 of the tables, where relevant. In Column 3 of the tables, EPA briefly discusses the extent to which these federal requirements are comparable to the relevant hazardous waste requirements.

3. Summary of Key Findings

Following is a summary of the findings of the comparative analysis presented in the tables of Section 4 of this Appendix. The findings are summarized under the headings used in the comparative tables.

3.1 Legitimate Recycling

EPA has set forth criteria for determining legitimate recycling under the hazardous waste regulations and the current DSW exclusions. Refer to Section 5.1 of this Appendix for a summary of the legitimacy requirements and policies under the hazardous waste regulations and Section 5.2 for the legitimacy requirements and conditions under the current DSW exclusions.

3.2 Storage Time Limit

The hazardous waste regulations and the current DSW exclusions set forth time limits for generators to accumulate hazardous secondary material onsite. However, the current DSW exclusions allows generators to accumulate HSM onsite for longer periods of time. In addition, the current DSW exclusions does not include a quantity limit for on-site accumulation, as do the hazardous waste regulations for small quantity generators (SQGs).

3.3 Containment

The hazardous waste regulations and the current DSW exclusions require containment of HSM in the unit. The hazardous waste regulations prescribe design, operating, and other standards for containment (e.g., standards for container integrity, periodic inspections). Prescriptive requirements could facilitate inspection and enforcement, which could help to prevent releases. On the other hand, the current DSW exclusions does not include prescriptive requirements—rather, it provides a general performance standard. As such, the current DSW exclusions allow more flexibility in how HSMs can be contained. This could result in less protective containment than the hazardous waste regulations. However, some generators and facilities under the exclusions may choose to follow the hazardous waste regulations for their units anyways, particularly those that are otherwise subject to the hazardous waste regulations.

In addition, the GCE allows generators to manage their HSM in land-based units (e.g., surface impoundments, waste piles) but the exclusion does not prescribe containment standards. The hazardous waste regulations do not allow generators to manage hazardous waste in land-based units, unless they have a permit or interim status, under which they must comply with prescriptive design, operating, and other unit-specific standards.

3.4 Air Emissions

Some generators and facilities under the hazardous waste regulations and the current DSW exclusions may be subject to the federal Clean Air Act (CAA) regulatory program for air emissions from stationary sources. Under the CAA program, the states and EPA issue operating permits to certain "major" stationary sources of hazardous air pollutants (HAPs) under 40 CFR Parts 70 and 71. A major source is a source that emits more than 10 tons per year (TPY) of any single HAP or more than 25 TPY of HAPs in total. A number of smaller sources (e.g., "area" sources) also may be required to obtain a permit under the federal program. In addition, area sources not subject to a Title V permit may still be subject to CAA regulation, depending on the applicability provisions of the particular rule. The area source would be required to notify EPA (or the delegated state agency) whether it is subject to the regulation, typically 120 days following promulgation of a CAA rule applicable to that source,

Some generators and facilities under the current DSW exclusions may be subject to CAA requirements that control air emissions from process vents, equipment leaks, or storage units in a manner that is comparable to the hazardous waste regulations. For example, 40 CFR Part 63, Subparts OO, PP, and QQ require air emission controls for tanks, containers, and surface impoundments, respectively, at facilities subject to a CAA permit, as specified. These subparts impose the same types of requirements as the hazardous waste regulations for process vents, equipment leaks, and storage units (e.g., design, operating, monitoring standards).

However, there are two important differences between the CAA regulations and hazardous waste regulations. First, their applicability to the regulated universe differs in some respects. For example, many of the CAA regulations apply to specified industries. EPA has issued rules covering over 80 categories of major industrial sources, such as chemical plants, oil refineries, aerospace manufacturers, and steel mills, as well as categories of smaller sources, such as dry cleaners, commercial sterilizers, secondary lead smelters, and chromium electroplating facilities. The hazardous waste regulations apply to all facilities regardless of industry. Therefore, some generators and facilities under the current DSW exclusions may not be subject to the CAA regulations. Second, some CAA regulations apply to the overall emissions for an entire facility,

but not necessarily to its individual process vents, leaks, and storage units. This will depend on the particular CAA regulation in question. For example, at a facility that is considered a "major" source under CAA and also conducts reclamation of solvent under the DSW final rule, their CAA permit may apply limits to the overall site emissions, and not to the specific solvent recovery unit. By contrast, the hazardous waste regulations include requirements that apply specifically to process vents, equipment leaks, and storage units, as specified. Because of these differences, it is likely that a number of generators and facilities under the current DSW exclusions will not be subject to air emission controls comparable to the hazardous waste regulations for process vents, equipment leaks, or storage units.

3.5 Emergency Preparedness and Response

The hazardous waste regulations require generators and storage facilities to prepare for and respond to emergencies. The current DSW exclusions, on the other hand, does not require emergency preparedness and response. However, materials managed under the current DSW exclusions that are no longer contained in a unit (i.e., released) and not immediately recovered would no longer be excluded. They would need to be cleaned up and be subject to full RCRA Subtitle C regulation if hazardous, including the preparedness and response requirements of the hazardous waste regulations, as applicable.

In addition, other federal regulations may require emergency preparedness and response at generators and facilities operating under the hazardous waste regulations and the current DSW exclusions:

- CAA Chemical Accident Prevention Provisions. 40 CFR Part 68 requires a stationary source (e.g., a building, plant) that meets applicable criteria to develop and implement a risk management program. As part of the program, the stationary source must either develop an emergency response program (i.e., for facility personnel to respond) or make arrangements with off-site response organizations.
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)/Emergency Planning and Community Right-to-Know Act (EPCRA) Notification. 40 CFR Parts 302 and 355 require facilities to immediately notify the National Response Center and local/state officials (if applicable) of a release of a hazardous substance or extremely hazardous substance equal to or exceeding its reportable quantity (RQ).
- Clean Water Act (CWA) Oil Pollution Prevention. 40 CFR Part 112 requires a non-transportation-related facility that meets specified criteria to perform emergency planning and response for oil discharges, including development of a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The SPCC Plan must address such elements as discharge prevention measures; countermeasures for discharge discovery, response, and cleanup; and personnel responsibilities (e.g., for addressing discharges).
- Occupational Safety and Health Act (OSH Act). The Process Safety Management (PSM) Standards (29 CFR 1910.119) and Hazardous Waste Operations and Emergency Response (HAZWOPER) Standards (29 CFR 1910.120(p)(8) and (q)) require facilities meeting specified criteria either to develop and follow an emergency response program (i.e., for facility personnel to respond) or to prepare an evacuation plan for the entire plant (i.e., for off-site personnel to respond). In addition, the Hazard Communication Standard

(HazCom) (29 CFR 1910.1200) requires a facility to provide information to its employees about any chemical (except hazardous waste) which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels, and other forms of warning, material safety data sheets, and information and training (e.g., hazards detection, emergency procedures).

Each of the above regulations requires a level of emergency preparedness and/or response that is at least partially comparable to the hazardous waste regulations. However, it is likely that these regulations will not provide a level of emergency preparedness and protection that is comparable to the hazardous waste regulations for all generators and facilities under the current DSW exclusions. This is explained further below:

- The Chemical Accident Prevention Provisions and Oil Pollution Prevention regulations (i.e., SPCC Plan requirements) apply to a targeted universe of facilities; therefore, a number of generators and facilities under the current DSW exclusions may not be subject to them. The Chemical Accident Prevention Provisions apply to facilities that that have more than a threshold quantity of a "regulated substance." The provisions list 140 toxic and flammable substances subject to regulation. Generators and facilities that do not have any of these 140 chemicals above the quantity thresholds would not be subject to these provisions.

  The requirement for an SPCC Plan under the Oil Pollution Prevention regulations generally applies to non-transportation-related facilities with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines. Hence, these criteria would not apply to generators and facilities that are not expected to discharge oil to navigable waters or adjoining shorelines, do not generate or store oil-related substances, or meet minimum storage capacity thresholds.

- The Chemical Accident Prevention Provisions, PSM Standard, and HAZWOPER Standard give facilities the option of either developing an emergency response program or making alternative arrangements (e.g., evacuation plans, arrangements with off-site authorities). Facilities that opt to make alternative arrangements are not required to address a number of the elements required by the hazardous waste regulations particularly for large quantity generators (LQGs) and storage facilities (e.g., procedures and equipment for containing and cleaning up a release).

- The definition of "emergency response" under the Chemical Accident Prevention Provisions, PSM Standard, and HAZWOPER Standard applies to releases that threaten safety or health (i.e., fire, explosion, or chemical exposure). This definition does not necessarily encompass *environmental* contamination to the same extent as the hazardous waste regulations. As such, generators and facilities subject to these regulations may not be prepared for, or respond to, a release of a hazardous substance that contaminates the environment, but does not threaten human health (e.g., spills or leaks surface water or to the ground that may also contaminate groundwater, that are not in the vicinity of employees at the facility). On the other hand, the hazardous waste regulations require emergency preparedness and response for any emergencies affecting human health or the environment.

- The HAZWOPER Standard for emergency response programs at 29 CFR 1910.120(p)(8) applies only to generators of hazardous waste and permitted or interim-status hazardous waste facilities. Hazardous waste generators and facilities are required to have an emergency response program or evacuation plan to address emergencies in the area where hazardous waste is stored or disposed of. As such, generators and facilities under the current DSW exclusions would not necessarily be subject to this standard (i.e., unless they otherwise qualify as a hazardous waste generator or facility). Note, however, that generators and facilities under the current DSW exclusions would be subject to the HAZWOPER Standard at 29 CFR 1910.120(q). This standard requires an emergency response program or evacuation plan if the facility requires an emergency response for a release of a hazardous substance from personnel outside of the immediate area of the release (e.g., designated on-site personnel or off-site response agencies).

3.6 Personnel Training

The hazardous waste regulations require LQGs and storage facilities to provide recurrent training on emergencies, at a minimum. SQGs must provide employee familiarization. The current DSW exclusions does not require personnel training or familiarization. However, some generators and facilities under the current DSW exclusions may nonetheless qualify as a hazardous waste generator or storage facility and therefore be subject to the hazardous waste regulations' training requirements. Portions of the hazardous waste regulations' personnel training may be relevant to handling the excluded materials (e.g., familiarization on chemical hazards, emergency response).

In addition, other federal regulations require personnel training at generators and facilities under the hazardous waste regulations and the current DSW exclusions:

- CAA Chemical Accident Prevention Provisions. 40 CFR Part 68 sets forth training requirements for stationary sources (e.g., buildings, plants) that meet applicable criteria. Facilities with a process eligible for Program 1 (e.g., has not had accidental release of a regulated substance within the past five years with off-site consequences as specified) need not provide training. Facilities with a process subject to Program 2 or 3 (e.g., has had accidental release of a regulated substance from a process within the past five years with off-site consequences as specified) must provide recurring personnel training on operations and emergency procedures.
- CWA Oil Pollution Prevention. 40 CFR Part 112 requires a non-transportation-related facility that meets specified criteria to provide personnel training on topics, such as operation and maintenance of facility and equipment to prevent discharges, discharge procedure protocols, and elements of the SPCC Plan.
- Hazardous Materials Transportation Act (HMTA) Hazardous Materials Regulations (HMR). 49 CFR Part 172, Subpart H requires a facility that employs "hazmat employees" to provide initial and recurrent training. The training must cover general awareness/familiarization, function-specific training, safety, security awareness, and in-depth security. A hazmat employee is a person who is involved in the transportation of U.S. Department of Transportation (DOT) hazardous materials as specified (e.g., loading, preparation for transportation, operation of a transportation vehicle).

- OSH Act. The PSM Standard (29 CFR 1910.119) and the HAZWOPER Standard (29 CFR 1910.120(p) and (q)) require facilities either to train their employees on their emergency response program or, if they have opted to develop an evacuation plan instead of an emergency response program, they must train their employees on evacuations. In addition, HazCom (29 CFR 1910.1200) requires familiarization and training on emergency recognition, hazards, and protective measures.

Each of the above regulations requires personnel training that is at least partially comparable to the hazardous waste regulations. However, it is likely that a number of generators and facilities under the current DSW exclusions will not be subject to personnel training requirements that are fully comparable to the hazardous waste training requirements, as explained below:

- The Chemical Accident Prevention Provisions and Oil Pollution Prevention regulations apply to a targeted universe of facilities or activities, and hence, a number of generators and facilities under the current DSW exclusions may not be subject to them. The Chemical Accident Prevention Provisions apply to facilities that that have more than a threshold quantity of a "regulated substance." The provisions list 140 toxic and flammable substances subject to regulation. Generators and facilities that do not have any of these 140 chemicals above the quantity thresholds would not be subject to these provisions. The HMR require training of "hazmat employees" (i.e., a person who is involved in the transportation of DOT hazardous materials as specified). In a number of cases, HMR training may be at least partially comparable to training under the hazardous waste regulations, particularly for SQGs. However, the HMR training requirements are not as prescriptive as the hazardous waste regulations for LQGs and storage facilities; therefore, it is uncertain that HMR training would address comparable topics as the hazardous waste regulations for LQGs and storage facilities. In addition, it is important to note that, if a facility employs personnel that are not "hazmat" employees, such employees would not be required to receive HMR training. For example, some facilities use outside contractors to prepare and ship their HSM offsite.
- The PSM and HAZWOPER Standards require facilities to train their employees on emergencies. Facilities that have prepared an emergency response program must train employees on how to implement it. This would generally be comparable to the hazardous waste training required of generators and storage facilities under the hazardous waste regulations. However, facilities that have opted to develop an evacuation plan instead of an emergency response program are required to train employees on evacuations only. Such training would not cover a number of elements required by the hazardous waste regulations particularly for LQGs and storage facilities (e.g., use of emergency equipment, how to respond to fires and groundwater contamination).
- HazCom requires facilities to familiarize and train their employees on emergency recognition, hazards, and protective measures. However, HazCom has limited training requirements with regard to emergency procedures. The employer must provide employees with training on recognizing hazardous incidents and how to evacuate during an emergency.[47] In this regard, HazCom training may be comparable to training under the hazardous waste regulations particularly for SQGs. However, the hazardous waste

[47] This is OSHA's interpretation of the HazCom regulations dated June 6, 1991.

regulations require LQGs and storage facilities to provide more extensive training on emergencies (e.g., use of emergency equipment, how to respond to fires and groundwater contamination). These topics may be outside the scope of a facility's HazCom training.

3.7 Reporting and Recordkeeping

The hazardous waste regulations require generators and storage facilities to notify EPA to receive an EPA identification number. In addition, LQGs and storage facilities must submit a Biennial Report describing their hazardous wastes and activities. The current DSW exclusions require each generator and facility to submit an initial and biennial notification describing its HSMs and activities under the exclusion. Therefore, the hazardous waste regulations and the current DSW exclusions include comparable initial and biennial notification requirements.

In addition, the hazardous waste regulations and DSW TBE require generators and facilities to maintain specified information as necessary to demonstrate compliance.

3.8 Off-Site Transportation

The hazardous waste regulations require the manifesting of all off-site shipments (i.e., chain-of-custody tracking of shipments) and compliance with applicable DOT regulations for packing, labeling, marking, and placarding of shipments. The DSW GCE does not include requirements for off-site shipments (e.g., shipments from the generating site to a reclamation facility owned by the same generator). The DSW TBE includes requirements for packing, recordkeeping of shipments from the generator to the reclaimer, and transmittal of confirmation of receipt from the facility to the generator.

In addition, the DOT regulations set forth requirements for DOT hazardous materials in regard to the use of shipping papers, packing, labeling, marking, placarding, parking, and driving, among other things. The DOT regulations apply to all hazardous wastes, as well as other materials that qualify as a DOT "hazardous material."[48] A material qualifies as a DOT hazardous material if it: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR 172.101,[49] or (3) meets one or more of the hazard classifications (e.g., flammable liquid).

Following is a further discussion of the DOT requirements regarding each exclusion under the current DSW exclusions:

- GCE. HSMs under the GCE that qualify as a DOT hazardous material would be subject to comparable transportation requirements as hazardous waste in regard to packing, labeling, marking, placarding, parking, and driving. Specifically, the DOT regulations apply similar to hazardous waste and other types of DOT hazardous materials, such as excluded material, in regard to these activities. However, the excluded material would not be subject to comparable requirements for off-site tracking. Under the DOT regulations, a shipping paper must accompany a shipment of DOT hazardous material. The shipper and transporter must keep a copy, but the destination facility need not keep a copy or transmit a confirmation of receipt to the generator. Therefore, the generator

[48] All hazardous wastes are listed in 49 CFR Part 172 as DOT hazardous materials and therefore, are automatically subject to the DOT regulations as applicable.

[49] A hazardous substance (including hazardous wastes and other substances) listed in the Appendices would be a DOT hazardous material subject to regulation if it exceeded its reportable quantity (RQ).

would not know whether its excluded material reached the intended destination intact, as is required by the hazardous waste manifest regulations.

- TBE. HSMs under the TBE that qualify as a DOT hazardous material would be subject to comparable transportation requirements as hazardous waste in regard to packing, labeling, marking, placarding, parking, driving, and tracking. Note that the TBE requires recordkeeping of all off-site shipments by the generator and reclamation facility and a confirmation of receipt must be sent from the reclaimer to the generator. These recordkeeping and transmittal requirements are comparable to the hazardous waste manifest requirements for chain-of-custody tracking and confirmation of receipt.

In addition, it is important to note that excluded HSMs under the GCE or TBE that do not qualify as a DOT hazardous material would not be subject to comparable transportation requirements as hazardous waste in regard to packing, labeling, marking, placarding, parking, or driving (or tracking, for shipments under the GCE). That is, an excluded material would not be a DOT hazardous material subject to regulation if it is not listed in the Table in 49 CFR 172.101, is not listed in (or otherwise does not exceed its RQ in) the Appendices to the table, and does not meet any hazard classification.

Further, the RQs contained in 49 CFR Part 172 that trigger the DOT hazardous materials requirements are potentially different for hazardous waste and non-waste. A material-specific RQ is used to determine whether a hazardous waste or other hazardous substances must comply with the DOT requirements (i.e., if the hazardous substance exceeds its RQ, it must comply). In some cases the RQ for a hazardous waste would be lower because it is a hazardous waste than the RQ if the material were not considered a hazardous. In these cases, a greater quantity of material would be required to exceed the RQ if the material were a non-waste. This could result in some excluded materials not triggering the RQ requirements (at the lower level) and therefore, not needing to comply with RQ-related DOT packaging and other regulations.

3.9 Exports

The hazardous waste regulations require an exporter of hazardous waste to notify EPA about their intention to export waste and receive EPA consent prior to export. They also must submit an annual report summarizing export activities, including the amount and types of waste exported and the facilities receiving the waste. In addition, the facility must keep records describing the waste exported.

Under the GCE, exports are not allowed, and the HSM must be reclaimed within the U.S.

The TBE allows generators to export excluded material and requires them to notify EPA about their intention to export waste and receive EPA consent prior to export. They also must submit an annual report summarizing export activities, including the amount and types of waste exported and the facilities receiving the waste. In addition, the facility must keep records describing the waste exported. Therefore, the hazardous waste regulations and TBE include generally comparable export requirements.

Note that, even though hazardous wastes are currently exported to other nations for treatment, disposal, or reclamation, EPA has not received any notification indicating that HSMs will be exported under the 2008 DSW final rule. Based on this facility behavior, EPA does not anticipate that a significant amount of HSMs will be exported under the TBE of the current DSW exclusions.

3.11 Security [50]

The hazardous waste regulations require storage facilities to prevent the unknowing and unauthorized entry of persons and livestock onto the active portion of the facility. The TBE does not address security at facilities.

3.12 Financial Assurance

The hazardous waste regulations and TBE require facilities to have and maintain a cost estimate and obtain financial assurance for closure. In addition, facilities must have and maintain liability coverage for sudden accidental occurrences and, if applicable, non-sudden accidental occurrences. A variety of financial instruments are identified for these purposes (e.g., trust fund, surety bond). Therefore, the hazardous waste regulations and TBE have comparable financial assurance requirements for closure and accidental occurrences.

3.13 Requirement for a Permit

The hazardous waste regulations require storage facilities, including facilities that store hazardous waste prior to reclamation, to obtain a hazardous waste permit that includes requirements for facility and unit design, construction, operation, closure, and post-closure care, as applicable. In addition, any facility that manages hazardous waste in a land-based unit is subject to the requirement for a permit. By contrast, the GCE allows generators to manage HSM in land-based units without a permit.

The TBE requires facilities either to obtain a RCRA permit and manage HSMs in the permitted units or comply with its conditions and pass an audit by the generators. Generators must make reasonable efforts to ensure that their HSMs will be safely and legitimately managed and reclaimed.

The RCRA permit and TBE share some key similarities, but there also are some key differences. Examples include the following:

- Similarities. A hazardous waste permit and TBE impose requirements on facilities to ensure protective operation (e.g., permit requirements, exclusion conditions). In addition, a hazardous waste permit and the TBE rely on similar processes for compliance assurance (e.g., state inspections and reviews of facility submittals). Whereas a state may inspect storage facilities more often than facilities under the exclusion, the exclusion requires generator audits to supplement the state's compliance oversight and assure compliance. Finally, a hazardous waste permit and the TBE both require financial assurance for closure and sudden and non-sudden occurrences.
- Differences. A hazardous waste permit can be revoked or denied to prevent facility operation. Under the TBE, a generator audit does not result in denial of the ability to operate. However, a generator must not send its materials to a facility that fails its audit, essentially denying the facility the ability to manage the materials under the exclusion. In

[50] Paragraphs 3.11 through 3.14 describe the comparative findings presented in Table 3 for storage facilities under the hazardous waste regulations and intermediate/reclamation facilities under the transfer-based exclusion. The issues discussed in these paragraphs (e.g., security, financial assurance) do not apply to generators of hazardous waste or hazardous secondary materials, and hence, they are not addressed in Tables 1 or 2 or in these paragraphs.

addition, states have a lead role in administering the hazardous waste permitting and enforcement process. Under the TBE, states and generators both have important roles to evaluate facility compliance.

3.14 Public Involvement

The hazardous waste regulations require storage facilities, including facilities that store hazardous waste prior to reclamation, to undergo the hazardous waste permitting process, which includes public involvement (e.g., public notice and comment on draft permits).

Under the GCE, a generator that manages HSM in land-based units would not be subject to the permitting process, which differs from the hazardous waste regulations. Under the TBE, a permit is not needed for storage of excluded materials. As a result, such facilities could operate and store the materials under the exclusion without public involvement.

3.15 Enforcement

The hazardous waste regulations include prescriptive generator and facility standards (e.g., labeling, container integrity), which facilitate inspections and enforcement actions. The GCE and TBE do not include prescriptive requirements. Therefore, it may be more difficult for regulator and facility personnel to inspect for compliance under these exclusions.

4. Comparative Tables

Following are tables that compare federal regulations applicable to: (1) generators and permitted storage facilities operating under the federal hazardous waste regulations and (2) generators, intermediate facilities, and reclamation facilities operating under the current DSW exclusions. The purpose of the comparison is to determine if the federal regulations applicable to generators and facilities operating under the current DSW exclusions are comparable to the federal regulations applicable to hazardous waste generators and permitted storage facilities operating under the federal hazardous waste regulations.

Three tables are presented:

- Table 1 compares the federal regulations applicable to generators of hazardous waste and generators of HSM under the GCE.
- Table 2 compares the federal regulations applicable to generators of hazardous waste and generators of HSM under the TBE.
- Table 3 compares the federal regulations applicable to hazardous waste storage facilities and HSM intermediate and reclamation facilities under the TBE.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
1. Legitimate Recycling			
HWRs: EPA has issued policy statements to clarify legitimate recycling (e.g., in *Federal Register* notices). In addition, respondents in an enforcement action who raise a claim that a certain material is not a solid waste must demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption, as specified. (40 CFR 261.2(f))		*GCE*: Reclamation of the material must be legitimate, as specified at 40 CFR 260.43 (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23)(v)). 40 CFR 260.43 spells out the legitimacy criteria that must be met.	EPA has set forth criteria for determining legitimate recycling under the HWRs and DSW final rule. The DSW final rule codifies these criteria for the exclusions, which provides greater clarity and enforceability.
2. Storage Time Limit			
HWRs: LQG cannot accumulate waste onsite for more than 90 days without a permit or being in compliance with the interim status standards. (40 CFR 262.34)	*HWRs*: SQG cannot accumulate waste onsite for more than 180 or 270 days without a permit or being in compliance with the interim status standards and must not exceed 6,000 kilograms onsite. (40 CFR 262.34)	*GCE*: Generator must recycle (or ship for recycling) 75% of the HSM within one calendar year and meet other criteria as specified. (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23)(iii))	The GCE allows generators to accumulate HSM onsite for longer periods of time than the HWRs. In addition, the GCE does not include a quantity limit for on-site accumulation, as does the HWRs for SQGs.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
3. Containment			
HWRs: Generator must meet design, operating, inspection, and closure standards for containers, tanks, containment buildings, and drip pads. Generators cannot accumulate HSM in land-based units without a permit or interim status. (40 CFR 262.34 and 40 CFR Parts 264, 265, and 270)		*GCE*: HSM must be contained. Generators can manage HSM in land-based units (e.g., surface impoundments, waste piles). (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23)(i))	The HWRs and GCE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for containment, whereas the GCE does not. As such, the GCE allows more flexibility in how HSMs can be contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by the generator under the exclusion. In addition, prescriptive requirements may be more conducive to inspection and enforcement, which could help to prevent a release. The GCE also allows generators to manage HSM in land-based units, unlike the HWRs, which require a permit or interim status that prescribe facility and unit-specific standards.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
4. Air Emissions			
HWRs: LQGs must comply with standards to control air emissions. These include standards for the design, operation, monitoring, testing, and recordkeeping of: • Process vents associated with specified treatment technologies (40 CFR Parts 264 and 265, Subpart AA); • Equipment leaks (40 CFR Parts 264 and 265, Subpart BB); and • Emissions from tanks, surface impoundments, and containers (40 CFR Parts 264 and 265, Subpart CC).	*HWRs*: No air emission standards for SQGs.	*GCE*: HSM must be contained. (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23)(i))	The HWRs and GCE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for control of air emissions, whereas the GCE does not. As such, the GCE allows more flexibility in how HSMs can be contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by the generator under the exclusion. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA (Air Emission Standards): The states and EPA issue operating permits to certain "major" stationary sources of hazardous air pollutants (HAPs) under 40 CFR Parts 70 and 71. A major source is a source that emits more than 10 tons per year (TPY) of any single HAP or more than 25 TPY of HAPs in total. A limited number of smaller sources (e.g., "area" sources) also may be required to obtain a permit under the federal program. In addition, EPA has established technical standards for the control of air emissions from stationary sources, which permit writers include in a permit to control emissions as appropriate. Some of these standards could address air emissions from process vents, equipment leaks, tanks, and other units. Potentially applicable standards can be found in various parts of 40 CFR, such as: • Part 60: "Standards of Performance for New Stationary Sources (NSPS)." This part regulates emissions from stationary sources of criteria pollutants for which EPA has established National Ambient Air Quality Standards (NAAQS); and • Part 63: "National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories." This part regulates emissions of HAPs from source categories. These parts set forth design, operating, monitoring, testing, and/or recordkeeping standards, as specified.			The federal CAA permitting and technical standards could potentially address air emissions from process vents, equipment leaks, and/or storage units at some of the facilities operating under the GCE. These CAA standards include comparable types of controls as the HWRs, e.g., design, operating, and monitoring. However, the CAA permitting and technical standards under the federal program would not apply to facilities that: • Have emissions below specified thresholds (e.g., emit less than 10 TPY of any single HAP or 25 TPY of HAPs in total); or • Do not meet other applicability criteria (e.g., are not in a regulated industry).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
5. Emergency Preparedness and Response			
HWRs: LQGs must: • Have emergency equipment (e.g., alarms, fire protection, spill containment); • Designate an emergency coordinator; and • Have an emergency plan to address any release or other emergency, and emergency procedures for: – Notifying on-site and off-site personnel; – Controlling the emergency (e.g., identifying, assessing and containing the release); and – Taking other actions as specified (e.g., ensuring proper management of recovered material). (40 CFR 262.34 and Part 265, Subparts C and D)	*HWRs:* SQGs must: • Have emergency equipment (e.g., alarms, fire protection, spill containment); • Designate an emergency coordinator; and • Respond to any emergency (e.g., extinguish fires, contain and clean up releases, notify off-site emergency personnel as applicable). (40 CFR 262.34 and 40 CFR Part 265, Subpart C)	*GCE*: No comparable provisions.	The GCE does not include provisions on emergency preparedness and response. However, materials under the GCE that are no longer contained in a unit (i.e., released) and not immediately recovered would no longer be excluded. They would need to be cleaned up and be subject to RCRA Subtitle C regulation if hazardous, including the HWR preparedness and response requirements, as applicable. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process subject to Program 2 or 3 (e.g., a process that has had an accidental release within the past five years with off-site consequences as specified) must prepare an emergency response program that includes an emergency plan (e.g., procedures for notifying off-site parties, providing medical treatment, responding to an accidental release), emergency response equipment, and personnel training. However, a facility whose employees will not respond to the release need not prepare an emergency response program if it makes alternative arrangements. It must either be included in its community emergency response plan or coordinate response actions with the local fire department. There also must be a mechanism for notifying emergency responders. Note that the Chemical Accident Prevention provisions list 140 toxic and flammable regulated substances subject to regulation, with threshold quantities ranging from 500 to 20,000 pounds. (40 CFR Part 68.)			The Chemical Accident Prevention provisions for an emergency response program set forth generally comparable elements as the HWRs for SQG and LQG preparedness and prevention (e.g., an emergency plan, emergency equipment, and coordination with off-site responders). The provisions for alternative arrangements are not comparable to the HWRs for LQGs or SQGs. They do not require emergency equipment, an emergency plan, or basic efforts by on-site personnel to control the emergency (e.g., extinguishing a fire). Note that a generator would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Only a subset of these facilities (e.g., those subject to Program 2 or 3) would be required to have an emergency response or evacuation plan.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CERCLA/EPCRA (Emergency Notification): • A generator must immediately notify the National Response Center (NRC) of a release of a CERCLA hazardous substance (including hazardous waste) equal to or exceeding its reportable quantity in any 24-hour period. (40 CFR Part 302) • A generator must immediately notify the NRC and local/state officials of a release of a reportable quantity of any extremely hazardous substance (EHS) or CERCLA hazardous substance (including hazardous waste). (40 CFR Part 355)			These CERCLA/EPCRA provisions require notification to off-site personnel as do the HWRs. These notification provisions could effectively address some emergencies (e.g., if local responders respond immediately and control the emergency, such as local fire or hazmat personnel). However, they do not require emergency equipment, on-site coordination, or basic efforts to control an emergency (e.g., containing and cleaning up the release). Therefore, these provisions are not comparable to the HWRs for preparedness and response.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CWA (Oil Pollution Prevention): A generator that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The SPCC Plan must address such elements as discharge prevention measures; countermeasures for discharge discovery, response, and cleanup; personnel responsibilities (e.g., for addressing discharges); and plans and procedures for responding to discharges. (40 CFR Part 112)			The SPCC requirements set forth generally comparable elements as the HWRs for emergency preparedness and response for oil discharges. This includes emergency equipment, personnel responsibilities for addressing discharges, training, and emergency plans/procedures (e.g., countermeasures for discharge response and cleanup, notification to off-site agencies/personnel). A generator must prepare an SPCC Plan if it meets specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful). These criteria would not apply to certain types of generators (e.g., sites that are not near navigable waters, do not generate/store oil-related substances, or meet minimum storage capacity thresholds).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Process Safety Management or PSM): A facility that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above the specified quantity must have an evacuation plan for the entire plant addressing evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. The facility also would need to handle small releases. Highly hazardous chemicals include toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity. (29 CFR 1910.38 and 1910.119)			The PSM provisions require generally comparable elements as the HWRs for SQG preparedness and response. The evacuation plan must include on-site response coordination, off-site notification, alarms, and handling of small releases. However, the PSM provisions are not generally comparable to the HWR requirements for LQG preparedness and response. The PSM provisions do not require a plan for the facility to control/contain the emergency. A facility must comply with these regulations if it meets the specified applicability criteria (e.g., if it accumulates a highly hazardous chemical onsite above its threshold quantity). 29 CFR 1910.119, Appendix A, lists approximately 140 toxic and reactive highly hazardous chemicals subject to regulation.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Generators of hazardous waste must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. Generators must prepare emergency response program that includes an emergency response plan (e.g., personnel roles, coordination with outside parties, emergency alerting and response, emergency equipment), training for emergency response employees, and procedures for handling emergency incidents (e.g., alarms). (29 CFR 1910.120(p)(8)) If the generator will evacuate employees and will not allow them to assist in the response, it need not prepare a response program. Rather, it must prepare an evacuation plan for the entire plant. The plan must address evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. The generator also would need to have procedures for handling small releases. (29 CFR 1910.38 and 1910.120(p)(8))		29 CFR 1910.120(p)(8) does not apply to sites that are not hazardous waste generators or treatment, storage, and disposal facilities (TSDFs).	Facilities that do not qualify as a hazardous waste generator would not be subject to 29 CFR 1910.120(p)(8). However, some generators under the GCE may nonetheless qualify as an LQG or SQG based on the quantity of hazardous waste generated and be subject to 29 CFR 1910.120(p)(8). Portions of the emergency response program under 29 CFR 1910.120(p)(8) could apply to excluded materials at such a site (e.g., availability of emergency response equipment, such as absorbent, if needed). Note that the emergency response requirements under 29 CFR 1910.120(p)(8) are comparable to the requirements at 29 CFR 1910.120(q), which are presented below.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility), such as designated response employees. The program must include an emergency response plan (e.g., personnel roles, emergency equipment, and coordination with outside parties, emergency alerting and response), training for emergency response employees, and procedures for handling emergency incidents. (29 CFR 1910.120(q)) If the facility will evacuate employees and will not allow employees to assist in response, it need not prepare an emergency response plan. It must prepare an evacuation plan for the entire plant. The plan must address evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. (29 CFR 1910.38 and 1910.120(q))			The HAZWOPER regulations require generally comparable elements as the HWRs for LQG and SQG preparedness and response. This includes, for example, an emergency response plan, emergency equipment, and on-site coordination of emergency responses. In addition, the evacuation plan is generally comparable to the HWR requirements for SQG preparedness and response. The evacuation plan must include on-site response coordination, off-site notification, and alarms. However, the evacuation plan is not comparable to the HWR requirements for LQG preparedness and response. The plan does not include sufficient procedures for the facility to address (e.g., control) emergency. Note that 29 CFR 1910.120(q) would not apply to generators under the GCE unless they have on-site response personnel, as specified.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazard Communication): Facilities must provide information to their employees about any chemical (except hazardous waste) which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training (e.g., hazards detection, emergency procedures). Hazardous wastes are exempt from these provisions. (29 CFR 1910.1200).			A generator under the GCE would be subject to the Hazard Communication Standard (HazCom) for any excluded material and other chemicals that pose a physical or health hazard. (A generator of hazardous waste would not be subject to 29 CFR 1910.1200 for its hazardous waste, but for non-waste chemicals.) However, the HazCom provisions do not require emergency equipment, coordination with off-site personnel, or basic actions to control an emergency. Rather, they require information sharing and training. As such, these provisions are not comparable to the HWR requirement for LQG or SQG preparedness and response.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
6. Personnel Training			
HWRs: LQGs must provide personnel training and SQGs must provide familiarization on emergency response and job duties. At a minimum, this must address emergency procedures. LQGs must provide recurrent training. (40 CFR 262.34 and 265.16)		*GCE*: No comparable provisions.	The GCE does not include provisions on personnel training. However, some generators under the exclusion may nonetheless qualify as a LQG or SQG based on the quantity of hazardous waste they generate during the month and therefore, be subject to the HWR. Portions of the HWR personnel training may be relevant to handling the excluded materials (e.g., familiarization on chemical hazards). In addition, see "Other Federal Regulations" below for additional discussion.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process eligible for Program 1 (e.g., has not had accidental release of a regulated substance within the past five years with off-site consequences as specified) are not required to provide training. Generators with a process subject to Program 2 or 3 (e.g., has had accidental release of a regulated substance from a process within the past five years with off-site consequences as specified) must provide recurring personnel training on operations and emergency procedures. (40 CFR Part 68)			The Chemical Accident Prevention provisions require facilities in Program 2 and 3 to provide recurring personnel training on job operations and emergency procedures. These topics are generally comparable to those required by the HWRs for LQG and SQG training. A generator would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Note that only a subset of these facilities would need to provide training (i.e., facilities in Program 1 are exempt from training requirements). Note that 40 CFR Part 68 lists 140 toxic and flammable regulated substances, with threshold quantities ranging from 500 to 20,000 pounds.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CWA (Oil Pollution Prevention): A generator that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The Plan must provide for personnel training on topics such as operation and maintenance of facility and equipment to prevent discharges, discharge procedure protocols, and elements of the Plan. (40 CFR Part 112)			A generator's SPCC Plan would address comparable topics as the HWRs for on-going personnel training for oil. This includes operation and maintenance of the facility and equipment, discharge procedures, and how to carry out the SPCC Plan. A generator must prepare an SPCC Plan if it meets the specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
HMTA (Hazardous Materials Transportation): A generator would be subject to regulation under the HMTA (including the personnel training requirements as applicable) if it transported, or offered for transportation, a DOT hazardous material, i.e., a material that: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR 172.101, or (3) meets one or more of the hazard classifications (e.g., flammable liquid). 49 CFR Part 172 provides that all RCRA hazardous wastes are DOT hazardous materials, as specified. A HSM excluded from the definition of solid waste is neither a solid nor hazardous waste; therefore, it would not qualify as a DOT hazardous material on the basis of being a hazardous waste. Rather, an excluded material would qualify as a DOT hazardous material if it is otherwise listed in 49 CFR Part 172 (e.g., as a compound or element) or meets a hazard class. It is possible that some excluded materials will not qualify as a DOT hazardous material. This includes material that is not listed and does not meet any hazard class. A generator that employs "hazmat employees" must provide initial and recurrent training. A hazmat employee is a person who is involved in the transportation of DOT hazardous materials as specified (e.g., loading, preparation for transportation, operation of a transportation vehicle). The training must cover general awareness/familiarization, function-specific training, safety, security awareness, and in-depth security. In particular, the safety training must include emergency response information (i.e., information that can be used in the mitigation of an incident involving hazardous materials, such as health hazards, risks of fire/explosions, methods for handling fires/spills). (49 CFR 172, Subpart H)			Generators under the GCE that employ hazmat employees must train them on a recurrent basis as required by 49 CFR Part 172, Subpart H. The training must address function-specific, safety and emergency response topics, among other things. These topics are generally comparable to the topics required by the HWRs for LQG and SQG training as they pertain to transportation-related activities. Generators whose employees are not involved in transportation activities (e.g., because they do not make off-site shipments, contractors are used to prepare/transport the material, or the material is not DOT hazardous material) would not qualify as hazmat employees and not receive such training.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	Small Quantity Generators (SQGs)		
OSH Act (Process Safety Management): A generator that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above specified quantity must provide initial and refresher training of personnel involved in operating a process (e.g., job-related operating procedures, health hazards, emergency operations, evacuations). (29 CFR 1910.119)			The Process Safety Management provisions require initial and refresher training on topics related to job-related operations and emergencies. These topics are generally comparable to the topics required by the HWRs for LQG and SQG training. A generator must comply with the Process Safety Management provisions if it meets the specified applicability criteria (e.g., a generator that accumulates a highly hazardous chemical onsite above its threshold quantity).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Generators must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. The program must include training on emergency response (e.g., elements of the response plan, standard operating procedures, and procedures for handling emergency incidents). These provisions apply to hazardous waste generators and TSDFs only. (29 CFR 1910.120(p)(8))		29 CFR 1910.120(p)(8) does not apply to sites that are not hazardous waste generators or TSDFs.	Under the GCE, generators that do not otherwise qualify as a hazardous waste generator would not be subject to 29 CFR 1910.120(p)(8). 29 CFR 1910.120(p)(8) applies only to hazardous waste generators and TSDFs. On the other hand, generators under the exclusion that continue to be LQGs or SQGs under the HWRs would be subject to 29 CFR 1910.120(p)(8). Some of the training topics under the 29 CFR 1910.120(p)(8) could be relevant to the excluded material. These provisions require training on operating and emergency procedures. These topics are generally comparable to the topics required by the HWRs for SQG training. However, these provisions do not require recurrent training, as do the HWRs for LQG training. Therefore, they are not comparable to the HWRs for LQG training.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility). The facility's program must provide initial and recurrent training as relevant to personnel responsibilities (e.g., first responder, on scene incident commander). This includes, for example, hazard detection, responsibilities for emergency response, and safety. (29 CFR 1910.120(q))			The HAZWOPER regulations require initial and recurrent training on hazard detection, emergency response, and safety, among other things. These topics are comparable to the topics required by the HWRs for LQG and SQG training, as it relates specifically to emergency response personnel. A generator must comply with the HAZWOPER regulations if it meets the specified applicability criteria (e.g., a generator that has employees responsible for responding to on-site releases regardless of location).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazard Communication): Employers must provide information to their employees about any chemical which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. Employees must be informed of operations in their work area where hazardous chemicals are present, among other things. Employee training must include methods and observations for detecting releases, hazards in the work area, and measures employees can take to protect themselves (e.g., emergency procedures). (29 CFR 1910.1200)			The Hazard Communication Standard (HazCom) requires familiarization and training on emergency recognition, hazards, and protective measures, which is comparable to the topics of HWR training for SQGs. However, they are somewhat less rigorous than the HWR training requirements for LQGs. There is no schedule for follow-up training under HazCom. Therefore, HazCom training is not comparable to the HWRs for LQG training. A generator must comply with these regulations for any chemicals which could pose a physical or health hazard in the work place, except for hazardous waste. Generators would be subject to these requirements for their excluded materials, as well as other chemicals that are not hazardous waste (e.g., chemical products).

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
7. Reporting and Recordkeeping			
HWRs: Reporting to EPA on waste management activities: • Notification (40 CFR 262.12) • Biennial Report for LQGS only (40 CFR 262.41) • Exception report (40 CFR 262.42) *HWRs*: Recordkeeping for three years (40 CFR 262.40)		*GCE*: Initial and Biennial notifications (40 CFR 260.42)	The HWR and GCE have comparable requirements for initial and biennial submittals in regard to frequency and types of information submitted. However, the GCE biennial notification requirement applies to generators regardless of size. The HWR's biennial reporting requirement applies only to LQGs. The GCE does not require exception reporting or recordkeeping.
8. Off-Site Transportation			
HWRs: Shipments must be manifested (40 CFR 262, Subpart B) and comply with DOT requirements for packing, labeling, marking, and placarding. (40 CFR 262.30-.33)		*GCE*: No comparable provisions.	The GCE does not include transportation. See "Other Federal Regulations" below for additional discussion.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
HMTA: A generator would be subject to regulation under the HMTA if it transported, or offered for transportation, a DOT hazardous material, i.e., a material that: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR 172.101, or (3) meets one or more of the hazard classifications (e.g., flammable liquid). RCRA hazardous wastes are DOT hazardous materials because they are listed in 49 CFR Part 172. A HSM excluded from the definition of solid waste is neither a solid nor hazardous waste; therefore, it would not qualify as a DOT hazardous material on the basis of being a hazardous waste. Rather, an excluded material would qualify as a DOT hazardous material if it is otherwise listed in 49 CFR Part 172 (e.g., as a compound or element) or meets a hazard classification. It is possible that some excluded materials will not qualify as a DOT hazardous material. This includes a HSM that is not listed and does not meet any hazard class. Shipments of DOT hazardous materials (including hazardous waste) must comply with applicable transportation provisions. This includes, for example, the regulations for shipping papers (or manifest), packing, labeling, marking, and placarding (49 CFR Parts 171-180), as well as requirements for driving and parking. (49 CFR Part 397).			Excluded materials qualifying as a DOT hazardous material would be subject to transportation requirements comparable to hazardous waste, except for tracking of shipments. Under the HWRs, a manifest is required to track the waste from generator to designated facility and a confirmation of receipt is sent from the facility to the generator. The hazardous materials regulations do not require transmittal of confirmation. Note that some excluded materials may not qualify as a DOT hazardous material. They would not need to be transported in accordance with the hazardous materials regulations.
9. Exports			
HWRs: Reporting under 40 CFR Part 262, Subpart E or H: • Perform notice and consent • Submit annual report • Keep records		*GCE*: No comparable provisions for exports.	The GCE does not include comparable provisions for notice and consent for exports. This is because the exclusion requires that the material be generated and reclaimed within the U.S. and territories.
11. Requirement for a Permit			

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
HWRs: RCRA permit is required for managing hazardous waste in land-based units. (40 CFR Part 270)		*GCE:* No comparable provisions.	The HWRs require a permit for managing HSM in land-based units. The permit would prescribe facility and unit-specific standards (e.g., design, operation, emergency prevention). In addition, public involvement would be required as part of the permitting process. The GCE allows generators to manage HSM in land-based units without a permit.
12. Public Involvement in Permit Process			
HWRs: Facility managing hazardous waste in land-based units must undergo RCRA permitting process, which includes public involvement (e.g., public notice and comment for draft permit decision; public hearing if requested). (40 CFR Parts 270 and 124)		*GCE*: No comparable provisions.	Generator that manage HSM under the GCE in land-based units would not be subject to public involvement requirements, unlike the HWRs.

Table A-1. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of Hazardous Secondary Materials under the DSW Generator-Controlled Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		DSW Generator-Controlled Exclusion (GCE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators	Notes (e.g., issues regarding applicability, comments on comparability)
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
Facilities managing HSMs may be subject to other permitting programs that include public involvement. Examples include the Clean Air Act (CAA) operating permitting program and Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permitting program.			Facilities under GCE may be subject to the CAA NPDES, and/or other permitting programs. If so, the public may have an opportunity to comment on aspects of their draft permit that relate to management of the excluded material.
13. Enforcement and Compliance			
HWRs: EPA's National Program Manager (NPM) Guidance for Fiscal Year 2010 provides that the EPA Regions and states must annually inspect at least 20% of the LQG universe, so that the entire universe is inspected in five years.	*HWRs*: No comparable guidance.	*GCE*: No comparable guidance.	
HWRs: The HWRs include prescriptive generator standards (e.g., labeling, container integrity), which could facilitate inspections and enforcement actions.		*GCE*: The GCE does not include prescriptive standards, but performance based requirements.	It may be more difficult for regulators and facilities to inspect for compliance under the GCE because it does not spell out prescriptive standards. This differs from the HWRs, which lay out prescriptive standards.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
1. Legitimate Recycling			
HWRs: EPA has issued policy statements to clarify legitimate recycling (e.g., in *Federal Register* notices). In addition, respondents in an enforcement action who raise a claim that a certain material is not a solid waste must demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption, as specified. (40 CFR 261.2(f))		*TBE*: Reclamation of the material must be legitimate, as specified at 40 CFR 260.43 (261.4(a)(24)(iv)). 40 CFR 260.43 spells out the legitimacy criteria that must be met. Generator must perform reasonable efforts to ensure proper and legitimate recycling by reclaimer, as specified (40 CFR 261.4(a)(24)(v)(B))	EPA has set forth consistent criteria on legitimate recycling under the HWR and DSW final rule. The DSW final rule codifies these criteria for the exclusions, which provides greater clarity and enforceability. In addition, a generator's reasonable efforts under the TBE reinforce the criteria and encourage compliance by reclaimers.
2. Storage Time Limit			
HWRs: LQG cannot accumulate waste for more than 90 days without a permit or being in compliance with the interim status standards. (40 CFR 262.34)	*HWRs*: SQG cannot accumulate waste for more than 180 or 270 days without a permit or being in compliance with the interim status standards; must not exceed 6,000 kilograms onsite. 40 CFR 262.34)	*TBE*: Generator must recycle (or ship for recycling) 75% of the HSM within one calendar year and meet other criteria as specified. (261.4(a)(24)(i))	The TBE allows generators to accumulate HSM onsite for longer periods of time than the HWRs. In addition, the TBE does not include a quantity limit for on-site accumulation, as does the HWRs for SQGs.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
3. Containment			
HWRs: Generator must meet design, operating, inspection, and closure standards for containers, tanks, and containment buildings. (40 CFR 262.34 and 40 CFR Part 265, Subparts I, J, and DD)		*TBE*: HSM must be contained (40 CFR 261.4(a)(24)(v)(A))	Both the HWRs and TBE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for containment, whereas the TBE does not. As such, the TBE allows greater flexibility in how HSMs can be contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by the generator under the exclusion. In addition, prescriptive requirements may be more conducive to inspection and enforcement, which could help to prevent a release.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
4. Air Emissions			
HWRs: LQGs must comply with standards to control air emissions. These include standards for the design, operation, monitoring, testing, and recordkeeping of: • Process vents associated with specified treatment technologies (40 CFR Parts 264 and 265, Subpart AA); • Equipment leaks (40 CFR Parts 264 and 265, Subpart BB); and • Emissions from tanks, surface impoundments, and containers (40 CFR Parts 264 and 265, Subpart CC).	*HWRs*: No air emission standards for SQGs.	*TBE*: HSM must be contained. (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23)(i))	The HWRs and TBE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for containment of air emissions, whereas the TBE does not. As such, the TBE allows more flexibility in how HSMs can be contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by the generator under the exclusion. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA: The states and EPA issue operating permits to certain "major" stationary sources of hazardous air pollutants (HAPs) under 40 CFR Parts 70 and 71. A major source is a source that emits more than 10 tons per year (TPY) of any single HAP or more than 25 TPY of HAPs in total. A limited number of smaller sources (e.g., "area" sources) also may be required to obtain a permit under the federal program. In addition, EPA has established technical standards for the control of air emissions from stationary sources, which permit writers include in a permit to control emissions as appropriate. Some of these standards could address air emissions from process vents, equipment leaks, tanks, and other units. Potentially applicable standards can be found in various parts of 40 CFR, such as: • Part 60: "Standards of Performance for New Stationary Sources (NSPS)." This part regulates emissions from stationary sources of criteria pollutants for which EPA has established National Ambient Air Quality Standards (NAAQS); and • Part 63: "National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories." This part regulates emissions of hazardous air pollutants (HAPs) from source categories. These parts set forth design, operating, monitoring, testing, and/or recordkeeping standards, as specified.			The federal CAA permitting and technical standards could potentially address air emissions from process vents, equipment leaks, and/or storage units at some of the facilities operating under the TBE. These CAA standards include comparable types of controls as the HWRs, e.g., design, operating, and monitoring. However, the CAA permitting and technical standards under the federal program would not apply to facilities that: • Have emissions below specified thresholds (e.g., emit less than 10 TPY of any single HAP or 25 TPY of HAPs in total); or • Do not meet other applicability criteria (e.g., are not in a regulated industry).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
5. Emergency Preparedness and Response			
HWRs: LQGs must: • Have emergency equipment (e.g., alarms, fire protection, spill containment); • Designate an emergency coordinator; and • Have an emergency plan to address any release or other emergency, and emergency procedures for: – Notifying on-site and off-site personnel; – Controlling the emergency (e.g., identifying, assessing and containing the release); and – Taking other actions as specified (e.g., ensuring proper management of recovered material). (40 CFR 262.34 and Part 265, Subparts C and D)	*HWRs:* SQGs must: • Have emergency equipment (e.g., alarms, fire protection, spill containment); • Designate an emergency coordinator; and • Respond to any emergency (e.g., extinguish fires, contain and cleanup releases, notify off-site emergency personnel as applicable). (40 CFR 262.34 and 40 CFR Part 265, Subpart C)	*TBE*: No comparable provisions.	The TBE does not include provisions on emergency preparedness and response. However, materials under the TBE that are no longer contained in a unit (i.e., released) and not immediately recovered would no longer be excluded. They would need to be cleaned up and be subject to RCRA Subtitle C regulation if hazardous, including the HWR preparedness and response requirements, as applicable. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process subject to Program 2 or 3 (e.g., a process that has had an accidental release within the past five years with off-site consequences as specified) must prepare an emergency response program that includes an emergency plan (e.g., procedures for notifying off-site parties, providing medical treatment, responding to an accidental release), emergency response equipment, and personnel training. However, a facility whose employees will not respond to the release need not prepare an emergency response program if it makes alternative arrangements. It must either be included in its community emergency response plan or coordinate response actions with the local fire department. There also must be a mechanism for notifying emergency responders. Note that the Chemical Accident Prevention provisions list 140 toxic and flammable regulated substances subject to regulation, with threshold quantities ranging from 500 to 20,000 pounds. (40 CFR Part 68.)			The Chemical Accident Prevention provisions for an emergency response program set forth generally comparable elements as the HWRs for SQG and LQG preparedness and prevention (e.g., an emergency plan, emergency equipment, and coordination with off-site responders). The provisions for alternative arrangements are not comparable to the HWRs for LQGs or SQGs. They do not require emergency equipment, an emergency plan, or basic efforts by on-site personnel to control the emergency (e.g., extinguishing a fire). Note that a generator would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Only a subset of these facilities (e.g., those subject to Program 2 or 3) would be required to have an emergency response or evacuation plan.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CERCLA/EPCRA (Emergency Notification): • A generator must immediately notify the National Response Center (NRC) of a release of a CERCLA hazardous substance (including hazardous waste) equal to or exceeding its reportable quantity in any 24-hour period. (40 CFR Part 302) • A generator must immediately notify the NRC and local/state officials of a release of a reportable quantity of any extremely hazardous substance (EHS) or CERCLA hazardous substance (including hazardous waste). (40 CFR Part 355)			These CERCLA/EPCRA provisions require notification to off-site personnel as do the HWRs. These notification provisions could effectively address some emergencies (e.g., if local responders respond immediately and control the emergency, such as local fire or hazmat personnel). However, they do not require emergency equipment, on-site coordination, or basic efforts to control an emergency (e.g., containing and cleaning up the release). Therefore, these provisions are not comparable to the HWRs for preparedness and response.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CWA (Oil Pollution Prevention): A generator that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The SPCC Plan must address such elements as discharge prevention measures; countermeasures for discharge discovery, response, and cleanup; personnel responsibilities (e.g., for addressing discharges); and plans and procedures for responding to discharges. (40 CFR Part 112)			The SPCC requirements set forth generally comparable elements as the HWRs for emergency preparedness and response for oil discharges. This includes emergency equipment, personnel responsibilities for addressing discharges, training, and emergency plans/procedures (e.g., countermeasures for discharge response and cleanup, notification to off-site agencies/personnel). A generator must prepare an SPCC Plan if it meets specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful). These criteria would not apply to certain types of generators (e.g., sites that are not near navigable waters, do not generate/store oil-related substances, or meet minimum storage capacity thresholds).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Process Safety Management): A facility that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above the specified quantity must have an evacuation plan for the entire plant addressing evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. The facility also would need to handle small releases. Highly hazardous chemicals include toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity. (29 CFR 1910.38 and 1910.119)			The Process Safety Management (PSM) provisions require generally comparable elements as the HWRs for SQG preparedness and response. The evacuation plan must include on-site response coordination, off-site notification, alarms, and handling of small releases. However, the PSM provisions are not generally comparable to the HWR requirements for LQG preparedness and response. The PSM provisions do not require a plan for the facility to control/contain the emergency. A facility must comply with these regulations if it meets the specified applicability criteria (e.g., if it accumulates a highly hazardous chemical onsite above its threshold quantity). 29 CFR 1910.119, Appendix A, lists approximately 140 toxic and reactive highly hazardous chemicals subject to regulation.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Generators of hazardous waste must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. Generators must prepare emergency response program that includes an emergency response plan (e.g., personnel roles, coordination with outside parties, emergency alerting and response, emergency equipment), training for emergency response employees, and procedures for handling emergency incidents (e.g., alarms). (29 CFR 1910.120(p)(8)) If the generator will evacuate employees and will not allow them to assist in the response, it need not prepare a response program. Rather, it must prepare an evacuation plan for the entire plant. The plan must address evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. The generator also would need to have procedures for handling small releases. (29 CFR 1910.38 and 1910.120(p)(8))		29 CFR 1910.120(p)(8) does not apply to sites that are not hazardous waste generators or treatment, storage, and disposal facilities (TSDFs).	Facilities that do not qualify as a hazardous waste generator would not be subject to 29 CFR 1910.120(p)(8). However, some generators under the TBE may nonetheless qualify as an LQG or SQG based on the quantity of hazardous waste generated and be subject to 29 CFR 1910.120(p)(8). Portions of the emergency response program under 29 CFR 1910.120(p)(8) could apply to excluded materials at such a site (e.g., availability of emergency response equipment, such as absorbent, if needed). Note that the emergency response requirements under 29 CFR 1910.120(p)(8) are comparable to the requirements at 29 CFR 1910.120(q), which are presented below.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility), such as designated response employees. The program must include an emergency response plan (e.g., personnel roles, emergency equipment, and coordination with outside parties, emergency alerting and response), training for emergency response employees, and procedures for handling emergency incidents. (29 CFR 1910.120(q)) If the facility will evacuate employees and will not allow employees to assist in response, it need not prepare an emergency response plan. It must prepare an evacuation plan for the entire plant. The plan must address evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. (29 CFR 1910.38 and 1910.120(q))			The HAZWOPER regulations require generally comparable elements as the HWRs for LQG and SQG preparedness and response. This includes, for example, an emergency response plan, emergency equipment, and on-site coordination of emergency responses. In addition, the evacuation plan is generally comparable to the HWR requirements for SQG preparedness and response. The evacuation plan must include on-site response coordination, off-site notification, and alarms. However, the evacuation plan is not comparable to the HWR requirements for LQG preparedness and response. The plan does not include sufficient procedures for the facility to address (e.g., control) emergency. Note that 29 CFR 1910.120(q) would not apply to generators under the TBE unless they have on-site response personnel, as specified.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazard Communication): Facilities must provide information to their employees about any chemical (except hazardous waste) which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training (e.g., hazards detection, emergency procedures). Hazardous wastes are exempt from these provisions. (29 CFR 1910.1200).			A generator under the TBE would be subject to the Hazard Communication Standard (HazCom) for any excluded material and other chemicals that pose a physical or health hazard. (A generator of hazardous waste would not be subject to 29 CFR 1910.1200 for its hazardous waste, but for non-waste chemicals.) However, the HazCom provisions do not require emergency equipment, coordination with off-site personnel, or basic actions to control an emergency. Rather, they require information sharing and training. As such, these provisions are not comparable to the HWR requirement for LQG or SQG preparedness and response.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
6. Personnel Training			
HWRs: LQGs must provide personnel training and SQGs must provide familiarization on emergency response and job duties. At a minimum, this must address emergency procedures. LQGs must provide recurrent training. (40 CFR 262.34 and 265.16)		*TBE*: No comparable provisions.	The TBE does not include provisions on personnel training. However, some generators under the exclusion may nonetheless qualify as a LQG or SQG based on the quantity of hazardous waste they generate during the month and therefore, be subject to the HWR. Portions of the HWR personnel training may be relevant to handling the excluded materials (e.g., familiarization on chemical hazards). In addition, see "Other Federal Regulations" below for additional discussion.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
Other Federal Regulations:			
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process eligible for Program 1 (e.g., has not had accidental release of a regulated substance within the past five years with off-site consequences as specified) are not required to provide training. Generators with a process subject to Program 2 or 3 (e.g., has had accidental release of a regulated substance from a process within the past five years with off-site consequences as specified) must provide recurring personnel training on operations and emergency procedures. (40 CFR Part 68)			The Chemical Accident Prevention provisions require facilities in Program 2 and 3 to provide recurring personnel training on job operations and emergency procedures. These topics are generally comparable to those required by the HWRs for LQG and SQG training. A generator would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Note that only a subset of these facilities would need to provide training (i.e., facilities in Program 1 are exempt from training requirements). Note that 40 CFR Part 68 lists 140 toxic and flammable regulated substances, with threshold quantities ranging from 500 to 20,000 pounds.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
CWA (Oil Pollution Prevention): A generator that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The Plan must provide for personnel training on topics such as operation and maintenance of facility and equipment to prevent discharges, discharge procedure protocols, and elements of the Plan. (40 CFR Part 112)			A generator's SPCC Plan would address comparable topics as the HWRs for on-going personnel training for oil. This includes operation and maintenance of the facility and equipment, discharge procedures, and how to carry out the SPCC Plan. A generator must prepare an SPCC Plan if it meets the specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
HMTA (Hazardous Materials Transportation): A generator would be subject to regulation under the HMTA (including the personnel training requirements as applicable) if it transported, or offered for transportation, a DOT hazardous material, i.e., a material that: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR 172.101, or (3) meets one or more of the hazard classifications (e.g., flammable liquid). 49 CFR Part 172 provides that all RCRA hazardous wastes are DOT hazardous materials, as specified. A HSM excluded from the definition of solid waste is neither a solid nor hazardous waste; therefore, it would not qualify as a DOT hazardous material on the basis of being a hazardous waste. Rather, an excluded material would qualify as a DOT hazardous material if it is otherwise listed in 49 CFR Part 172 (e.g., as a compound or element) or meets a hazard class. It is possible that some excluded materials will not qualify as a DOT hazardous material. This includes material that is not listed and does not meet any hazard class. A generator that employs "hazmat employees" must provide initial and recurrent training. A hazmat employee is a person who is involved in the transportation of DOT hazardous materials as specified (e.g., loading, preparation for transportation, operation of a transportation vehicle). The training must cover general awareness/familiarization, function-specific training, safety, security awareness, and in-depth security. In particular, the safety training must include emergency response information (i.e., information that can be used in the mitigation of an incident involving hazardous materials, such as health hazards, risks of fire/explosions, methods for handling fires/spills). (49 CFR 172, Subpart H)			Generators under the TBE that employ hazmat employees must train them on a recurrent basis as required by 49 CFR Part 172, Subpart H. The training must address function-specific, safety and emergency response topics, among other things. These topics are generally comparable to the topics required by the HWRs for LQG and SQG training as they pertain to transportation-related activities. Generators whose employees are not involved in transportation activities (e.g., because they do not make off-site shipments, contractors are used to prepare/transport the material, or the material is not DOT hazardous material) would not qualify as hazmat employees and not receive such training.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Process Safety Management): A generator that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above specified quantity must provide initial and refresher training of personnel involved in operating a process (e.g., job-related operating procedures, health hazards, emergency operations, evacuations). (29 CFR 1910.119)			The Process Safety Management provisions require initial and refresher training on topics related to job-related operations and emergencies. These topics are generally comparable to the topics required by the HWRs for LQG and SQG training. A generator must comply with the Process Safety Management provisions if it meets the specified applicability criteria (e.g., a generator that accumulates a highly hazardous chemical onsite above its threshold quantity).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Generators must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. The program must include training on emergency response (e.g., elements of the response plan, standard operating procedures, and procedures for handling emergency incidents). These provisions apply to hazardous waste generators and TSDFs only. (29 CFR 1910.120(p)(8))		29 CFR 1910.120(p)(8) does not apply to sites that are not hazardous waste generators or TSDFs.	Under the TBE, generators that do not otherwise qualify as a hazardous waste generator would not be subject to 29 CFR 1910.120(p)(8). 29 CFR 1910.120(p)(8) applies only to hazardous waste generators and TSDFs. On the other hand, generators under the exclusion that continue to be LQGs or SQGs under the HWRs would be subject to 29 CFR 1910.120(p)(8). Some of the training topics under the 29 CFR 1910.120(p)(8) could be relevant to the excluded material. These provisions require training on operating and emergency procedures. These topics are generally comparable to the topics required by the HWRs for SQG training. However, these provisions do not require recurrent training, as do the HWRs for LQG training. Therefore, they are not comparable to the HWRs for LQG training.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility). The facility's program must provide initial and recurrent training as relevant to personnel responsibilities (e.g., first responder, on scene incident commander). This includes, for example, hazard detection, responsibilities for emergency response, and safety. (29 CFR 1910.120(q))			The HAZWOPER regulations require initial and recurrent training on hazard detection, emergency response, and safety, among other things. These topics are comparable to the topics required by the HWRs for LQG and SQG training, as it relates specifically to emergency response personnel. A generator must comply with the HAZWOPER regulations if it meets the specified applicability criteria (e.g., a generator that has employees responsible for responding to on-site releases regardless of location).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
OSH Act (Hazard Communication): Employers must provide information to their employees about any chemical which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. Employees must be informed of operations in their work area where hazardous chemicals are present, among other things. Employee training must include methods and observations for detecting releases, hazards in the work area, and measures employees can take to protect themselves (e.g., emergency procedures). (29 CFR 1910.1200)			The Hazard Communication Standard (HazCom) requires familiarization and training on emergency recognition, hazards, and protective measures, which is comparable to the topics of HWR training for SQGs. However, they are somewhat less rigorous than the HWR training requirements for LQGs. There is no schedule for follow-up training under HazCom. Therefore, HazCom training is not comparable to the HWRs for LQG training. A generator must comply with these regulations for any chemicals which could pose a physical or health hazard in the work place, except for hazardous waste. Generators would be subject to these requirements for their excluded materials, as well as other chemicals that are not hazardous waste (e.g., chemical products).

