ECONOMICS BACKGROUND DOCUMENT

ECONOMIC ANALYSIS OF THE USEPA'S PROPOSED MODIFICATIONS TO THE RCRA HAZARDOUS WASTE MANIFEST SYSTEM

US Environmental Protection Agency
Office of Solid Waste
Economics, Methods & Risk Analysis Division
1200 Pennsylvania Avenue, NW (Mailstop 5307P)
Washington, DC 20460 USA
http://www.epa.gov/epawaste/index.htm

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EXECUTIVE SUMMARY

A. Background to RCRA Manifests: A crucial component of the EPA's "*cradle-to-grave*" RCRA hazardous waste regulatory program, is the "*Uniform Hazardous Waste Manifest*" (i.e. EPA Form 8700-22 & 22A). A completed manifest form – including description and quantity of the waste, and identity of all parties involved in shipment – must accompany the shipment of hazardous waste, from the point of generation, to the point of ultimate treatment, storage or disposal. This manifest system ensures that the hazardous waste generator has tracking documentation that the waste has arrived at its ultimate and proper destination. As of 1999, there are over **92,000 entities** operating in **45 economic sectors** in the US subject to the RCRA manifest system as hazardous large quantity waste generators (18,290), small quantity waste generators (71,536), waste transporters (500), waste treaters/storers/disposers (2,024), and as state governments.

B. Major Features & Estimated Benefits of the Proposed Modifications to the RCRA Manifest: In response to public requests in the 1990s to the EPA for a streamlined and up-to-date manifest system (EPA issued the original manifest form on 20 March 1984), EPA is proposing to modify the RCRA hazardous waste manifest system to provide regulatory relief to waste handlers and to the States. By design, EPA's proposed **three major modifications** to the manifest system – both "system-wide" and "per-manifest" in nature – would reduce the national annual administrative burden to RCRA hazardous waste handlers and to State governments:

Major Features of the Proposed Modifications to the RCRA Hazardous Waste Manifest System	
Feature	**Brief Description**
Form contents:	Reduce information requirements on the current RCRA manifest form, and limit the extent to which States may include State-specific information requirements/instructions on the RCRA manifest form.
Form automation:	Encourage the use of readily-available, automated (electronic and computer) technologies that are currently not allowed under the RCRA manifest system, for completing and signing forms, transmitting forms, and for storing forms.
Residues/ non-empties:	Clarify the requirements for the follow-on manifesting of TSDF-rejected RCRA hazardous waste shipment "loads", and follow-on shipment of non-empty waste containers containing waste "residues".

The *Federal Register* proposal also contains a number of **minor modifications** which are not included in this economic analysis because they potentially have minimal direct, or non-quantifiable indirect, beneficial impacts.

The purpose of this Economic Background Document is to estimate the potential **administrative burden reduction** and **net cost savings** to waste handlers and to States, associated with the proposed major modifications to the RCRA manifest system, by comparing estimates of national average annual, manifesting burden under the current RCRA manifest system (i.e. "baseline" case), to after hypothetical implementation of manifest system modifications. The table below summarizes the findings of this study, based on an uncertainty range assumption of 25% to 50% of annual RCRA manifests eventually becoming automated at some time in the future (the proposal includes a two-year phase-in period, however, manifest automation is optional, not required, so ultimate national burden reduction may be more or less than estimated in this document). These burden reduction estimation ranges are based on a non-probability information collection (survey sampling) design, which does not provide statistical confidence.

Summary of Baseline Administrative Burden for the Existing RCRA Manifest System, and of Potential Net Savings in Burden and Costs for the Proposed Modifications						
Affected Entities	**National Annual Burden (million hours)**			**National Annual Cost ($millions)**		
	Baseline Burden	**Burden Savings**	**% Net Reduction**	**Baseline Cost**	**Cost Savings**	**% Net Reduction**
Waste Handlers	4.416	0.729 to 1.162	17% to 26%	$187.0	$24.2 to $35.6	13% to 19%
State Governments	0.199	0.036 to 0.079	18% to 40%	$6.3	$0.2 to $1.6	3% to 25%
Totals =	4.615	**0.765 to 1.241**	**17% to 37%**	$193.3	**$24.4 to $37.2**	**13% to 19%**

ACKNOWLEDGMENTS

ICF Consulting Inc., under project direction of Mr. Earl Harris, prepared the 12 May 2000 initial draft of this document for the EPA Office of Solid Waste (OSW), under the direction of Work Assignment Manager Mr. Frank Smith (Economist, EPA-OSW), using EPA Contract 68-W-98-221. Mark Eads (Economist, EPA-OSW) contributed to final draft edits prior to and after OMB review, after the retirement of Mr. Smith from Federal Service in Summer 2000.

OSW provided in September 2000, a draft of this report to the Office of Management & Budget for review.

The public may provide comments to the EPA about the contents of this report, during the designated public review period, according to the public comment instructions in the *Federal Register* announcement for the proposed modifications to the RCRA hazardous waste manifest system.

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I. INTRODUCTION

I.1 Background

The US Environmental Protection Agency (EPA or Agency) prepared this economic assessment to accompany the Agency's proposed rulemaking to modify the hazardous waste generator manifest standards under Subtitle C of the ***Resource Conservation and Recovery Act*** (RCRA) of 1976. EPA is authorized to make these regulatory modifications pursuant to section 3002 of RCRA. Section 3002 directs EPA to promulgate regulations, applicable to hazardous waste generators, as may be necessary to protect human health and the environment. Among other things, section 3002 authorizes EPA to develop standards to provide for the "use of a **manifest system** and any other reasonable means" to assure that off-site shipments of hazardous wastes are designated for, and arrive at, appropriate RCRA treatment and disposal facilities.

Under this authority, EPA requires the use of the ***Uniform Hazardous Waste Manifest*** (EPA Form 1800-22 & 22A), and has established requirements at **40 CFR Part 262 Subpart B** for generators to prepare, transmit and keep copies of the manifest, as well as to conduct other manifest-related activities. EPA's proposed regulatory action would **streamline** the current manifest system by simplifying the existing manifest form, and by encouraging the use of automated technologies in preparing, transmitting and keeping copies of the manifest.

I.2 Need for the Proposed Action

EPA believes that opportunities exist for providing ***regulatory relief*** to hazardous waste handlers and to the States under the RCRA regulatory program, while maintaining or increasing the level of human health and environmental protectiveness of the program. As estimated in this report, the Agency's proposed modifications to the RCRA hazardous waste manifest system would reduce the overall **paperwork burden** hours and associated labor costs to waste handlers and to States,[1] as a result of both ***system-wide*** changes to the RCRA manifest system, and from changes that affect the "***per manifest***" burden to individual entities for completing and using the RCRA manifest. Consult the *Federal Register* announcement for additional background information about EPA's rationale for the formulation and development of the proposal.

I.3 Summary of Proposed Modifications to the RCRA Manifest System

Specifically, the proposed modifications to the RCRA hazardous waste manifest system consist of the following **three primary features** (i.e. categories of modifications):

[1] For the purposes of this analysis, "***burden***" means the total time (i.e., hours) expended by individuals and/or organizations in carrying out specified activities. For example, it includes the time needed to review manifest instructions and prepare, transmit, and keep copies of the manifest; and manage and transport hazardous wastes, if specified.

Summary of Primary Features of the Proposed Modifications to the RCRA Hazardous Waste Manifest System	
Feature	**Description**
Manifest form contents:	Reduce the information requirements on the current RCRA manifest form, and limit the extent to which States may include their own State-specific information requirements/instructions on the RCRA manifest form.[2]
Manifest form automation:	Encourage the use of readily-available, automated (electronic and computer) technologies that are currently not allowed under the RCRA manifest system, for completing and signing forms, transmitting forms, and storing forms.
Residues/ non-empties:	Clarify the requirements for the follow-on manifesting of TSDF-rejected waste shipment "loads", and follow-on shipment of non-empty waste containers containing waste "residues".

In addition, the *Federal Register* proposal contains seven additional minor modifications to the RCRA manifest. Table I-1 below lists and summarizes **11 components** of the proposed modifications to the RCRA manifest system. The order of the modifications listed in this table does not coincide with how they sequentially appear in the Federal Register notice; the order is altered in this report so that the separable modification features may be grouped and presented below as components within broader-defined **major** and **minor** modification categories, adopted in this report to facilitate organization of the economic impact analysis.

Table I-1: Itemized Summary of Proposed Modifications to the RCRA Hazardous Waste Manifest System		
Item	**Proposed Modification**	**Brief Description & Sub-components**
A. MAJOR MODIFICATIONS (expected economic impacts estimated in this study):		
1	Revised manifest form contents & appearance	! Revise the current manifest Form 1800-22 & 22A, by eliminating several State datafields. ! The manifest would be completely uniform in its design and contents. ! Universally accessible. ! States and others could register with EPA to get authorization to print and distribute manifests.
2	Electronic automation	! Enable automation of manifest cycle via Electronic Data Interchange (EDI) or EDI/Internet. Standard file format would be used. ! Specify standards for electronic (digital) signatures. ! Allow waste handlers to send their electronic manifests to offsite third parties for recordkeeping. ! Waste handlers would be allowed to fax copies of manifest to third parties (e.g., States). Currently, they send copies by mail (e.g., regular or overnight).
3	Non-empty waste container residues & rejected waste shipment loads	! Revise the manifest to include a check box for waste TSDFs to indicate if they are rejecting and sending offsite a waste shipment or non-empty waste container, so to ensure tracking by the original waste generator. ! The revised form would also include a space for handler to record the new manifest number for a non-empty container or rejected load. ! Requires the rejecting TSDF to contact the waste generator for decision about next destination and transport mode for rejected load or residue (or specify in a contract w/generator). ! Clarify that rejecting TSDFs are not subject to BRS reporting.

[2] As of mid-year 2000, **24 States** require the completion of State-only information on the manifest. The resulting variability among State manifest requirements has created some confusion among waste handlers, increasing their manifesting time and costs and their potential for errors in manifest completion. The proposal would significantly reduce the variability among State manifest requirements.

Table I-1: Itemized Summary of Proposed Modifications to the RCRA Hazardous Waste Manifest System

Item	Proposed Modification	Brief Description & Sub-components
B. MINOR MODIFICATIONS (potential minor or indirect impacts not estimated in this study):		
4	International shipments	Provide explicit form datafields (i.e. boxes or spaces) to require: ! designation of port and date of exit/entry into the US for all hazardous waste exports/imports, and ! sending a copy of such manifests to US Customs.
5	Bulk container definition	Change EPA's definition of "***bulk containers***" (greater than 110 gallons capacity), to be consistent with the US Department of Transportation's (DOT's) and international community's definition for bulk packaging (i.e. greater than 119 gallons). (DOT first established a 110 gallon standard on 18 August 1982 which formed the basis for EPA's standard, but DOT revised its standard to 119 gallons on 21 December 1990.)
6	Use of quantity fractions	Clarify that whole numbers should be used on manifests for quantities of non-bulk shipments, and that waste quantity fractions may be used for bulk shipments.
7	Emergency phone number	Designate one separate space (block) on the manifest form for an emergency phone number (as required by DOT).
8	Certification language	Standardize the wording of the manifest generator certification on the manifest, to the wording of DOT's Shipper's Certification found at 49 CFR 172.204.
9	Waste management system type coding (Manifest block K)	! Re-label the state optional "Block K" on the manifest form to "Block B". ! Eliminate state-specific instructions/codes for this block, by requiring the use of EPA's RCRA Biennial Reporting System (BRS) waste management "system codes" (i.e. Mxxx codes) for "Block B" on the manifest form.
10	Waste type coding (Manifest block I)	! Re-label the state optional "Block I" on the manifest form to "Block A". ! Divide the block into two sections, one for the optional reporting of up to three EPA BRS waste type codes, and another for up to three state optional waste type codes. ! For wastes which meet multiple codes (e.g. mixtures) require use of waste code toxicity/volume hierarchy for this block.
11	Replacement for EPA's discontinued unmanifested waste form	Allows TSDFs who accept unmanifested waste to submit a typed, handwritten, or electronic note containing seven information items, as a replacement for the 1983-discontinued EPA Form 8700-13B, which hitherto has still been required, but generally unavailable, for reporting unmanifested wastes.

Explanatory Notes:
In addition to the modifications listed above, EPA-OSW considered and formulated one additional modification – "waste minimization annual certification": to allow annual waste generator certification for waste minimization, rather than requiring it on each waste shipment manifest. However, EPA-OSW dropped this feature from the proposal because the current language in RCRA Subtitle C (Section 3002(b)) ties the generator certification requirement to RCRA manifests.

I.4 Purpose, Scope and Limitations of This Document

This report describes the estimated national, average annual, ***administrative burden hour*** and associated ***burden cost*** impacts to both (a) waste handlers and (b) the States, under the Agency's proposed modifications to the RCRA manifest system. Because of the proposal's **burden relief design**, the *a priori* expected **incremental change** in annual burden is for a net **reduction** in national burden, to entities involved in the RCRA manifest system. This report also characterizes the expected **environmental implications** of the proposed action, as well as addresses **environmental justice analysis** requirements.

This economic analysis only addresses the **direct administrative impacts** expected for the "**major**" modification components listed in the table above. The reason for this methodological restriction is largely because the expected monetary magnitude of other potential indirect economic impacts, as well as impacts (if any) associated with the "**minor**" modification components, are expected to be relatively minor, or otherwise fall in magnitude, within the uncertainty bounds of the direct impact estimates.

The indirect impacts are largely expected to be beneficial rather than adverse, in the form of **indirect economic efficiencies** which are difficult to quantify without extensive additional economic research and analysis. For example, during the development of the proposed manifest system modifications, EPA-OSW interviews with state-level hazardous waste program officials revealed that many state officials not only expressed support for the potential **direct beneficial impacts** of the modifications in reducing annual manifest paperwork burden to state agencies, but also indicated that one potential **indirect beneficial impact** to states is that the proposed electronic manifesting may enable states to prepare more easily their submissions of hazardous waste data to EPA's RCRA Biennial Reporting System. Such potential indirect benefits are not estimated in this economic study.

This document does not provide a complete assessment of the **national investments** required for implementation of the major features of the proposals (i.e. this study does not assess the capital investments required for automating the RCRA manifest system, and purchase of computer-related equipment (hardware and software) for implementing and operating the system). The Agency's assessment of capital costs is presented in a separate report available from the RCRA Docket, as identified in the *Federal Register* announcement to the proposal. The other report builds the investment and implementation cost analysis, upon the administrative burden costs of this background document, so it is complementary in its design, but broader in its analytic scope, as compared to the contents of this document.

II. ECONOMICS ANALYSIS FRAMEWORK

II.1 Framework Applied for Assessing Administrative Burden Under the Current (Baseline) RCRA Hazardous Waste Manifesting System

This section summarizes the methodology and analytic assumptions applied in this document for estimating the national, average annual, burden hours (and associated labor costs) to waste handlers and to States, under both the baseline RCRA manifest system, and under the proposed modifications to the manifest system. The economic analysis presented in this document largely builds upon the administrative and paperwork burden data and information contained within two recently-completed EPA "Information Collection Request" (ICR) supporting documents, related to the RCRA manifest system:

Primary Data and Information Reference Documents Used for Building This Economic Analysis: Two "Information Collection Request" (ICRs) Supporting Documents

EPA ICR Nr.	ICR Date	Document Title
801	22 Oct 1999	"Supporting Statement for Information Collection Request Number 801: Requirements for Generators, Transporters & Waste Management Facilities Under the RCRA Hazardous Waste Manifest System" (EPA Office of Solid Waste).
801.#	19 July 2000	"Supporting Statement for Information Collection Request Number 801.#: Modifications of the Hazardous Waste Manifest System - Proposed Rule" (EPA Office of Solid Waste).

Explanatory Notes:
(a) ICR = "Information Collection Request". ICRs have a legislative history dating back to the 1942 Federal Reports Act, which required that the Federal government collect information from the public, with a minimum burden and at a minimum cost. The Paperwork Reduction Act of 1980 established Office of Management & Budget (OMB) responsibility for reviewing every Federal agency's information management activities (including surveys, forms, reporting and recordkeeping requirements involving more than nine persons), to meet annual paperwork reduction goals. As defined by Congress, ICRs which involve gathering data independent of a rule are "Information Collection Requests", whereas ICRs associated with a specific regulation (proposed or final rule) are "Information Collection Requirements". The 1980 PRA was amended by Congress by the 1995 Paperwork Reduction Act. For additional information and inventory of Federal government-wide ICR's, see OMB's website: http://www.whitehouse.gov/OMB/inforeg/index.html#IC ; for additional information and inventory of EPA ICR's, see EPA's website: http://www.epa.gov/icr .
(b) It is important to emphasize that both reference ICRs involved **non-probability** collection of data and information from three small sample groups, consisting of seven RCRA hazardous waste handler sites, nine state governments , and three electronic data information "value added network" companies. All three sample groups were constrained by the maximum number of **nine entities** as allowed under the *Paperwork Reduction Act of 1995*, for purpose of collecting information concerning the same set of questions by Federal agencies in support of research and rulemakings, without prior review and approval of information collection studies by the Office of Management & Budget. The total number of entities contacted exceeds nine, because EPA asked each sample group different questions.

EPA analyzes the annual burden impacts to hazardous waste handlers under the proposed manifest regulatory changes, by first estimating the annual burden under the baseline RCRA manifest system (inclusive of Federal and State requirements). The Agency then analyzes the annual burden and costs under the proposed manifest changes. Finally, the Agency compares the burden and costs under the baseline and proposed manifest regulatory changes, to derive an estimate of the total annual burden impacts (i.e., **potential net annual savings** in burden hours and costs). This chapter describes the methodology used in developing the analysis of the RCRA manifest baseline and of the proposed modifications to the RCRA manifest system.

The analysis in this chapter focuses primarily on the activities undertaken by hazardous waste handlers and by State governments under Federal RCRA and State-level hazardous waste manifest programs. The Federal "*Universal Hazardous Waste Manifest*" – **USEPA Form 8700-22 & 22A**,[3] front & back pages, respectively – consists of a minimum of four copies — original and several copies — to facilitate recordkeeping by multiple parties, as summarized below:

Summary of RCRA Manifest System Responsibilities by Type of Waste Handler	
Waste handler	**RCRA Manifest System Responsibilities**
Waste generators:	Under the Federal program, hazardous waste generators must ship their hazardous waste to a TSDF that is permitted or under interim status. Generators are required under 40 CFR **Part 262** to complete a manifest for each shipment of hazardous waste sent offsite. Generators must keep a copy of the manifest signed by the transporter who picks up the waste and, subsequently, by the designated TSDF who must return a signed copy to the generator within a specified time frame.
Waste transporters:	Under 40 CFR **Part 263**, hazardous waste transporters must sign and date the manifest at pickup, carry it to the designated TSDF, and keep a copy.
Waste TSDFs:	Under 40 CFR **Parts 264 and 265**, designated treatment, storage & disposal facilities (TSDFs) must sign and date the manifest, note any discrepancies, return a copy to the generator, and keep a copy.

All RCRA hazardous waste handlers must also comply with other requirements as specified in the regulations, such as submitting special reports (e.g., exception reports, discrepancy reports) to EPA or to authorized State governments, and notifying governmental authorities of hazardous waste transportation emergencies.

Under RCRA Section 3006, EPA may delegate authority to qualified State governments to implement and enforce their own RCRA programs. Approved programs must be consistent with, and may be more stringent than, the Federal RCRA program. Currently, **24 State governments** collect hazardous waste manifest copies from waste handlers, and are thus more stringent than the Federal RCRA manifest program. Many State governments also require the use of their own customized version of the RCRA manifest. These State-specific versions may differ in requiring the use of certain optional data fields provided on the manifest form (boxes A - L) for State government use.

Forms required by State governments may contain special instructions for completing the State portion, and may request State-specific information (e.g., State waste codes). Further, many of the States collect manifest copies from generators and/or designated TSDFs. Some States require the use of six-part forms so that copies can be sent by the generator and designated TSDF to the destination State. Other States require the use of eight-part forms so that generators and designated TSDFs can send copies to both the generator and destination States. There are also a number of States that do not print their own forms, but still require waste handlers to submit copies. Finally, a number of States require generators and designated TSDFs to undertake other manifest-related activities, such as submitting periodic reports on, among other things, shipping activities.

To develop the baseline analysis, EPA first identified relevant Federal RCRA and State government hazardous waste manifesting requirements -- and associated paperwork burden and costs, as well as certain voluntary industry hazardous waste manifest activities and costs. EPA then developed analytic spreadsheets to calculate the total manifest-related costs and hourly burdens to hazardous waste handlers and to State governments.

[3] To learn more about the current RCRA hazardous waste manifest system, see descriptive information at EPA's website: http://www.epa.gov/epawaste/hazard/transportation/manifest/index.htm . An electronic copy of the current RCRA manifest Form 1800-22 is available at: http://www.epa.gov/epawaste/hazard/transportation/manifest/forms.htmf .

To identify relevant Federal RCRA hazardous manifest requirements under the current (baseline) system, EPA referred to the most recently OMB-approved Manifest ***Information Collection Request*** **(ICR), #801** dated 22 October 1999, which estimates the national annual burden hours and associated labor costs to waste handlers and to regulators, in carrying out all EPA-required manifesting activities as required under 40 CFR Parts 262, 263, 264, and 265. It is important to note that although this ICR as a reference document provided a quantitative foundation to this economic study, a number of deviations between this study and the reference ICR exist for many burden hour elements. The six-page document provided as **Appendix A** to this report identifies and explains the nature of these annual burden hour differences.

As described in the reference ICR documents identified above in this chapter, the Agency conducted consultations with **nine** State government agencies and with **seven** RCRA hazardous waste handlers to identify State-only manifest requirements and voluntary activities undertaken by industry.[4] In addition, as presented elsewhere in this document, the Agency contacted **three** computer Internet "Value Added Networks" (VANs) companies for obtaining cost information about electronic computer equipment. The selection of subjects in all three survey samples involved the **non-probability** sampling techniques, as summarized in the table below:

Information Collection Survey Sample Design:
Non-Probability Information Collection Techniques Applied in This Economic Analysis

Survey Sample Group	Number Entities in Sample	Type of Sampling Technique	Sampling Technique Description
RCRA hazardous waste handlers	7	Non-probability "purposive" sampling	Ultimately received responses from seven of nine attempted contacts to the largest hazardous waste generators and waste handlers in the US. The sample of generators stratified according to three sub-groups: "large", "medium" and "small" generators, in relation to the RCRA regulatory benchmark definition of "small", being generation of less than 1,000 kilograms (2,205 pounds) of hazardous waste in any calendar month (40 CFR 260.10).

[4] One of the first methodological steps in designing social scientific data collection and quantitative social scientific research studies (such as economic analysis), is to define and select the subjects, instruments, and procedures for data and information collection. Several techniques are available to reduce error in quantitative research studies, including randomization of subjects, holding observational or interview study conditions or factors constant, building conditions or factors into the study design as independent experimental variables, and making statistical adjustments to study results.

"***Probability sampling***" techniques (e.g. random-, stratified-random-, systematic-, and cluster-sampling) are often desirable for selecting subjects from a larger population, to facilitate generalization of study results beyond the immediate group studied, to a larger population (i.e. universe of subjects).

In contrast to probability sampling, "***non-probability sampling***" techniques (e.g. convenience- or availability-, quota-, dimensional-, purposive-, and snowball-sampling) may alternatively be used for social scientific studies, in situations where (a) a study is merely a trial run or preliminary study conducted in support for conducting a larger study at a later date, and (b) complex statistical designs are undesirable in the interest of saving limited study resources and/or for saving time in conducting a study. The obvious disadvantage of a non-probability sampling design is that the investigator generally cannot claim that the study sample is representative of the larger population. As described in the framework chapter of this document, the burden reduction estimates are largely based on a "***non-probability sampling***" designs, which reflects the additional pragmatic constraint that Federal agencies are only allowed to contact and collect information from up to nine entities for the same set of questions in support of any particular research or rulemaking activity – as established by the *Paperwork Reduction Act* of 1995 (http://www.rdc.noaa.gov/) -- without obtaining prior review and approval of the information collection, in a paperwork clearance process involving the Office of Management & Budget. For description of alternative information collection sampling designs, see "*Survey Sampling*", Chapter 5 in Kenneth D. Bailey, Methods of Social Research, The Free Press, New York & London, 1982 (2nd edition).

State government departments responsible for hazardous waste programs	9	Non-probability "purposive" sampling	Targeted selection of state governments according to the top-nine ranking of states according to annual volume of RCRA hazardous waste generated in 1995. Skipped down the ranked list of states for by skipping over states unable to contact proper department and/or personnel upon initial contact attempt, until contact with a total of nine states achieved. The resultant nine states represented about 63 million tons (29%) of the US national total RCRA hazardous wastes generated in 1995.
Electronic computer vendors	3	Non-probability "availability" sampling	Information technology staff associated with EPA contacted three companies known to EPA as electronic computer equipment vendors, for purpose of obtaining initial cost data for this document. Companies identified based on convenience of existing & known contacts.
Total =	**19**		
Note: In addition to these 19 entities, one additional entity (Chemical Waste Transportation Institute) contacted to establish the RCRA hazardous waste transporter company universe, as identified elsewhere in this document.			

These survey sample consultations were conducted in the following years:

- **!** States: 1995, 1996, and 1999
- **!** Generators and TSDFs: 1994, 1995, 1996 and 1999
- **!** Transporters: 1995 and 1996

From the above consultations, EPA identified many State-specific manifest requirements beyond the Federal program. For example, many States require completion of additional data elements on the manifest form. Many States also require waste handlers to submit manifest copies to them. In addition, EPA identified activities that waste handlers undertake voluntarily, e.g., voluntary recordkeeping on manifested shipments (e.g., a log of time and date of shipment).

Finally, EPA referred to the US Department of Transportation's (DOT's) hazardous materials regulations to ascertain the types of shipping activities that hazardous waste handlers are subject to, as relevant to this analysis. (Note that the RCRA requirements for hazardous waste shipments were developed in coordination with existing DOT requirements, and hazardous waste haulers are subject to both RCRA and DOT shipping requirements, as applicable.) From this review, EPA decided to include in this regulatory assessment the DOT requirement for personnel training. That is, EPA determined that DOT-required personnel training should be considered part of the "manifest system" for purposes of this analysis, since persons preparing manifests must receive introductory and recurring training on how to complete them (49 CFR Part 172.704).

Having identified the Federal and State manifest requirements and voluntary industry manifest activities relevant to this regulatory assessment, EPA developed **analytic spreadsheets** that calculate the associated annual baseline costs and hourly burdens to waste handlers and States. The spreadsheets examine the manifest-related activities identified in Table II-1 for EPA, State, and DOT requirements, as applicable. Note that the table shows only the broad types of activities examined. Each activity type consists of a number of more specific procedures or operations that are not shown in the table. For each specific waste handler activity, the Agency estimates the annual number of waste handlers and/or manifests involved and the burden hours and costs to waste handlers to complete that activity. A similar analysis is done for States. It is important to indicate that because of the use of a **non-probability sampling design** in the selection of waste handlers and state governments from which to ask for manifest system burden data and information, **the findings of this study do not have a high-level of statistical validity or confidence**. Consequently, the findings for any particular data element should be interpreted only as rough approximations, and may not be generalizeable to all potentially affected entities or economic sectors.

Table II-1: Manifest-Related Activities Analyzed in this Document			
Waste Handler Activities		**State Government Activities**	
1	Preparing the Manifest	1	Printing Manifests
2	Transmitting the Manifest	2	Distributing Manifests
3	Manifest Recordkeeping	3	Processing Manifests
4	Acquiring New Manifest Forms	4	Manifest Recordkeeping
5	Sending Copies to States	5	Reviewing Reports
6	Reporting to States	6	Training of Employees
7	Training Employees	7	Other (Miscellaneous)

II.2. Framework Applied for Assessing the Potential Administrative Burden Impacts of the Proposed Changes to the RCRA Manifest System

The Agency's analytic spreadsheets of the proposed changes to the manifest system draw from the underlying assumptions of the baseline analysis, as appropriate (e.g., estimates of number of entities involved in the RCRA manifest system, and of the number of RCRA manifests transmitted annually). As such, the spreadsheets of the proposal are consistent with the baseline analysis and include modified or new information to reflect changed activities as needed under the new conditions established by the proposed rule (e.g., new assumptions about manifest form automation and faxing of form copies).

This document assesses burden impacts by first "bundling" components of the proposal that, for analytical purposes, makes sense to analyze in the same spreadsheet. EPA has bundled two of the three main features of the proposal – (a) proposed revisions to the manifest form and (b) proposed manifest system automation (including optional faxing of forms) – for analysis in a single spreadsheet and reporting in this document, since these two proposed features are system-wide (i.e. "global") changes to the RCRA manifest system. This document then examines the remaining major component in a separate spreadsheet and discussion in this document, i.e., special procedures for "problem" loads (i.e. non-empty containers and rejected waste shipments).

"Bundling" of Regulatory Components into Separate Burden Analysis Spreadsheets	
"Bundled" spreadsheet	Two of the three major features of the proposal, concerning changes to the contents of the RCRA manifest form, and the proposed optional electronic automation of the manifest system.
Second spreadsheet	Third remaining major feature of the proposal, which addresses the subject of problem shipments (i.e. non-empty containers and rejected waste shipments).

EPA developed its assumptions and data for these components mostly from informal consultations with a small sample of RCRA hazardous waste handlers and States with RCRA authorized programs. For example, we contacted a small sample of generators, transporters, and TSDFs to ascertain their willingness

to fax or e-mail copies to third parties.[5] We also asked them to estimate the burden and cost savings from preparing the revised RCRA manifest form, preparing and transmitting electronic manifests, and faxing copies. We averaged their feedback and incorporated it into the spreadsheets for estimating burden impacts. Note that there was general uncertainty about their willingness and capability to adopt the electronic automation component. Therefore, we developed a low and high estimate of their adoption rates for the extent of adoption of automation:

Two Alternative Adoption Rates Applied for Purpose of Establishing a Lower- and Upper-Bound Range for the Economic Analysis of Potential Impacts of the Proposed Modifications to the Manifest System

Adoption Rate	Description
Low adoption rate:	Assumes approximately **25 percent** of manifests are automated and 75 percent are hard copies. Of the hard copies, we assume 20 percent are faxed (effective adoption rate of 15%) and 80 percent are sent by conventional methods (e.g., by regular mail or by special overnight delivery).
High adoption rate:	Assumes approximately **50 percent** of manifests are automated and 50 percent are hard copies. Of the hard copies, we assume **20 percent** are faxed (effective adoption rate of 10%) and 80 percent are sent by conventional methods.

It is important to note that EPA's proposes to give States the option of adopting the automation component. Thus, it is possible that some States may not adopt it, or adopt it after some years into the future. This economics analysis, however, simply assumes that all 24 States currently collecting RCRA manifests, would adopt the manifest automation component of the proposal, to enable waste handlers operating in those states, to transmit electronic manifests to the State governments. The total savings calculated in this analysis could therefore be lower if fewer States adopt the automation component, compared to this simple working assumption.