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
7. Reporting and Recordkeeping			
HWRs: Reporting to EPA on waste management activities: • Notification (40 CFR 262.12) • Biennial report for LQGs only (40 CFR 262.41) • Exception report (40 CFR 262.42) *HWRs*: Recordkeeping for three years (40 CFR 262.40)		*TBE*: Reporting on HSM activities: • Initial and biennial notifications (40 CFR 260.42) • Records of reasonable efforts if requested (40 CFR 261.4(a)(24)(v)(C)) *TBE*: Recordkeeping for three years: • Records of reasonable efforts (40 CFR 261.4(a)(24)(v)(C)) • Records of off-site shipments and confirmations of receipt (40 CFR 261.4(a)(24)(v)(D) and (E))	The HWRs and TBE have comparable requirements for initial and biennial submittals in regard to frequency and types of information submitted. However, the TBE biennial notification requirement applies to generators regardless of size. The HWRs' biennial reporting requirement applies only to LQGs. The TBE does not require exception reporting or recordkeeping. The TBE includes records of reasonable efforts performed by the generator to ensure that reclamation is legitimate and the excluded material will be managed in a protective manner. This is not required by the HWRs.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
8. Off-site Transportation			
HWRs: Shipments must be manifested (40 CFR 262, Subpart B) and comply with DOT requirements for packing, labeling, marking, and placarding. (40 CFR 262.30-.33)		*TBE*: Recordkeeping of off-site shipments and confirmations of receipt (40 CFR 261.4(a)(24)(v)(D)) and compliance with DOT packing requirements (40 CFR 261.4(a)(24)(ii))	The HWRs and TBE are comparable in regard to packing requirements and tracking of shipments from generator to reclaimer. Refer to "Other Federal Regulations" below for an additional discussion.
Other Federal Regulations:			
HMTA: A generator would be subject to regulations under the HMTA if it transported, or offered for transportation, a DOT hazardous material, i.e., a material that: (1) is listed in the Table in 49 CFR 172.101 (e.g., compounds), (2) is listed in the Appendices to the Table in 49 CFR172.101, or (3) meets one or more of the hazard classifications (e.g., flammable liquid). RCRA hazardous wastes are DOT hazardous materials because they are listed in 49 CFR Part 172. A HSM excluded from the definition of solid waste is neither a solid nor hazardous waste; therefore, it would not qualify as a DOT hazardous material on the basis of being a hazardous waste. Rather, an excluded material would qualify as a DOT hazardous material if it is otherwise listed in 49 CFR Part 172 (e.g., as a compound or element) or meets a hazard classification. It is possible that some excluded materials will not qualify as a DOT hazardous material. This includes a HSM that is not listed and does not meet any hazard class. Shipments of DOT hazardous materials (including hazardous waste) must comply with applicable transportation provisions. This includes, for example, the regulations for shipping papers (or manifest), packing, labeling, marking, and placarding (49 CFR Parts 171-180), as well as requirements for driving and parking (49 CFR Part 397).			Excluded materials under the TBE that qualify as a DOT hazardous material would be subject to transportation requirements comparable to hazardous waste. (See the above requirement for off-site tracking.) Note that some excluded materials may not qualify as a DOT hazardous material. They would not need to be transported in accordance with the regulations under the HMTA.

Table A-2. Comparison of Federal Regulations Applicable to Generators of Hazardous Waste and Generators of **Hazardous Secondary Materials under the DSW Transfer-Based Exclusion**

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Generators		**DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Generators**	**Notes (e.g., issues regarding applicability, comments on comparability)**
Large Quantity Generators (LQGs)	**Small Quantity Generators (SQGs)**		
9. Exports			
HWRs: Reporting under 40 CFR Part 262, Subpart E or H: • Perform notice and consent • Submit annual report • Keep records		*TBE*: Reporting under 40 CFR 261.4(a)(25): • Perform notice and consent • Submit annual report • Keep records	The HWRs and TBE include comparable requirements for notice and consent, annual reporting, and recordkeeping for exports.
11. Enforcement and Compliance			
HWRs: EPA's National Program Manager (NPM) Guidance for Fiscal Year 2010 provides that the EPA Regions and states must annually inspect at least 20% of the LQG universe, so that the entire universe is inspected in five years.	*HWRs*: No comparable guidance.	*TBE*: No comparable guidance.	

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
1. Legitimate Recycling		
HWRs: EPA has issued policy statements to clarify legitimate recycling (e.g., in *Federal Register* notices). In addition, respondents in an enforcement action who raise a claim that a certain material is not a solid waste must demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption, as specified. (40 CFR 261.2(f))	*TBE*: Reclamation of the material must be legitimate, as specified at 40 CFR260.43 (40 CFR 261.4(a)(24)(iv)). 40 CFR 260.43 spells out the legitimacy criteria that must be met. Facility must perform reasonable efforts to ensure proper and legitimate recycling by reclaimer, as specified (40 CFR 261.4(a)(24)(v)(B)).	EPA has set forth consistent criteria on legitimate recycling under the HWR and the current DSW exclusions. The current DSW exclusions codifies these criteria, which provides greater clarity and enforceability. In addition, a generator's reasonable efforts under the TBE reinforce the criteria and encourage compliance by reclaimers.
2. Containment		
HWRs: Facility must meet storage design and operating standards for hazardous waste management units (e.g., containment, inspections) (40 CFR Part 264, Subparts I-L and DD)	*TBE*: Facility must manage material in a manner that is at least as protective as that employed for analogous raw material and must be contained (40 CFR 261.4(a)(24)(vi)(D))	Both the HWRs and TBE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for containment, whereas the TBE does not. As such, the TBE allows greater flexibility in how HSMs can be managed and contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by facilities under the exclusion. In addition, prescriptive requirements may be more conducive to inspection and enforcement, which could help to prevent a release.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
3. Air Emissions		
HWRs: Facility must meet air emission standards for storage (40 CFR Part 264, Subparts AA-CC) and recycling (40 CFR Part 264, Subparts AA and BB)	*TBE*: Facility must manage material in a manner that is at least as protective as that employed for analogous raw material and must contained (40 CFR 261.4(a)(24)(vi)(D))	Both the HWRs and TBE require containment of HSM in the unit. The HWRs prescribe design, operating, and other standards for containment, whereas the TBE does not. As such, the TBE allows greater flexibility in how HSMs can be managed and contained. This could result in more or less effective containment than the HWRs, depending on the containment methods used by facilities under the exclusion. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
Other Federal Regulations:		
CAA: The states and EPA issue operating permits to certain "major" stationary sources of hazardous air pollutants (HAPs) under 40 CFR Parts 70 and 71. A major source is a source that emits more than 10 tons per year (TPY) of any single HAP or more than 25 TPY of HAPs in total. A limited number of smaller sources (e.g., "area" sources) also may be required to obtain a permit under the federal program. In addition, EPA has established technical standards for the control of air emissions from stationary sources, which permit writers include in a permit to control emissions as appropriate. Some of these standards could address air emissions from process vents, equipment leaks, tanks, and other units. Potentially applicable standards can be found in various parts of 40 CFR, such as: • Part 60: "Standards of Performance for New Stationary Sources (NSPS)." This part regulates emissions from stationary sources of criteria pollutants for which EPA has established National Ambient Air Quality Standards (NAAQS); and • Part 63: "National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories." This part regulates emissions of hazardous air pollutants (HAPs) from source categories. These parts set forth design, operating, monitoring, testing, and/or recordkeeping standards, as specified.		The federal CAA permitting and technical standards could potentially address air emissions from process vents, equipment leaks, and/or storage units at some of the facilities operating under the TBE. These CAA standards include comparable types of controls as the HWRs, e.g., design, operating, and monitoring. However, the CAA permitting and technical standards under the federal program would not apply to facilities that: • Have emissions below specified thresholds (e.g., emit less than 10 TPY of any single HAP or 25 TPY of HAPs in total); or • Do not meet other applicability criteria (e.g., are not in a regulated industry).

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
4. Emergency Preparedness and Response		
HWRs: Facilities must: • Have emergency equipment (e.g., alarms, fire protection); • Designate an emergency coordinator; and • Have an emergency plan to address any release or other emergency, and emergency procedures for: – Notifying on-site and off-site personnel; – Controlling the emergency (e.g., identifying, assessing and containing the release); and – Taking other actions if specified (e.g., ensuring proper management of recovered material). (40 CFR Part 264, Subpart C and D)	*TBE*: No comparable provisions.	The TBE does not include provisions on emergency preparedness and response. However, materials under the TBE that are no longer contained in a unit (i.e., released) and not immediately recovered would no longer be excluded. They would need to be cleaned up and be subject to RCRA Subtitle C regulation if hazardous, including the HWR preparedness and response requirements, as applicable. In addition, see "Other Federal Regulations" below for additional discussion.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
Other Federal Regulations:		
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process subject to Program 2 or 3 (e.g., a process that has had an accidental release within the past five years with off-site consequences as specified) must prepare an emergency response program that includes an emergency plan (e.g., procedures for notifying off-site parties, providing medical treatment, responding to an accidental release), emergency response equipment, and personnel training. However, a facility whose employees will not respond to the release need not prepare an emergency response program if it makes alternative arrangements. It must either be included in its community emergency response plan or coordinate response actions with the local fire department. There also must be a mechanism for notifying emergency responders. Note that the Chemical Accident Prevention provisions list 140 toxic and flammable regulated substances subject to regulation, with threshold quantities ranging from 500 to 20,000 pounds. (40 CFR Part 68.)		The Chemical Accident Prevention provisions for an emergency response program set forth generally comparable elements as the HWRs for facility preparedness and prevention (e.g., an emergency plan, emergency equipment, and coordination with off-site responders). The provisions for alternative arrangements are not comparable to the HWRs for facilities. They do not require emergency equipment, an emergency plan, or basic efforts by on-site personnel to control the emergency (e.g., extinguishing a fire). Note that a facility would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Only a subset of these facilities (e.g., those subject to Program 2 or 3) would be required to have an emergency response or evacuation plan.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
CERCLA/EPCRA (Emergency Notification): • A facility must immediately notify the National Response Center (NRC) of a release of a CERCLA hazardous substance (including hazardous waste) equal to or exceeding its reportable quantity in any 24-hour period. (40 CFR Part 302) • A facility must immediately notify the NRC and local/state officials of a release of a reportable quantity of any extremely hazardous substance (EHS) or CERCLA hazardous substance (including hazardous waste). (40 CFR Part 355)		These CERCLA/EPCRA provisions require notification to off-site personnel as do the HWRs. These notification provisions could effectively address some emergencies (e.g., if local responders respond immediately and control the emergency, such as local fire or hazmat personnel). However, they do not require emergency equipment, on-site coordination, or basic efforts to control an emergency (e.g., containing and cleaning up the release). Therefore, these provisions are not comparable to the HWRs for preparedness and response.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
CWA (Oil Pollution Prevention): A facility that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The SPCC Plan must address such elements as discharge prevention measures; countermeasures for discharge discovery, response, and cleanup; personnel responsibilities (e.g., for addressing discharges); and plans and procedures for responding to discharges. (40 CFR Part 112)		The SPCC requirements set forth generally comparable elements as the HWRs for emergency preparedness and response for oil discharges. This includes emergency equipment, personnel responsibilities for addressing discharges, training, and emergency plans/procedures (e.g., countermeasures for discharge response and cleanup, notification to off-site agencies/personnel). A facility must prepare an SPCC Plan if it meets specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful). These criteria would not apply to certain types of facilities (e.g., facilities that are not near navigable waters, do not store oil-related substances, or meet minimum storage capacity thresholds).

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
OSH Act (Process Safety Management): A facility that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above the specified quantity must have an evacuation plan for the entire plant addressing evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. The facility also would need to handle small releases. Highly hazardous chemicals include toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity. (29 CFR 1910.38 and 1910.119)		The Process Safety Management (PSM) provisions require generally comparable elements as the HWRs for facility preparedness and response. The evacuation plan must include on-site response coordination, off-site notification, alarms, and handling of small releases. However, the PSM provisions are not generally comparable to the HWR requirements for facility preparedness and response. The PSM provisions do not require a plan for the facility to control/contain the emergency. A facility must comply with these regulations if it meets the specified applicability criteria (e.g., if it accumulates a highly hazardous chemical onsite above its threshold quantity). 29 CFR 1910.119, Appendix A, lists approximately 140 toxic and reactive highly hazardous chemicals subject to regulation.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Permitted and interim-status TSDFs are required to have a safety and health program designed to identify, evaluate and control safety and health hazards for the purpose of employee protection, to provide for emergency response, and to address other elements as specified (e.g., material handling program, training). It also must have an emergency response program, including the development of an emergency response plan (e.g., personnel roles, emergency alerting and response, emergency equipment), training for emergency response employees, and procedures for handling emergency incidents (e.g., alarms). (29 CFR 1910.120(p)) Facilities must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. The program must include an emergency response plan (e.g., personnel roles, coordination with outside parties, emergency alerting and response, emergency equipment), training for emergency response employees, and procedures for handling emergency incidents (e.g., alarms). These provisions apply to hazardous waste generators and TSDFs only. These provisions are not applicable if	29 CFR 1910.120(p) does not apply to sites that are not permitted or interim-status TSDFs.	Under the TBE, facilities that do not otherwise qualify as a permitted or interim-status TSDF would not be subject to 29 CFR 1910.120(p). However, some facilities under the exclusion may nonetheless be subject to a permit or interim status because of their management of hazardous waste and be subject to 29 CFR 1910.120(p). Portions of the emergency response program under 29 CFR 1910.120(p) could apply to excluded materials at such a site (e.g., availability of emergency response equipment, such as absorbent, if needed). Note that the emergency response requirements under 29 CFR 1910.120(p) are comparable to the requirements at 29 CFR 1910.120(q), which are presented below.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
all workers are evacuated. (29 CFR 1910.120(p)(8))		
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility), such as designated response employees. The program must include an emergency response plan (e.g., personnel roles, emergency equipment, and coordination with outside parties, emergency alerting and response), training for emergency response employees, and procedures for handling emergency incidents. (29 CFR 1910.120(q)) If the facility will evacuate employees and will not allow employees to assist in response, it need not prepare an emergency response plan. It must prepare an evacuation plan for the entire plant. The plan must address evacuation procedures, alarm systems, personnel responsibilities, evacuation training, off-site notification, and procedures to be followed by facility personnel who remain to operate critical equipment before evacuation. (29 CFR 1910.38 and 1910.120(q))		The HAZWOPER regulations require generally comparable elements as the HWRs for preparedness and response. This includes, for example, an emergency response plan, emergency equipment, and on-site coordination of emergency responses. However, the evacuation plan is not comparable to the HWR requirements. The plan does not include sufficient procedures for the facility to address (e.g., control) emergency. Note that 29 CFR 1910.120(q) would not apply to facilities under the TBE unless they have on-site response personnel, as specified.
OSH Act (Hazard Communication): Facilities must provide information to their employees about any chemical (except hazardous waste) which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training (e.g., hazards detection, emergency procedures). Hazardous wastes are exempt from these provisions. (29 CFR 1910.1200).		A facility under the TBE would be subject to the Hazard Communication Standard (HazCom) for any excluded material and other chemicals that pose a physical or health hazard. (A TSDF managing hazardous waste would not be subject to 29 CFR 1910.1200 for its hazardous waste, but for non-waste chemicals.) However, the HazCom provisions do not require emergency equipment, coordination with off-site personnel, or basic actions to control an emergency. Rather, they require information sharing and training. As

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
		such, these provisions are not comparable to the HWR requirements for preparedness and response.
5. Security		
HWRs: Prevention of unauthorized entry. (40 CFR 264.14)	*TBE*: No comparable provisions.	Facilities under the TBE would not be required to prevent unauthorized entry, as is the case under the HWRs.
6. Personnel Training		
HWRs: Personnel training on emergency response and job duties must be conducted. At a minimum, this must include training on emergency procedures. Facilities must provide recurrent training. (40 CFR 264.16)	*TBE*: No comparable provisions.	The TBE does not include provisions on personnel training. However, some facilities under the exclusion may nonetheless be subject to a permit or interim-status standards because of their hazardous waste management activities. Portions of the HWR personnel training may be relevant to handling the excluded materials (e.g., familiarization on chemical hazards). In addition, see "Other Federal Regulations" below for additional discussion.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
Other Federal Regulations:		
CAA (Chemical Accident Prevention): A facility that is a stationary source that has more than a threshold quantity of a "regulated substance" in a process (e.g., storage) must develop and implement a risk management program, including a Risk Management Plan (RMP). Facilities with a process eligible for Program 1 (e.g., has not had accidental release of a regulated substance within the past five years with off-site consequences as specified) are not required to provide training. Facilities with a process subject to Program 2 or 3 (e.g., has had accidental release of a regulated substance from a process within the past five years with off-site consequences as specified) must provide recurring personnel training on operations and emergency procedures. (40 CFR Part 68)		The Chemical Accident Prevention provisions require facilities in Program 2 and 3 to provide recurring personnel training on job operations and emergency procedures. These topics are generally comparable to those required by the HWRs for facility training. A facility would be subject to the Chemical Accident Prevention provisions if it has more than a threshold quantity of a 40 CFR Part 68-regulated substance in a process (e.g., storage). Note that only a subset of these facilities would need to provide training (i.e., facilities in Program 1 are exempt from training requirements). Note that 40 CFR Part 68 lists 140 toxic and flammable regulated substances, with threshold quantities ranging from 500 to 20,000 pounds.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
CWA (Oil Pollution Prevention): A facility that is a "non-transportation-related facility" that could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in harmful quantities and that meets other applicability criteria must perform emergency planning and response for oil discharges, including a Spill Prevention, Control, and Countermeasure (SPCC) Plan. The Plan must provide for personnel training on topics such as operation and maintenance of facility and equipment to prevent discharges, discharge procedure protocols, and elements of the Plan. (40 CFR Part 112)		A facility's SPCC Plan would address comparable topics as the HWRs for ongoing personnel training for oil. This includes operation and maintenance of the facility and equipment, discharge procedures, and how to carry out the SPCC Plan. A facility must prepare an SPCC Plan if it meets the specified applicability criteria (e.g., a non-transportation-related facility with aboveground oil storage capacity of more than 1,320 gallons that could reasonably be expected to discharge petroleum-based solvents to navigable waters or adjoining shorelines in quantities that may be harmful).
OSH Act (Process Safety Management): A facility that has a process (e.g., use, storage, handling) which involves a "highly hazardous chemical" at or above the specified quantity must provide initial and refresher training of personnel involved in operating a process (e.g., job-related operating procedures, health hazards, emergency operations, evacuations). (29 CFR 1910.119)		The PSM provisions require initial and refresher training on topics related to job-related operations and emergencies. These topics are generally comparable to the topics required by the HWRs for LQG and SQG training. A facility must comply with these regulations if it meets the specified applicability criteria (e.g., a facility that accumulates a highly hazardous chemical onsite above its threshold quantity).

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): Facilities must have an emergency response program if it is required by EPA or state to have its employees engage in emergency response or if it directs its employees to engage in emergency response. The program must include, among other things, training on job duties and emergency response (e.g., elements of the response plan, procedures for handling emergency incidents). Training on job duties must be recurrent training. These provisions apply to hazardous waste TSDFs only. (29 CFR 1910.120(p))	29 CFR 1910.120(p) does not apply to facilities that are not hazardous waste TSDFs.	Facilities that are not subject to a permit or interim status would not be subject to 29 CFR 1910.120(p)(8). However, facilities under the exclusion may continue to manage hazardous waste under a permit or interim status and be subject to 29 CFR 1910.120(p). Some of the training topics under the 29 CFR 1910.120(p) could be relevant to the excluded material. These provisions require training on job duties and emergency procedures. These topics are generally comparable to the topics required by the HWRs. However, these provisions do not require recurrent training on emergency response, as do the HWRs for facilities. Therefore, they are not comparable to the HWR training requirements.
OSH Act (Hazardous Waste Operations and Emergency Response (HAZWOPER)): A facility is required to establish an emergency response program if it has employees who are responsible for emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard (e.g., anywhere at the facility). The facility's program must provide initial and recurrent training as relevant to personnel responsibilities (e.g., first responder, on scene incident commander). This includes, for example, hazard detection, responsibilities for emergency response, and safety. (29 CFR 1910.120(q))		The HAZWOPER regulations require initial and recurrent training on hazard detection, emergency response, and safety, among other things. These topics are comparable to the topics required by the HWRs for facilities, as it relates specifically to emergency response personnel. A facility must comply with these regulations if it meets the specified applicability criteria (e.g., a facility that has employees responsible for responding to on-site releases regardless of location).