It is also important to indicate that this economic analysis is based on the simplifying case that the annual number of RCRA manifests will remain constant over the future period of this analysis, during which the proposal may take effect (i.e. after its promulgation as a final rule). Because of the fact that the nation-wide number of RCRA manifests is the primary factor which determines national annual burden (and cost) for the manifest system -- under both the current paper-based manifest system as well as under the proposed modifications to the manifest system -- readers may easily generate alternative, approximating burden impact estimates associated with different future annual manifest volume projections, by multiplying the average annual burden findings (hours and costs) reported in this document, by the incremental deviation of such alternative manifest activity projections as a percentage in relation to the average annual static number or manifests referenced in this document.

[5] In 1995, EPA spoke with a **small sample** of **seven** RCRA hazardous waste handlers. EPA found that 86% (i.e. 6 of 7) of these waste handlers have access to the Internet or EDI, and may be interested in automating their RCRA manifest activities. However, because of respondents' uncertainty about this hypothetical system, this economics analysis applies a less-extensive adoption rate assumption, rather than assuming that 86% of all waste handlers will automate. For purposes of this economic analysis, EPA applied two alternative modest assumptions that between roughly 25% ("low rate") to 50% ("high rate") of annual RCRA manifests would eventually become automated under the proposal. Consequently, this is one possible source of beneficial impacts underestimation in this study, if more manifests become automated.

III. ESTIMATE OF NATIONAL PAPERWORK BURDEN UNDER THE CURRENT (BASELINE) RCRA HAZARDOUS WASTE MANIFEST SYSTEM

III.1. Current RCRA Hazardous Waste Handler Universe

As displayed in Table III-1, based on 1997 Biennial Reporting System (BRS) data, there are an estimated **18,290** large quantity generators (LQGs) and **2,024** permitted treatment, storage, and disposal facilities (TSDFs) which are RCRA hazardous waste generators nationwide.[6] Further, review of the RCRA Information System (RCRIS) (April 1999), in conjunction with the BRS, indicates that there are **71,536** small quantity generators (SQGs) subject to the manifest system.

In addition, of the 2,024 TSDFs, EPA estimates that approximately 25 percent (506) are commercial TSDFs and that 75 percent (1,518) are captive TSDFs. For this analysis, a commercial TSDF is defined as a facility whose waste management capacity is available to any generators or facilities for commercial hazardous waste management, or to a limited group of generators or facilities for commercial hazardous waste management. A captive TSDF is defined as a facility that receives hazardous waste from onsite sources only, or from onsite sources and offsite sources that are part of its same company only. EPA believes there are notable differences between commercial and captive TSDFs regarding waste volumes managed and number of manifests completed. Because of this, their respective hourly burdens for many manifesting activities are examined separately.

In early 1999, EPA contacted a sample of nine States to ascertain the total number of manifests prepared in their respective State by the regulated universe.[7] Based on these consultations, it is estimated that the average LQG and SQG completes 66 and 13 manifests per-site per-year, respectively, for both Federally regulated (RCRA) and State-only regulated hazardous wastes. As also displayed in Table III-1, applying these per-site averages, to the national universe of hazardous waste generators, produces estimates of 1,207,140 and 929,968 hazardous waste manifests (RCRA + State-level) completed annually by all LQGs and SQGs, respectively. In addition, we estimate that the average captive TSDF acting as a generator completes 51 manifests annually. This amounts to 77,418 manifests completed annually by all captive TSDFs acting as generators. The average commercial TSDF acting as a generator (i.e., a TSDF that ships waste offsite) completes 432 manifests annually for outbound shipments. This amounts to 218,592 manifests completed annually by all commercial TSDFs acting as generators. In total, EPA estimates that about **2.4 million RCRA manifests** were completed and sent offsite by all generators in 1998. This annual manifest volume is applied in this document as a constant factor for estimating baseline

[6] Most RCRA hazardous waste "TSDFs" may also be classified as "LQGs" because they may generate waste treatment "residual" or "derived-from" hazardous wastes, in volumes which meet or exceed the "LQG" threshold (note that RCRA regulations do not formally define "LQGs", however RCRA program supporting materials and other RCRA background documents define "LQG" as a site which generates 1,000 kilograms (2,205 pounds) or more of hazardous waste in a calendar month). In comparison, RCRA regulations classify sites which generate less than 2,205 pounds of RCRA hazardous waste in a calendar month as SQGs, "small quantity generators",; 40 CFR 260.10). However, because of their differences in the number of outbound hazardous waste shipments and associated RCRA manifesting activities, it is appropriate in this economic analysis pertaining to the RCRA manifest system, to distinguish between sites that only generate hazardous waste (i.e. LQGs and SQGs) and sites that generate and treat, store or dispose of hazardous waste (i.e. captive and commercial TSDFs).

[7] The nine contact sample States' estimates of hazardous waste manifest activity, are based on calendar year 1998.

RCRA manifest system burden, and for estimating the potential change in burden under the proposed modifications to the system.

Table III-1: Summary of RCRA Hazardous Waste Handlers and Number of Annual Manifests

Item	Waste Handler Type	Estimated Facility Universe*	Average Annual No. of Manifests Prepared for Outbound Shipments	Total Annual No. of Manifests Prepared	
1	Large Quantity Generator (LQG)	18,290	66	1,207,140**	50%
2	Small Quantity Generator (SQG)	71,536	13	929,968**	38%
3	Captive TSDF	1,518	51	77,418	3%
4	Commercial TSDF	506	432	218,592	9%
5	Transporter Company	500***	NA	NA	0%
	Totals =	**92,350**	varies	**2,433,118**	100%

Explanatory Notes:
(a) * Source: EPA "Supporting Statement for Information Collection Request (ICR) Nr.801#:Modifications of the Hazardous Waste Manifest System: Proposed Rule", Table 3 (19 July 2000).
(b) ** Note that this cost analysis assumes that a percentage of these manifests are prepared by designated TSDFs for their generator customers, while the remaining forms are prepared by generators themselves or brokers acting as agents for the generators.
(c) *** The EPA's RCRIS data indicate that there are more than 20,000 hazardous waste transporter companies nationwide. The validity of RCRIS data on transporters, however, has been challenged on the basis that it overestimates the actual number of companies. It has been asserted, for example, that EPA does not have a process to revalidate that the transporter companies in the database are still active, or to control against double-counting of companies. To address these concerns, EPA contacted the Chemical Waste Transportation Institute (CWTI) for data on its surveys and studies of the transporter universe. CWTI estimates that there are approximately 500 hazardous waste transportation companies nationwide as of 1998/99 (source: USEPA Office of Solid Waste, "Supporting Statement for Information Collection Request Nr.801: Requirements for Generators, Transporters & Waste Management Facilities Under the RCRA Hazardous Waste Manifest System", 22 Oct 1999, footnote nr.6).
(d) Note that the 2.433 million total annual number of manifests prepared shown in this table, exceeds the estimate of 1.755 million provided in the facilility universe source ICR Nr.801# (Table 3, 19 July 2000), because the source ICR counts only Federal RCRA manifests, whereas this Economics Background Document counts both Federal RCRA and state-level hazardous waste manifests.

Note that EPA estimates that approximately 238 brokers assist their SQG customers in completing the manifest and about 88 brokers assist their LQG customers. For most of this analysis, EPA does not distinguish between generator versus broker costs/burdens, because brokers are seen as a cost input for generators. For certain activities, however, EPA has felt it necessary to distinguish between them (e.g., when examining handlers' burden and cost for buying new manifests). The number of brokers assisting their generator customers is also relevant to the Agency's analysis of the automation component.

The table below identifies 45 economic sectors which would likely be affected by the proposed revisions to the RCRA hazardous waste manifest system. EPA derived this list of economic sectors from data contained in the EPA Office of Solid Waste's 1996 "*National Hazardous Waste Constituent Survey*", for the sector identity of RCRA hazardous waste shippers.[8] Because of the numerous sectors at the four-

[8] EPA OSW's "*National Hazardous Waste Constituent Survey*" (NHWCS) was a one-time, data collection activity administered in 1996 as a mail questionnaire survey, sent to 221 of the largest hazardous waste treatment, storage, recycling and disposal facilities in the US (TSDRFs). As a class of waste handler facilities, this survey sample represented 92% of the total volume of RCRA hazardous waste generated in 1993, as benchmarked to the EPA Office of Solid Waste's 1993 RCRA *Biennial Reporting System* (http://www.epa.gov/epawaste/inforesources/data/biennialreport/index.htm). A total of 156 TSDRFs responded to the voluntary, non-confidential business information (non-CBI) survey, which was primarily designed to collect information about the identity and concentration of chemical constituents in RCRA hazardous wastes, among other descriptive information about this category of wastes, and the facilities which generate and manage the wastes (including generator site facility SIC codes). The findings of the NHWCS are available in a database at EPA's website http://www.epa.gov/epawaste/hazard/wastetypes/wasteid/hwirwste/economic.htm; see item (4) on the website to download the database and additional descriptive information about the NHWCS.

digit SIC level (i.e. at the six-digit NAICS level), the respective two- and three-digit levels are presented in the table below for many sectors.[9]

List of Economic Sectors Which Are Likely Affected by the Proposed Revisions to the RCRA Hazardous Waste Manifest System

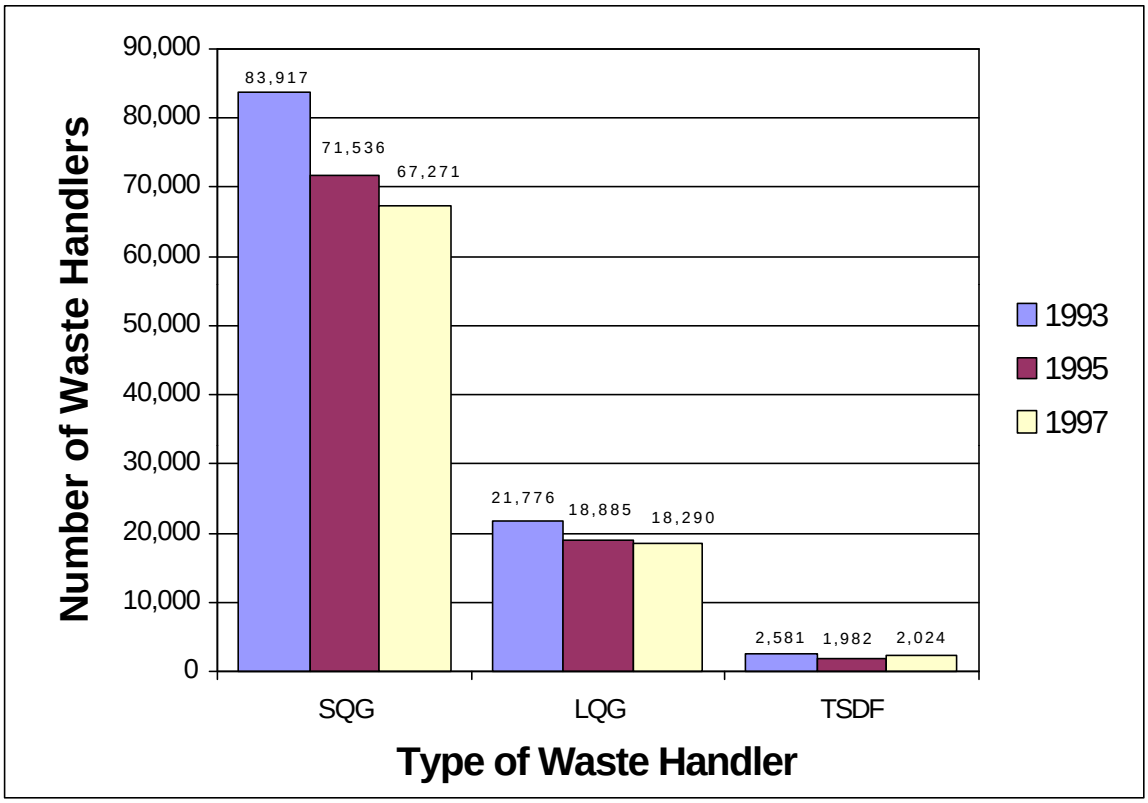
Item	SIC Code	NAICS Code	Sector Description
1	1794	23593	Construction excavation work
2	20	311	Food and kindred products manufacturing
3	2295	31332	Coated fabrics manufacturing
4	24	321	Lumber and wood products manufacturing
5	25	337	Furniture and fixtures manufacturing
6	26	322	Pulp and allied products manufacturing
7	27	511	Printing and publishing
8	28	325	Chemicals and allied products manufacturing
9	29	324	Petroleum and coal products manufacturing
10	30	326	Rubber and miscellaneous plastic products manufacturing
11	32	327	Stone, clay and glass products manufacturing
12	33	331	Primary metal manufacturing industries
13	34	332	Fabricated metal products manufacturing
14	35	333	Industrial machinery and equipment manufacturing
15	36	335	Electronic and other electric equipment manufacturing
16	37	336	Transportation equipment manufacturing
17	38	334	Instruments and related products manufacturing
18	39	339	Miscellaneous manufacturing industries
19	4111	485	Local and suburban passenger transit
20	4173	48849	Terminal and service facilities for vehicle transport
21	42	484	Trucking and warehousing
22	4212	562112	Hazardous waste collection services
23	4491	4883	Marine cargo handling
24	4512	48111	Air transportation
25	4613	48691	Refined petroleum pipelines
26	4789	488999	Transportation services n.e.c.
27	4813	5133	Telephone communications
28	49	2211	Electric, gas and sanitary services
29	4953	562211	Hazardous waste treatment and disposal
30	4959	562910	Hazardous waste remediation services
31	50	421	Wholesale trade (durable goods)
32	51	422	Wholesale trade (nondurable goods)
33	5912	44-45	Drugstores and proprietary retail stores
34	6552	23311	Subdividers and developers
35	7216	81232	Dry cleaning plants
36	73	541	Business services
37	7532	811121	Top, body and upholstery repair and paint shops
38	7699	561	Repair shops and related services n.e.c.
39	8062	62211	General medical and surgical hospitals
40	8221	61131	Colleges and universities
41	87	541	Engineering and management services
42	8999	541	Services n.e.c.
43	95	924-925	Environmental quality and housing administration (state government offices)
44	9661	92711	Space research and technology
45	9711	92811	National security (e.g. military bases)

[9] SIC = *Standard Industrial Classification* code system ; NAICS = *North American Industrial Classification System.*. Maintained by the US Department of Commerce Bureau of the Census, the NAICS replaced the SIC code system in 1997. For additional information about these code systems see the Census website http://www.census.gov/epcd/www/naics.html .

III.2. Annual Trend in Number of RCRA Hazardous Waste Handlers

Although the Agency does not have direct trend data on the number of Federal and State-only manifests prepared for years other than 1998, indirect evidence shows that they may be on a downward trend, based on the waste handler universe and the annual amount of waste shipped offsite. Figure III-1 compares the number of SQGs, LQGs, and TSDFs in 1993, 1995, and 1997. The figure shows that, between 1993 and 1997, the number of SQGs has decreased by 20 percent, LQGs by 16 percent, and TSDFs by 22 percent.

Figure II-1: Number of Waste Handlers in 1993, 1995, and 1997*



* LQG and TSDF estimates are based on BRS (i.e., Form GM) data. SQG estimates are based on an analysis of RCRIS and BRS (i.e., WR Form) data.

In addition, EPA notes that the total amount of hazardous waste shipped offsite by LQGs between 1993 and 1997 has decreased as well, from 11.5 million tons in 1993 to 7.3 million tons in 1997 (37 percent decrease).[10,11] EPA believes that these downward trends result partly because of waste minimization efforts taken by hazardous waste generators.

[10] An estimate of SQG waste shipped offsite is not available.

[11] Note that between 1995 and 1997, the total amount of hazardous waste shipped offsite by LQGs increased by 18 percent.

EPA further believes that the decreasing number of waste handlers and waste volumes shipped offsite may suggest that fewer annual shipments were made and, hence, fewer manifests prepared. If these downward trends continue, EPA expects that the number of manifests prepared in future years also may continue to decrease, along with total industry costs under the manifest system.

III.3. RCRA Hazardous Waste Handler and States Manifest System Burden and Cost Assumptions

This section presents the assumptions and data used in estimating baseline burdens and costs for each of the seven manifest-related activities analyzed. Refer to **Appendix B** for the Agency's analytic spreadsheets of the baseline annual costs and hourly burdens under the manifest system.

Many of the cost and burden estimates for activities analyzed under the baseline and proposal (e.g., keeping records, submitting information to States) are taken from the most recent Manifest ICR, No. 801 (October 1999). In developing the ICR, the Agency conducted consultations with hazardous waste handlers and States to characterize their burdens and costs under the EPA and States' manifest requirements. As a result, many of the manifesting practices and burdens in this analysis are based on feedback from waste handlers. In areas where their feedback is not available, EPA has used its best judgment to make reasonable estimates.

Because today's rule primarily affects the processing of manifests, the primary unit costs used are national average **hourly labor costs**. EPA has referred to the Manifest ICR to obtain labor cost data for waste handlers. To derive the ICR's labor rates, EPA consulted with industry officials regarding their salary structures and overhead rates and obtained figures that are representative of their typical costs, including direct and indirect costs. This analysis uses the following ICR labor rates:

Table III-2: National Average Labor Wage Rates Applied in this Document for Purpose of Estimating the Cost Associated with Paperwork Burden for the RCRA Hazardous Waste Manifest System

Labor Category	Average Hourly Wage	RCRA Manifest System Duties
Technical	$53/hour	E.g., truck drivers and technical staff at generator sites and TSDFs.
Clerical	$27/hour	E.g., employees responsible for keeping records, sending copies to States, and acquiring new forms.
Joint technical/ clerical	$45.20/hour	Activities that may be done by technical or clerical staff separately or jointly. An example is preparing a manifest, which may be done by either a technical or a clerical staff person; it may also be done jointly (e.g., a technical staff person researches shipment information and provides it to a clerical person for manifest preparation).

In addition, this analysis includes operation and maintenance(O&M) costs associated with manifesting, such as postage at $0.36/mailing for regular mail (i.e., $0.03 for envelope and $0.33 for postage), $11/package for overnight service, and $0.10 for photocopying. It also includes capital costs for recordkeeping (e.g., $549 per file cabinet). Note that, throughout this ICR, start-up capital costs are annualized over a three-year period.[12] These O&M costs are consistent with those in the Manifest ICR. Other costs that may be incurred when carrying out specific manifest activities are discussed in the analysis.

[12] Annualized over a three-year period by applying the OMB-prescribed discount rate of 7.0%, for Federal regulatory economics analysis (OMB Circular A-94 "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs", 29 October 1992, http://www.whitehouse.gov/OMB/circulars/a094/a094.html).

EPA has derived costs to the States based on consultations with State representatives. State costs include costs for labor (@ **$31.50/hr**) and, if specified, capital costs.[13]

III.3.A Waste Handler Annual Manifest Burden and Cost Under the Baseline

Preparing the Manifest

Under 40 CFR 262.20, a generator must prepare and transmit a manifest with shipments of hazardous waste to the TSDF. Based on consultations with generators and TSDFs, EPA developed assumptions and estimated the number of manifests prepared by type of waste handlers. For purposes of this analysis, EPA assumes that LQGs and SQGs rely on various means for preparing their manifests (i.e., by brokers, designated TSDFs, or the generator itself). On the other hand, this analysis assumes that all captive and commercial TSDFs prepare their manifests without any third party. Table III-3 summarizes the number of manifests prepared by waste handlers, as included in the Agency's analytic spreadsheets. Refer to **Appendix C** for a further discussion of the Agency's assumptions regarding the preparation of LQG and SQG manifests.

Table III-3: Annual Number of RCRA Hazardous Waste Manifests Prepared by Waste Handler Type*

Type of Waste Handler Preparing the Manifest	Hazardous Waste Generators		Hazardous Waste Treaters, Storers, Disposers		Row Totals	
	LQGs	SQGs	Captive TSDFs	Commercial TSDFs		
Generator	525,106	18,599	77,418	218,592	839,715	35%
Broker	175,035	167,394	NA	NA	342,430	14%
Designated TSDF	506,999	743,974	NA	NA	1,250,973	51%
Totals =	1,207,140	929,968	77,418	218,592	**2,433,118**	100%
Relative percents =	50%	38%	3%	9%	100%	

* Contains rounding.

Additional Assumptions Applied in this Document's Computation of National Burden Under the RCRA Hazardous Waste Manifest System

Element	Description
State-optional data elements on form	**77%** of all manifests currently require some degree of State-optional data elements.
"Initial" manifests for new wastestreams	**5%** of all manifests from generators preparing their forms themselves are for new waste streams or for shipments to a new State. These "initial" manifests take, on average, more than an hour to complete (including Federal and State elements).
"Repeat" manifests for existing wastestreams	The remaining **95%** of manifests are "repeat" manifests. Generators average about 30 minutes to complete these manifests (including Federal and State elements).
Manifest form continuation sheets	**5%** of all repeat manifests include a continuation sheet. Generators take about 15 minutes to complete the continuation sheet, on average (including Federal and State elements).

[13] The State hourly labor rate ($31.50) is based on the average (loaded) government labor hourly rate in the Manifest ICR.

Log of shipments	**50%** of all generators preparing their manifest without the TSDF keep some form of inventory or log of shipments sent offsite (close to five minutes/manifest).
Rejected load re-shipments	Each TSDF fully rejects, on average, **16 shipments** per year. EPA assumes that TSDFs do not prepare a new manifest when re-shipping these loads. Rather, they take approximately 16 minutes to mark up the existing manifest and re-ship the load to the generator or alternate designated TSDF.

Transmitting the Manifest

EPA expects that each generator will take about 30 seconds to sign the manifest and provide it to the initial transporter (2,433,118 manifests in total). The Agency's spreadsheet transporters take about ten minutes to review the form (e.g., for consistency with the waste being picked up), sign it, and provide a copy to the generator, and ensure it accompanies the waste during shipment to the designated TSDF. The spreadsheet also assumes the designated TSDF takes on average ten minutes to review the form, sign it, and provide a copy to the delivering transporter. The designated TSDF then sends a signed copy to the generator by regular mail (about ten minutes/copy). Note that EPA estimates designated TSDFs receive about 2,421,118 manifests from generators; that is, of the 2,433,118 manifests originating from generators, about 12,000 manifests accompany exports outside the U.S. The remaining 2,421,118 manifests arrive at designated TSDFs in the U.S.

EPA also estimates that about nine percent of manifests accompany rail shipments and three percent accompany water shipments. Of these shipments, EPA expects that about 33 percent originate at the generator's site. For these manifests, the generator must obtain the signature of the rail transporter before shipment. EPA believes this is normally accomplished by the generator sending a copy to the rail transporter's central office for signature (by overnight mail). The central office then signs it and sends a signed copy back by overnight mail to the generator (108,395 transmittals in total).

The remaining 66 percent of rail and water shipments are sent by intermodal shipment, whereby the delivering transporter must forward three copies of the manifest to the next non-rail or non-water transporter, or to the designated TSDF (7,226 transmittals in total).

Based on data compiled by EPA's Office of Enforcement and Compliance Assurance, EPA estimates that about 12,000 manifests accompany exports of hazardous waste outside the U.S. As required by 40 CFR 263.20(g), transporters must provide a copy of the manifest at the U.S. Customs official at the border.

Finally, EPA estimates that about 19,500 SQGs ship their waste under a tolling agreement. Transporters transporting such waste must carry a copy of the reclamation agreement in the truck.

Maintaining Manifest Records

All waste handlers preparing or transmitting the manifest must keep a signed copy for at least three years. EPA estimates that each LQG, SQG and captive TSDF will take about six minutes to keep a copy of the manifest provided to the initial transporter and six minutes to keep a copy returned from the designated TSDF (4,866,236 copies in total). EPA further estimates that designated TSDFs and transporters take on average about ten minutes per copy. EPA believes designated TSDFs and transporters take more time because they often receive and process large volumes of manifests (2,433,118 for transporters), and it takes them time to sort them prior to filing. Transporters must also take additional measures to send manifest copies to their central office. EPA estimates that all generators and designated TSDFs will keep copies of their manifests sent and/or received for three years.

Acquiring New Manifest Forms

EPA estimates that waste handlers purchase approximately 2.4 million manifests each year for their hazardous waste shipments. EPA assumes generators or their brokers, as well as captive and

commercial TSDFs and transporters assisting their customers, will obtain these forms. Because many States require the use of a specific form, EPA's spreadsheet assumes waste handlers will need to call a number of States, as needed, to obtain their forms. Each form is estimated to cost $2.50.

Submitting Copies to States

As mentioned, a number of States require generators and designated TSDFs to submit manifest copies to them. Manifest forms may include 4, 6 or 8 parts (i.e., copies). EPA estimates that generators submit 4-, 6-, and 8-part forms at the following frequencies: 23 percent, 25 percent, and 29 percent, respectively.[14] We further estimate that 50 percent are sent by certified mail and the other 50 percent are sent by regular mail by generators. We also assume 4-part forms are photocopied before submittal. Finally, we estimate designated TSDFs in States requiring the submittal of copies send copies in bulk mail to their State monthly.

Submitting Manifest-Related Reports

Based on consultations, the Agency's spreadsheets include the following burden and frequency estimates for preparing manifest-related reports:

- **Exception reports** (0.5 percent of manifests transmitted for LQGs, SQGs, and TSDFs acting as generators; burden is 1.1 hours/report for LQGs and TSDFs acting as generators; 0.5 hour/report for SQGs);
- **Discrepancy reports** (0.4 percent of manifests received by designated TSDF; burden is 2.50 hours/report); and
- **Unmanifested waste reports** (370 unmanifested waste reports at 2 hours/report).

Employee Training

EPA assumes that each waste handler involved in manifest preparation will provide training to its employees in manifest preparation, as required by DOT regulations. 49 CFR 172.704 requires that each hazmat employee must receive an initial training, and a recurrent training at least once every two years. For purposes of this analysis, §172.704 requires each employee involved with manifesting at generator sites, transporter companies, and TSDFs to receive training on manifesting procedures, among other things. (A generator provides manifest training to his employees only if they prepare the manifest without the designated TSDF's assistance (58% of LQGs and 20% of SQGs).)

To quantify waste handlers' burdens and costs for such training, EPA estimated the number of hazmat employees in the typical facility, the average turnover rate, and the average duration and cost of training. These basic estimates are as follows:

Assumptions Applied for Estimating Waste Handler Employee Training Burden and Costs

Element	Assumption
Number of employees per facility receiving training	Each LQG and SQG employs an average of 2.5 and 1.5 employees, respectively, who are responsible for RCRA hazardous waste manifesting, and who receive training; captive and commercial TSDFs — 3.5 and 8 employees, respectively; and transporters — 47 employees (i.e., office personnel and truck drivers).

[14] Based on an analysis of States' manifesting practices and their respective tons of hazardous wastes received/managed at TSDFs.

Training session duration	Initial training takes 8 hours, and recurrent training takes 1 hour for manifest-related topics only.
Annual employee turnover	Each facility has a 20 percent turnover rate every other year. Therefore, 20 percent of employees must receive introductory training and 80 percent must receive the recurrent training every other year.
Training session hourly cost	Training of employees costs $85/hour. This includes a $50/hour consultant or in-house cost to develop/deliver the training and a weighted average hourly labor rate of $40/hour in lost productivity for technical and clerical (i.e., shipping clerks) employees attending the training.
State manifest procedures training	Transporters and commercial TSDFs indicated that, because they are involved in multi-State shipments, they must teach their employees both the Federal and State manifesting requirements. State requirements account for about 18 percent of the total time spent teaching manifesting procedures.

Table III-4 presents the total annual aggregate burden and costs to waste handlers under the current manifest system. As shown, the total annual aggregate burden and cost to all waste handlers under the manifest system is approximately **4.416 million hours** and **$187.042 million**.

Table III-4: National Annual Waste Handler Burden and Cost under Baseline

Type of Waste Handler	Annual Burden Hours	Annual Burden Cost
LQGs	855,250	$35,116,037
SQGs	443,195	$16,269,024
TSDF Captive	80,611	$3,790,658
TSDF Commercial	2,069,773	$87,299,803
Transporters	967,467	$44,566,775
Totals =	**4,416,296**	**$187,042,297**

Figures III-2 and III-3 present these annual totals for each of the seven major manifesting activities analyzed in this regulatory assessment. As shown in the figures, of the seven manifesting activities analyzed, three clearly imposed the greatest burden and cost on waste handlers: manifest preparation, transmittal and recordkeeping. Manifest preparation accounts for approximately 33 percent of total aggregate costs and 31 percent of total aggregate burden. Most of manifest preparation cost and time are accounted for in preparing repeat manifests.

Manifest transmittal accounts for approximately 32 percent of total aggregate costs and 29 percent of total aggregate burden. Most of the transmittal time is spent by transporters (at pickup and delivery) and designated TSDFs (at delivery) reviewing manifests to confirm accuracy of the manifest against the shipment. Relatively little transmittal cost or time is spent by generators, who generally provide signatures and perform special transmittal procedures for rail or water shipments.

Manifest recordkeeping accounts for about 20 percent of the total cost and 30 percent of total hours. (The reason for the discrepancy between total cost and burden percentages (i.e., 20% vs. 30%) is that recordkeeping is a clerical activity, and thus, the average hourly rate averages about $27/hr.) Recordkeeping activity cost and burden are distributed across all waste handler types, with transporters and designated (commercial) TSDFs seeing the greatest per manifest burden (i.e., 10 minutes vs. 6 minutes for all other waste handlers) and total cost and burden. Capital costs for recordkeeping (i.e., file cabinets) represent about one percent of total recordkeeping costs.