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
OSH Act (Hazard Communication): Employers must provide information to their employees about any chemical which is a physical or health hazard to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. Employees must be informed of operations in their work area where hazardous chemicals are present, among other things. Employee training must include methods and observations for detecting releases, hazards in the work area, and measures employees can take to protect themselves (e.g., emergency procedures). (29 CFR 1910.1200)		The Hazard Communication Standard (HazCom) requires familiarization and training on emergency recognition, hazards, and protective measures. These provisions less rigorous than the HWR training requirements for facilities. There is no schedule for follow-up training under HazCom. Therefore, HazCom training is not comparable to the HWR training requirements. A facility must comply with these regulations for any chemicals which could pose a physical or health hazard in the work place, except for hazardous waste. Facilities under the TBE would be subject to these requirements for their excluded materials, as well as other chemicals that are not hazardous waste (e.g., chemical products).

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
7. Reporting and Recordkeeping		
HWRs: Reporting to EPA: • Notification (40 CFR 264.11) • Biennial report (40 CFR 264.75) • Manifesting reports (40 CFR 264.72 and 264.76) *HWRs*: Operating record (40 CFR 264.73)	*TBE*: Initial and biennial notification (40 CFR 260.42) and recordkeeping of all shipments received onsite and received onsite and sent offsite. (40 CFR 261.4(a)(24)(vi)(A))	The HWR and TBE have comparable requirements for initial and biennial submittals in regard to frequency and types of information submitted. The TBE does not require recordkeeping comparable to an operating record.
8. Financial Assurance		
HWRs: Financial assurance must be obtained. (40 CFR Part 264, Subpart H)	*TBE*: Financial assurance must be obtained. (40 CFR 261.4(a)(24)(vi)(F))	The HWR and TBE include comparable requirements for financial assurance.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
10. Requirement for a Permit		
HWRs: RCRA permit is required for storage. (40 CFR Part 270)	*TBE*: Facility must either obtain RCRA permit and manage HSMs in the permitted units (40 CFR Part 270) or must comply with TBE conditions and pass an audit by the generator, who makes reasonable efforts to ensure their HSM will be safely and legitimately managed. (40 CFR 261.4(a)(24)(v)(B))	The RCRA permit and TBE share some key similarities and differences, e.g.: <u>Similarities</u> • RCRA permit and TBE impose requirements on facilities to ensure protective operation (e.g., RCRA permit conditions, TBE conditions); • RCRA permit and TBE rely on similar processes for compliance assurance (e.g., state inspections and reviews of facility submittals). Whereas a state may inspect TSDFs more often than TBE facilities, the TBE requires generator audits to supplement state's compliance oversight and assure compliance. • RCRA permit and TBE both require financial assurance for closure and sudden and non-sudden occurrences. <u>Differences</u> • RCRA permit can be revoked or denied to prevent facility operation. Under the TBE, generator audit does not result in denial of ability to operate. Rather, generators must not send materials to a facility that fails an audit, essentially denying it the ability to manage the materials under the exclusion. • States have lead role in administering the RCRA permitting and enforcement process. Under the TBE,

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
		states and generators both have lead roles to evaluate facility compliance.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
11. Public Involvement in Permit Process		
HWRs: Facility must undergo RCRA permitting process, which includes public involvement (e.g., public notice and comment for draft permit decision; public hearing if requested). (40 CFR Part 270 and 124)	*TBE*: Facility must either undergo RCRA permitting process, including public involvement, or be subject to generator audits. Generator audits do not involve the general public.	The TBE is not comparable to the HWRs for public involvement. Under the HWRs, a facility must obtain a permit to store HSMs. The RCRA permitting process includes public involvement. Under the TBE, a permit is not needed for storage of excluded materials. As a result, the facility could operate and store the materials under the TBE without public involvement. In addition, see "Other Federal Regulations" below for additional discussion.
Other Federal Regulations:		
Facilities managing HSMs may be subject to other permitting programs that include public involvement. Examples include the Clean Air Act (CAA) operating permitting program and Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permitting program.		Facilities under the TBE may be subject to the CAA, NPDES, and/or other permitting programs. If so, the public may have an opportunity to comment on aspects of their draft permit that relate to management of the excluded material. For example, a draft CAA operating permit may include requirements related to the control of air emissions from storage tanks holding excluded materials. The public could comment on these aspects of the proposed permit.

Table A-3. Comparison of Federal Regulations Applicable to Hazardous Waste Storage Facilities and Hazardous Secondary Material Intermediate and Reclamation Facilities under the DSW Transfer-Based Exclusion

Hazardous Waste Regulations (HWRs) and Other Federal Regulations: Hazardous Waste Storage Facilities	DSW Transfer-Based Exclusion (TBE) and Other Federal Regulations: Hazardous Secondary Material (HSM) Intermediate and Reclamation Facilities	Notes (e.g., issues regarding applicability, comments on comparability)
12. EPA/State Oversight and Enforcement		
HWRs: RCRA section 3007(c) requires annual inspections of federal TSDFs. RCRA section 3007(d) requires annual inspections of state and local TSDFs. RCRA section 3007(e) requires that other TSDFs be inspected no less than every two years. EPA's National Program Manager (NPM) Guidance for Fiscal Year 2010 establishes performance expectations and activities related to the TSDF universe for the EPA Regions and states: • Inspect at least once every two years each operating TSDF; and • Annually inspect each TSDF operated by states or local governments (for Regions only). The HWRs include prescriptive standards for facilities, including the requirement for a permit, which could facilitate inspections and enforcement actions.	*TBE*: For RCRA-permitted facilities, requirements would be the same. For unpermitted DSW facilities, no comparable requirements. The TBE does not include prescriptive standards, but performance based requirements.	It may be more difficult for regulators and facilities to inspect for compliance under the TBE because it does not spell out prescriptive standards. This differs from the HWRs, which lay out prescriptive standards.

5. Summary of Federal Regulations

This section summarizes the federal regulations that are compared and discussed in this Appendix. These include the following:

- 5.1 Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations
  - 5.1.1 Hazardous Waste Generator Standards
  - 5.1.2 Hazardous Waste Storage Standards
- 5.2 Resource Conservation and Recovery Act (RCRA) Definition of Solid Waste (DSW) Exclusions
  - 5.2.1 Generator-Controlled Exclusion
  - 5.2.2 Transfer-Based Exclusion
- 5.3 Clean Air Act (CAA)
  - 5.3.1 CAA Title V Air Quality Permitting Process
  - 5.3.2 CAA Standards for Area Sources Not Subject to Title V Permit
  - 5.3.3 Chemical Accident Prevention Provisions
- 5.4 Clean Water Act (CWA) – Oil Pollution Prevention
- 5.5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – Release Notification
- 5.6 Emergency Planning and Community Right-to-Know Act (EPCRA) – Release Notification
- 5.7 Hazardous Materials Transportation Act of 1975 (HMTA)
  - 5.7.1 Overview and Applicability
  - 5.7.2 Hazardous Materials Regulations
  - 5.7.3 Transportation of Hazardous Materials; Driving and Parking Rules
- 5.8 Occupational Safety and Health Act (OSH Act)
  - 5.8.1 Process Safety Management of Highly Hazardous Chemicals
  - 5.8.2 Hazardous Waste Operations and Emergency Response
  - 5.8.3 Hazard Communication

5.1 Resource Conservation and Recovery Act (RCRA) Hazardous Waste Regulations

Subtitle C of the Resource Conservation and Recovery Act (RCRA), as amended, authorizes EPA to develop and implement a national hazardous waste regulatory program. EPA has established hazardous regulations at 40 CFR Parts 260 through 279. Following is a summary of some of the regulations applicable to hazardous waste generators and storage facilities.

5.1.1 Hazardous Waste Generator Standards (40 CFR Part 262)

A hazardous waste generator is any person, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation. Generators are divided into three categories based on the quantity of waste they produce during the month:

- A large quantity generator (LQG) is a site that generates 1,000 kilogram (kg) or more of hazardous waste in a calendar month, more than 1 kg of acute hazardous waste in a calendar month, or more than 100 kg of any residue, soil, waste or other debris resulting from the cleanup of any acute hazardous waste. (261.5(e) and 262.34(a))
- A small quantity generator (SQG) is a site that generates greater than 100 kg but less than 1,000 kg of hazardous waste in a calendar month. (262.34(d))
- A conditionally exempt small quantity generator (CESQG) is a site that generates 100 kg or less of hazardous waste in a calendar month, 1 kg or less of acute hazardous waste in a calendar month, or 100 kg or less of any residue, soil, waste or other debris resulting from the cleanup of any acute hazardous waste. (261.5(a))

LQGs and SQGs must comply with the standards of 40 CFR Part 262, as applicable. Following is a summary of some of the generator standards.

Legitimate Recycling

EPA has issued policy statements to clarify legitimate recycling under the RCRA hazardous waste program. In particular, EPA issued a memorandum on April 26, 1989, that consolidated preamble statements concerning legitimate recycling that had been articulated previously into a list of criteria to be considered in evaluating legitimacy [OSWER Directive 9441.1989(19)]. This memorandum has been a primary source of guidance for the regulated community and for implementing agencies in distinguishing between legitimate and sham recycling.

As explained in the memorandum, a legitimacy determination involves evaluating case-specific information to determine whether or not a secondary material being recycled is in effect being used as a commodity, rather than as a waste. The memorandum identified six criteria to be considered in evaluating this fundamental question, explaining that each recycling scenario is likely to require a case-specific evaluation. The memorandum further explained that, depending on the case-specific facts and circumstances, certain criteria may weigh more heavily than others in making legitimacy determinations.

In addition, 40 CFR 261.2(f) provides that respondents in an enforcement action who raise a claim that a certain material is not a solid waste must demonstrate that there is a known market or disposition for the material and that they meet the terms of the exclusion or exemption, as specified.

Storage Time Limit

Generators must comply with the storage time limits at 40 CFR 262.34, as specified:

- LQGs may accumulate hazardous waste onsite for 90 days or less without a permit or interim status, provided that specified standards are met. (262.34(a))
- SQGs may accumulate hazardous waste onsite for 180 days or less without a permit or interim status, provided that the quantity of waste accumulated onsite never exceeds 6,000 kg and other standards are met, as specified. If the SQG's waste must be transported 200 miles or more for off-site treatment, storage, or disposal, it may accumulate the hazardous waste onsite for 270 days or less without a permit or interim status, provided that specified standards are met. (262.34(d) and (e))

Containment

40 CFR 262.34(a) and (d) provide that LQGs and SQGs may accumulate their hazardous waste in containers and tanks in accordance with 40 CFR Part 265, Subparts I and J, respectively. In addition, LQGs may accumulate their hazardous waste in containment buildings in accordance with 40 CFR Part 265, Subpart DD. The purpose of these standards is to contain the waste in the unit, among other things. Section 5.2 of this Appendix gives examples of some of these standards.

Air Emission Standards

40 CFR 262.34(a) requires LQGs to comply with the air emission standards for containers and tanks at 40 CFR Part 265, Subparts AA, BB, and CC, as applicable. SQGs are not subject to these subparts. Section 5.2 of this Appendix summarizes the Subpart AA through CC requirements.

Emergency Preparedness and Response

Emergency Equipment. 40 CFR 262.34(a) and (d) require LQGs and SQGs to comply with the preparedness and prevention requirements of 40 CFR Part 265, Subpart C. Subpart C requires that they be equipped with, test, and maintain emergency equipment, including internal and external communications and alarm systems, fire control equipment, and water, if needed for the hazards posed by waste handled at the facility.

Emergency Plan and Response. 40 CFR 262.34(a) requires LQGs to comply with the contingency plan and emergency procedures of 40 CFR Part 265, Subpart D. Subpart D requires that they designate an emergency coordinator and have a contingency plan designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The emergency coordinator must carry out the following procedures whenever there is a fire, release, and explosion:

- Notify on-site and off-site personnel/agencies as specified;
- Identify, assess, and control releases, fires or explosions and related hazards;
- Take other actions as specified (e.g., ensure treatment, storage, or disposal of recovered waste).

40 CFR 262.34(d) requires SQGs to designate an emergency coordinator and post emergency information next to the telephone (e.g., location of fire extinguisher). In the event of a fire, explosion or other release, the emergency coordinator must notify appropriate off-site personnel/agencies and control/cleanup to the fire, release or other emergency (e.g., contain the flow of hazardous waste).

Personnel Training

40 CFR 262.34(a) requires LQGs to comply with the personnel training requirements of 40 CFR 265.16. LQGs must provide initial training and annual review, which teach facility personnel to perform their duties in a way that ensures the facility's compliance with applicable RCRA requirements. It must ensure, at a minimum, that personnel are able to respond effectively to emergencies. Specified records must be kept.

40 CFR 262.34(d) requires SQGs to ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures relevant to their responsibilities during normal facility operations and emergencies.

Reporting and Recordkeeping

Notification. Under 40 CFR 262.12, a generator must not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an EPA identification (ID) number from EPA. The generator may obtain an ID number by submitting a RCRA Subtitle C Site Identification Form (EPA Form 8700-12) to EPA.

Biennial Report. 40 CFR 262.41 requires LQGs to prepare and submit a Biennial Report to EPA by March 1 of each even numbered year. The Biennial Report must be submitted on EPA Form 8700–13A/B and include information about the generator, hazardous wastes generated, on-site management, and off-site shipments. SQGs are not required to submit a Biennial Report.

Exception Report. Under 40 CFR 262.42, a generator must submit an Exception Report to EPA if has not received a copy of the manifest from the designated facility within 45 days (for LQGs) or 60 days (for SQGs) of the date the waste was accepted by the initial transporter. The Exception Report must explain the generator's efforts to locate the waste and the results of those efforts.

Recordkeeping. 40 CFR 262.40 requires generators to retain the following documents for three years:

- Manifests;
- Biennial Report (LQGs only); and
- Results of waste analyses, tests, and other determinations.

Off-Site Transportation

Manifest System. Under 40 CFR Part 262, Subpart B, generators must prepare a hazardous waste manifest for all off-site shipments, give it to initial the transporter, and retain a copy. The transporter must ensure that the manifest accompanies the shipment to the designated facility and retain a copy. The designated facility must note discrepancies, retain a copy and send a copy back to the generator to confirm receipt.

U.S. Department of Transportation (DOT) Requirements. 40 CFR 262.30 through 262.33 require generators to comply with the following DOT requirements for the waste before it is transported offsite:

- Packaging requirements at 49 CFR Parts 173, 178, and 179; and
- Labeling, marking, and placarding requirements at 49 CFR Part 172.

Exports

Under 40 CFR Part 262, Subparts E and H, a primary exporter must provide notice to EPA of its intent to export hazardous waste. The shipment cannot take place until the receiving country consents (e.g., tacit or written) to the shipment. The primary exporter must comply with the requirements for use of a tracking document (e.g., manifest), as specified. In addition, exports to countries in the Organization for Economic Cooperation and Development (OECD) must occur under the conditions of a contract, as specified. The primary exporter must file an annual report by March 1 of each year to EPA, summarizing the types, quantities, frequency, and ultimate disposition of all hazardous waste exported. The primary exporter must keep a copy of specified documents (e.g., each notification, annual report).

Enforcement and Compliance

EPA's National Program Manager (NPM) Guidance for Fiscal Year 2010 establishes performance expectations and activities related to the LQG universe for the EPA Regions and states. It requires that they annually inspect at least 20% of the LQG universe, so that the entire universe is inspected in five years unless approval to deviate from this requirement is approved.[51]

5.1.2 Hazardous Waste Storage Standards (40 CFR Parts 264 and 265)

A facility that treats, stores of disposes of hazardous waste must comply with the technical requirements of 40 CFR Part 264 or 265. Part 264 establishes requirements for treatment, storage or disposal facilities (TSDFs) that have received a RCRA permit under Part 270. Part 265 establishes requirements for TSDFs that are under interim status until either a RCRA permit is issued or closure and post-closure responsibilities are fulfilled. Following is a summary of some of the requirements applicable to facilities that store hazardous waste.

Legitimate Recycling

Section 5.1.1 of this Appendix summarizes the requirements and policy related to the legitimate recycling of hazardous waste.

Containment

Facilities must store their hazardous waste in containers, tanks, surface impoundments, waste piles, or containment buildings in accordance with 40 CFR Part 264 or 265, Subparts I, J, K, L, or DD, respectively. The purpose of these standards is to contain the waste, among other things. Following are examples of standards for the design, operation, inspection, and closure/post-closure of these units.

Design Standards

[51] "FY 2010 Office of Enforcement and Compliance Assurance (OECA) National Program Manager (NPM) Guidance April 23, 2009." See page 44.

- Liners and leachate collection and removal systems
- Air emission controls
- Other control measures (e.g., dikes, run-on/run-off systems)

Operating Standards

- Controls and practices to prevent spills and overflows (e.g., maintenance of sufficient freeboard in uncovered tanks)
- Controls to prevent wind dispersal of particulate matter
- Special procedures for storing ignitable, reactive waste, and incompatible waste (e.g., waste segregation)

Monitoring and Inspection Standards

- Periodic inspections to detect leaks and ensure the unit is in good working order (e.g., at least weekly for containers)
- Periodic monitoring of leakage rates from surface impoundments and waste piles

Closure and Post-Closure Care Standards

- Removal or decontamination of all waste residues, contaminated containment system components, contaminated soils, and structures/equipment contaminated with waste
- Elimination of free liquids
- Performance of post-closure care, if applicable (e.g., maintenance and monitoring)

Air Emission Standards

EPA has established air emission standards at 40 CFR Parts 264 and 265, Subparts AA, BB, and CC. They apply to LQG and TSDF containers, tanks, and other units as specified. They are summarized below.

Air Emission Standards for Process Vents at 40 CFR Parts 264 and 265, Subpart AA

Parts 264 and 265, Subpart AA applies to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations that manage hazardous wastes with organic concentrations of at least 10 parts per million by weight (ppmw), if these operations are conducted in specified units (e.g., units subject to permitting requirements). Facilities must design, operate, monitor, and maintain their process vents to either (1) reduce total organic emissions from all affected process vents at the facility below specified levels or (2) reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent.

Air Emission Standards for Equipment Leaks at 40 CFR Parts 264 and 265, Subpart BB

Parts 264 and 265, Subpart BB applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight that are managed in specified unit types (e.g., units subject to permitting requirements). Facilities must comply with the design, operation, inspection, monitoring, testing, maintenance, and recordkeeping standards for specified types of equipment (e.g., pumps, compressors, pressure relief devices).

Air Emission Standards for Tanks, Surface Impoundments, and Containers at 40 CFR Parts 264 and 265, Subpart CC

Parts 264 and 265, Subpart CC applies to tanks, surface impoundments, and containers, except as otherwise specified.

Tanks. Facilities must control air pollutant emissions from tanks in accordance with Tank Level 1 or Tank Level 2 controls, as specified (e.g., installing a fixed roof).

Surface Impoundments. Facilities must control air pollutant emissions from surface impoundments by using either a floating membrane cover or a cover that is vented through a closed-vent system to a control device, as specified.

Containers. Facilities must control air pollutant emissions from containers in accordance with Container Level 1, 2, or 3 standards (e.g., use of containers that meet applicable DOT regulations).

Emergency Preparedness and Response

Emergency Equipment. Facilities must comply with the preparedness and prevention requirements of Subpart C of 40 CFR Parts 264 and 265. Subpart C requires that they be equipped with, test, and maintain emergency equipment, including internal and external communications and alarm systems, fire control equipment, and water, if needed for the hazards posed by waste handled at the facility.

Emergency Plan and Response. Facilities must comply with the contingency plan and emergency procedures of Subpart D of 40 CFR Parts 264 and 265. Subpart D requires that they designate an emergency coordinator and have a contingency plan designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The emergency coordinator must carry out procedures for responding to fires, releases, and explosions, including:

- Notify on-site and off-site personnel/agencies as specified;
- Identify, assess, and control releases, fires or explosions and related hazards;
- Taking other actions as specified (e.g., ensure treatment, storage, or disposal of recovered waste).

Security

Facilities must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of the facility, unless specified otherwise, as required by 40 CFR 264.14 and 265.14. This must include a surveillance system or barrier (e.g., fence).

Personnel Training

Facilities must comply with the personnel training requirements of 40 CFR 264.16 or 265.16. Facilities must provide initial training and annual review, which teach facility personnel to perform their duties in a way that ensures the facility's compliance with applicable requirements. It must ensure, at a minimum, that personnel are able to respond effectively to emergencies. Specified records must be kept.

Reporting and Recordkeeping

Notification. Under 40 CFR 264.11 and 265.11, every facility must apply to EPA for an EPA identification number in accordance with the EPA notification procedures.

Biennial Report. 40 CFR 264.75 and 265.75 require facilities to prepare and submit a single copy of a biennial report to EPA by March 1 of each even numbered year. The report must include information about the facility, wastes received (e.g., from offsite), management and disposal methods.

Discrepancy Report. 40 CFR 264.71 and 265.71 require a facility that receives an off-site shipment to note discrepancies between the waste and manifest. The facility must attempt to reconcile the discrepancy. If it cannot, it must submit a Discrepancy Report to EPA within 15 days, explaining the discrepancy and efforts to resolve it.

Recordkeeping. 40 CFR 264.73 and 265.73 require facilities to record and maintain the following information in an operating record (e.g., waste and unit descriptions, emergency incidents, inspection/monitoring results, notices and certifications).

Financial Assurance

40 CFR Parts 264 and 265, Subpart H requires facilities to have and maintain a cost estimate for closure and, if applicable, post-closure. They also must obtain financial assurance for closure and, if applicable, post-closure.

In addition, facilities must maintain liability coverage for sudden accidental occurrences of at least $1 million per occurrence with an annual aggregate of at least $2 million. Facilities with a surface impoundment, landfill, land treatment facility, or disposal miscellaneous unit as specified also must maintain liability coverage for non-sudden accidental occurrences in an amount of at least $3 million per occurrence with an annual aggregate of at least $6 million.

Subpart H identifies a variety of financial instruments for these purposes (e.g., trust fund, surety bond).

Requirement for a Permit

40 CFR Part 270 requires a facility owner/operator to obtain a permit to treat, store or dispose of hazardous waste. Owner/operators must have a permit during the active life (including closure period) of their hazardous waste management units. Owner/operators of surface impoundments, landfills, land treatment units, and waste pile units also must have post-closure permits, unless they demonstrate closure by removal or decontamination s specified. The permit specifies the requirements to which the facility is subject.

Public Involvement in the Permit Process

The RCRA permitting process is laid out at 40 CFR Parts 124 and 270. Following its basic elements, including public involvement methods:

- Applicant holds a public meeting with the public prior to submitting the Part B RCRA permit application to EPA (e.g., to explain its facility).
- The facility submits a Part A and Part B permit application to EPA or authorized state permitting agency that contains the information required in Part 270, Subpart B.

- Permitting agency will issue a public notice that an application has been received and where it is available for public review. The agency will review the application for completeness and send a written notification to the applicant indicating whether the application is complete.
- Once an application is complete, the agency will tentatively decide whether to issue or deny the permit. If it decides to issue a permit, it will prepare a draft permit that contains requirements and conditions as specified. If it decides to deny the permit, it will issue a notice of intent to deny.
- The permitting agency will provide public notice of its intent to issue or deny the permit, along with a fact sheet. The notice must be circulated in specified media (e.g., local papers, etc.) and allow at least 45 days for public comment.
- The permitting agency will hold a public hearing whenever it receives written notice of opposition to a draft permit and a request for a hearing, as specified. Whenever possible, it will schedule a hearing at a location convenient to the nearest population center to the proposed facility.
- After the close of the public comment period, the agency will either issue or deny the permit. It also must prepare a written response to comments and make it publicly available.

EPA/State Oversight and Enforcement

RCRA section 3007(c) requires annual inspections of federal TSDFs. RCRA section 3007(d) requires annual inspections of state and local TSDFs. RCRA section 3007(e) requires that other TSDFs be inspected no less than every 2 years.

EPA's National Program Manager (NPM) Guidance for Fiscal Year 2010 establishes performance expectations and activities related to the TSDF universe for the EPA Regions and states. It requires that they inspect at least once every two years each operating TSDF, as required under RCRA section 3007(e), i.e., 50% of the TSDF universe annually. It also requires the EPA Regions to annually inspect each TSDF operated by states or local governments as required under RCRA section 3007(d).[52]

5.2 Resource Conservation and Recovery Act (RCRA) Definition of Solid Waste (DSW) Exclusions

5.2.1 Generator-Controlled Exclusion (40 CFR 261.2(a)(2)(ii) and 261.4(a)(23))

The GCE excludes from the definition of solid waste those HSMs which remain under the control of the generator when legitimately reclaimed. The exclusion can be claimed for materials that are:

- Generated and reclaimed at the generating facility;

[52] "FY 2010 Office of Enforcement and Compliance Assurance (OECA) National Program Manager (NPM) Guidance April 23, 2009." See pages 43 and 45.

- Generated and reclaimed at different facilities, if the reclaiming facility is controlled by the generator or if both the generating facility and the reclaiming facility are controlled by a person as defined in 40 CFR 260.10; and
- Generated pursuant to a written contract between a tolling contractor and a toll manufacturer and is reclaimed by the tolling contractor. A tolling contractor means a person who arranges for the production of a product or intermediate made from specified unused materials through a written contract with a toll manufacturer. Toll manufacturer means a person who produces a product or intermediate made from specified unused materials pursuant to a written contract with a tolling contractor.

The conditions and requirements of the exclusion are summarized below.

Legitimate Recycling

The GCE requires the reclamation of HSM to be legitimate, as specified under 40 CFR 260.43.

40 CFR 260.43(a) provides that persons regulated under 40 CFR 260.34 or claiming to be excluded from hazardous waste regulation under sections 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) because they are engaged in reclamation must be able to demonstrate that the recycling is legitimate. Hazardous secondary material that is not legitimately recycled is discarded material and is a solid waste. In determining if their recycling is legitimate, persons must address the requirements of 40 CFR 260.43(b) and must consider the requirements of 40 CFR 260.43(c).

40 CFR 260.43(b) provides that legitimate recycling must involve a hazardous secondary material that provides a useful contribution to the recycling process or to a product or intermediate of the recycling process, and the recycling process must produce a valuable product or intermediate as specified.

40 CFR 260.43(c) identifies factors that must be considered in making a determination as to the overall legitimacy of a specific recycling activity. These factors relate to how the generator and reclaimer should manage the material (e.g., as a valuable commodity) and how closely the product of the recycling process resembles analogous products. In making a determination that a hazardous secondary material is legitimately recycled, persons must evaluate all factors and consider legitimacy as a whole. If, after careful evaluation of these other considerations, one or both of the factors are not met, then this fact may be an indication that the material is not legitimately recycled. However, the factors do not have to be met for the recycling to be considered legitimate. In evaluating the extent to which these factors are met and in determining whether a process that does not meet one or both of these factors is still legitimate, persons can consider other relevant factors.

Storage Time Limit

The GCE requires that the material not be speculatively accumulated, as defined in 40 CFR 261.1(c)(8). 40 CFR 261.1(c)(8) provides that a material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that—during the calendar year (commencing on January 1)—the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period.

Containment

The GCE requires that the material be contained.

Air Emission Standards

The GCE requires that the material be contained.

Emergency Preparedness and Response

The GCE does not require emergency preparedness and response.

Personnel Training

The GCE does not require personnel training.

Reporting and Recordkeeping

The GCE requires notification to EPA in accordance with 40 CFR 260.42. 40 CFR 260.42 requires hazardous secondary material generators, tolling contractors, toll manufacturers, reclaimers, and intermediate facilities managing hazardous secondary materials which are excluded from regulation under 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) to send a notification prior to operating under the exclusion(s) and by March 1 of each even numbered year thereafter to EPA using EPA Form 8700–12. The form must include the following types of information:

- Information about the claimant and exclusion being claimed;
- Description of the materials to be managed under the exclusion (e.g., quantity); and
- Description of management methods.

Off-Site Transportation

The GCE does not include provisions for off-site transportation.

Exports

The GCE does not include provisions for exporting material outside the U.S. The exclusion requires that the material be generated and reclaimed within the U.S. or its territories.

5.2.2 Transfer-Based Exclusion (40 CFR 261.4(a)(24) and (25))

The TBE excludes from the definition of solid waste those HSMs that are generated and subsequently transferred to another company or person for the purpose of legitimate reclamation. The conditions and requirements of the exclusion are summarized below.

5.2.2.1 Generators (40 CFR 261.4(a)(24) and (25))

Legitimate Recycling

40 CFR 261.4(a)(24)(iv) requires that the reclamation of the material be legitimate, as specified under 40 CFR 260.43. Section 5.1.1 of this Appendix on RCRA summarizes the requirements for legitimate recycling under 40 CFR 260.43.