Figure II-2: Aggregate Annual Cost of the Seven Major Manifesting Activities Analyzed

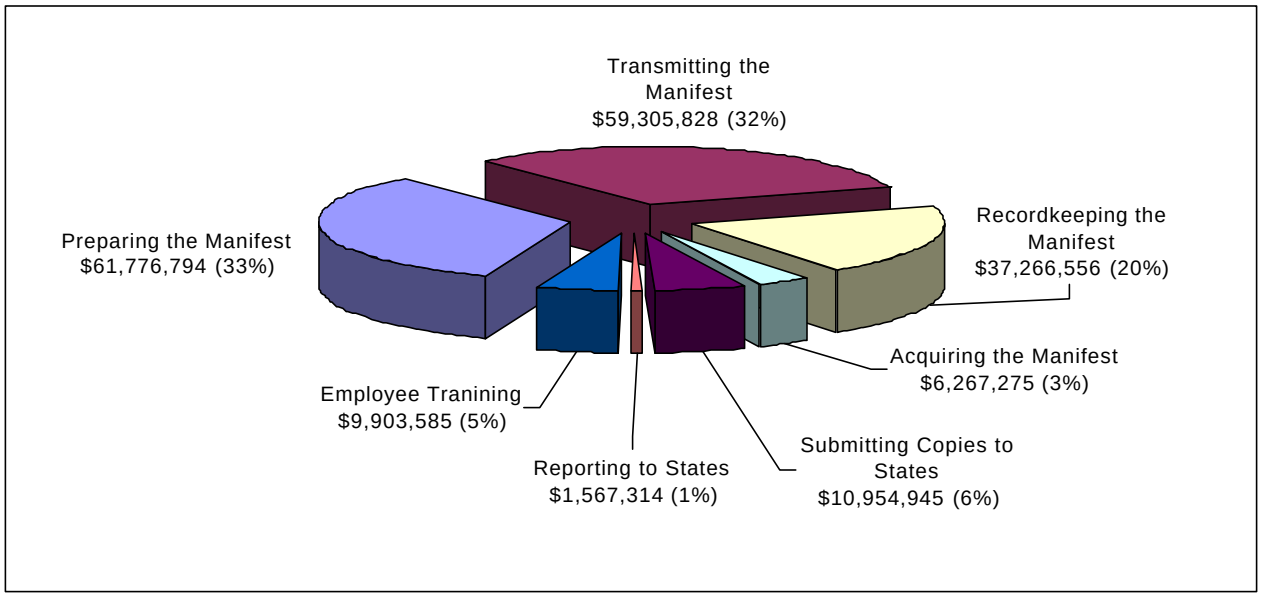
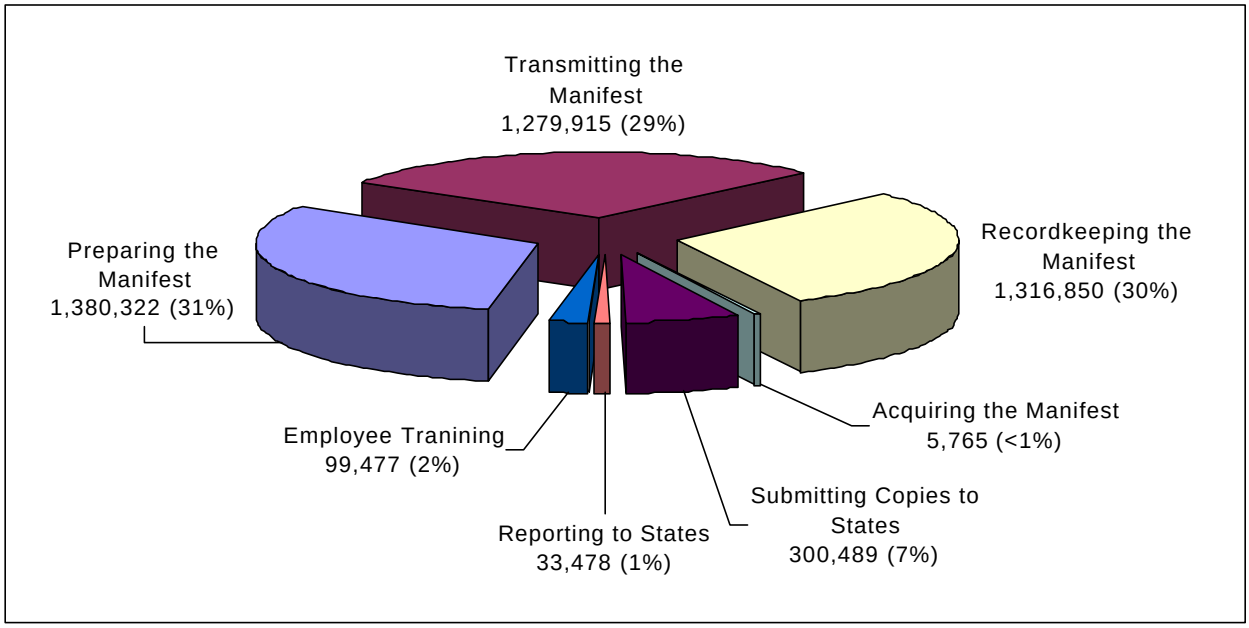


Figure II-3: Aggregate Annual Burden Hours of the Seven Major Manifesting Activities Analyzed



Figures III-4 and III-5 present the total annual aggregate costs and burden for each type of waste handler under the baseline. A brief discussion on each type of waste handler follows:

RCRA Hazardous Waste Handler Manifest System Duties and Burden	
Type of Waste Handler	**Description of Manifest System Duties and Burden**
Commercial TSDFs:	Commercial TSDFs incur approximately 46 percent of the total aggregate cost and 47 percent of the total aggregate burden under the system. There are many reasons for their large share of cost and burden. First, commercial TSDFs often play a dual role in manifest preparation (i.e., in preparing their customers' manifests and manifests for their own outbound shipments) and in the manifest cycle generally (i.e., as a generator and designated facility). In addition, commercial TSDFs bear about 56 percent of total aggregate cost and 63 percent of the total aggregate burden for transmitting the manifest. Commercial TSDFs acting as designated facilities must review the manifest at waste delivery (approx. 10 min/form) and return copies to the generator (approx. 10 min/form). Finally, commercial TSDFs also must keep records as generator and designated facility, submit copies as generator and designated site, and report manifest discrepancies and unmanifested waste. They also must provide manifest training to a relatively large staff.
Transporters:	Transporters bear approximately 24 percent of total aggregate costs and 22 percent of total aggregate burden under the system. EPA believes that transporters are involved in most activities in the manifest cycle. Transporters must revise or redo manifests incorrectly prepared by generators (approx. 44,307 forms/yr). They must also review the manifest at waste pick-up (approx. 10 min/form for 2.4 million forms) and keep copies of all manifests transmitted annually (approx. 10 min/form for 2.4 million forms). Transporters also are involved in other types of transmittal activities (e.g., sending copies from remote locations for centralized recordkeeping). Transporters also acquire forms for their generator customers and provide manifest training to a relatively large staff.
LQGs, SQGs, TSDFs:	LQGs, SQGs, and captive TSDFs incur about 30 percent of the total aggregate cost and 31 percent of the total aggregate burden under the system. Most of their costs are spent preparing manifests. Of the total costs expended by LQGs under the system, approximately 52 percent is spent preparing manifests. Of the total costs expended by SQGs and captive TSDFs, approximately 33 percent and 55 percent are spent preparing manifests, respectively. Repeat manifests account for most of LQG, SQG, and captive TSDF preparation costs. Further, unlike for commercial TSDFs, manifest transmittal is not a major activity for LQGs, SQGs, and captive TSDFs. These handlers need only transmit the manifest to the transporter (e.g., 36 seconds for signature), and conduct certain limited activities for rail and water shipments. Transmittal costs represent about five percent or less of their total manifest-related costs. On the other hand, recordkeeping, submittal of copies to States, and employee training are more costly. Recordkeeping costs account for about 19 percent, 31 percent, and 11 percent of their total costs expended under the system by LQGs, SQGs, and captive TSDFs, respectively (e.g., of the total costs expended by SQGs, SQG recordkeeping represents about 31%). Generator recordkeeping generally involves placing two copies in the files for each manifest prepared (i.e., about 12 minutes per manifest). Submitting copies to States accounts for about 15 percent, 26 percent, and nine percent of the total costs expended under the system by LQGs, SQGs, and captive TSDFs, respectively. The analysis assumes a burden of about ten minutes per form for submittal. Finally, employee training accounts for about seven percent, two percent, and 17 percent of their total costs for LQGs, SQGs, and captive TSDFs. The analysis assumes that these waste handlers provide an introductory training (8 hrs/employee training) and a refresher training (one hour per employee) every other year.

Figure II-4: Aggregate Annual Cost to Waste Handlers under the Baseline

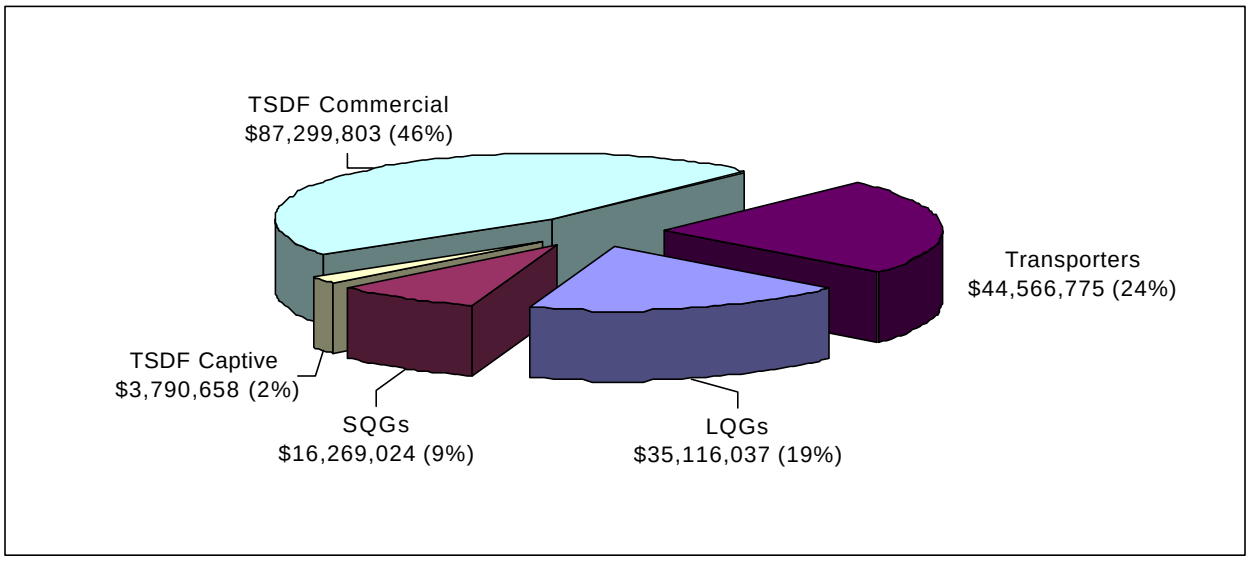
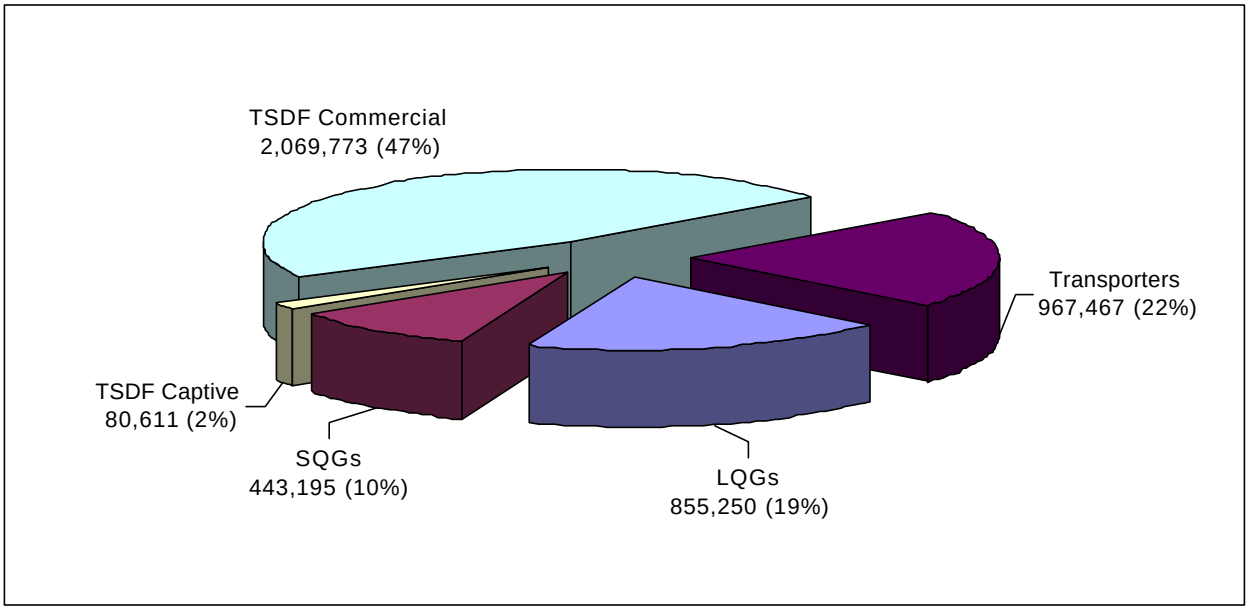


Figure II-5: Aggregate Annual Burden to Waste Handlers under the Baseline



III.3.B. Baseline Annual RCRA Manifest Burden and Cost to States

The current RCRA manifest system only requires the following relatively minimal and/or irregular administrative involvement of state agencies (or by EPA regional offices in States without authorized RCRA programs):

Summary of State Duties for the Current RCRA Hazardous Waste Manifest System	
Type of State Duty	**Description of Duties**
Manifest form acquisition:	States to which hazardous waste generators plan to ship their wastes (i.e. consignment states) must respond to generator requests to supply them with copies of the RCRA manifest form. (However, States are not required to supply forms). The current RCRA manifest system (40 CFR 262.21) directs generators to first contact the consignment state.
State optional blocks:	States must respond to hazardous waste generator and transporter requests for instructions on whether a State has particular terms or conditions for completing the Federal-optional State information blocks (boxes) on the RCRA manifest form.
Unmanifested wastes:	States must receive reports from TSDFs for all unmanifested hazardous wastes.

However, there is a broad range of potential additional levels of administrative involvement of state agencies in the RCRA manifest system.

On the one hand, the RCRA manifest system only imposes administrative burden on each individual private sector entity (i.e. waste handler) within the **waste transportation chain**, originating with the initial hazardous waste generator, and ending with the ultimate TSDF. However, based on consultations with State hazardous waste management personnel, EPA estimates that over 20 States have instituted their own versions of the RCRA manifest form which meet Federal minimum requirements, and that **24 States** collect the RCRA manifest, under the current manifest system. On the other hand, as of 1999 there are a total of **56 states/territories** which could at some time in the future increase the level of state administrative burden for the RCRA manifest system through:

Potential Sources of Future Increase in State Burden for the RCRA Manifest System	
Source	**Description**
RCRA Authority:	Becoming authorized for the RCRA program (which includes the manifest system); as of 1999, 49 states/territories have EPA-suthorized RCRA base program authorization, so an additional seven states/territories (56-49 = 7) could become authorized and engage in RCRA manifest system administrative burden.
RCRA Facilities:	Gaining one or more RCRA hazardous waste facilities in states which currently do not have such facilities (i.e. generators, transporters, and/or TSDFs), and/or
Manifest Activities:	Increasing the type of annual administrative burden associated with the RCRA manifest system, beyond just the single activity of collecting RCRA manifest forms.

Consequently, although the current count of 24 states engaged in manifest collection is the basis for burden estimate in this study, future levels of annual burden associated with the RCRA manifest system, may conceivably increase or decrease, according to the reasons given above.

EPA estimated the average labor-related burden hours and costs associated with the on-going manifest-related activities of these 24 states, and applies this as a constant computation parameter in this

study, for estimating national manifest burden to states.[15] EPA further estimated an average hourly government labor cost of $31.50 for these activities.[16] (Note that State manifesting activities vary widely, and thus, EPA has made a number of simplifying assumptions about the types of activities undertaken). Table III-5 presents the total annual hourly burden and cost to State governments under the RCRA manifest program.

Table III-5: Total Annual Hourly Burden and Cost to Government under the Baseline Manifest System

Activity	Total Annual Burden Hours	Total Annual Cost	Number of States	Average Burden Hour per State	Average Cost per State
Printing Manifests	1,200	$37,800	24	50	$1,575
Distributing Manifests	2,400	$75,600	24	100	$3,150
Processing Manifests	168,000	$5,292,000	24	7,000	$220,500
Recordkeeping Manifests	7,200	$226,800	24	300	$9,450
Reviewing Reports	2,250	$70,875	50	45	$1,418
Training Employees	2,400	$75,600	24	100	$3,150
Other Manifest Activities	15,600	$491,400	24	650	$20,475
Totals =	**199,050**	**$6,270,075**	Varies	Varies	Varies

Summary of Assumptions Applied to State-Level RCRA Manifest System Activities

Activity	Assumption
Printing	EPA estimates that each of the 24 States takes about **50 hours** per year to work with a commercial printer to print out the State's manifest.
Distributing	EPA estimates that each of the 24 States takes about **100 hours** per year to work with a commercial printer to receive orders and distribute the manifest to waste handlers.
Processing	EPA estimates that each of the 24 States takes about **7,000 hours** per year to receive, sort and key punch data from the manifests collected from waste handlers.
Recordkeeping	EPA estimates that each of the 24 States takes about **300 hours** per year to route and keep copies of the manifests collected.
Reviewing Reports	EPA estimates that each of the 50 States (or EPA Region for non-authorized States) takes about **45 hours** per year to review and keep records of exception reports, discrepancy reports, and unmanifested waste reports.
Training Employees	EPA estimates that each of the 24 States takes about **100 hours** to train employees on manifest-related activities (e.g., administrative responsibilities, technical manifest issues).
Other	EPA believes that the States carry out numerous miscellaneous activities under the manifest system, such as providing outreach to waste handlers, pursuing compliance issues, and fielding phone calls about their manifest program. EPA estimates that each State takes about **650 hours** per year to conduct these miscellaneous activities.

In total, EPA estimates that the total annual hourly burden and cost to governments under the baseline manifest system is approximately **199,050 hours** and **$6.270 million**.

[15] EPA has not included any capital costs (e.g., computers, office equipment) in its cost estimates of the baseline manifest system.

[16] The average hourly government labor rate is taken from the most recently approved Manifest ICR, #801.

III.3.C Combined Annual RCRA Manifest Burden and Cost for Waste Handlers and States Under the Baseline

Table III-6 presents the total annual baseline burden and costs to waste handlers and State governments under the manifest system. In total, EPA estimates the average annual, national burden hours and cost to waste handlers and to States, at approximately **4.615 million hours** and **$193.31 million**.

Table III-6: National Annual RCRA Manifest System Baseline Burden Hours and Costs to Waste Handlers and States

	Annual Burden Hours	Annual Burden Cost
Waste Handlers	4,416,000	$187,042,000
State Governments	199,000	$6,270,000
Totals =	**4,615,000**	**$193,312,000**

IV. ESTIMATE OF NATIONAL BURDEN UNDER THE PROPOSED RCRA MANIFEST SYSTEM MODIFICATIONS

This chapter presents the assumptions and data included in the Agency's spreadsheets for estimating national annual RCRA manifest burden under the proposed modifications to the manifest system. As mentioned earlier, EPA examines the proposed rule by first bundling components that, for analytical purposes, it makes sense to analyze in the same spreadsheet. That is, EPA has bundled the revised form, electronic automation, and faxing into one spreadsheet, since these are system-wide ("global") changes to the manifest system. EPA then separately examines the special procedures for "problem" loads component. At the end of this section, EPA combines all of the components' annual costs and hourly burdens to derive the national average annual burden hours and associated burden costs under all of the proposed changes to the manifest system.

IV.1 Overview of Three Manifest Preparation Mechanisms Applied in this Study

Overall, EPA believes that electronic automation would be a very attractive option particularly for large generators, brokers, and TSDFs, given their relatively high annual volumes of manifests prepared and transmitted. Automation would enable them to prepare and transmit their manifests expeditiously (e.g., many manifest software programs have pull-down menus of manifesting data) and keep copies more easily and in a smaller physical area than paper copies (e.g., on computer disks or hard drives). Similarly, faxing would enable some generators to send their manifest copies more quickly than conventional means; it may also be cheaper in certain instances.

For purpose of simplification, the discussion of the proposed modifications to the RCRA manifest system in this section applies to the **high adoption rate** scenario for automation. However, for purposes of comparison, the Agency also presents the total annual burdens and costs under the **low adoption rate** at the end of the section. [These two alternative "adoption rates" are described in a previous chapter.] **Appendices D and E**, respectively, at the end of this report present the Agency's spreadsheets for estimating the administrative burden (hours and costs) under the two adoption rate scenarios.

This cost analysis estimates **annual burden impacts** to waste handlers based on a mix of three **manifest preparation mechanisms**, of how the proposed automated manifest cycle might work:

Three Manifest Preparation Mechanisms Applied for Assessing Potential Impacts of the Proposed RCRA Manifest Automation on Waste Handlers	
Mechanism	**Description**
Mechanism 1:	**Broker-prepared electronic forms**. Under this mechanism, the broker would prepare an automated manifest for their generator customers. The broker would provide the signed manifest to the transporter (hard copy and automated version), who would sign it, provide a copy to the broker, and save a copy in his tracking device in his truck. The broker would send the manifest copy to the State(s), if required, and keep a copy for three years. (Note that the broker would have to enter into an agreement with the generator to become the generator's agent for these purposes. This could be done, for example, when renewing their existing contractual relationship.) The transporter would carry the manifest and waste to the designated TSDF, who would sign it, provide a copy to the transporter for recordkeeping, and send a signed copy via EDI to the broker. He would also send a confirmation of receipt to the generator (e.g., by postal mail). The transporter and designated TSDF must keep copies for three years. Further, EPA estimates that, of the 238 brokers preparing manifests for their SQG customers, 50 percent would automate assuming the high adoption rate (119) and 25 percent would automate in the low case (60). EPA estimates that, of the 88 brokers preparing manifests for their LQG customers, 50 percent would automate assuming the high adoption rate (44) and 25 percent would automate in the low case (22). The remaining brokers in the high or low case would continue to prepare and transmit the paper forms.

Mechanism 2:	**Manifests prepared by designated TSDFs for their customers**. This mechanism represents situations where the designated TSDF prepares the manifest for their generator customers. The designated TSDF would provide the pre-prepared automated form to the transporter, who would then go to the generator's site. The transporter would pick up the waste and sign the form in lieu of the generator or obtain the generator's electronic signature on a portable device. (Note that the transporter or designated TSDF would have to enter into an agreement with the generator to become the generator's agent for these purposes.) The transporter would bring the waste to the designated TSDF, who would sign and keep records of the manifest, provide a copy to the transporter, and send a paper copy to the generator. The transporter and designated TSDF would have to keep copies for three years.
Mechanism 3:	**Manifests prepared by large LQGs**. EPA believes that a subpopulation of LQGs accounts for a disproportionately large share of the manifests prepared and transmitted by the LQG universe. EPA further believes that the automation component would be especially attractive to these large generators, who have to prepare, transmit, and keep records of hundreds or thousands of manifests per year. EPA recently conducted an analysis to determine how many manifests the largest of the LQGs prepare and transmit annually.[17] This analysis indicated that approximately three percent of LQGs account for 50 percent of all LQG manifests, and less than one percent account for 25 percent of all LQG manifests. For purposes of this analysis, EPA is uncertain if all of these largest of LQGs would automate their manifesting activities under the proposal. To address this uncertainty, EPA has increased by several magnitudes its estimate of the number of LQGs that might automate. For the high adoption rate, EPA estimates that approximately ten percent of LQGs (roughly 1,800) would automate. For the low adoption rate, EPA assumes five percent would automate (roughly 900). The remaining LQGs would continue to prepare and transmit the paper manifest.

Finally, in all three mechanisms, EPA assumes the transporter would carry the automated manifest with a hard copy of the manifest or shipping paper to the designated TSDF.[18] For the high adoption rate, EPA has used its best professional judgment to estimate that about 40 percent of transporter companies would automate their systems (200). For the low estimate, EPA estimates that about 100 of the 500 (20%) transporter companies would automate. EPA believes these assumptions may be low because of its belief that the hazardous waste transportation industry is dominated by a relatively small subpopulation of large carriers. If these large carriers automated their systems, they would account for a disproportionately large share of all manifests.

IV.2. Estimate of Annual Burden to Waste Handlers Under the Proposed Modifications to the RCRA Manifest System

In the following sections, EPA examines each of the **manifesting activities** under the proposed option assuming a high automation adoption rate.

IV.2.A. Burden for Revised Manifest Form, Electronic Automation Features & Form Faxing

Preparing the Manifest

Table IV-1 presents the total number of manifests prepared by all waste handlers, as used in the Agency's spreadsheets. It reflects EPA's assumption that half of all broker-prepared manifests would be electronic. It also reflects EPA's assumption that all manifests prepared by designated TSDFs for their generator customers would be prepared electronically (e.g., in the TSDFs' proprietary database system), as is done in the baseline. EPA estimates that half of the designated TSDFs' manifests prepared electronically would be transmitted to generator customers via transporters electronically. The remaining 50 percent would be transmitted in hard copy. Note that EPA does not assume captive or commercial TSDFs use brokers or designated TSDFs for manifest preparation, consistent with the baseline.

[17] Based on EPA's Definition of Solid Waste Database for recyclable shippers. EPA believes this database provides a representative characterization of LQGs in the wider universe.

[18] This analysis assumes transporters would automate their manifesting by upgrading their existing vehicle tracking systems, as needed. EPA acknowledges that other alternatives may be possible (e.g., transmittal from automated broker to designated TSDF by EDI).

Table IV-1: Methods of Manifest Preparation by Waste Handler Type*				
	Waste Generators		Waste Treaters, Storers, Disposers	
	LQGs	SQGs	Captive TSDF	Commercial TSDF
A. Electronically Prepared Manifests:				
Prepared by generator	262,553	0	38,709	109,296
Prepared by broker	87,518	83,697	N/A	N/A
Prepared by designated TSDF**	506,999	743,974	N/A	N/A
Subtotals =	857,069	827,672	38,709	109,296
B. Manually Prepared Manifests:				
Prepared by generator	262,553	18,599	38,709	109,296
Prepared by broker	87,518	83,697	N/A	N/A
Prepared by designated TSDF	0	0	N/A	N/A
Subtotals =	350,071	102,296	38,709	109,296
Column Totals =	**1,207,140**	**929,968**	**77,418**	**218,592**

* Contains rounding
** "High adoption rate" represents 50% of annual RCRA manifests transmitted electronically.
"Low adoption rate" represents 25% transmitted electronically.

Note that EPA's calculations also include the assumptions discussed previously for preparing the manifest, except for the assumption for fully rejected loads. Rather, under the proposal, the designated TSDF must prepare a new manifest for each fully rejected load (16 manifests/TSDF/year). Each manifest would take about 21 minutes to prepare. (See a following section for further discussion of rejected loads.)

Transmitting the Manifest

EPA assumes that all generators will sign their manifests at waste pickup, except for those generators whose manifests are prepared and transmitted by the designated TSDFs electronically. EPA assumes the designated TSDFs would prepare waste management system codes for approximately 77 percent of manifests received from off site. In addition, EPA assumes that the designated TSDF will send by fax (484,224) or regular mail (1,936,894) either the signed manifest copy or a confirmation of receipt to the generator. The remaining manifests would be sent by EDI or other on-line means. Generators and transporters would also send carload shipments by overnight mail, EDI or fax.

Manifest Recordkeeping

EPA estimates that all waste handlers will need to keep copies of the manifest or confirmation of receipt. EPA also assumes that designated TSDFs preparing the electronic manifest for their generator customers would have to keep copies of their customers' manifests if the TSDFs act as their customers' agent. Note, however, that the Agency has not burdened these designated TSDFs for this activity, since these records would be entered into the facility's database when it receives and signs the form provided by the transporter, which is already addressed in this analysis. Finally, EPA estimates that about 50 percent of manifests will be stored electronically, and 50 percent will be stored in hard copy.

Acquiring the Manifest Forms

Under its proposal, the manifest would be universally accessible, e.g., States and TSDFs could be contacted for the form. EPA estimates that 50 percent of commercial TSDFs and 50 percent of brokers would register with EPA to print their own forms (416 commercial TSDFs and brokers). EPA estimates that such registration is a one-time activity, and thus, it has annualized the one-time burden of 30 minutes over 3 years (i.e., 10 minutes per year). EPA further assumes that all remaining waste handlers may obtain their new manifests from any source, e.g., State or TSDF.

Submitting Copies to States

EPA assumes generators would be able to submit their manifest copies by fax, regular mail, or electronically. Note that EPA's proposal would enable the designated TSDF to send the generator's electronic copy to the State. This analysis does not reflect that feature.

Reporting to States

EPA believes generators would continue to report to the States as under the baseline.

Employee Training

EPA believes waste handlers would continue to train their employees as under the baseline, except that EPA expects transporters and commercial TSDFs would see a slight burden reduction for no longer having to train their employees on State-specific manifest requirements.

Automation Subscription and Operating Costs

EPA estimates, under the high adoption rate scenario, that approximately 1,800 LQGs, and 50 percent of LQG brokers (44), 50 percent of commercial TSDFs (253), and 40 percent of transporters (200) would subscribe to a **VAN** (i.e. *value-added network*) for unlimited three-year subscription to **EDI** (i.e. *electronic data interchange*) access, at **$3,000 in one-time cost** ($1143 annualized cost over three years at seven percent interest), given the volume of their manifesting. In addition, each of these handlers would need to buy a signature device at **$100/device** ($40 annualized). This analysis assumes each LQG would purchase on signature device, each commercial TSDF would purchase eight signature devices (i.e., for eight employees at the site), and each transporter company would purchase a signature device for each truck at a cost of $279 per truck ($107 annualized).[19] It is assumed transporter companies would upgrade their existing vehicle tracking systems by adding the signature device. See Table IV-2 for a summary of these waste handlers' costs.

Table IV-2: Summary of Waste Handlers' Start-Up Cost for Automation

Type of Handler	Number of Handlers	EDI Cost per Handler			Row Totals
		EDI Subscription Cost	Signature Devices	Unit cost	
LQGs	1,800	$1,143	$40	$1,183	$2,129,400
Brokers/LQGs	44	$1,143	$40	$1,183	$52,052
Brokers/SQGs	119	$295	$40	$335	$39,865
TSDFs Captive	759	$295	$40	$335	$254,265
TSDFs Commercial	253	$1,143	$320	$1,463	$370,139
Transporter	200	$1,143	$1,819	$2,962	$592,400
Column totals =	**3,175**				**$3,438,121**

EPA also assumes that 50 percent of SQG brokers (119) and 50 percent of captive TSDFs (759) would buy Internet/EDI access at a $295 annual fee. They would also need to buy a signature device ($40 annualized), for a total annualized cost of about $335.[20]

[19] The average number of TSDF employees (eight) is based on EPA's best professional judgement. The average number of hazardous waste trucks per transporter company (17) is based on the *1997 Economic Census, Vehicle Inventory and Use Survey, Geographic Area Series* (October 1999).

[20] Estimates of EDI costs are based on Agency consultations with VANs.

Further, EPA estimates[21] that each of these waste handlers would take about 15 hours per year to comply with the standards being proposed in the rule, including:

- Establishing procedures to validate their systems to ensure proper and reliable operation.
- Maintaining record authenticity, including assignment of unique identifiers to each authorized person, password administration and termination.
- Maintaining logs of log-on attempts and failures.
- Establishing and adhering to written polices that hold individuals accountable and responsible for actions initiated under their signature.

Summary of Total Annual Burden and Cost to Waste Handlers under Revised Form and Electronic Automation (including Fax)

As shown in Table II-9, EPA estimates the total annual burden and cost to waste handlers under the revised manifest form, electronic automation, and fax option to be about **3.253 million hours** and **$151.37 million**, respectively (high adoption rate). As shown in Table IV-3, EPA estimates the total annual burden and cost under the low adoption rate to be about **3.686 million hours** and **$162.82 million**.

Table IV-3: Annual Burden and Costs to Waste Handlers Under the Proposed RCRA Manifest Revised Form, Electronic Automation, and Fax

Waste Handler	Total Burden	Total Cost
A. High Adoption Rate:		
LQGs	591,051	$27,331,818
SQGs	295,176	$11,082,155
TSDF Captive	64,409	$3,461,651
TSDF Commercial	1,515,380	$69,403,486
Transporters	787,065	$40,091,201
Total	**3,253,081**	**$151,370,311**
B. Low Adoption Rate:		
LQGs	692,830	$29,946,376
SQGs	355,872	$13,138,365
TSDF Captive	68,727	$3,472,270
TSDF Commercial	1,695,685	$74,338,238
Transporters	872,514	$41,927,663
Total	**3,685,628**	**$162,822,912**

[21] EPA internally developed this estimate of 15 hours per year for these activities, as a placeholder working assumption, in absence of any other source of information. Assumptions such as this one are subject to modification and improvement, based on public comments received in response to review of this document in conjunction with the proposed rule announcement in the *Federal Register*, and based on possible additional consideration by EPA Office of Solid Waste, in absence of public comments.