In addition, 40 CFR 261.4(a)(24)(v)(B) requires that, prior to arranging for transport of HSMs to a reclamation facility (and any intermediate facility) where the management of the hazardous secondary materials is not addressed under a RCRA Part B permit or interim status standards, the generator must make reasonable efforts to ensure that each reclaimer intends to properly and

legitimately reclaim the HSM and not discard it, and that each facility will manage the HSM in a manner that is protective of human health and the environment. Reasonable efforts must be repeated at a minimum of every three years. 40 CFR 261.4(a)(24)(v)(B) sets forth a series of questions about the facility that the generator must affirmatively answer.

Storage Time Limit

40 CFR 261.4(a)(24)(i) provides that the material must not be speculatively accumulated, as defined in 40 CFR 261.1(c)(8). Section 5.1..1 of this Appendix on RCRA summarizes the speculative accumulation provisions of 40 CFR 261.1(c)(8).

Containment

40 CFR 261.4(a)(24)(v)(A) requires that the material be contained.

Air Emission Standards

40 CFR 261.4(a)(24)(v)(A) requires that the material be contained.

Emergency Preparedness and Response

The TBE does not include provisions for emergency preparedness and response.

Personnel Training

The TBE does not require personnel training.

Reporting and Recordkeeping

Reporting. The TBE requires notification to EPA in accordance with 40 CFR 260.42. Section5. 2.1 of this Appendix on RCRA summarizes the notification requirement and types of information that must be submitted.

The generator also must make documentation and certification of its reasonable efforts available upon request by a regulatory authority within 72 hours, or within a longer period of time as specified by the regulatory authority, as required by 40 CFR 261.4(a)(24)(v)(C).

Recordkeeping. 40 CFR 261.4(a)(24)(v)(C) requires the generator to maintain for a minimum of three years documentation and certification that reasonable efforts were made for each reclamation facility and, if applicable, intermediate facility where the management of the HSMs is not addressed under a RCRA Part B permit or interim status standards prior to transferring HSM. The certification statement must include specified information.

40 CFR 261.4(a)(24)(v)(D) and (E) require the generator to maintain at the generating facility for no less than three years records of all off-site shipments of HSMs and confirmations of receipt from each reclaimer and, if applicable, each intermediate facility for all off-site shipments of HSMs.

Off-Site Transportation

40 CFR 261.4(a)(24)(ii) requires the material not be handled by any person or facility other than the HSM generator, the transporter, an intermediate facility or a reclaimer, and, while in transport, not be stored for more than 10 days at a transfer facility, and be packaged according to applicable DOT regulations at 49 CFR Parts 173, 178, and 179 while in transport.

40 CFR 261.4(a)(24)(v)(D) requires the generator to maintain at the generating facility for no less than three years records of all off-site shipments of HSMs. For each shipment, these records must, at a minimum, contain the following information:

- Name of the transporter and date of the shipment;
- Name and address of each reclaimer and, if applicable, the name and address of each intermediate facility to which the HSM was sent; and
- The type and quantity of HSM in the shipment.

40 CFR 261.4(a)(24)(v)(E) requires the generator to maintain at the generating facility for no less than three years confirmations of receipt from each reclaimer and, if applicable, each intermediate facility for all off-site shipments of HSMs. Confirmations of receipt must include the following information:

- Name and address of the reclaimer (or intermediate facility);
- Type and quantity of the HSMs received; and
- Date which the HSMs were received.

This requirement may be satisfied by routine business records (e.g., financial records, bills of lading, copies of DOT shipping papers, or electronic confirmations of receipt).

Exports

40 CFR 261.4(a)(25) provides that HSM that is exported from the U.S. and reclaimed at a reclamation facility located in a foreign country is not a solid waste, provided that the HSM generator complies with the applicable requirements of 40 CFR 261.4(a)(24)(i)–(v) (excepting paragraph (a)(24)(v)(B)(2) for foreign reclaimers and foreign intermediate facilities). The generator also must comply with 40 CFR 261.4(a)(25).

Under 40 CFR 261.4(a)(25), the generator must notify EPA of an intended export before the HSM is scheduled to leave the U.S., as specified. The export of HSM is prohibited unless the receiving country consents (written or tacit) to the intended export. When the receiving country consents to the receipt of the export, EPA will send an Acknowledgment of Consent (AOC) to the generator. An AOC must accompany the shipment. The generator must file an annual report with EPA no later than March 1 of each year, summarizing the types, quantities, frequency and destination of all materials exported. The generator must keep a copy of the AOC and comply with the notification requirements of 40 CFR 260.42. Section 5.2.1 of this Appendix on RCRA summarizes the types of information that must be submitted under 40 CFR 260.42.

5.2.2.2 Intermediate and Reclamation Facilities (40 CFR 261.4(a)(24))

Legitimate Recycling

40 CFR 261.4(a)(24)(iv) requires that the reclamation of the material be legitimate, as specified under 40 CFR 260.43. In addition, generators must make reasonable efforts as applicable to ensure that each facility intends to properly and legitimately reclaim the HSM and not discard it, and that each facility will manage the HSM in a manner that is protective of human health and the environment. Section 5.1.2 of this Appendix summarizes the requirements for legitimate recycling.

Containment

40 CFR 261.4(a)(24)(vi)(D) requires the reclaimer and intermediate facility to manage the HSM in a manner that is at least as protective as that employed for analogous raw material and must be contained. An ‘‘analogous raw material’’ is a raw material for which a HSM is a substitute and serves the same function and has similar physical and chemical properties as the HSM.

Air Emission Standards

Section 5.1.2 of this Appendix on RCRA summarizes the requirement to contain the material.

Emergency Preparedness and Response

The TBE does not include requirements for emergency preparedness and response.

Security

The TBE does not include requirements for security.

Personnel Training

The TBE does not require personnel training.

Reporting and Recordkeeping

Reporting. The TBE requires notification to EPA in accordance with 40 CFR 260.42. Section 5.1.2 of this Appendix on RCRA summarizes the notification requirement and types of information that must be submitted.

Recordkeeping. 40 CFR 261.4(a)(24)(vi)(A) requires the reclaimer and intermediate facility to maintain at their facility for no less than three years records of all shipments of HSM that were received at the facility and, if applicable, all shipments of HSMs that were received and subsequently sent offsite from the facility for further reclamation.

Financial Assurance

40 CFR 261.4(a)(24)(vi)(F) requires the reclaimer and intermediate facility to have financial assurance as required under Subpart H of 40 CFR Part 261.

Subpart H requires facilities to have and maintain a cost estimate for closure. They also must obtain financial assurance for closure.

In addition, facilities must have and maintain liability coverage for sudden accidental occurrences in the amount of at least $1 million per occurrence with an annual aggregate of at least $2 million. A facility with land-based units used to manage HSMs must have and maintain liability coverage for non-sudden accidental occurrences in the amount of at least $3 million per occurrence with an annual aggregate of at least $6 million.

Subpart H identifies a variety of financial instruments for these purposes (e.g., trust fund, surety bond).

Requirement for a Permit

The TBE does not require the intermediate or reclamation facility to obtain a permit. However, if the facility does not have a permit, it must undergo reasonable efforts by generators that intend to send their material to it, as required by 40 CFR 261.4(a)(24)(v)(B). The generators must affirmatively answer all of the following questions for each reclamation facility and any intermediate facility:

- Does the available information indicate that the reclamation process is legitimate pursuant to 40 CFR 260.43?
- Does the publicly available information indicate that the reclamation facility and any intermediate facility that is used by the HSM generator notified the appropriate authorities of HSMs reclamation activities pursuant to 40 CFR 260.42 and have they notified the appropriate authorities that the financial assurance condition is satisfied per 40 CFR 261.4(a)(24)(vi)(F)?
- Does publicly available information indicate that the reclamation facility or any intermediate facility that is used by the HSM generator has not had any formal enforcement actions taken against the facility in the previous three years for violations of the RCRA hazardous waste regulations and has not been classified as a significant non-complier with RCRA Subtitle C? If the reclamation facility or any intermediate facility that is used by the HSM generator has had a formal enforcement action taken against the facility in the previous three years for violations of the RCRA hazardous waste regulations and has been classified as a significant non-complier with RCRA Subtitle C, does the HSM generator have credible evidence that the facilities will manage the HSMs properly?
- Does the available information indicate that the reclamation facility and any intermediate facility that is used by the HSM generator have the equipment and trained personnel to safely recycle the HSM?
- If residuals are generated from the reclamation of the excluded HSMs, does the reclamation facility have the permits required (if any) to manage the residuals? If not, does the reclamation facility have a contract with an appropriately permitted facility to dispose of the residuals? If not, does the HSM generator have credible evidence that the residuals will be managed in a manner that is protective of human health and the environment?

Public Involvement in the Permit Process

The TBE does not include methods for public involvement.

5.3 Clean Air Act (CAA)

This section gives an overview of the Clean Air Act (CAA) regulation of emissions from stationary sources. It also describes the CAA regulations related to chemical accident prevention. A "stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant (e.g., factories, manufacturing plants).

5.3.1 CAA Title V Air Quality Permitting Process

Title V of the Clean Air Act authorizes EPA to establish minimum elements to be included in all state and local operating permit programs and then assist the state and local governments in developing their programs. Most Title V permits are issued by state and local permitting authorities under 40 CFR Part 70. However, EPA also issues some Title V permits (e.g., to sources in Indian country) under 40 CFR Part 71. The permit program involves public participation. Draft Title V permits issued by authorized state agencies are published for public review and comment prior to issuance of a permit.

All "major" stationary sources emitting certain air pollutants are required to obtain Title V operating permits. A major source for hazardous air pollutants is defined as a source that emits more than 10 tons per year of any single Hazardous Air Pollutant (HAP) or more than 25 tons per year of HAPs in total. In addition, a limited number of area sources (i.e., sources that do not meet the criteria for a major source) also may be required to obtain a permit under the federal regulatory program, e.g.:

- Hazardous waste combusters;
- Portland cement manufacturers;
- Mercury cell chlor-alkali plants;
- Secondary lead smelters;
- Carbon black production;
- Chemical manufacturing: chromium compounds;
- Primary copper smelting;
- Secondary copper smelting;
- Nonferrous metals area sources;
- Glass manufacturing; and
- Electric arc furnace (EAF) steelmaking facilities.

Title V operating permits contain air emissions permit limits, control requirements, and operating requirements for regulated air emissions sources. Potentially applicable requirements that could be included in a permit can be found in various parts of 40 CFR, such as:

- Part 60: "Standards of Performance for New Stationary Sources (NSPS)." This part regulates emissions from stationary sources of criteria pollutants for which EPA has established National Ambient Air Quality Standards (NAAQS); and
- Part 63: "National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories." This part regulates emissions of hazardous air pollutants (HAPs) from source categories.

The table below gives examples of CAA technical standards that could be included in a permit to control air emissions. These standards could potentially apply to some facilities claiming a DSW exclusion and address emissions from process vents, equipment leaks, and/or emissions from tanks, surface impoundments and containers.

Also, state agencies have the regulatory authority to issue permits to minor sources of air emissions. Emissions thresholds for the definition of "minor source" vary among state regulatory programs.

Examples of Technical Standards under the Clean Air Act

Standards of Performance for New Stationary Sources at 40 CFR Part 60
Subpart Ka—Standards of Performance for Storage Vessels for Petroleum Liquids. The provisions of this subpart apply to each petroleum liquids storage vessel which has a storage capacity greater than 151,412 liters (40,000 gallons)
Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels). The provisions of this subpart apply to each volatile organic liquids storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) (approx. 20,000 gallons)
Subpart VV and Subpart VVa—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry, including production of chemical compounds as specified. These subparts include design, operating and other standards applicable to process vents and equipment leaks.
Subpart NNN—Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations. The provisions of this subpart apply to distillation unit vent streams and to combinations of a distillation unit and its associated recovery systems at facilities in the synthetic organic chemical manufacturing industry.
National Emission Standards for Hazardous Air Pollutants from Source Categories at 40 CFR Part 63
Subpart F—National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry. The provisions of this subpart apply to facilities that manufacture as a primary product one or more of the synthetic organic chemicals listed in the subpart, as specified.
Subpart G—National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater. The provisions of this subpart apply to synthetic organic chemical manufacturing industry facilities that are covered under Part 63, Subpart F (above).
Subpart H—National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks. The provisions of this subpart apply to synthetic organic chemical manufacturing industry facilities that are covered under Part 63, Subpart F (above).
Subpart DD—National Emission Standards for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations. The provisions of this subpart apply to facilities that are major sources of hazardous air pollutants and that receive "off-site material" for treatment (e.g., a waste or used solvent).
Subparts OO, PP, QQ, WW – National Emission Standards for Tanks (Level 1), Containers, Surface Impoundments, and Storage Vessels (Level 2). These subparts apply to the control of air emissions for the specified unit types for which another subpart of Parts 60-63 references the use of these subparts for such air emission control.
Subpart TT—National Emission Standards for Equipment Leaks—Control Level 1 and Subpart UU—National Emission Standards for Equipment Leaks—Control Level 2. The provisions of these subparts apply to the control of air emissions from equipment leaks for which another subpart references the use of these subparts for such air emission control.

5.3.2 CAA Standards for Area Sources Not Subject to Title V Permit

Area sources not subject to a Title V permit may still be subject to CAA regulation, depending on the applicability provisions of the particular regulation. The area source would be required to notify EPA (or the delegated state agency) typically 120 days following promulgation, whether it is subject to the regulation. Some CAA regulations could apply to the types of facilities that could claim a DSW exclusion. For more information on area sources and applicable regulations, go to: http://www.epa.gov/ttn/atw/area/compilation.html.

5.3.3 Chemical Accident Prevention Provisions

The Clean Air Act authorizes requirements for owner/operators of stationary sources concerning the prevention of accidental releases. These requirements are codified at 40 CFR Part 68, "Chemical Accident Prevention Provisions." An owner/operator of a stationary source (e.g., a building or plant) that has more than a threshold quantity of a regulated substance in a process (e.g., storage) must comply with Part 68. "Regulated substances" are toxic and flammable substances with threshold quantities listed in section 68.130.[53] There are 140 regulated substances with threshold quantities ranging from 500 to 20,000 pounds.

Part 68 requires the owner/operator of a stationary source to develop a risk management plan (RMP) that describes the facility's risk management program. The RMP is made available to federal, state, and local government agencies and the public. The owner/operator must develop its risk management program in accordance with the following program requirements:

- Program 1: Processes which would not affect the public in the case of a worst-case release and with no accidents with specified off-site consequences within the past five years are eligible for Program 1.
- Program 2: Processes not eligible for Program 1 or subject to Program 3 are placed in Program 2.
- Program 3: Processes not eligible for Program 1 and meeting other requirements (e.g., they are classified in one of ten specified North American Industrial Classification System (NAICS) codes) are placed in Program 3.

Following is a summary of the Part 68 requirements relevant to this analysis.

Emergency Preparedness and Response

Owner/operators of a stationary source with a process eligible for Program 1 must designate a point of contact for emergency response and at least make arrangements with local response authorities.

Owner/operators of a stationary source with a process subject to Program 2 or 3 have the option of either developing an emergency response program or making alternative arrangements, as follows:

1. Alternative Arrangements. Owner/operators whose employees will not respond to accidental releases of regulated substances need not prepare an emergency response program provided that they meet the following:

[53] These regulated substances are also CERCLA hazardous substances. Facilities subject to Part 68 also would be subject to OSHA requirements as applicable (e.g., at 29 CFR 1910.119 and 1910.120).

- For stationary sources with any regulated toxic substance held in a process above the threshold quantity, the stationary source is included in the community emergency response plan developed under 42 U.S.C. 11003 (i.e., the Emergency Planning and Community Right-To-Know Act of 1986);
- For stationary sources with only regulated flammable substances held in a process above the threshold quantity, the owner or operator has coordinated response actions with the local fire department; and
- Appropriate mechanisms are in place to notify emergency responders when there is a need for a response.

2. Emergency Response Program. Owner/operators subject to Program 2 or 3 that do not make the above alternative arrangements must develop an emergency response program for protecting human health and the environment. The emergency response program must include an emergency response plan that includes procedures for informing the public and local emergency response agencies about accidental releases, documentation for administering proper first-aid and emergency medical treatment as necessary, and procedures/measures for emergency response after an accidental release of a regulated substance. It also must include procedures for using and maintaining emergency response equipment, personnel training in relevant procedures, and procedures to update the plan.

Personnel Training

Owner/operators of a stationary source with a process eligible for Program 1 are not required to conduct personnel training. Owner/operators of a stationary source with a process subject to Program 2 or 3 must conduct initial and refresher training for personnel that operate a process. The training must cover specified elements (e.g., normal operations, emergency shutdown and operations). In addition, owner/operators must train their personnel in relevant procedures under their emergency response program (i.e., if the owner/operator develops an emergency response program instead of making alternative arrangements, as described above).

5.4 Clean Water Act (CWA) -- Oil Pollution Prevention

The Clean Water Act authorizes requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines and other areas as specified. These requirements are codified at 40 CFR Part 112, "Oil Pollution Prevention."

Part 112 establishes requirements for the preparation and implementation of Spill Prevention, Control, and Countermeasure (SPCC) Plans. SPCC Plans are designed to complement existing laws, regulations, rules, standards, policies, and procedures pertaining to safety standards, fire prevention, and pollution prevention rules. The purpose of an SPCC Plan is to form a comprehensive federal/state spill prevention program that minimizes the potential for discharges. The SPCC Plan must address all relevant spill prevention, control, and countermeasures necessary at the specific facility.

In general, facilities subject to the SPCC requirements are non-transportation-related, have aboveground oil storage capacity of more than 1,320 gallons and completely buried oil storage capacity of 42,000 gallons or less, and could reasonably be expected to discharge oil to navigable

waters or adjoining shorelines in quantities that may be harmful. "Oil" means oil of any kind or in any form (e.g., petroleum, fuel oil, sludge, synthetic oils, mineral oils, oil refuse, or oil mixed with wastes other than dredged spoil).

Emergency Preparedness and Response

The SPCC Plan must detail the equipment, workforce, procedures, and steps to prevent, control, and provide adequate countermeasures to a discharge. The Plan must address specified topics, such as:

- Discharge prevention measures;
- Countermeasures for discharge discovery, response, and cleanup;
- Containment and/or diversionary structures and equipment;
- Personnel responsibilities (e.g., for addressing discharges, off-site notifications);
- Plans and procedures for responding to discharges.

Personnel Training

Facilities must provide train their oil-handling personnel in the operation and maintenance of equipment to prevent discharges, discharge procedure protocols, applicable pollution control laws and regulations, general facility operations and the contents of the facility SPCC Plan. The facility must schedule and conduct discharge prevention briefings for its oil-handling personnel at least once a year to assure adequate understanding of the SPCC Plan for that facility. Such briefings must highlight and describe known discharges or failures, malfunctioning components, and any recently developed precautionary measures.

5.5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) – Release Notifications

Notification requirements for releases of a reportable quantity of a hazardous substance are authorized under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). Notification requirements are codified in 40 CFR Part 302, "Designation, Reportable Quantities, and Notification."

Emergency Preparedness and Response

Section 302.6 requires that any person in charge of a vessel or an offshore or an onshore facility must, as soon as he or she has knowledge of any release of a hazardous substance (including any hazardous waste) from such vessel or facility in a quantity equal to or exceeding the reportable quantity (RQ) determined by Part 302 in any 24-hour period, immediately notify the National Response Center. Such releases are also subject to state and local reporting under Section 304 of the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of SARA.

5.6 Emergency Planning and Community Right-to-Know Act (EPCRA) – Release Notifications

Emergency planning and notification requirements for "extremely hazardous substances" (EHSs) are authorized under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and EPCRA (also known as Title III of SARA). Emergency planning

and notification requirements for EHSs are codified at 40 CFR 355. Part 355 is titled, "Emergency Planning and Notification."

Emergency Preparedness and Response

Part 355 requires a facility to comply with its emergency release notification requirements if it produces, uses, or stores a hazardous chemical and releases a reportable quantity (RQ) of any extremely hazardous substances (EHS) or of a hazardous substance as defined by CERCLA (including any hazardous waste) at the facility. The facility must immediately notify the community emergency coordinator for the local emergency planning committee of any area likely to be affected by the release as well as the State Emergency Response Commission of any state likely to be affected by the release. The facility also must submit a follow-up notification as soon as practicable after the release to provide updated information.

5.7 Hazardous Materials Transportation Act of 1975 (HMTA)

5.7.1 Overview and Applicability

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the U.S. Department of Transportation (DOT). HMTA provides DOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the U.S. against risk to life and property, which is inherent in the commercial transportation of hazardous materials.

DOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or who is involved in any way with the manufacture or testing of hazardous materials packaging or containers. DOT regulations set forth packaging, handling, labeling, marking, placarding, operational, and routing standards. These regulations include, among others:

- Hazardous Materials Regulations; and
- Transportation of Hazardous Materials; Driving and Parking Rules.

Following is a summary of these standards.

5.7.2 Hazardous Materials Regulations

DOT's Hazardous Materials Regulations (HMR) are contained in 49 CFR Parts 100 through 180. These regulations pertain to all modes of shipment (e.g., highway, air). Following is a summary of selected regulations as relevant to this analysis.

Personnel Training

49 CFR Part 172, Subpart H requires hazmat employers to train hazmat employees to perform duties under the HMR. Training must be refreshed periodically and training records retained by the employer. The training must cover general awareness/familiarization, function-specific training, safety, security awareness, and in-depth security, as specified. In particular, their training on safety must include emergency response information (i.e., information that can be used in the mitigation of an incident involving hazardous materials, such as health hazards, risks of fire/explosions, methods for handling fires/spills).

A "hazmat employer" is a person who employs or uses at least one hazmat employee and who is involved the transportation of hazardous materials as specified.

A "hazmat" employee is a person who is employed by a hazmat employer or self-employed and who is involved in the transportation of hazardous materials as specified (e.g., loading, preparation for transportation, operation of a transportation vehicle).

Off-Site Transportation

49 CFR Part 171 lays out general information, regulations and definitions. It defines "hazardous materials" as those materials designated by the Secretary of the Department of Transportation as posing an unreasonable threat to the public and the environment. The term "hazardous materials" includes all of the following: (1) hazardous substances, (2) hazardous wastes, (3) marine pollutants, (4) elevated temperature material, (5) materials identified in 49 CFR 172.101, and (6) materials that meet the defining criteria for hazard classes and divisions in contained in 49 CFR Part 173 (e.g., Class 1 explosives, Class 2 gases).

49 CFR Part 172 lists and classifies those materials that DOT has designated as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials. Following is a summary of some of its subparts:

- **Subpart B – Table of Hazardous Materials and Special Provisions.** This table (located in 49 CFR172.101) designates the materials listed therein as hazardous materials for the purpose of transportation of those materials. The purpose of the table is to assign proper shipping names, class and division, and guidance for packaging and handling requirements for hazardous materials. Note: Additional hazardous materials are listed in Appendix A and B to 49 CFR 172.101.
- **Subpart C – Shipping Papers.** The shipping document for hazardous materials must be prepared by the shipper and contain the proper shipping name, the hazard class or division of the material(s), ID number, and where appropriate, the packing group. No shipper may transport a hazardous material unless it is accompanied by a shipping paper. The shipper must certify and retain the shipping paper for two years. Carriers must check to ensure that the material offered by the shipper is properly described, carry the shipping paper during transportation, and retain a copy for two years.
- **Subpart D – Markings.** The basic marking requirement consists of the proper shipping name and ID number of the hazardous materials contained in a package. Markings should be durable and not be obscured. Additional marking requirements apply depending on the material. Shippers may not offer and carriers may not transport unless the hazardous material markings apply to the material contained in the package.
- **Subpart E – Labeling.** Anyone who offers for transportation or transports a hazardous material must ensure that the package is properly labeled with the appropriate hazard class or division number.
- **Subpart F – Placarding.** Anyone who offers for transportation or transports a hazardous material must comply with applicable placarding requirements. Each bulk packaging, freight container, unit load device, transport vehicle, or rail car containing any quantity of a hazardous material must be placarded on each side and each end with the applicable placarding requirements (specified in 49 CFR 172.504).

- **Subpart G – Emergency Response Information.** An emergency response number must be monitored at all times during transportation and at facilities where hazardous materials are loaded for transportation, stored incidental to transportation, or otherwise handled during any phase of transportation. Emergency response information must appear on the shipping paper, describing the hazards of the material and procedures to be used in mitigation of an incident.
- **Subpart I – Security Plans.** Each employer must establish and implement a security plan and train their relevant employees on the security plan.

49 CFR Parts 173 through180 lay out general requirements for shipments and packagings. They also set forth requirements applicable to particular modes of transportation (e.g., rail, public highway).

5.7.3 Transportation of Hazardous Materials; Driving and Parking Rules

49 CFR Part 397 is titled, "Transportation of Hazardous Materials, Driving and Parking Rules." Part 397 applies to each motor carrier engaged in the transportation of hazardous materials by a motor vehicle that must be marked or placarded under 49 CFR Part 172, as specified. These rules apply to each officer or employee who performs supervisory duties related to the transportation of hazardous materials and each person who operates the vehicle containing the hazardous materials.

Off-Site Transportation

49 CFR Part 397, Subpart A provides that a motor vehicle that contains hazardous materials other than explosive materials and which is located on a public street or highway must be attended by its driver, unless the driver is performing duties that are incident and necessary as operator of the vehicle. A motor vehicle which contains an explosive material must be attended at all times by its driver or a qualified representative of the motor carrier that operates it, except as otherwise specified. In addition, a motor vehicle that contains hazardous materials other than explosive materials must not be parked near the traveled portion of a public street or highway. A motor vehicle which contains explosive materials must not be parked under the circumstances specified in the rule (e.g., near or within a tunnel).

Subpart C of Part 397 provides that, for Non-Radioactive Hazardous Materials (NRHM), motor carriers must comply with State and Indian Tribe NRHM routing. Placarded and marked vehicles that are not subject to NRHM routing from either a State or Indian Tribe must avoid heavily populated areas, tunnels, and other specified areas. Deviations are allowed where no practical alternative exists or to reach terminals, rest and fueling stops, etc. Deviations for operating convenience are not allowed.

5.8 Occupational Safety and Health Act (OSH Act)

The Occupational Safety and Health (OSH) Act was enacted to "assure safe and healthful working conditions for working men and women." The OSH Act establishes the Occupational Safety and Health Administration (OSHA) at the federal level and applies to private sector workers in the U.S. with few exceptions (e.g., the self-employed). It does not cover employees of state and local governments, except in states that have their own occupational safety and health plans that cover these workers. It also does not cover worker conditions that are regulated

under worker safety or health requirements of other federal agencies. OSHA has established occupational safety and health regulations at 29 CFR Part 1910.

5.8.1 Process Safety Management of Highly Hazardous Chemicals

OSHA established requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals at 29 CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals." This standard applies to a process (e.g., use, storage, and handling) which involves (1) a chemical listed in Appendix A of section 1910.119 at or above the specified threshold quantity or (2) a flammable liquid or gas as defined in 29 CFR 1910.1200(c) that is onsite in one location in a quantity of 10,000 pounds or more, except as specified. These chemicals are referred to as "highly hazardous chemicals." Relevant requirements are described below.

Emergency Preparedness and Response

The employer must establish and implement an evacuation plan for the entire plant. The plan must include procedures for reporting a fire or other emergency; emergency evacuation, including type of evacuation and exit route assignments; operating critical plant operations before evacuation; accounting for all employees after evacuation; and performing rescue or medical duties. In addition, the plan must include procedures for handling small releases.

Employers covered under this standard may also be subject to the hazardous waste and emergency response provisions contained in 29 CFR 1910.120 (a), (p) and (q).

Personnel Training

The employer must provide initial and recurrent training to each employee involved in operating a process. Employees must be trained in an overview of the process and in operating procedures as specified (e.g., safety systems and functions). The training must include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks. In addition, employers must train their employees on the implementation of an evacuation plan.

5.8.2 Hazardous Waste Operations and Emergency Response (HAZWOPER)

OSHA established "Hazardous Waste Operations and Emergency Response" (HAZWOPER) at 29 CFR 1910.120. 29 CFR 1910.120(p) includes requirements that apply permitted and interim-status treatment, storage, and disposal facilities (TSDFs). In addition, hazardous waste generators must comply with 29 CFR 1910.120(p)(8) regarding an emergency response program, as specified. 29 CFR 1910.120(q) includes requirements that apply to emergency response operations for releases of, or substantial threats of releases of, hazardous substances (including hazardous waste) without regard to the location of the hazard. The term "emergency response" a response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance. Responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel are not considered to be emergency responses within the scope of this standard. Responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure) are not considered to be emergency responses.