IV.2.B. Burden to Waste Handlers for the Proposed RCRA Manifest Special Procedures for "Problem" Waste Shipments

The current Federal manifest system does not include explicit procedures applicable to the manifesting of non-empty containers or rejected loads. In reviewing the manifest system, the EPA Inspector General expressed concern about the absence of explicit procedures for dealing with these shipments. States and waste handlers have also asked for clarification on appropriate procedures.

For this component, EPA would revise the manifest form to include a check box for waste handlers to indicate whether they are originating a non-empty container or rejected load. In addition, under current rules, a waste handler may be required to prepare an entirely new manifest for subsequent shipment, e.g., if he re-ships a partially rejected load to the generator or alternate designated TSDF. If the waste handler must prepare a new manifest to replace one (or more) manifests that had previously accompanied that hazardous waste shipment, the component would require him to reference the previous manifest's document number on the new manifest. EPA expects that these procedures would assist in creating an auditable trail for waste shipments that require additional management by another facility, thereby strengthening the manifest system's ability to track shipments "cradle-to-grave". The two types of shipments affected by this component are described further below.

"Problem" Shipments Affected by the Proposed Modifications to RCRA Manifest System

Shipment Type	Description
Non-Empty Containers (residues):	Under 40 CFR 261.7, EPA provides that a container is considered empty when: (i) all wastes have been removed that can be removed using the practices commonly employed to remove material from the type of container and (ii) the residue in the container is no more than 2.5 centimeters on the bottom of the container, or is no more than 3 percent by weight of the total capacity of the containers, or is no more than 0.3 percent by weight of the total capacity of the tank or car. (This assumes a container larger than 110 gallons in size.) RCRA regulated hazardous wastes are sometimes delivered to TSDFs in a tank car or tank truck. The waste is pumped out of the tanker, but some unpumpable residue, known as "heel," remains in the tanker. This has led to confusion among States and the regulated community regarding how to deal with container residues in these "non-empty" containers.[22]
Rejected Loads:	Rejected loads are shipments of hazardous waste that are either totally or partially rejected by the designated TSDF. Federal regulations have established a clear set of procedures if a designated TSDF does not sign the manifest, e.g., the transporter must contact the generator for further instructions. The manifest may also identify an alternate destination. However, if the TSDF signs the manifest and then rejects the shipment, the regulations are less clear.

Further, EPA believes that many States are currently following an interim policy that requires TSDFs to prepare a new manifest for container residues or shipments that are partially rejected. Thus, under the proposed modifications, TSDFs would generally not see incremental burden for preparing a new manifest for container residues or partially rejected loads. TSDFs would only need to check a box on the manifest form to indicated the partially rejected load or non-empty container. EPA believes they would need to check the box (36 seconds) for about 72,634 manifests accompanying partially rejected loads or non-empty containers (3 percent of manifests received). They must also note the manifest number of the second shipment on the original manifest. EPA estimates that the annual burden and cost for special procedures for problem shipments would be approximately **1,000 hours and $33,000.**

In addition, the interim policy also requires TSDFs to use the original manifest with a continuation sheet to re-route a shipment that is fully rejected. Thus, TSDFs would see some incremental burden for preparing a new manifest for fully rejected shipments. The incremental burden would be the difference

[22] EPA Draft Discussion Paper, "Manifest Regulatory Issues That Require Clarification," March 1991.

between marking up the original manifest (under the baseline) versus preparing a new manifest as described above. EPA estimates that the incremental burden would be about five minutes to complete the Federal portion of the manifest and two minutes to complete the State portion. [Note: A following section estimates the burden to designated TSDFs for preparing new manifests for fully rejected loads.]

IV.2.C. Estimate of Potential Cost Savings to Waste Handlers Under the Proposed Modifications to the RCRA Manifest System

Table IV-4 presents the total annual burden and cost to waste handlers under proposed changes to the manifest system for high adoption rate (50% of manifests automated via EDI/Internet) and compares these impacts to the baseline burdens and costs for the manifest system. Table IV-4 presents total annual burden and cost to waste handlers under the low adoption case (i.e., 25% of manifests automated via EDI/Internet) and compares these impacts to the baseline burdens and costs for the manifest system. The tables show that the estimated:

- National average annual burden hour savings to waste handlers under the proposed manifest changes, range from **729,000 hours to 1.162 million hours**.
- The associated national average annual burden cost savings, range from **$24.186 million to $35.639 million**.

Table IV-4: National Annual Burden Hour and Cost Savings to RCRA Hazardous Waste Handlers Under Proposed Changes to the RCRA Manifest System*

	Annual Burden (hours)			Annual Cost		
	Total Hours	Savings from Baseline	Percent Reduction	Total Cost	Cost Savings from Baseline	Percent Reduction
A. High Adoption Rate:						
Revised Form, Automation, Fax	3,253,000	1,163,000	26%	$151,370,000	$35,672,000	19%
Special Procedures for Problem Wastes	1,000	(1,000)	0%	$33,000	($33,000)	0%
Total	**3,254,000**	**1,162,000**	**26%**	**$151,403,000**	**$35,639,000**	**19%**
B. Low Adoption Rate:						
Revised Form, Automation, Fax	3,686,000	730,000	17%	$162,823,000	$24,219,000	13%
Special Procedures for Problem Wastes	1,000	($1,000)	0%	$33,000	($33,000)	0%
Total	**3,687,000**	**729,000**	**17%**	**$162,856,000**	**$24,186,000**	**13%**

* As compared to baseline (4,416,000 hours and $187,042,000).

The proposed changes to the manifest system would provide significant savings in hourly burden from the baseline (17 to 26 percent savings). There are several reasons for this. First, the revised form would contain fewer data elements for waste handlers to complete, and it would be uniform and universally accessible. This would reduce variability in State-imposed requirements, and facilitate manifest completion. In this regard, even preparers that do not automate their manifesting would see reductions from the baseline in terms of manifest preparation. Second, electronic automation would provide almost global burden savings to automated waste handlers, i.e., most RCRA manifesting activities could potentially be automated. Third, electronic automation provides significant per-manifest burden savings in a number of "big-ticket" activities (e.g, manifest preparation, transmittal).

Despite these labor savings, the proposed changes provide less savings in cost (13 to 19 percent savings). This analysis assumes that automated handlers have personal computers readily available for

automation, but that all automated handlers would need to buy an Internet/EDI subscription and signature device ($335 to $2,962 in annualized costs). These subscription costs are purely incremental to the baseline. The following paragraphs discuss specific sources and reasons for changes in burden and cost under the proposed modifications, relative to the baseline burden.

Sources of Annual Burden Reduction (Hours and Costs) Under the Proposed Modifications to the RCRA Manifest System

Activity	Reason for Burden Reduction
Manifest preparation:	Because the manifest form would be made uniform, traditional and automated preparers would see a reduction in preparing the State portion of initial and repeat manifests and continuation sheets. Traditional preparers preparing repeat manifests, for example, would see their preparation burden for the State portion decrease by about 50 percent from the baseline. In addition to savings because of reduced State data elements, automated preparers would see additional reductions because of automation itself. The Agency believes that automated preparers would be able to save and retrieve waste information from electronic storage, thereby reducing preparation time for repeat manifests. Note that EPA assumes that preparing initial manifests would not be greatly affected by automation. EPA also does not expect that commercial TSDFs would generally see significant reductions in burden for preparing electronic forms because many commercial TSDFs have already automated phases of their preparation activities. Note that designated TSDFs would see a slight increase in burden for preparing a new manifest for shipments that are fully rejected. (Under the baseline, EPA assumes designated TSDFs do not prepare new manifests for these shipments. Rather, they mark up the existing manifest and re-send.)
Manifest transmittal:	Automated waste handlers would see some savings in transmittal costs and burden over the baseline. Faxing and EDI would provide a five minute or greater savings over use of regular postal mail. The analysis assumes that large waste handlers (e.g., commercial TSDFs and transporters) would buy EDI access with unrestricted use and could therefore transmit forms to third parties without a transaction fee.
Record-keeping:	Automated waste handlers would see a reduction in recordkeeping burden and cost of over five minutes per copy for each of the electronic forms shipped annually (about 36 seconds/form versus 6 minutes/form). They would also a see an additional cost savings for keeping copies on disk ($0.37/disk) instead of in file cabinets ($549/cabinet).
Acquiring the manifest:	EPA does not expect waste handlers to see any significant cost savings from the baseline for acquiring forms. This analysis assumes that States and/or other commercial printers would continue to charge manifest users for new forms. These costs are expected to far outweigh any cost savings from the streamlined/universal acquisition procedures.
Submitting copies to States:	Automated waste handlers would see a reduction in sending copies to States of about five minutes/form for faxing or EDI. Note that the cost analysis may underestimate savings for this activity, since it does not account for the fact that waste handlers could transmit multiple copies to different parties simultaneously using EDI.
Reporting to States:	EPA does not expect to see significant impacts to this activity from automation. Waste handlers are expected to continue to send reports to the State via postal mail.
Training Employees:	Transporter companies and commercial TSDFs providing introductory training to employees would be able to reduce the time spent on State-specific requirements (i.e., by 16% to 17%).

As mentioned earlier, EPA's analytical spreadsheets "bundle" certain global changes to the manifest system in order to estimate costs and hourly burdens to waste handlers, i.e., revised form, automation and fax. As a result, the spreadsheets provide a single bottom-line estimate of the total annual cost and hourly burden to waste handlers for the high and low scenario. We then add to these bottom-line estimates the costs and hourly burdens of the procedures for problem shipments. These calculations provide the total, aggregate (i.e. national) annual costs and hourly burdens to waste handlers under the proposed regulatory changes. Ultimately, we compare these estimates to the baseline costs and hours to derive an estimate of the national annual savings in costs and hourly burden.

In this section, EPA presents the respective annual hourly burden and cost savings to waste handlers for each component in isolation (i.e., exclusive of synergistic effects of the other components). The components include:

- The revised RCRA manifest form (inclusive of procedures for both non-empty containers (i.e. container residues), and for rejected loads)

- Manifest system electronic automation (including manifest form faxing).

As shown in Table IV-5, under the high adoption rate, EPA estimates the total annual burden and cost savings to waste handlers to be about 1,162,000 hours and $35,639,000. As shown in Table III-5, under the low adoption rate, EPA estimates the total annual burden and cost savings to waste handlers to be about 729,000 hours and $24,186,000. In both tables, the automation component provides the greatest contribution to total annual savings under the proposed changes (ranging from 59 to 75 percent of total cost savings). The revised form provides the next greatest contribution to overall savings (ranging from 22 to 33 percent of total cost savings). The fax component provides a contribution to total annual cost savings ranging from three to eight percent.

Table IV-5: Component-by-Component Annual Savings Analysis to Waste Handlers*

Component	Burden Savings	Percent of Total Savings (Burden)	Cost Savings	Percent of Total Savings (Cost)
A. High Adoption Rate:				
Savings Revised Form**	188,000	16%	$7,914,000	22%
Savings from Automation	938,000	81%	$26,613,000	75%
Savings from Fax	36,000	3%	$1,112,000	3%
Total Savings =	**1,162,000**	100%	**$35,639,000**	100%
B. Low Adoption Rate:				
Savings Revised Form**	188,000	26%	$7,914,000	33%
Savings from Automation	488,000	67%	$14,396,000	59%
Savings from Fax	53,000	7%	$1,876,000	8%
Total Savings =	**729,000**	100%	**$24,186,000**	100%

* Contains rounding error. ** Inclusive of procedures for rejected loads.

IV.3. Estimate of Annual Burden and Potential Cost Savings to States under Proposed RCRA Manifest System Changes

EPA expects that States would see a decrease in annual administrative burden for most of their RCRA manifest-related activities under the proposal, for the following reasons:

Sources of Annual Burden and Cost Reduction to States Under the Proposed Modifications to the RCRA Manifest System

Activity	Reason for Burden (Hours and Costs) Reduction
Printing & distribution:	Specifically, under the high adoption rate scenario, EPA expects States' annual burden to decrease by about 50 percent for their RCRA manifest **printing and distribution** related activities (and by 25% under the low adoption rate scenario; see Table IV-6.) Under the proposal, EPA expects that much of their current responsibility for printing and distributing the forms would be shifted onto commercial vendors and TSDFs, who would be able to print and distribute forms directly to customers.

Record-keeping:	In addition, EPA expects that States' administrative burden for **form processing and recordkeeping** would also decrease by about 50 percent (25% under the low adoption rate scenario), since automated forms would relieve States of the need to keypunch manifest data into computers. Electronic-automated manifests also could be routed electronically to databases for storage, thereby saving administrative time for the States.
Training:	On the other hand, EPA expects that States' hourly burden and costs would increase approximately two-fold for **training employees** and about 1.5-fold for providing outreach support to waste handlers. Specifically, States will need to train employees on receiving and processing automated RCRA manifest forms. They also will likely receive numerous calls from waste handlers on how to complete the revised form and/or automate their manifesting.
Initial start-up:	Finally, EPA expects that each State would incur approximately $100,000 in **initial start-up costs** to automate their own systems ($38,000 in annualized costs). These costs include, for example, EDI subscription costs and contractor-related costs for establishing a web page dedicated to the automated manifest program and re-configuring their existing systems as needed.[23] This analysis assumes government contractors would develop the States' automation system; and thus States would incur insignificant hourly burden for system integration.

As shown in Table IV-6, EPA estimates that State governments would incur an annual burden of about 120,000 hours, and an annual cost of about $4.7 million under the proposed changes to the RCRA manifest system. (Note: This analysis assumes that all 24 States currently collecting manifests would adopt the automation component. If fewer States adopt it, the costs shown in Table IV-6 would decrease.)

Table IV-6: National Average Annual Hourly Burden and Cost to States under Proposed Manifest Changes: High Adoption Rate Scenario

Activity	Total Burden	Total Cost	Number of States	Average Burden per State	Average Cost per State
Printing Manifests	600	$18,900	24	25	$788
Distributing Manifests	1,200	$37,800	24	50	$1,575
Processing Manifests	84,000	$2,646,000	24	3,500	$110,250
Recordkeeping Manifests	3,600	$113,400	24	150	$4,725
Reviewing Reports	2,250	$70,875	50	45	$1,418
Training Employees	4,800	$151,200	24	200	$6,300
Other	23,400	$737,100	24	975	$30,713
Capital/System Integration	0	$912,000	24	0	$38,000
Totals =	**119,850**	**$4,687,275**	Varies	Varies	Varies

Table IV-7 presents the total annual burden and cost savings to States under the proposed rule for the high and low adoptions rate scenarios, respectively. This table shows that the annual administrative burden savings to the States would range from **36,000 and 79,000 hours**, and the total annual cost savings would range from about **$213,000 to $1.58 million**.

[23] EPA has conducted several studies to estimate State costs in establishing EDI programs. EPA's estimates range up to about $600,000 in start-up costs. However, EPA notes that these studies assume the States would implement an Agency-wide program, rather than a program dedicated to the manifest. Therefore, EPA believes that these cost studies may not be appropriate for estimating the costs that State manifest programs may incur. EPA has used readily available information (e.g., consultations with VANs) to derive the $100,000 estimate.