5.8.2.1 HAZWOPER Requirements at 29 CFR 1910.120(p)

29 CFR 1910.120(p) requires permitted and interim-status TSDFs to develop and implement a safety and health program that includes specified elements (e.g., medical surveillance, decontamination, emergency response). These provisions do not apply to hazardous waste generators, except for emergency preparedness and response (i.e., 29 CFR1910.120(p)(8)). Specifically, generators who are required by the EPA or state agency to have their employees engage in emergency response or who direct their employees to engage in emergency response must comply with the requirements for an emergency response program. Relevant requirements are described below.

Emergency Preparedness and Response

Employers must develop and implement either an emergency response program or an evacuation plan. Employers that develop an emergency response program must have an emergency response plan that includes specified elements (e.g., personnel roles, emergency recognition and prevention, personal protective equipment, emergency equipment). Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by EPA. In addition, the employer also must follow procedures for handling emergency incidents (e.g., off-site reporting).

Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements for an emergency response program. Rather, they must establish and implement an evacuation plan for the entire plant. The plan must include procedures for reporting a fire or other emergency; emergency evacuation, including type of evacuation and exit route assignments; operating critical plant operations before evacuation; accounting for all employees after evacuation; and performing rescue or medical duties.

Personnel Training

Employers must provide initial and annual refresher training that is part of the employer's safety and health program. The training must be designed to enable employees to perform their assigned duties and functions in a safe and healthful manner so as not to endanger themselves or other employees.

In addition, employers must provide training for emergency response employees. Such training must include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.

5.8.2.2 HAZWOPER Requirements at 29 CFR 1910.120(q)

29 CFR 1910.120(q) sets forth requirements for emergency response programs for hazardous substance releases. Relevant requirements are described below.

Emergency Preparedness and Response

Employers must develop and implement either an emergency response program or an evacuation plan. Employers that develop an emergency response program must have an emergency response plan that includes specified elements (e.g., personnel roles, emergency recognition and prevention, personal protective equipment, emergency equipment). The employer also must

follow procedures for handling emergency response (e.g., personnel responsibilities), training, medical surveillance, protective clothing, and post-emergency response operations.

Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements for an emergency response program. Rather, they must establish and implement an evacuation plan for the entire plant. The plan must include procedures for reporting a fire or other emergency; emergency evacuation, including type of evacuation and exit route assignments; operating critical plant operations before evacuation; accounting for all employees after evacuation; and performing rescue or medical duties.

Personnel Training

Employers must provide initial and refresher training on emergency response. The training must be based on the duties and function to be performed by each responder of an emergency response organization (e.g., first responders, hazardous materials technicians). Topics to be covered by the training differ based on an employee's duties and functions. Examples of topics include:

- An understanding of what hazardous substances are, and the risks associated with them in an incident;
- An understanding of the potential outcomes associated with an emergency created when hazardous substances are present;
- The ability to recognize the presence of hazardous substances in an emergency;
- The ability to identify the hazardous substances, if possible; and
- The ability to realize the need for additional resources, and to make appropriate notifications to the communication center.

5.8.3 Hazard Communication

OSHA established the "Hazard Communication" Standard (HazCom) at 29 CFR 1910.1200. The purpose of HazCom is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

HazCom applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency. The term "hazardous chemicals" means any chemical which is a physical hazard or a health hazard. However, HazCom does not apply to RCRA hazardous waste.

Relevant requirements are described below.

Emergency Preparedness and Response

HazCom addresses emergency preparedness and response through information dissemination and training, as described below.

Personnel Training

Employers must provide specified information and training to employees. Specifically, employees must be informed of the requirements of HazCom, any operations in their work area where hazardous chemicals are present, and the location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

Employers must provide training that includes, at least:

- Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released;
- The physical and health hazards of the chemicals in the work area;
- The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and
- The details of the hazard communication program developed by the employer.

Appendix B: Acronyms and Abbreviations

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	A
AFS	Air Facility System
AIAN	American Indian/Alaska Native
	B
BR	Biennial Report
	C
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CESQG	Conditionally Exempt Small Quantity
CWA	Clean Water Act
	D
DNA	Deoxyribonucleic acid
DOT	Department of Transportation
DR	Demographic Ratio
DSW	Definition of Solid Waste
	E
EAF	Electric arc furnace
EHS	Extremely Hazardous Substance
EJ	Environmental Justice
EJ SEAT	Environmental Justice Smart Enforcement Assessment Tool
EJ Toolkit	Toolkit for Assessing Potential Allegations of Environmental Justices
EPA	Please see U.S. EPA

EPCRA	Emergency Planning and Community Right-to-Know Act
	F
FR	Federal Register
FRS	Facility Registry System
	G
GCE	Generator-Controlled Exclusion
GIS	Geographic Information Systems
GM	Waste Generation and Management
	H
HAP	Hazardous Air Pollutant
HAZWOPER	Hazardous Waste Operations and Emergency Response
HazCom	Hazard Communication Standard
HMR	Hazardous Materials Regulations
HMTA	Hazardous Materials Transportation Act
HSM	Hazardous Secondary Material
HTMR	High Temperature Metals Recovery
HWR	Hazardous Waste Regulation
	I
IARC	International Agency for Research on Cancer
IRIS	Integrated Risk Information System
	K
K061	Electric arc furnace dust
	L
LDR	Land Disposal Restrictions
LQG	Large quantity generator

N

NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NATA	National-Scale Air Toxics Assessment
NBR	National Biennial Report
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPM	National Program Manager
NRC	National Response Center
NRHM	Non-Radioactive Hazardous Materials
NSPS	New Source Performance Standards

O

OECA	Office of Enforcement and Compliance
ORCR	Office of Resource Conservation and Recovery
OSHA	Occupational Safety and Health Administration
OSH Act	Occupational Safety and Health Act
OSWER	Office of Solid Waste and Emergency Response

P

PBE	Petition-Based Exclusion
PC	Priority Chemical
PERC	Tetrachloroethylene
POTW	Publicly Owned Treatment Works
ppm	Parts per million
ppmw	Parts per million by weight

PR	Population ratio
PSM	Process Safety Management
	R
RCRA	Resource Conservation and Recovery Act
RCRAInfo	Resource Conservation and Recovery Act Information
RIA	Regulatory Impact Analysis
RMP	Risk Management Plan
RQ	Reportable Quantities
	S
SD	Standard Deviation
SF	Summary File
Site ID	Site Identification
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SPCC	Spill Prevention, Control, and Countermeasure
SQG	Small quantity generators
	T
TBE	Transfer-Based Exclusion
TPY	Tons per Year
APR	Affected Population Ratio
TSDF	Treatment, Storage, or Disposal Facility
	U
U.S.	United States
U.S. EPA	United States Environmental Protection Agency
	V
VOC	Volatile Organic Compound

W

WR Waste Received from Off-site

Appendix C: Glossary

A

Air Facility System — Contains compliance and permit data for stationary sources regulated by EPA, state and local air pollution agencies

American Indian Alaska Native — A Census Bureau term that refers to these entity types: American Indian reservation, American Indian off-reservation trust land, Oklahoma tribal statistical area, joint use area, American Indian tribal subdivision, tribal designated statistical area, state designated American Indian statistical area, Alaska Native Regional Corporation, Alaska Native village, Alaska Native village statistical area.

B

Biennial Report — All generators and treatment, storage, and disposal (TSD) facilities who handle hazardous waste are required to report to the EPA Administrator at least once every two years. The data collected is used to create the National Biennial Resource Conservation and Recovery Act (RCRA) Hazardous Waste Report. This data is processed within the RCRA Information (RCRAInfo) database.

Block group — A statistical subdivision of a census tract. A block group (BG) consists of all tabulation blocks whose numbers begin with the same digit in a census tract; for example, for Census 2000, BG 3 within a census tract includes all blocks numbered between 3000 and 3999. The block group is the lowest-level geographic entity for which the Census Bureau tabulates sample data from the decennial census.

C

Census Block — An area bounded by visible and/or invisible features shown on Census Bureau maps. A block is the smallest geographic entity for which the Census Bureau collects and tabulates 100-percent decennial census data.

Clean Air Act — Comprehensive federal law that regulates air emissions from stationary and mobile sources.

Clean Water Act — Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters

Comprehensive Environmental Response, Compensation and Liability Act	Known as CERCLA or Superfund, provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment.
Comprehensive Environmental Response, Compensation and Liability Information System	CERCLIS is EPA's inventory of abandoned, inactive, or uncontrolled hazardous waste sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). It records information about all aspects of hazardous waste sites from initial discovery to listing on the National Priorities List (NPL).
Conditionally Exempt Small Quantity Generator	Generate 100 kilograms or less per month of hazardous waste, or 1 kilogram or less per month of acutely hazardous waste
	D
D001	Ignitable waste
D007	Chromium waste
D008	Lead waste
Damages	The likelihood of harm or injury to property or a person resulting in loss of value or the impairment of usefulness
Damage Case Facility	Facilities that highlighted in EPA's An Assessment of Environmental Problems Associated with Recycling of Hazardous Secondary Materials
Definition of Solid Waste	A *solid waste* is any discarded material that is not excluded under §261.4(a) or that is not excluded by a variance granted under §§260.30 and 260.31 or that is not excluded by a non-waste determination under §§260.30 and 260.34.
Definition of Solid Waste Rule	The DSW rule creates specific conditions for recycling hazardous secondary materials under the Resource Conservation and Recovery Act (RCRA).
Definition of Solid Waste Final Rule (2008)	Revision of the Definition of Solid Waste under RCRA for certain types of hazardous secondary materials being recycled

	E
EJ Toolkit	Toolkit for Assessing Potential Allegations of Environmental Justices
Emergency Planning and Community Right-to-Know Act	Establishes requirements for Federal, state and local governments, Indian Tribes, and industry regarding emergency planning and "Community Right-to-Know" reporting on hazardous and toxic chemicals.
Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.
Environmental Justice Smart Enforcement Assessment Tool	Created by EPA's Office of Enforcement and Compliance Assurance to serve as a consistent methodology that would enable OECA to identify communities or areas experiencing disproportionate environmental and public health burdens for the purposes of enhancing and focusing OECA's enforcement and compliance in those areas.
	F
F003	Spent non-halogenated solvents
F005	Spent non-halogenated solvents
F006	Wastewater treatment sludges
F037	Petroleum refinery primary sludges
F1_5	Mixture of F001-F005
Facility Registry System	FRS is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest.
	G
Generator-Controlled Exclusion	Materials that are generated and transferred to another company for legitimate reclamation under specific conditions

Geographic Information System	A computer system for the input, storage, processing, applications development, retrieval, and maintenance of information about the points, lines, and areas that represent the streets and roads, rivers, railroads, geographic entities, and other features on the surface of the Earth–information that previously was available only on paper maps.
	H
Hazard Communication Standard	The HCS became effective in 1986. A fundamental premise of the HCS is that employees who may be exposed to hazardous chemicals in the workplace have a right to know about the hazards and how to protect themselves
Hazardous Air Pollutant	HAPs are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.
Hazardous Materials Regulations	HMRs are issued by the Pipeline and Hazardous Materials Safety Administration and govern the transportation of hazardous materials by highway, rail, vessel, and air. The HMR address hazardous materials classification, packaging, hazard communication, emergency response information and training.
Hazardous Materials Transportation Act	Its primary objective is to provide adequate protection against the risks to life and property inherent in the transportation of hazardous material in commerce by improving the regulatory and enforcement authority of the Secretary of Transportation.
Hazardous Secondary Materials	The DSW rule defines hazardous secondary materials (HSM) as those materials that would be classified as hazardous waste, if discarded. HSMs can be stored for longer periods of time than hazardous materials, but must meet various criteria such as 75% of the material must be recycled each year.
Hazardous Waste Facilities	Likely to recycle under the DWS Final Rule, including hazardous waste generators producing more than a truckload (25 tons) of recyclable hazardous secondary materials annually, and hazardous waste recyclers
Hazardous Waste Operations and Emergency Response	Refers to five types of hazardous waste operations conducted in the United States under OSHA Standard 1910.120 "Hazardous Waste Operations and Emergency Response." The standard contains the safety requirements employers must meet in order to conduct these operations.

	I
Integrated Risk Information System	a human health assessment program that evaluates quantitative and qualitative risk information on effects that may result from exposure to environmental contaminants
	K
K061	Electric arc furnace dust
K088	Spent potliners
K171	Spent hydrotreating catalyst
KXXX	Mixture of K waste code wastes
	L
Land Disposal Restrictions	LDR program ensures that toxic constituents present in hazardous waste are properly treated before hazardous waste is land disposed
Large quantity generator	LQG generate 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste.
	N
National Ambient Air Quality Standards	Standards established by EPA under authority of the Clean Air Act (42 U.S.C. 7401 et seq.) that apply for outdoor air throughout the country. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.
National Emissions Standards for Hazardous Air Pollutants	NESHAPS are stationary source standards for hazardous air pollutants.
National Priorities List	The list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

National Response Center	The NRC is the sole federal point of contact for reporting all hazardous substances and oil spills. The NRC receives all reports of releases involving hazardous substances and oil that trigger the federal notification requirements under several laws.
National-Scale Air Toxics Assessment	U.S. EPA developed the NATA as a state-of-the-science screening tool for State/Local/Tribal Agencies to prioritize pollutants, emission sources and locations of interest for further study in order to gain a better understanding of risks.
New Source Performance Standards	Section 111 of the Clean Air Act authorized the EPA to develop technology based standards which apply to specific categories of stationary sources. These standards are found in 40 CFR Part 60. The NSPS apply to new, modified and reconstructed affected facilities in specific source categories such as manufacturers of glass, cement, rubber tires and wool fiberglass.
Non-hazardous Industrial Waste Facilities	Facilities not currently generating or managing hazardous wastes that may choose to begin reclaiming hazardous secondary materials under the 2008 DSW Final Rule
North American Industry Classification System	The standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.
Notification Facility	Facility that has notified EPA that it will be managing hazardous secondary materials under the 2008 DSW Final Rule
	O
Occupational Safety and Health Act	The primary federal law which governs occupational health and safety in the private sector and federal government in the United States.
	P
Petition-Based Exclusion	Materials that EPA or an authorized state determines to be non-wastes through a case-by-case petition process.
Process Safety Management	The major objective of process safety management (PSM) of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations that could expose employees and others to serious hazards. An effective process safety management program requires a systematic approach to evaluating the whole chemical process.

R

Resource Conservation and Recovery Act	The (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes.
Resource Conservation and Recovery Act Information	RCRAInfo is EPA's comprehensive information system that supports the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984 through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.
Risk Management Plan (RMP)	The RMP database stores the risk management plans reported by companies that handle, manufacture, use, or store certain flammable or toxic substances, as required under section 112(r) of the Clean Air Act (CAA).
Rural	All territory, population, and housing units located outside of urbanized areas and urban clusters.

S

Spill Prevention, Control, and Countermeasure Plan	The Spill Prevention, Control, and Countermeasure (SPCC) rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges to navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement SPCC Plans. The SPCC rule is part of the Oil Pollution Prevention regulation, which also includes the Facility Response Plan (FRP) rule.
Small Quantity Generator	SQG generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

T

Transfer-Based Exclusion	Materials that are generated and legitimately reclaimed under the control of the generator

U

Urban	For Census 2000, all territory, population, and housing units in urbanized areas and urban clusters.
Urban Cluster	A densely settled area that has a census population of 2,500 to 49,999.
Urbanized Area	A densely settled area that has a census population of at least 50,000.

V

Volatile Organic Compound	VOCs are organic chemical compounds whose composition makes it possible for them to evaporate under normal indoor atmospheric conditions of temperature and pressure.

Appendix D: EPA Response to Peer Review Comments

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2d	87	Henshel	Section 2.3 p 30, third paragraph down – This paragraph needs rewriting to make it clearer. A particularly difficult sentence is sentence 3, and the logic between sentences 3 and 4 may be faulty. If a material's reporting quantity is lower when it is characterized as hazardous waste then if it is characterized as non-waste, as written in sentence 3, then a smaller quantity would be needed before it exceeds the reportable quantity as a hazardous waste compared to as a non-waste, not a larger quantity (as currently written in sentence 3). But this does mean that if the implementation of the DSW results in what would otherwise be considered hazardous waste being now considered non-waste, then indeed more of the same material (now classified as "non-waste") would be required to trigger reporting requirements then would have been true if the material were classified as hazardous waste	EPA rewrote the paragraph pertaining to the reporting of hazardous versus non-hazardous waste to ensure greater clarity and consistency.
2d	88	Henshel	P 32, end of second full paragraph. A "reasonable" effort is not defined or discussed. Without such discussion or clarification, a "reasonable" effort remains so open to interpretation that a phone call to the foreign facility owner and asking for assurances of safety would more than satisfy that requirement, and yet not provide any real assurance that the community and workers in the foreign facility would be protected from hazardous exposures.	EPA clarified the use of the term "reasonable effort" by adding an explanatory sentence.
2d	90	Henshel	As an example of a need to define terms and abbreviations, K061 is used in the footnote on page 27 (footnote 25) without any explanation of the meaning of the term.	EPA added a definition of the term in parenthesis to help clarify its meaning.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2d	91	Henshel	When requirements or criteria are referred to, it is important to specify and list those requirements or criteria, in the text, a footnote, or an inserted box. An example of such a referral to insufficiently explained and detailed requirements are on the top of page 28. The details about the "SQG" requirements are lacking.	EPA provided the definition and criteria to differentiate between a SQG and LQG.
5b	165	Ferris	What are "structural" reasons as stated in section 5.1.4?	EPA added explanatory sentences to clarify structural reasons that certain groups do not participate in the decision-making process.
6c	197	Henshel	Table numbers are not provided.	EPA inserted table numbers for reference.
6c	200	Henshel	P 123 Multiple and Cumulative Effects - note the numbers with % above 70% (most) and above 60% (all but a few!!!) – and a cumulative frequency chart might make a nice and very visually effective summary of these observations.	Presentation of percentages may be misleading given the scope of the data.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
ESa	34	Henshel	In addition, the last sentence on page ix (starts “In addition,…”) is unclear and needs rewriting. Similarly the last sentence on page xi needs additional clarity.	TEPA revised the paragraph to add clarity and increase readability.
Ga	7	Henshel	1) A glossary, 2) Remembering to define every acronym the first time it is used in every chapter, and in the legend for every table, 3) A list of abbreviations and acronyms	EPA added acronym definitions in the text and provided a glossary and a list of abbreviations and acronyms in an appendix.
Gb	12	Daley	A list of acronyms would be extremely helpful.	EPA added acronym definitions in text and provided a glossary and a list of abbreviations and acronyms in an appendix.
Gb	15	Henshel	Needed improvements for clarity: As mentioned above, it would be very helpful for the general reader to provide a Table of Abbreviations/Acronyms and a Glossary, in addition to remembering to follow some other basic rules of clear communication as outlined above (Readability).	EPA added acronym definitions in text and provided a glossary and a list of abbreviations and acronyms in an appendix.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Ga	8	Henshel	A few diagrammatic algorithms that could help explain two complexities: 1) The regulations that apply under each condition that increases exposure under the new 2008 DSW. This algorithm could be bilaterally symmetrical – taking the reader through the process, and when there is a change that occurs due to the regulations, the algorithm can identify the regulations in play and not in play for each set of exposure conditions (as in longer stored waste materials, transport exposure, etc). One side of the symmetrical algorithm would identify regulations in play before the new 2008 DSW regulations, and the other side would identify the regulations in play after the new 2008 DSW regulations. 2) A second algorithm that would be useful would be to outline the framework, the process used to analyze the environmental justice concerns about the 2008 DSW rules. This algorithm could then tersely identify each step in the process and the implications for the outcomes of each step.	EPA determined that additional diagrams and algorithms would not add clarity to the topic, and may further confuse the reader.
Gb	10	Daley	For the most part, the information in the report is clearly presented. There are, however, some areas that could be improved. While Figure 1 is informative, the other figures in the report make little sense to me. They either need additional explanation, or they should be removed. Figure 4.41.1 is an example of the type of bar chart that can be confusing. Perhaps if the base category of White/Non-Hispanic was added, the figure would make more sense. As it is now, these figures detract rather than add to the report.	EPA added an explanation to Section 4.4.
1a	48	Ferris	1.3 minor typo -- see “HSMHSMs”	Typographical errors were corrected.
2d	86	Henshel	Page 3 Inset. Typo or residual undeleted “(“ in explanation for Generator-Controlled Exclusion	Typographical errors were corrected.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2d	89	Henshel	p 32 end of the second bullet there's a typo, a misplaced period.	Typographical errors were corrected.
6c	199	Henshel	P121 – 7th line down in paragraph – typo – higher total population than…. I believe was intended.	Typographical errors were corrected.
Gb	13	Daley	Also, there are also several typos and minor mistakes that should be addressed. These include: (1) Page iv – under the hazardous waste baseline, second row, "recycles" should be changed to "recycling" (2) Page 2, sec 1.3, bullet 1 – "HSMHSMs" should be changed to "HSM" (3) Page 10, top of the page: "as a focus" is written twice. One occurrence should be deleted. (4) Page 81, section 4.2.3 – "area" should be added after "a 3 km" (5) Page 91, section 4.42 – lists 219 damage case facilities. There are only 217 reported in the analysis. Either explain the missing cases, or fix a typo. (6) Attachment A, page A-2, section 1. Toward the end of the first paragraph, should read "regulation if" not "regulation is".	Typographical errors were corrected.
2d	92	Henshel	The discussion about reportable quantities (second full paragraph down on page 30) needs to be written more clearly. The third sentence in that paragraph is particularly problematic.	EPA revised the paragraph to add clarity and increase readability.
3c	104	Daley	The report however, could be edited to more clearly explain this approach. The text on Page 80 and 81 should be streamlined. First, the agency should suggest that the 3 km buffer is reasonable given the potential for acute exposure from accidental releases. Then, this should be followed by a discussion of the area apportionment method. As it reads now, it is a bit confusing.	EPA clarified the language in Section 4.2.2 and reorganized it to make discussion of the areal apportionment method more transparent.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4c	122	Daley	Yes, it is fine. It would be beneficial to have some discussion of the assumption behind this method. As noted on Page 80, the areal apportionment method assumes all populations are equally distributed in the block or block group. This assumption will not hold in practice. Therefore, some indication of how this assumption influences the analysis would be useful. Given the population distribution in the nation, how might this assumption bias the analysis? I am not suggesting that the agency change their approach, only that they articulate the implication of this assumption.	EPA added language to clarify the assumptions underlying the areal apportionment method.
Gb	16	Henshel	In addition, the excessive use of acronyms makes the document very hard for any lay reader to read. It makes the document hard to read for even an expert, as one must constantly look for the meaning of the new acronyms that pop up pages after they have been defined. It would be helpful, should the acronyms stay in such a density, to provide a list of acronyms used on each page in a footnote at the bottom of each page.	EPA added acronym definitions in the text and provided a glossary and a list of abbreviations and acronyms in an appendix.
Gb	17	Henshel	The Wind Dispersal category would be better (and less confusingly) labeled as “Particulate [or Dust] Wind Dispersal.”	EPA changed table and section heading to "Particulate wind dispersal."
Ga	4	Henshel	Content: The environmental justice assessment process undergone was a reasonably thorough approach to assessing environmental justice concerns associated with the 2008 DSW rule. However, there was a lot of repetition that seemed to involve just copying and pasting the same statements and phrases over and over again, and rarely elaborated in depth.	EPA deleted repetitive sentences when not needed for clarity.
Gb	18	Henshel	There is no need to repeat the exact same phrases multiple times without additional elaboration.	EPA deleted repetitive sentences when not needed for clarity.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
1a	45	Ferris	The term “damages” in Step 4 could be explicitly defined. Presumably, the language that follows the term “damages” is explanatory but that is somewhat unclear.	EPA added the definition of damages to Table 1.1. The names of the categories of facilities were revised for consistency throughout the document.
2c	69	Daley	As mentioned earlier, it would be helpful if the report clarified the definition of a damage case or damage facility. As noted on page 10, the analysis highlights solvent wastes because of their prevalence in damage cases. A definition and some references to RCRA damage cases would be helpful, even if provided in a footnote.	EPA added a footnote to the damage cases study and revised the names of the categories of facilities for consistency throughout document.
5a	162	Ferris	What is the universe of industrial facilities that may be generators of HSW and how do they factor into this analysis? How do industrial facilities factor into the potential impacts analysis?	EPA added language on industrial facilities and how they factor into the analysis to Section 5.2.2.
ESa	25	Daley	Considering the complexity of the document, the Executive Summary is relatively clear and easy to read. The “Summary of Potential Impacts” is very helpful. It is important to note, however, that the findings in the executive summary are not properly numbered: the executive summary lists findings 1, 3, and 4, omitting 2. The table and paragraph describing “Community Level Analysis of Potential Disproportionate Impacts” is difficult to follow. It would be helpful if the Environmental Protection Agency (EPA) could identify and describe the four types of facilities in this analysis more consistently. For example, the text on page vii could be edited to include the following language connecting the text to the community analysis tables: "The second step of the methodology identified facilities that can represent the facilities that are likely to take advantage of the 2008 DSW final rule. These facilities are grouped into four different categories: (1) facilities that have already notified under the 2008 DSW final	EPA added the missing header for Finding 2 as well as revised the names of the categories of facilities for consistency throughout the document.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
			rule[Notification facilities], (2) hazardous waste facilities that are likely to recycle under the rule (including hazardous waste generators producing more than a truckload (25 tons) of recyclable hazardous secondary materials annually, and hazardous waste recyclers) to use the rule [Hazardous Waste Facilities], (3) facilities from the environmental problems study (many of which operated under exclusions or reduced regulations)[Damage Facilities], and (4) facilities currently recycling non-hazardous industrial waste (e.g., antifreeze) that could most easily switch or expand to recycling under the 2008 DSW final rule [Non-Industrial Hazardous Waste Facilities]."	
ESa	26	Daley	It is difficult to understand where the categories in the Table on page X come from. They should be clearly labeled in the text and - table categories: the ordering in the text and the table should be consistent.	EPA revised the names of the categories of facilities for consistency throughout the document.
ESa	27	Daley	Also, it would be helpful to define “damage facilities”.	EPA added the definition of damages to Table 1.1, and revised the names of the categories of facilities for consistency throughout the document.
ESa	31	Ferris	Summary of DSW EJ Methodology is clear and concise with a couple of exceptions. The term “damages” in Step 4 could be explicitly defined. Presumably, the language that follows the term “damages” is explanatory but that is somewhat unclear.	EPA added the definition of damages to Table 1.1, and revised the names of the categories of facilities for consistency throughout the document.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
ESa	33	Henshel	The executive summary is readable. The executive summary needs to include definitions of terms used (for example, “notification facilities,” “damage case facilities,” etc).	EPA added the definition of damages to Table 1.1, and revised the names of the categories of facilities for consistency throughout the document.
ESb	40	Ferris	Does EPA plan to establish a definition or explanation of what constitutes legitimate recycling and/or recycler-facility? This could serve as notice to generators, receivers, recyclers that the exemptions and exclusions are accompanied by affirmative duties that include compliance with statutes and regulations?	EPA added the definition of damages to Table 1.1, and revised the names of the categories of facilities for consistency throughout the document.
1a	47	Ferris	Readers reviewing the synopsis of the Sierra Club petition would be informed by an abbreviated specific list of issues identified by the Club (instead of “raised a number of issues about the protectiveness of the rule…”	EPA provided a link to the Sierra Club petition.
ESa	30	Ferris	Readers reviewing the synopsis of the Sierra Club petition in this summary (or, in the relevant section below) would be informed by an abbreviated specific list of issues identified by the Club (instead of the more generalized “”raised a number of issues about the protectiveness of the rule…’ -- especially since the language of the rule emphasizes that a number of commenters “echoed”…concern…”	EPA provided a link to the Sierra Club petition.
1a	46	Ferris	Does “Information” in Step 5 include data? Perhaps strengthening the language to “Data and Information…” is more supportive of the Agency’s rationale.	EPA clarified that "information" includes data.
ESa	32	Ferris	Does “Information” in Step 5 include data? Perhaps strengthening the language to “Data and Information…” is more supportive of the Agency’s rationale.	EPA clarified that "information" includes data.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2	53	Ferris	The transition to this section should be clear. It's not clear that this section is distinct from the prior rule discussion (the "Introduction"). This is a graphics issue.	EPA inserted a page break before Section 2 to be consistent with formatting of other sections.
3	93	Ferris	The transition to this section should be clear. It's not clear that this section is distinct from the prior rule discussion. This is a graphics issue.	EPA inserted a page break before Section 2 to be consistent with formatting of other sections.
4	108	Ferris	The transition to this section should be clear. It's not clear that this section is distinct from the prior rule discussion. This is a graphics issue.	EPA inserted a page break before Section 2 to be consistent with formatting of other sections.
5	156	Ferris	The transition to this section should be clear. It's not clear that this section is distinct from the prior rule discussion. This is a graphics issue.	EPA inserted a page break before Section 2 to be consistent with formatting of other sections.
6	174	Ferris	The transition to this section should be clear. This is a graphics issue.	EPA adjusted the formatting for section headers to make the transition to different sections more clear.
6c	202	Henshel	1. page A-4 – second paragraph – last line – "typically 120 days following promulgation" of what?	EPA added clarifying language to Section 3.4.
6c	203	Henshel	2. Page A-4 still – last paragraph – 5 lines down – please add examples here to each type of industry not subject to CAA regulation under the 2008 DSW rule.	EPA added clarifying language to Appendix A.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	204	Henshel	3. Page A-6 third bullet – clarify if you mean leaks to only ground, to surface water, or also leaching to ground water – ie clarify	EPA added clarifying language to Appendix A.
6c	205	Henshel	4. Page A-7 last bullet – capitalize OSH.	Typographical errors were corrected.
6c	206	Henshel	5. Page A-8 first bullet – a great example of spaghetti writing. Spaghetti writing makes the report more difficult to read for everyone, especially the lay person.	EPA added clarifying language to Appendix A.
6c	207	Henshel	6. Page A-9 top of the page. A mention of the differences in monitoring would be appropriate here.	The section at the top of A-9 discusses reporting and recordkeeping. EPA determined that a discussion of monitoring would be out of place here.
6c	208	Henshel	7. Page A-10 – second full paragraph (starts… "Further…") - This paragraph needs some clarification, and needs rewriting.	EPA added clarifying language to Appendix A.
6c	209	Henshel	8. Page A-10 section 3.9 second two paragraphs. These paragraphs are very unclear, and also seem to be internally inconsistent, as written. Clarify in these paragraphs what is included in each type of exclusion. A good example of a clearly written paragraph is the next paragraph (first paragraph of 3.10). This paragraph includes a short but clear definition which enables the reader to comprehend the information provided more readily. The reader does not have to go searching for the definition, which helps reduce reader confusion.	EPA added clarifying language to Appendix A.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	210	Henshel	9. Page A-10 last paragraph, first sentence. Add clarifying phrases – what kind of characteristics, and where are these listed.	EPA added clarifying language to Appendix A.
6c	211	Henshel	10. Page A-11. First paragraph needs a sentence inserted clarifying what could be exempted. Second paragraph needs clarification in the middle sentence – specify briefly or provide example (in parentheses) for conditions under which listed waste may not be determined to be hazardous waste.	EPA added clarifying language to Appendix A.
6c	212	Henshel	11. Table A-11 page A-13 middle column, middle section – This is too dense for the average reader referring only to CFR citations and statutes (in inconsistent style no less). Provide details or names for these sections and their overall regulation titles in clear, jargon-free writing.	No action was taken because the level of detail requested cannot be presented in a table.
6c	213	Henshel	12. Table A-11 – Overall – this table (and the report) lacks any discussion of the implication of these changes due to the adoption of the 2008 DSW rule. An example might be to evaluate the implication of leaking containers, which (under the current vagueness of the 2008 DSW ruling language) might not be caught for up to 2 years, or maybe longer. What kinds of exposures might be increased to what diameter population under this scenario?	No action was taken because the level of detail requested cannot be presented in a table The addition of an example, such as leaky containers would result in an inconsistent level of detail in the table.
6c	214	Henshel	13. Page A -17 – why the changed font size in column 1?	EPA made fonts consistent throughout the table.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	215	Henshel	14. Page A-18. Last paragraph in column 1. Include a list of the 140 toxic and flammable regulated chemicals referred to here, and elsewhere in the report. The easiest way to handle this might be a footnote, or adding the list to the appendices, and referring to the inserted list (footnote, endnote, or appendix) here and whenever else this list is referenced.	A reference to the CFR section where the chemicals are listed is provided.
6c	216	Henshel	15. Page A-21 first column, second line – missing an article (“the” or “a”) between “above” and “specified quantity”.	EPA edited the table to include the missing articles.
6c	217	Henshel	16. Page A-26 – last column, first paragraph – this section (and its text tie-in) is just calling out for a discussion of the implications of lack of required training on personnel at the facility if exposures indeed rise.	Additional discussion would not fit into table format. No action was taken.
6c	218	Henshel	17. Page A-29 first column – need a space between paragraphs.	EPA added spaces between paragraphs throughout the document for consistency.
6c	219	Henshel	18. Page A-30 third column, first word “these” needs clarification – to which regulations is the writer referring. Do not expect the lay audience to know for sure. Same point for page A-32 third column, last paragraph, second line and again page A-33 second line.	EPA adjusted the language in all places on the table where this occurs.
6c	220	Henshel	19. Page A-34 third column second paragraph. This very statement again seems to call out for a discussion of the implications of the lack of record keeping and exception reporting. It is NOT sufficient to point out that the 2008 DSW rule changes the recording and record keeping requirements.	No action was taken as implications are discussed in the main body of the report.
6c	221	Henshel	20. Page A-35 first column middle paragraph – clarify, provide more detail. Similarly third column second paragraph – specify which excluded materials may not qualify as a DOT hazardous material, and provide some discussion of the potential implications of this from an EJ perspective.	No action was taken as implications are discussed in the main body of the report

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	222	Henshel	21. Page A-36 third column second paragraph – this again needs further discussion here and in the text on the possible implication of this change due to the 2008 DSW rules. Specifically, would any residues from reclamation ever be potentially hazardous and NOT get identified as such through the 2008 DSW process.	No action was taken as implications are discussed in the main body of the report.
6c	223	Henshel	22. Page A-37 GCE: is something missing here? Seems like it.	EPA added the missing text.
6c	224	Henshel	23. Page A-49 right hand column, second paragraph – use the full citation, not the abbreviated citation. The full citation (ie using the same citation format throughout) is more understandable to the lay person.	EPA replaced the abbreviated citation with the full citation throughout the document.
6c	225	Henshel	24. Page A-52 right column, top line “an SPCC” fix typo	Typographical errors were corrected.
6c	226	Henshel	25. Page A-61 middle column, top paragraph. Keep citation format consistent and summarize the legitimacy criteria in this paragraph, a footnote, or the next paragraph.	EPA made the citation format consistent throughout the document. The table format does not have sufficient space for discussion of legitimacy criteria.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	227	Henshel	26. Page A-63 right column. Provide examples of potential problematic emissions that don't meet threshold criteria and don't meet other applicability criteria. It would be great if the implications of the resultant exposure (were this to occur) be determined quantitatively, maybe at the mean/lower assumption (9.5 TPY single type HAP) and high assumption (24.95 TPY mixed HAP) levels.	Due to insufficient space in table format, examples were not given.
6c	228	Henshel	27. Page A-64 – right hand column – No one in this report is discussed how much might be released before anything would trigger the need to determine if a cleanup is needed. Surely this would help explore the potential for a significant disproportionate impact occurring?	There is insufficient space in the table format to address this issue.
6c	229	Henshel	28. Page A-68, right column, last sentence. Where is the "note below"? Probably better to put the note in a footnote on the same page or in the right hand column immediately after this paragraph.	EPA removed the reference to the "note below."
6c	230	Henshel	29. Page A-82 on – It is great to have the summary of the Federal Regulations here. However, the formatting and depth of each discussion is not consistent and needs to be made so. For example, the most readable formats start with a sentence or two that talks about the relevant regulation(s) more broadly, and then includes a sentence that explains the relevance of the regulation to this report/study.	The current contents of Appendix A contain sufficient description to summarize the regulations and their implications for this rule. This document is not intended to provide a thorough description of other regulations. Such information is available in other references. Additional content will not be added due to limitations on space

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	231	Henshel	30. Page A-83 Second paragraph under "Legitimate recycling" – include a brief summary of the six criteria referred to here (and elsewhere) and not clearly defined. The listing could be in the paragraph, in an offset list, in a separated inset box, or in a footnote.	There is insufficient space in the table format to address this issue.
6c	232	Henshel	31. Page A-84 Top of the page – provide details about standards in 262.34 (d) and (e). They are not clearly described anywhere. Also maintain a consistent formatting for citations.	There is insufficient space in the table format to address this issue.
6c	233	Henshel	32. Page A-94 Exports first paragraph last two sentences – a) remember to keep citations in consistent format. B) To make this document most readable, summarize these requirements briefly.	All citations were updated to ensure a consistent format. Requirements appear to be summarized adequately.
6c	234	Henshel	33. Page A-96 – No where is there a discussion of at what point in a chain of non-compliance would the chain of permission stop and oversight identify a problem that needs to be addressed.	This as an enforcement and compliance issue that would need to be addressed by individual EPA Regional or authorized state agencies.
6c	235	Henshel	34. Page A-99 bullets under 5.3.3 In each bullet, first identify the key factors that determine whether processes fit as Program 1, 2 or 3 (i.e. defined for the appropriate bullet). These three was to characterize a process are never clearly defined throughout this whole document. This would seem to be the place to put those definitions.	The current contents of Appendix A contain sufficient description to summarize the regulations and their implications for this rule. This document is not intended to provide a thorough description

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
				of other regulations. Such information is available in other references. Additional content will not be added due to limitations on space.
6c	236	Henshel	35. Page A-106 5.8.2 line 3 – TSDFs is an acronym that is never defined.	EPA added acronym definitions in the text and provided a glossary and a list of abbreviations and acronyms in an appendix.
6c	237	Henshel	36. Appendix B is good to have, as is Appendix C and D. Note that in Appendix B, and in a few other places, the writer uses the personal “we” instead of a noun. This is formal writing and should not include any first person (personal) pronouns anywhere in the document. Search to find the “we”s and rewrite to replace the personal pronoun with a clearer sentence using the impersonal 3rd person or noun.	EPA eliminated the use of "we" throughout the document.
6c	238	Henshel	37. Page B-2 first paragraph. Need to add a sentence that explains why it is important to understand what a “wastewater” versus a “nonwastewater” is.	Clarifying language was added to page B.2.
6c	239	Henshel	38. Page B-3 table bottom: POTW and NPDES is not defined here or elsewhere in the document. Acronyms are best spelled out the first time they are used in any given chapter, and still it is kind to the read to provide a Table of Acronyms and Abbreviations, and spelling out of all acronyms in footnotes for any table in which they are used.	EPA added acronym definitions in the text and provided a glossary and a list of abbreviations and acronyms in an appendix.
6c	240	Henshel	39. Appendix C is written like an abbreviated technical reference manual, but without the definitions usually included in such a manual. Most of this section reads like a jargonfest, and is not accessible to the lay reader.	The current contents of Appendix A contain sufficient description to summarize the regulations and their implications for this rule. The implications of information is

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
				are explained for the more general reader in Section 2 of Volume 1.
6c	241	Henshel	a. Identify all acronyms and abbreviations. There's two in the second paragraph.	EPA added acronym definitions in the text and provided a glossary and a list of abbreviations and acronyms in an appendix. The second acronym is a reference code from the database used to develop the hazardous waste facility estimates, and has no direct English language definition.
6c	242	Henshel	b. In the introductory section, explain by the K, F, U, P and D codes represent, how they are used, and how understanding the coding was needed for the environmental justice analyses.	Information was added to glossary.
6c	243	Henshel	c. Explain all codes that have no other referent to explain them. For example, on page C-5 top line, F037-F038 codes are referred to without placing them in any context or defining what these codes cover.	Information was added to glossary
6c	244	Henshel	d. Table C-1 needs some additional explanation before it will be easily read by the lay reader.	The current contents of Appendix A contain sufficient description to summarize the regulations and their implications for this rule. This document is not intended to provide a thorough description of other regulations. Such information is available in other references. Additional content

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
				will not be added due to limitations on space.
6c	245	Henshel	40. Appendix D is written in a way that is essentially understandable. However in two places, where groups are moved from the logical grouping to a not as obvious grouping, explanation is needed for why the move was made. These points are on Page D-3 bottom of the page, and on Page D-5 top of the page.	EPA added explanatory sentences to clarify the change in grouping.
6c	246	Henshel	41. Appendix E needs some clarifying verbiage written in easy to understand English. The two ratios could, for example, be easily explained by one or two sentences. The description of the tests are more theoretical in places. Specific places that clarification is needed includes:	A new description of the Fischer's Exact test was provided.
6c	247	Henshel	a. Page E-9 bottom of the last Fisher Exact Test paragraph, there is no explanation for why or when the minus sign is removed, nor where the minus sign is likely to show up and why.	A new description of the Fischer's Exact test was provided.
6c	248	Henshel	b. Page E-10 – it is not clear what the tables are for the various states. Add clarifying language.	A new description of the Fischer's Exact test was provided.
6c	249	Henshel	Since these tests are not always run (but should be) the verbiage should include an explanation of why they are not run in some situations in the analysis and are run in other, apparently similar situation.	A new description of the Fischer's Exact test was provided.
Gb	19	Henshel	In no scenario was there a consideration of generators who consistently function in violation of the regulations once they start handling waste under the 2008 DSW rule. As there are such companies, this would seem to be a scenario to include, or at least discuss, in an EJ analysis.	EPA expanded the discussion of compliance under DSW vs. HW regulations.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Gb	20	Henshel	No scenario considered the possibility of the impact on the community if a generator acting under the 2008 DSW rules goes out of business with accumulated, non-processed, possibly not appropriately contained excluded hazardous material waste on the property. Yet this situation would only happen (legally) under the 2008 regulations, not under the previous HSM regulations.	EPA added a discussion of generators going out of business to Section 2.5.1 of document.
1a	50	Ferris	In addition to the advantage of adhering to RCRA's decades old cradle-to-grave protective framework, consider whether requiring a streamlined notice and record-keeping process for generators, receivers and recyclers of HSM benefit EPA and states e.g., monitoring, as well as data that shows the environmental and economic benefits of HSW exclusions?	N/A (comment on 2008 DSW rule)
2b	65	Daley	Without adequate record-keeping and environmental protection safeguards (streamlined requirements would not be objectionable), the international export exclusion/scenario is troubling re potential releases, impacts, whether or not the recipient nation has genuine knowledge of the contents and consents to the receiving the export; see e.g., Circle of Poison and pesticide regulation.	EPA expanded the discussion of exports in the scenarios.
6c	190	Ferris	Should record-keeping include quantities of HSW generated? This data would be useful for emergency planning and response as well as helpful to determining economic and environmental benefit.	N/A (comment on 2008 DSW rule)
2a	57	Daley	Yes, the scenarios clearly define how EPA thinks facilities may react to the rule. Table 2.1 is particularly useful in outlining the baseline and potential changes based on the DSW Exclusions. I would however, like to know how the EPA developed these scenarios. Are these based on professional experience, or did the agency talk with the regulated community to get a sense of potential reactions to the DSW Exclusions? If it is the latter, could the report provide more detailed information regarding the feedback from the regulated community? If it is the	EPA added discussion of how scenarios were chosen to Section 2.1.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
			former, it would add value to outline some of the ways in which that experience shaped the discussion / selection of the scenarios.	
2a	60	Henshel	What is lacking overall from the analysis, from the Hazard Characterization step onward, is any discussion or analysis of the implications (i.e secondary consequences) of each of these assumptions (about the possibility of increased exposure) for total exposure and estimated changes in risk values for the potential EJ communities (ie those communities within 3 km of each facility, according to this report).	EPA added language throughout Section 2 on the possibility of increased exposure to communities as a result of hazards identified.
2c	73	Ferris	Does worker training (e.g., protection standards, labeling, handling) or the lack of it at relevant/specified facilities factor into the EPA hazard analysis?	Worker training is discussed in the regulatory comparison section. No further action was required.
2c	74	Ferris	Does emergency response and planning, the existence or lack of these programs, factor into the EPA hazard analysis? Similarly, does eliminating the requirement for a Manifest (or some version of a tracking mechanism) factor into possible increases or reductions in the emergency response preparedness and planning, enforcement or compliance monitoring?	Both emergency planning and the manifest are discussed in the regulatory comparison section. No further action was required.
2c	77	Ferris	Does the EPA hazard analysis factor imposition (or not) of container integrity and container management standards into the determination of the potential or actual hazards associated with higher storage volumes, and/or higher concentrations of HSW? What constitutes a safe "container?" Does the analysis factor in whether making storage subject	EPA added language to sections discussing storage that applied to containers.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
			to controls, environmental monitoring and inspections increases or reduces community protection?	
2b	66	Henshel	a. Unlikely" scenario 1: If the cost of recycling off-shore (Africa, China) are low enough, these lower costs will offset the additional costs of transportation to get the now excluded hazardous waste (which costs less also as an excluded waste, and one for which the same expensive containers do not have to be bought). This is a reasonable scenario (not unlikely) unless the EPA provides calculations to prove that the costs of transportation would never be overcome by the reduced costs of recycling in Africa or China. It is also disturbing that there is insufficient discussion and analysis of EJ concerns for the locations of the recycling plant and no discussion and analysis of EJ concerns for the locations where recycling is carried out in another country. (This last sentence applies as well to the whole report.)	EPA elaborated on exports given existing scenarios rather than creating a new scenario only focused on exports of wastes to other countries.
2c	72	Ferris	Intervening prior to a release is clearly preferable – the possibility of enforcement action prior to a release would be protective and more likely in the event that there are clear regulations e.g., storage limitations, labeling requirements and requirements related to the integrity of storage containers and areas.	EPA added discussion on preventive enforcement to the enforcement section.
6c	187	Ferris	Is there sufficient analysis of the impacts of storing HSW in land-based units such as pits, ponds and lagoons. Should standard RCRA regulatory controls apply where HSW is stored in such land-based units?	EPA added language about the impacts of land-based storage units in the storage section.
2c	79	Henshel	Toxicity information: When applicable, endocrine disruption toxicity is not even mentioned. Developmental toxicity of heavy metals would also seem to be an important, very sensitive effects indictor to mention.	Further research indicated that specific contaminates discussed did not include endocrine disruptors.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2c	80	Henshel	p 19 top of the page. There isn't mention of fugitive emissions (leaks at valves, escape at points of transfer) as part of the way in which hazardous materials/waste can be released.	The section described by the commenter discussed the activities that involve HSM. Associated hazards, including fugitive emissions, are discussed on the following page.
4g	142	Daley	There is considerable selection bias or selection effect in the "notification" facilities and likely also in the damage facilities. It is likely that these early adopters (notification facilities) are significantly different (and non-randomly distributed) compared to the three remaining categories. Damage facilities are also likely to be systematically different. I am not sure exactly how to address this, but it seems like something that the agency needs to consider. Perhaps analyzing a comparison group of randomly selected and/or "matched" facilities could be useful, in addition to the broader state and national comparisons.	EPA added discussion on selection bias for both "notification" facilities and for "damage" facilities to Section 4.4.1.
6c	198	Henshel	Population level analysis table results seem to show that there is a numbers (sample size) bias in the level of statistical significance. Once the notification facilities used in the analysis are pooled, or incorporate facilities from other states as will, to increase sample size, chances are that these results will also be significant in a pooled state analysis. Thus the need to do both pooled state, and divided state, to assess how much of the sensitivity might be sample size. It is also important to note that in regions with few Blacks, or few minorities, the minority population comparisons are always less of a driver than the low income analysis, as in these regions, are larger percentage of the low income community is white. This is true in Indianapolis, where there is a significantly large percentage of poor whites. In Northwest Indiana, however, there are more minorities, and minority population comparisons drive the EJ analysis results as strongly, or more strongly, than the low income analysis.	Discussion on the affects of uniform population distribution on the analysis was added to Section 6.1.4.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
ESa	35	Henshel	The summary of Finding 4 should include some discussion of the other three categories not discussed in the executive summary (example, susceptible populations). You might include leaking septics in the list on the top of page xiii (under multiple and cumulative effects), as leaking septics are more likely to be addressed more slowly, and thus pose a higher health risk, in low income communities.	Discussion on leaking septic tanks was added to the Executive Summary. Discussion of additional vulnerability factors was not provided because analyses for these were not available.
5a	160	Ferris	Where does immigrant status factor into vulnerability factors?	Addition discussion on the immigrant status and English literacy was added to Section 5.1.4.
5c	171	Ferris	Immigrant status, particularly new immigrants and undocumented workers and residents constitute an important additional factor.	Addition discussion on the immigrant status and English literacy was added to Section 5.1.4.
5c	173	Henshel	Other health endpoints to consider include: low birth weight as a measure of embryonic development; some measure of endocrine disruption including, and particularly, thyroid disruption, although other endocrine function indices should also be considered, such as diabetes; and some measure of IQ in children, if this is available.	Review of the specific contaminants reviewed in Section 2 indicated that none were endocrine disruptors.
2c	78	Ferris	Intermediate facilities and off-site HSM self policing may not be effective as a means to ensure protection of health and the environment in communities whether disproportionately affected or not.	EPA added additional discussion on strategies to mitigate impacts.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6c	201	Henshel	The proposed regulatory and implementation measures section needs solid expansion. It's truly pitiful right now. It should also be noted that without regulatory clarification of some of the weaknesses in the 2008 DSW rule, enforcement is only as strong as the environmental consciousness of the administration. Even with revised regulation, enforcement and oversight is susceptible to political influence, just somewhat less so. Monitoring is not as much a part of the 2008 DSW rule, so how could monitoring data be used to help ensure facilities are not creating more of an exposure hazard for their communities under the new rule?	EPA expanded on the discussion of proposed regulatory and implementation measures in Section 6 in order to add clarity.
3c	106	Henshel	Other environmental justice analyses have used other diameters to define the proximate neighborhoods. On studies of Indianapolis, especially, we have tested multiple diameters (all smaller than 3 km – 0.5, 1 and 2 km) and typically found 2 km to be a good cut-off to define proximate communities. It would seem that this question should be answered in the study, that is, that the study design would test multiple possible diameters (or donuts) around the facilities and determine which diameter provides the most sensitive distinction. It is quite possible that different types of facilities would have different cut-off diameters, based on differences in potential for dispersal/distribution of (excluded) hazardous waste (i.e. as liquid solvent waste or dust).	EPA determined that a 3-km radius is commonly used in EJ analyses. EPA has added a such as the sensitivity at 1-km radius.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
3c	107	Henshel	In conducting similar EJ analyses, using TRI facilities, we discovered that we had to truthed the facility addresses to the GPS coordinates by on the ground determination of whether the address listed for the facility was actually the address of the releasing facility or the address of company offices. Even when the two buildings were on the same campus, and not separated by miles, the difference between the buildings (between the addresses) could be a significant distance (on a mile long campus, they could be a mile apart), and thus could affect which neighborhoods were included in the proximate circle. From the information provided in chapter 3 about the methods used for obtaining GPS coordinates, it appears that this truthing was never done or even attempted for this analysis. No efforts were apparently made to ascertain whether the listed address referred to the hazardous materials processing location or to the main offices.	EPA added language in Section 3 noting that verification of GIS coordinates was beyond the feasible scope of this analysis.
4g	144	Henshel	No – see comments above about problems with addresses linked to facilities that have corporate offices away from the processing facilities, even when the two buildings are on the same campus.	EPA added language in Section 3 noting that verification of GIS coordinates was beyond the feasible scope of this analysis.
4d	128	Henshel	It is also appropriate to use the more commonly used cut-off of 2x the poverty line, since even families at 2x the poverty line are struggling just to provide food and shelter these days. The census determined poverty line (that is, above or below the threshold) does not include childcare costs, as one example of the kind of critical expenditures that enable both parents to work. Thus it would be appropriate to test poverty threshold versus 2x*poverty threshold as the criteria for determining bias in representation of low income populations with regard to proximity to the HSM or DSW facilities.	EPA has revised the analysis to use the 2x the poverty line standard.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4e	135	Henshel	The analysis should be broken out by state for all the analyses, and similarly, the notification facility results could be summed across states, as was done for the other types of facilities, even though the states covered are small in number compared to the total number of states represented in the analyses for the other facilities. That discrepancy should be pointed out in the legend. Yet there needs to be some way to compare across analyses. Only summing across states for most, and separating out one subset of data makes it hard to compare across results.	An appendix has been added showing the breakout by State, County, Urban, and Rural for all groups for all demographics in one table
4d	125	Daley	Yes. A statistical analysis of these results is an appropriate method to understand patterns in administrative and community level data. These patterns can reflect social and environmental disparities and the EPA can consider these patterns for future decision making. Note however, that the analysis presented in Chapter 4 did not include a comparison between community (3 km buffer area) and county level characteristics. State, national, and urban and rural were examined, but county information was not analyzed in this section of the report. County level information and analysis would have added value to this report.	An appendix has been added showing the breakout by State, County, Urban, and Rural for all groups for all demographics in one table.
6c	183	Daley	In addition, it would be helpful to have county level comparisons for the community analysis. I am less certain that this addition would significantly change the conclusions, but it may strengthen the recommendations.	An appendix has been added showing the breakout by State, County, Urban, and Rural for all groups for all demographics in one table
Gb	11	Daley	Why are urban and rural comparison omitted for the damage case facilities? Consistent analysis across categories is important. If the analysis cannot be performed for some reason, an explanation in the text would be helpful.	An appendix has been added showing the breakout by State, County, Urban, and Rural for all groups for all demographics in one table.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4e	137	Henshel	The first set of analyses for each facility type would be better and more clearly represented by box and whisker plots. When using box and whisker plots, it is important to explain (for the lay audience) what data is represented in each part of the plots at some point in the chapter. With that explanation, the box and whisker plots provide more information for the comparisons, and provide a visual sense of variability and bias around the means.	Additional diagrams and algorithms would not add clarity to the topic..
4h - 2	148	Daley	Option 2 has the strongest potential to add to the ability of the agency to draw inferences from their data sources. If statistical analysis indicates systematic socioeconomic and demographic differences in area with and without facilities, then this provides even stronger evidence of the distributional affects of decision making. In addition to this, it would be ideal if the agency could model cumulative environmental stressors in communities in a more integrated fashion. Rather than simply noting multiple stressors in the notification areas, provide some indication of cumulative stressors in the other categories as well (damage case facilities, hazardous waste, and non-hazardous industrial waste).	Additional analyses are beyond the scope of this effort.
4h - 2	149	Ferris	The reviewer is uncertain if this analysis will yield additional useful information other than another take on areas where disproportionate impacts occur.	The purpose of the analysis is to support the DSW rulemaking.
4h - 2	150	Henshel	Yes – this provides a better comparison group – a counterfactual.	Additional analyses are beyond the scope of this effort.
4h - 3	151	Daley	See 2. above.	Additional analyses are beyond the scope of this effort.
4h - 3	152	Ferris	This comparison may yield information about metropolitan areas where disproportionate impacts exist.	Additional analyses are beyond the scope of this effort.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4h - 3	154	Ferris	Do host metropolitan areas factor in rural areas where capacity, including staffing, to oversee HSM facilities may be more limited compared to urban and suburban areas.	Language has been added to the report clarifying that the analysis does not explicitly factor in the capacity of local governments to oversee HSM facilities.
4h - 3	155	Henshel	Yes, this also would be a very appropriate comparison to include.	Additional analyses are beyond the scope of this effort.
4d	127	Henshel	Yes, statistical methods are appropriate in general. However, a more sensitive analyses seems to be to break the demographics up (quartiles, quintiles) into some binned division of the total range, create donuts around the facility, and run the analyses as a regression of the demographics against proximity. You are able to detect (significantly) more subtle shifting of demographics over time.	Additional analyses are beyond the scope of this effort.
Gb	21	Henshel	The methods for analysis of environmental justice impacts (as in biases in the siting) are not as sensitive as might be obtained with using regression analysis and grouping the data into maybe quartiles rather than doing all analyses on data that has only been divided into two categories (ie equivalent of yes/no data).	Additional analyses are beyond the scope of this effort..

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Ga	2	Daley	To fully understand the differential impact of the 2008 DSW final rule on low income and minority communities and populations, it would be helpful to have a meaningful baseline analysis. What if continuing to regulate HSM under RCRA has even greater environmental justice impacts? The report and analysis do not provide that information. So, there is no way to identify if the 2008 DSW rule – while likely to have disproportional impacts – is an improvement over current reclamation and disposal practices under RCRA. I recognize this analysis would entail considerable work, but if HSM regulated under RCRA currently has even greater environmental justice impacts, then this would be very important to know this as decision making proceeds.	EPA believes that the regulatory comparison between hazardous waste regulations and the 2008 DSW rule already includes a qualitative discussion of the baseline impacts at hazardous waste, since the discussion includes the benefits of the 2008 DSW rule (which would mirror the "impacts" of hazardous waste regulations). In addition, hazardous waste facilities are one of the categories in the demographic analysis. To address this comment, EPA added discussion to make this clearer.
Gc	22	Daley	It seems like the document is quite thorough. As noted in my response to question Ga, the document would be improved by a assessing the Environmental Justice impacts of the baseline – or RCRA's approach to HSM recycling and disposal.	Such baseline analysis is already captured in regulatory comparison and in the analysis of hazardous waste generators and recycling facilities. EPA added discussion to make this clearer.
4b	118	Ferris	In disproportionately affected communities, the issue is not whether there will be impacts; rather the issue is what the full extent of the hazard impacts will be.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Ga	1	Daley	My overall assessment is that the report manages to present a very complex decision making process and analysis in a fairly clear and accessible fashion. The discussion of potential hazards and exposure pathways seems clear and complete. The eight scenarios are clearly laid out. There report is quite detailed. The main points seem to be that the 2008 Draft Solid Waste Final Rule (DSW) enables generators to store more hazardous secondary material (HSM) for a longer period of time, and provides no prescriptive standards to ensure safe containment. Transporters of waste and intermediate and reclamation facilities are also impacted in ways not necessarily analyzed in the initial consideration of the rule change. Decreased transparency and public participation provisions combined with deregulation of hazardous secondary material to encourage reclamation is likely to have differential impacts across the county. The findings from this report present the EPA with a challenge. Recycling hazardous secondary material presents significant health and environmental hazards, and the 2008 rule change is not uniformly health protective. According to this analysis, some communities will be more impacted than others, and this differential impact has direct environmental justice implications.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Ga	5	Henshel	In addition, the analysis never included taking the example situations (places where greater exposure by the neighbors could occur, for example) and quantifying the potential impact on the neighboring community (maybe within the 3 km diameter defined "proximity to site" area). Using the basic approaches for predictive risk assessment, one would take the real situation, make assumptions for the average and high end of the range for the increased exposure situation, calculate the potential increased exposure to the chemicals, and then calculate the potential for increased risk, with average and high end assumptions. At least one such scenario calculated for each situation identified as potentially increasing exposure under the new regulations would be helpful in determining just how critical revising the regulations would be. It would have been even better to then recalculate the exposure and risk inherent in at least a few scenarios with the assumptions made under the recommendations for revision of the 2008 DSW rule, weak and non-specific as those recommendations were.	Assessment of the full extent of the impacts would require a formal risk assessment. EPA did not pursue this because it would be too difficult to pick "example" scenarios that would cover the range of possibilities, and the analysis would be too sensitive to potential bias in upfront assumptions..
3	95	Ferris	Diversion of materials from the waste stream is beneficial (although on it face, without safeguards, reclamation falls short of environmental justice) and should be accompanied by adequate protections for health and the environment.	Further discussion of benefits has been added.
ESb	39	Ferris	The benefits (per language in the Scenarios) don't balance the potential negative impacts. This could be more clearly set forth or demonstrated. Although the reviewer does not express agreement that any benefits would offset the potential hazards or actual hazards, more clarity or quantification of benefits would strengthen the analysis.	Discussion of trade-offs has been added.
4d	129	Henshel	Given the neighborhoods in which these facilities are placed, it would seem to be appropriate to at least consider other toxic stressors, such as TRI facilities or road density as part of the EJ analysis looking at cumulative exposure potential (based on permit data for the HSM/potential DSW facilities for maximal exposure estimates).	Additional analyses are beyond the scope of this effort.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
5a	157	Daley	Yes. The agency has identified a wide range of stressors that can shape individual and community vulnerability. Additional resources that the agency could consider - particularly if they embark on a more detailed county level comparison – include the county health rankings (http://www.countyhealthrankings.org/).	Additional analyses are beyond the scope of this effort.
5c	170	Daley	If the country level examination is pursued, the agency might be able to rely upon data compiled under the country health rankings. Otherwise, the data presented in the report seems adequate.	Additional analyses are beyond the scope of this effort.
6c	195	Henshel	Table 5.1 would allow for a very nice small cluster analysis (or principal component analysis) to look at which emissions and types of facilities link with which endpoints, and (using maybe MANOVA) incorporating transportation and health care availability would be interesting as confounding variables.	Additional analyses are beyond the scope of this effort.
2b	62	Daley	Is there a significant possibility that small businesses could be more vulnerable to sham recycling if many won't have the capacity and staffing to thoroughly assess recyclers?	EPA added discussion of "reasonable efforts" audits. The supplementary text was added to Sections 2.5.2 and 5.1.4.
2c	70	Ferris	The selection of electric arc furnace dust and solvent wastes as national HSM proxies appears sound based on the analysis. Excluding used oil, non-ferrous metals and scrap metals from the hazard analysis, although associated with "damages cases?"	EPA added discussion on hazard characterization to Section 2.2.2.
3a	97	Ferris	Are the facilities that gave notice located; in disproportionately affected communities or not? The recycling exclusions should not exacerbate impacts or exposures in these communities. A troubling compliance history could signal future endangerment of the health and the environment.	EPA added to the discussion in Section 6.1.4 to clarify the results of demographic analysis for notification facilities.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
3b	99	Daley	I cannot comment directly on whether or not the annual marker of 25 tons of recyclable material is appropriate. The report provided limited justification for this cut off point, and while it seems reasonable, someone with more applied experience in waste management and reclamation may think otherwise	EPA added language to 3.2.3 to explain the 25-ton cut-off, and how the number of facilities might change with a 1-ton and 100-ton cut off.
3b	100	Ferris	Is the 25-ton threshold empirical?	EPA added language to 3.2.3 to explain the 25-ton cut-off, and how the number of facilities might change with a 1-ton and 100-ton cut off.
4b	116	Ferris	Have either the absence of these protections or the "real world" limitations on a community's ability to publicly participate been evaluated as an impact upon low income communities and communities of color?	EPA added discussion on public participation to the executive summary and conclusions.
4b	120	Ferris	Potential impacts associated with transportation of HSW warrant a closer look.	Additional description of the hazards associated with transportation of HSM has been added.
4e	132	Henshel	There is a lot of detail provided for some of the analyses. Other analyses (producing some of the results listed in the tables) do not have such clear or extensive or sometimes even any clear statement of how some calculations were made. At the very least, a clear, jargonless description of how each column in each table was determined should be evident in the text in proximity to the tables.	EPA added additional descriptions to Section 4.
4e	133	Henshel	There needs to be an explanation of why some Fisher's analytical results are listed as N/A.	EPA added additional descriptions to Section 4.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
5a	161	Ferris	Should whether the generator is a small business factor into community vulnerability? For example, some small businesses could be less likely due to capacity to conduct in-depth due diligence or examinations of HSW facilities or how their wastes are recycled.	EPA added discussion on this topic to 2.5.2 and 5.1.4.
5b	166	Ferris	Ability to participate in the decision making process is a stated environmental justice vulnerability; however, this section states explicitly (in clear contradiction) that community input is not required of facilities or regulators.	EPA added discussion on this topic to 2.5.2 and 5.1.4.
6c	184	Daley	Finally, the report would also benefit from a clear assessment of compliance under RCRA and the DSW final rule. If there are no prescriptive standards for storing waste while waiting to reclaim/recycle, are facilities more likely to have accidents?	EPA added discussion on this topic to the Executive Summary and Conclusions sections.
6c	193	Ferris	Tribes, including Inuits, will need additional resources to staff and implement the DSW Rule. Should more cases on Native lands be included in the damages cases analysis?	EPA added discussion about Tribal representation to Section 4.2.2.
ESb	37	Ferris	The "Summary of Potential Impacts…Under Different Recycling Scenarios" is clear however the accuracy of the presumptions is challenged by the language on its face. Pursuant to Hazard Characterization, EPA demonstrates and discusses the highly hazardous nature of the 2 main sources of reclaimed hazardous secondary materials (hereafter HSM) upon which much of the Draft DSW Rule analysis is based in addition to the storage hazards including leaks, fires and explosions. Container standards do not appear to compare with the highly hazardous nature of the 2 main sources upon which much of the Draft DSW Rule analysis is based.	EPA added discussion to the Executive Summary.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4a	109	Daley	The census data that the EPA uses for this analysis is standard. Improvements would include relying upon the 2010 census numbers to more accurately reflect community composition. If possible, it would be ideal to be able to rely upon the American Community Survey (ACS) to obtain more detailed and temporal information on community change. However, I am not sure that the sample size for the ACS are adequate for this facility based approach. It may be that by drilling down to the facility level and relying upon survey rather than census data, introduces too much variability.	The analysis has been updated with the 2010 census data
4b	121	Henshel	The same methods and break outs should have been carried out for all analyses. There should not have been different protocols and analyses used for some types of facilities and not for others. There should have been a break out of asian, black, other minority, and possibly immigrant populations for all facilities.	The EJ Characteristics selected were based on EO 12898 and 13045.
4e	136	Henshel	The same set of demographics should be tested for all types of facilities for all types of analyses. There is no justification for cutting back to 4 categories of analysis for some analyses, and none is given.	EPA added descriptions of why additional demographics were analyzed for notification facilities.
4f	140	Ferris	Would assessment of an additional number of damages case affect the assumptions?	EPA has updated the damage case list.

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4h - 3	153	Ferris	Has EPA evaluated additional damages cases? Is the pool of 218 adequate to reveal the widest reasonable range of damages, potential damages and types of comparisons?	EPA has updated the list of damage cases.
6c	182	Daley	An environmental justice analysis of current regulatory practices for those states and facilities not adopting the 2008 DSW Final Rule would be helpful and may provide guidance if regulatory changes to the DSW rule are likely. The assumption seems to be that the status quo before the rule is neutral for communities of concern. Given the weight of the evidence in the environmental justice literature, this is not likely a reasonable assumption.	An analysis of the demographics around Subtile C disposal facilities has been added.
6c	188	Ferris	Does the DSW Rule consider the affects of tracking, monitoring and enforcement across multiple state lines or, nationally, whether HSW transport will operate smoothly across multiple state programs? Is there favorable or negative impact on interstate commerce?	EPA added discussion on the analysis of interstate tracking, monitoring and enforcement in the conclusions section of the report.
6c	191	Ferris	Has EPA assessed profitability and the viability of end-use markets for various HSW and facilities? Would lack of markets affect, encourage or discourage a facility from taking steps and investing in protecting health and the environment?	A reference the EPA's An assessment of markets and the associated with hazardous waste recycling is presented in the supporting document, "A Study of the Potential Effects of Market Forces on the Management of Hazardous Secondary Materials Intended for Recycling" has been added
1a	43	Daley	Yes, the Introduction is clear. It is easy to follow and well organized.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
1a	44	Ferris	Summary of DSW EJ Methodology is clear and concise with a couple of exceptions.	N/A
1a	49	Ferris	In view of the complexity of what is explained, Scenarios are clear	N/A
1a	51	Ferris	The threat of post facto CERCLA liability is not interchangeable with up-front environmental protection standards and requirements. This reviewer does not presume that the entire regulated community is villainous; however, any vigor/rigor that a generator, receiver, recycler might invest in environmental protection could wane as oversight and compliance requirements are reduced or eliminated.	N/A
1a	52	Henshel	No complaints.	N/A
2a	58	Ferris	The description of potential scenarios is clear.	N/A
2a	59	Ferris	The chart situated in the “Overview” section, which describes the 3 relevant exclusions is clear and concise. The applicability of RCRA (or not) is readily discernible from the scenarios.	N/A
2b	61	Daley	These scenarios seem plausible. They are described in clear and logical detail.	N/A
2c	67	Henshel	Two other possible scenarios to address are listed above under “general comments”.	N/A
2c	68	Daley	Yes, EPA’s analysis of the types and quantities of hazardous secondary material is clear. Figure 1 provides a clear justification for the focus on solvents and electric arc furnace dust.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2d	81	Daley	It seems as if EPA has noted many of the differences between hazardous waste regulations and the changes stemming from the 2008 Draft Solid Waste (DSW) Final Rule. Table 2.3 is a very detailed description of the eight likely scenarios and their impact on generators, transporters, and intermediate reclamation facilities. This material clearly communicates that there is likely to be substantial changes in the accumulation and storage of hazardous secondary material (HSM).	N/A
2d	85	Ferris	Audits of reclaimers are not the same as or superior to periodic inspections or other agency oversight.	N/A
3a	96	Daley	EPA's approach to identifying facilities that are likely to begin recycling hazardous secondary material seems reasonable. I cannot think of another category to include. Out of the categories presented (already notified; damage facilities; currently generating hazardous secondary material, and facilities that may easily expand or switch to reclamation because of the DSW final rule), the last three categories seem more useful to understanding likely environmental justice impacts. With only 40 facilities providing notification at the time of the report, it is likely that "street level" implementation will be driven by the larger population of facilities rather than early adopters.	N/A
3a	98	Henshel	no comment, outside this reviewer's area of expertise	N/A
3b	101	Henshel	no comment, outside this reviewer's area of expertise	N/A
3c	102	Daley	EPA is defining a community as a 3 kilometer circle or buffer around one of the facilities included in this analysis. The agency then uses census information to apportion socio-economic and demographic ratios within this radius. This method is superior to simply using standard census divisions such as census tracts, blocks, or even zip code aggregation.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
3c	103	Daley	The operational definition of “a community” is challenging and the environmental justice literature has numerous empirical studies at different levels of analysis, sometimes providing conflicting and competing results. Thus, using a measure of community with stronger measurement validity is important. Like all measurements, this is not a perfect representation of “a community”, but it is a much improved measure over more traditional approaches, i.e., studies that rely upon preexisting census designations to ascertain community characteristics. Increasingly, a 3 kilometer radius is becoming a standard approach to improving the precision of community measures in environmental justice and public health research.	N/A
3c	105	Ferris	EPA synchronizes with Professor Paul Mohai and Professor Robin Saha who are doing cutting edge demographic analysis. Their work shows increasing disproportionality, for example, nationally, people of color now make up the majority of those living within 3-km of such facilities and that where facilities cluster they make up over two-thirds. These are the highest concentrations of people of color ever reported from a national study of the distribution of hazardous waste facilities. Furthermore, when applying their recommended statistical analysis, it was found that racial disparities persist even when controlling for socioeconomic factors such as income, housing values, education, and employment status.	N/A
4a	111	Henshel	Using census data is standard protocol for many EJ analyses.	N/A
4b	114	Ferris	Without RCRA status or Treatment, Storage and Disposal (TSD) protections, communities will many facilities are not required to get a permit, provide notice and opportunity to comment, address public input, monitor or be subject to protective container standards or storage time limits. These are baseline historic protections that, while they do exist, as regards most environmental statutes, they haven’t been updated to reflect the “real world” since original passage.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4b	115	Ferris	Furthermore, taking advantage of existing public participation mandates commonly requires a massive investment of usually volunteer community resources to engage in a process that is time consuming and expensive and in which, comparatively, the private sector and government stakeholders have extensive resources and dedicated staff.	N/A
4c	124	Henshel	It appears, yes.	N/A
4e	130	Daley	The statistical analysis seems to be properly done. As far as I can tell, these are conditional probability calculations. It is a relatively straightforward and simple approach. While I am not a statistician, it seems like a reasonable way to approach the analysis. It provides the agency with two types of information: the chances that a facility exists in a buffer area given the demographic and socio-economic composition (threshold risk), and the probability of a particular demographic or socioeconomic composition given the likelihood of facilities (the demographic ratio).	N/A
4f	138	Daley	Yes, I think the assumptions are accurately presented. Footnotes 34 – 37 are important components in the analysis. The report very clearly outlines data sources and how the information is aggregated together. As already noted, the distributional assumptions of the areal apportionment method should be more fully explained.	N/A
4f	139	Ferris	Assumptions appear accurate; however at this reading, this reviewer cannot determine whether they are thorough.	N/A
4f	141	Henshel	[No response provided]	N/A
4g	143	Ferris	Uncertainties in the data input in the analysis appear to be appropriate.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
4h - 1	145	Daley	See 2. below.	N/A
4h - 1	146	Ferris	The reviewer is uncertain if this analysis will yield additional useful information without an assessment of additional cases.	N/A
4h - 1	147	Henshel	Your meaning is not fully clear in this question, and it is not clear what analyses you would do to address this question, and how you would break up the data. I am also concerned that the number of facilities in each group might then be so small as to really decrease power to detect significant differences.	N/A
5a	158	Ferris	The description of other factors that may affect vulnerability is accurate.	N/A
5a	159	Ferris	The DSW Rule contains sound baseline vulnerability factors.	N/A
5a	163	Henshel	[No response provided]	N/A
5b	164	Ferris	The broader discussion is helpful. The report is complex, removing the broader discussion will not simplify the report tremendously. The broader discussion, however adds thoughtful detail and clearly communicates the challenges confronting public and private decision makers.	N/A
5b	167	Ferris	The section is clear that lower participation levels can translate into experiencing greater negative impacts since “their input has not been considered fully, particularly if competing interests are set forth more effectively.”	N/A
5b	169	Henshel	It is better to keep the discussion broader. In this kind of document, it is important to include the negative results as well as the positive results.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
5c	172	Ferris	Unfunded mandates would affect EPA ability to ensure compliance if enforcement is left to states that don't have the budget to inspect, monitor, notify the public or implement public involvement.	N/A
6a	175	Daley	Yes, the conclusions seem to stem directly from the analysis presented in the report.	N/A
6a	176	Ferris	The analysis and conclusions are extensive.	N/A
6a	178	Henshel	Yes, the results support EPA's conclusions, but likely not as well, currently, as they might with more extensive EJ analysis carried out on the data.	N/A
6b	179	Daley	Yes, I think the agency has clearly differentiated between the community level analysis – comparing the 3 km buffer area to state, national and urban and rural areas, and the population level analysis – exploring the threshold risk ratio and the demographic ratio for a larger set of categories (minority, poverty, American Indian and Alaska Native, and children under 5).	N/A
6b	180	Ferris	The differences between community level and population level analysis are clear.	N/A
6b	181	Henshel	I think so, but I am not fully sure that my answer comes from the readability and clarity of the explanations – I suspect my familiarity with the information is affecting my comfort with the descriptions.	N/A
ESa	28	Ferris	The Executive Summary is very clear and readable.	N/A
ESa	29	Ferris	The material is complex and dense which is to be expected in an agency rulemaking.	N/A
ESb	36	Daley	Yes, the Executive Summary provides an accurate summary of the more detailed material presented in the report.	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
ESb	42	Henshel	See above comments. But yes, the Executive Summary does provide a reasonably accurate view of the findings and conclusions of this analysis.	N/A
Ga	3	Ferris	Generally, the DSW Rule is read-able and clear.	N/A
Gb	14	Ferris	Generally, information in the DSW Rule presented is clear and appears to be accurate.	N/A
Gc	23	Ferris	The DSW Rule is an extensive document with significant analysis and extensive data.	N/A
Gc	24	Henshel	This is a nice review of the data. This is a nice first analysis. Improvements can be made. This question is a perfect example of the redundancy that could be avoided.	N/A
Ga	6	Henshel	Readability. Unfortunately, this document is pretty standard for an EPA document. If the audience is only technical, the document is usable and readable. If the audience is intended to be the EJ communities and include a non-technical audience, this document is dense and difficult to read. There is also a lot of “spaghetti” logic – explanations that are internally referencing without sufficient definition of terms or acronyms. The document is missing some key components that would make it more readable. These include:	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
Ga	9	Henshel	Utility. This analysis and report does demonstrate that there already is a bias in the location of the facilities that already produce hazardous waste, and this includes a bias in the facilities that might utilize this rule to increase storage time and volume of exempted otherwise hazardous materials. The environmental justice analysis could have been more complete. Further discussion of other approaches are included below. The report does make reasonably recommendations for some of the ways that the environmental justice concerns might by reduced, although the discussion of these abbreviated comments was both vague and needed elaboration.	An analysis of the demographics around disposal facilities has been added.
4b	112	Daley	Yes. The EPA has selected appropriate characteristics to analyze in this report. I think it would be a stronger analysis if along with “children under five”, “adults over 65” were included in the detailed analysis in chapter 4. Given the demographic transitions of the baby boomers into an elderly population, it will become more critical to understand differential exposure for susceptible populations at both ends of the spectrum.	The EJ Characteristics selected were based on EO 12898 and 13045.
6c	196	Henshel	The chapter analyses seem to be ignoring the risk ratio data. Since the “full” set of analyses (ie Fishers Exact Test, for example) did not actually carry out the full set of analyses (separating out Black and Asian, for example), it seems that the results might have been stronger with the additional analyses.	Discussion of risk ratio data was added to the statistical analysis section.
4e	134	Henshel	Why are the same charts repeated twice? Is this necessary?	Additional discussion was added to Section 4 to clarify charts.

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4a	110	Ferris	EPA synchronizes with Professor Paul Mohai and Professor Robin Saha who are doing cutting edge demographic analysis. Their work shows increasing disproportionality, for example, nationally, people of color now make up the majority of those living within 3-km of such facilities and that where facilities cluster they make up over two-thirds. These are the highest concentrations of people of color ever reported from a national study of the distribution of hazardous waste facilities. Furthermore, when applying their recommended statistical analysis, it was found that racial disparities persist even when controlling for socioeconomic factors such as income, housing values, education, and employment status.	N/A
4c	123	Ferris	EPA synchronizes with Professor Paul Mohai and Professor Robin Saha who are doing cutting edge demographic analysis. Their work shows increasing disproportionality, for example, nationally, people of color now make up the majority of those living within 3-km of such facilities and that where facilities cluster they make up over two-thirds. These are the highest concentrations of people of color ever reported from a national study of the distribution of hazardous waste facilities. Furthermore, when applying their recommended statistical analysis, it was found that racial disparities persist even when controlling for socioeconomic factors such as income, housing values, education, and employment status.	N/A
4d	126	Ferris	EPA synchronizes with Professor Paul Mohai and Professor Robin Saha who are doing cutting edge demographic analysis. Their work shows increasing disproportionality, for example, nationally, people of color now make up the majority of those living within 3-km of hazardous waste facilities and that where facilities cluster they make up over two-thirds. These are the highest concentrations of people of color ever reported from a national study of the distribution of hazardous waste facilities. Furthermore, when applying their recommended statistical analysis, it was found that racial disparities persist even when controlling for	N/A

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
			socioeconomic factors such as income, housing values, education, and employment status.	
4e	131	Ferris	EPA synchronizes with Professor Paul Mohai and Professor Robin Saha who are doing cutting edge demographic analysis. Their work shows increasing disproportionality, for example, nationally, people of color now make up the majority of those living within 3-km of hazardous waste facilities and that where facilities cluster they make up over two-thirds. These are the highest concentrations of people of color ever reported from a national study of the distribution of hazardous waste facilities. Furthermore, when applying their recommended statistical analysis, it was found that racial disparities persist even when controlling for socioeconomic factors such as income, housing values, education, and employment status.	N/A
2	54	Ferris	The discussion of hazards associated with mainly the 2 selected vectors is clear. Hazards are extensive in contrast to reducing the levels of regulatory oversight provided by RCRA. Should all 4 legitimacy factors should be mandatory in view of the hazards? What about release reporting? Should releases be grounds for losing exclusion and HSW status? How is a significant release determined?	N/A (comment on 2008 DSW rule)
2	55	Ferris	In view of the stated hazards, could managing HSW as a valuable commodity influence the generator, receiver, recycler and affect compliance? This goes to the concept of legitimacy. Would the mandating a showing of economic value militate in favor of safeguards against releases, spillage?	N/A (comment on 2008 DSW rule)

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2	56	Ferris	If wastes that are going to be recycled as hazardous as wastes that are not recycled, are both equally likely to be mishandled? Are the regulatory and enforcement tools provided by the DSW Rule commensurate with the task of ensuring compliance?	N/A (comment on 2008 DSW rule)
3	94	Ferris	Does the large number of damages cases support granting the transfer-based exclusion?	N/A (comment on 2008 DSW rule)
2b	63	Daley	The DSW Rule could inadvertently encourage mismanagement while transitioning materials into the recycling stream. Does the Rule apply where HSW is recycled into even more toxic products?	N/A (comment on 2008 DSW rule)
2b	64	Daley	Should notice be the hazard quid pro quo for the exclusions which provide the benefit of different (reclamation), streamlined treatment of HSW?	N/A (comment on 2008 DSW rule)
2c	71	Ferris	How and when does enforcement after a “significant” release occur? How is the determination made as to what constitutes a significant release? Which party has the burden of proof? It would seem that placing the burden of proof on the party that causes or is responsible for the release should bear the burden of proof opposed to, for example, the governmental entity.	N/A (comment on 2008 DSW rule)
2c	75	Ferris	Would streamlined, but standardized HSW reporting on a Manifest or comparable document be feasible, e.g., for state and local government, the industry?	N/A (comment on 2008 DSW rule)
2c	76	Ferris	Compliance with financial assurance can be a high hurdle given conditions imposed by the environmental insurance market. All parties under this rule should be required to comply with financial assurance. Would requiring management standards for reclamation facilities that don’t have RCRA permits strengthen the DSW Rule by increasing or reducing the potential for environmental releases and/or disproportionate negative impacts?	N/A (comment on 2008 DSW rule)

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
2d	82	Ferris	The threat of post facto CERCLA liability is not interchangeable with up-front environmental protection standards, notice and record-keeping requirements. Streamlined record, keeping, tracking and monitoring would contribute to ensuring that toxic wastes are not dumped illegally dumped in disproportionately affected communities and would contribute to ensuring that HSW is safely delivered to the recycling facility.	N/A (comment on 2008 DSW rule)
2d	83	Ferris	The DSW Rule could be characterized, to some extent, as industry self-certification on HSW, which contrasts sharply with RCRA's historic cradle-to-grave framework and preventative approach to hazardous waste management and disposal.	N/A (comment on 2008 DSW rule)
2d	84	Ferris	Generators and third party reclaimers must file notices – they should be required or the HSW should be treated as hazardous waste.	N/A (comment on 2008 DSW rule)
4b	113	Ferris	Is the preventative approach a reasonable starting point when evaluating harm to the environment and public health.	N/A (comment on 2008 DSW rule)
4b	117	Ferris	Notice requirements inform communities, the public and municipalities about how HSW is being managed and recycled. How would the public learn about releases, spillage without notice, monitoring, recordkeeping; how would they advocate safeguards or alternatives? Streamlined requirements would be preferable to none.	N/A (comment on 2008 DSW rule)
4b	119	Ferris	Should recyclers be required to demonstrate a history of compliance prior to benefiting from the exclusions?	N/A (comment on 2008 DSW rule)
5b	168	Ferris	Does the importance and/or benefit of recycling override the value of public participation especially where disproportionality is an issue? Additionally, the studies show that facilities which have notified already show multiple facilities, higher disease incidence and a dearth of hospitals in the 3-km area.	N/A (comment on 2008 DSW rule)

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
6a	177	Ferris	Arguably, DSW Rule conclusions supporting exclusion of HSW from RCRA protections are not thoroughly supported by the analysis as it pertains, in particular, to multiple (disproportionate?) impacts, potential hazards and public participation.	N/A (comment on 2008 DSW rule)
6c	185	Ferris	Specific and explicit storage timeframes and container requirements would facilitate safer handling by reducing the prospects for potential explosions, spills and other uncontrolled releases of HSM.	N/A (comment on 2008 DSW rule)
6c	186	Ferris	Off-site reclamation – regulatory safeguards that ensure proper management of HSW while on-site and during shipment are important.	N/A (comment on 2008 DSW rule)
6c	189	Ferris	What constitutes “reasonable effort” is not clear. This may not be a sufficiently high bar to deter mismanagement of HSW and could encourage high risk conduct.	N/A (comment on 2008 DSW rule)
6c	192	Ferris	Does the DSW Rule facilitate broad adoption by the states and state implementation?	N/A (comment on 2008 DSW rule)
6c	194	Ferris	Encouraging recycling should be possible while retaining a reasonable assurance of regulatory protection for health and the environment.	N/A (comment on 2008 DSW rule)
ESb	38	Ferris	The Scenarios chart shows several instances involving movement or activity related to HSM where it appears that various historic RCRA safeguards are not required see e.g., certain scenarios under Scenario 3; Scenario 5; Scenario 6; Scenario 7; Scenario 8) without, it could be said, on balance, assuring a regulatory atmosphere that influences the regulated community to handle HSW in ways that prevent hazards. Comparatively, streamlined notice and recordkeeping would both facilitate emergency planning and response and protect human health and the environment.	N/A (comment on 2008 DSW rule)
ESb	41	Ferris	Regarding DSW Rule controversies about disproportionate negative impacts and exposures, would these communities feel more protected (versus adding to the burden of already cumulative pollution) if HSW	N/A (comment on 2008 DSW rule)

Charge Question No.	Comment No.	Reviewer	Comment	EPA Response
			were handled similar to those substances categorized under Universal Wastes?	