Table IV-7: National Average Annual Burden and Costs to States under Proposed Changes to Manifest System*					
States' Annual Burden (hours)			State's Annual Cost		
National Hours	Savings from Baseline	Percent Reduction	National Cost	Savings from Baseline	Percent Reduction
A. High Adoption Rate:					
120,000	79,000	40%	$4,687,000	$1,583,000	25%
B. Low Adoption Rate:					
163,000	36,000	18%	$6,058,000	$213,000	3%

* As compared to baseline (199,000 hours and $6,270,000).

Table IV-8 presents the respective annual hourly burden and cost savings to States for each component of the proposal: (i) revised form (inclusive of procedures for problem shipments), (ii) automation, and (iii) fax. As shown in Table II-14, under the high adoption rate, EPA estimates the total annual burden and cost savings to States to be **79,200 hours** and **$1.583 million**. As shown in Table IV-8, under the low adoption rate, EPA estimates the total annual burden and cost savings to States to be about **35,700 hours** and **$213,000**. EPA notes that automation accounts for the greatest contribution to savings. EPA expects that States that automate their manifesting activities would need much less time to key punch and keep records of their manifests. However, they would incur significant capital start-up costs and need to train employees on how to use the automated system.

Table IV-8: Component-by-Component Annual Savings to States*				
Component of Proposed Manifest System Modifications	States' Burden Savings	Percent of Total Savings (Burden)	States' Cost Savings	Percent of Total Savings (Cost)
A. High Adoption Rate:				
Savings from Revised Form**	1,800	2%	$56,700	4%
Savings from Automation	77,400	98%	$1,526,100	96%
Savings from Fax	0	0%	$0	0%
Totals =	**79,200**	100%	**$1,582,800**	100%
B. Low Adoption Rate:				
Savings from Revised Form**	900	3%	$28,350	13%
Savings from Automation	34,800	97%	$184,200	87%
Savings from Fax	0	0%	$0	0%
Totals =	**35,700**	100%	**$212,550**	100%

* Contains rounding error. ** Inclusive of procedures for problem shipments.

V. ESTIMATED NET REDUCTION IN NATIONAL BURDEN FOR THE PROPOSED MANIFEST SYSTEM MODIFICATIONS

V.1 Combined National Burden Effects of the RCRA Manifest System Proposed Modifications

Table V-1 compares the total annual burden and costs to hazardous waste handlers and to the States, collectively, under the baseline RCRA manifest system and under the proposed changes to the manifest system, for both the high and low adoption rate scenarios, respectively. The table shows that the national annual burden savings under the proposed changes are estimated to range from **0.765 to 1.241 million burden hours**, and the total annual burden cost savings are estimated to range from **$24 million to $37 million**.

It is important to indicate that these **estimation ranges** in burden reduction reflect **pre-proposal uncertainty** by both the Agency and the RCRA regulated community, as to the ultimate number of hazardous waste generators and State governments, which would adopt the optional electronic manifest automation feature of the proposed rule.

It is also important to indicate for proper interpretation, that these estimation ranges are not based on a statistical probability sampling and data collection design, but are based on **preliminary working assumptions**, largely derived from **non-probability sampling** of waste handlers and state governments, for obtaining manifest burden and manifest automation adoption information. (The sampling design and its limitations are described in the economic analysis framework chapter of this document). Consequently, there is not a high degree of statistical confidence in these burden reduction estimation ranges.

Furthermore, because the proposal allows for a two-year **phase-in period** of the optional (voluntary) electronic manifest automation feature, achieving the full value of these burden reduction estimation ranges is expected to occur a number of years out into the future, after promulgation of the proposal as a final rulemaking.

For example, there is usually a number of months which transpire between Federal agency proposed rule announcements and promulgation of final rules, because of (a) provision of public review and comment periods (i.e. right to notice, right to hearing, right to due process, and right to independent judicial review), according to the Federal agency rule-making requirements established by the *Administrative Procedures Act* of 1946 (5 USC 553), and
(b) Agency final revisions, OMB final review, and *Federal Register* announcement of the final rule. Consequently, by allowing for the required APA review period after proposal announcement, Agency finalization and promulgation of the rule, and closure of the (proposed) two-year phase-in period after final rule promulgation, the minimum number of years out into the future after which full national burden reduction may be achieved, is at least four-years after *Federal Register* announcement of the proposal.

Table V-1: Comparison of Waste Handler and State Costs and Burdens under Baseline and Proposed Manifest Changes*

	Annual Burden (hours)				Annual Cost			
	Baseline Burden	Modified System Burden	Burden Savings	Percent Reduction	Baseline Cost	Modified System Cost	Cost Savings	Percent Reduction
A. High Adoption Rate:								
Waste Handlers	4,416,000	3,254,000	1,162,000	26%	$187,042,000	$151,403,000	$35,639,000	19%
States Gov'ts	199,000	120,000	79,000	40%	$6,270,000	$4,687,000	1,583,000	25%
Totals =	4,615,000	3,374,000	**1,241,000**	27%	$193,312,000	$156,090,000	**$37,222,000**	19%
B. Low Adoption Rate:								
Waste Handlers	4,416,000	3,687,000	729,000	17%	$187,042,000	$162,856,000	$24,186,000	13%
State Gov'ts	199,000	163,000	36,000	18%	$6,270,000	6,058,000	213,000	3%
Totals =	4,615,000	3,850,000	**765,000**	17%	$193,312,000	$168,914,000	**$24,399,000**	13%

V.2 Limitations of This Analysis

Key limitations of this analysis include the following:

- Because of the complexity and wide variety of existing and anticipated manifesting practices across the country, EPA has made several working assumptions in this analysis. For example, in analyzing electronic automation, EPA assumed that designated TSDFs would send electronic manifest copies to generators and States in separate transmissions. However, it is likely that many, if not most, designated TSDFs would configure their systems so that electronic copies are sent simultaneously to the generator and to the State. In this case, the Agency's cost analysis underestimates the actual savings to designated TSDFs under the proposal.

- Because the proposal has not been implemented on a national level, EPA had some difficulty obtaining feedback from waste handlers on their potential manifest burden under certain aspects of the proposal. For example, EPA was unable to get feedback on the burden to waste handlers for developing systems and procedures to prevent unauthorized access to electronic manifests in storage. In these cases, EPA used its best professional judgment to estimate these costs.

- This study assumes that all transporters automating their manifesting would upgrade their existing vehicle tracking systems in order to receive and carry the electronic manifest during transport (i.e., by installing a signature device in the truck). This assumption is based on EPA's belief that the largest of the transportation companies would automate soonest and that these companies would most likely have vehicle tracking systems. However, EPA notes that a number of transporter companies may not be able to upgrade their existing systems as described in this analysis. These transporter companies would have the option of carrying the electronic manifest on computer disc, incurring costs similar to, or less than, those who upgrade their tracking systems with a signature device.

- The Agency's proposed action would give States the option of adopting the automation component. This study assumes that all 24 States currently collecting forms from industry would adopt it. If fewer States adopt it, the estimated burden savings in this study would be lower.

- This study does not address a number of possible automation scenarios. This study assumes that all automated manifests would be carried by transporters from the generators to the designated TSDFs. However, some generators may choose to e-mail manifests to TSDFs rather than providing an electronic copy to the transporter.

- Under the proposed rule, EPA would require States and others to register with EPA before printing and distributing the revised form. Although the cost of registration to waste handlers is included in the burden data applied in this study (as derived from the EPA reference document ICR Nr. 801.#, 19 July 2000), the cost for States to register is not included in this analysis (State registration costs have not been included, because EPA simplistically assumes in this document, that the 24 states which currently collect hazardous waste manifest data, would adopt the electronic automation option; this subset of states has authorized RCRA programs, and adoption of the proposed manifest system modifications is assumed to be accomplished by states in their annually-required RCRA program revision submissions to EPA (as required under 40 CFR 271.21(e)). However, an alternative estimate of state registration burden may be derived by applying the waste handler burden per facility in this document, to the 24 states which currently collect RCRA manifest data:
  (0.17 hours/state) x ($42.50/hour) x (24 states) = $174.

- This study assumes all waste handlers that automate their manifest activities (e.g., brokers and TSDFs) have the requisite computer equipment (e.g., PC and modem) that can be upgraded and used to automate their manifesting. EPA notes, however, that certain companies may need to purchase such required equipment, and such possible costs are not included in this study, which would reduce this study's estimate of annual cost savings.

- Finally, it is extremely important to emphasize, that because of the use of a **non-probability sampling design** in the selection of a sample of waste handlers and state governments from which to ask for manifest system burden data and information, **the findings of this study do not have a high-level of statistical validity or confidence**. Consequently, the findings for any particular data element should be interpreted only as rough approximations, and may not be generalizeable to all potentially affected entities or economic sectors.

VI. ENVIRONMENTAL QUALITY IMPLICATIONS

This chapter presents an analysis of environmental quality implications of manifest reform. In general, EPA expects the proposed modifications to increase the protectiveness of the manifest system. This section of the report assesses the environmental quality implications of **four modifications** involving the **manifest form** and automation of the **manifest cycle**.

This section addresses four manifest system modifications affecting paperwork, communications, and recordkeeping requirements. These reforms would have little or no impact on hazardous waste generation or handling. The four modifications and their potential environmental quality implications are described below:

- **Revised Manifest Form --** EPA is proposing to eliminate unnecessary datafields from the RCRA manifest form, and adopting a universal form for use in all States. The revised manifest form would still serve as a "cradle-to-grave" tracking device. It would also retain emergency response and waste description information, as well as other essential elements for reporting and recordkeeping purposes. In addition, the revised form would contain a mandatory, unique manifest tracking number. The existing form only contains a tracking number if required by the State. By improving manifest tracking, the mandatory tracking number would improve the protectiveness of the manifest system.

- **Electronic Automation --** Electronic automation, such as electronic transmittal of manifest forms, would improve the efficiency of the RCRA manifest cycle and enhance tracking and enforcement. Electronic preparation and transmittal, which EPA estimates would be used for approximately 50 percent of shipments, would be more convenient than preparation of paper manifest forms and transmittal by regular mail, potentially increasing transmittal compliance rates (e.g., submittal of copies to States). In addition, electronic manifest data would generally be more legible and reliable than hand-written forms. Electronic automation would be at least as protective as the current paper system.

- **Use of Fax --** Under the proposed rule, EPA would allow hazardous waste generators and treatment, storage, and disposal facilities (TSDFs) to transmit manifest forms by fax. This voluntary reform probably would be used only by a relatively small number of generators or TSDFs in special situations. Faxing would expedite the manifest cycle, which would enable closer real-time tracking and increase responsiveness of investigations and enforcement. The convenience of faxing is expected to increase compliance.

- **Procedures for Rejected Loads and Container Residues --** This reform is intended to clarify appropriate procedures for manifesting “problem” shipments. At present, confusion exists over whether a manifest needs to be prepared for these problem shipments and, as a result, some waste handlers may not be manifesting their problem loads. The reform would clearly specify that all problem loads need to be manifested and would add check boxes and manifest field space to the manifest form to improve identification and tracking of problem loads. This reform could improve compliance. Where increased compliance leads to reduced exposure and unacceptable risks, the proposal could have a positive impact human health and the environment.

VII. ENVIRONMENTAL JUSTICE ANALYSIS

This final chapter addresses and presents the analysis and findings associated with the environmental justice regulatory analysis. White House Executive Order 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*" (11 February 1994), directs Federal Agencies to:

> "*make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations....*"

A requirement of the Executive Order is that all regulatory initiatives should be accompanied by an environmental justice analysis, which examines potential disproportionately high adverse impacts on minority and low-income communities.

Environmental justice is an integral part of all EPA solid and hazardous waste rulemakings. In a policy directive of September 21, 1994, OSWER staff were instructed to consider environmental justice at all stages of policy, guidance, and regulatory development.[24] Early in the process, the proposed actions should be evaluated to identify potential environmental justice issues. Where potential environmental justice concerns are found, further analysis should be pursued as needed. For example, it may be necessary to analyze how the proposed action would affect ecosystems, human health (taking into account subsistence patterns and sensitive populations), and socioeconomic impacts in minority and low-income communities. In addition, the directive encourages input from stakeholders and the development and evaluation of various options.

EPA has evaluated the proposal's components to determine whether they would result in a disproportionate and adverse impact on minority populations and low-income populations. The Agency believes that determining whether environmental justice concerns exist can be accomplished based on two **evaluative criteria**:

- Are there any adverse impacts from the proposed action, and if so,
- would the adverse impacts on minority populations and low-income populations be disproportionately high?

An action would be an environmental justice concern if both criteria were met. However, if there were no adverse impacts or, if the adverse impacts on minority and low-income populations were not disproportionately high, the proposed action would not be an environmental justice concern.[25] For each component, Exhibit VII-1 summarizes whether the Agency believes there would be an adverse impact, and if so, whether there would be a disproportionately high and adverse impact on minority populations and low-income populations.

[24] OSWER Directive No. 9200.3.17. "Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development," Elliot P. Laws, Assistant Administrator, Office of Solid Waste and Emergency Response, September 21, 1994.

[25] This interpretation is consistent with numerous Federal guidances. See, for example, "Environmental Justice Guidance Under the National Environmental Policy Act," Council on Environmental Quality, Executive Office of the President, (pp. 20-21). See also Department of Transportation definition of "disproportionate" at 62 Federal Register 18377, April 15, 1997.

Exhibit VII-1: Screening Analysis of Impacts on Minority Populations and Low-Income Populations

Reform Component	Is There Adverse Impact?	Is There Disproportionately High and Adverse Impact on Protected Populations?
1. Revised Manifest Form	No. The revised form would still serve as a "cradle-to-grave" tracking device. It would also retain emergency response and waste description information, as well as other essential elements for reporting and recordkeeping purposes.	NA: No adverse impact
2. Electronic Automation	No. Electronic automation would potentially improve the efficiency of manifest cycle and enhance tracking/enforcement. For certain handlers, electronic transmittal may be more convenient than using regular mail, potentially increasing transmittal compliance rates (e.g., submittal of copies to States). Electronic transmittal would also enable closer real-time tracking and improve data quality for recipients. Finally, transporter would still be required to carry a paper copy during shipment (e.g., for emergency response).	NA: No adverse impact
3. Use of Fax	No. EPA expects faxing to enhance the ability of States and others to track manifests. For certain handlers, faxing may be more convenient than using regular mail, potentially increasing transmittal compliance rates, e.g., waste handlers would be more likely to send copies to States. This would assist States and others in tracking/enforcement. Faxing could also expedite the manifest cycle, e.g., faxing may reduce the time for a designated TSDF to return a copy to the generator. This would enable closer real-time tracking and increase responsiveness of investigations and enforcement.	NA: No adverse impact
4.Special Procedures for Problem Loads	No. The procedures are designed to improve tracking of "problem" shipments. Therefore, there would be no adverse effects on human health or environment.	NA: No adverse impact

APPENDIX A:

COMPARISON OF THE BURDEN HOUR ELEMENTS AND METHODOLOGY OF THIS ECONOMIC ANALYSIS REPORT, WITH THE "INFORMATION COLLECTION REQUEST" (ICR Nr.801, 22 OCTOBER 1999) FOR THE RCRA MANIFEST SYSTEM

Administrative Burden Estimates Presented in this Study,
Compared to the Burden Estimates Contained in the ICR for this Proposal

This Appendix identifies a number of differences (i.e. apparent discrepancies or inconsistencies), between the approved RCRA Hazardous Manifest "Information Collection Request" (ICR) Nr.801 (October 1999), and this Economics Background Document (EBD), for the proposed RCRA manifest rulemaking. The particular ICR used as a data source in this economic analysis, provides estimates of the national annual burden hours (and associated labor costs) for the "baseline" RCRA manifest system. This Appendix describes these differences and identifies a potential approach for reconciling them.

In general, an ICR is a more simplified analysis than an EBD, and often takes a "one size fits all" approach to analyzing the burden of a particular Federal paperwork requirement. EBDs, on the other hand, go into greater detail on specific activities to flesh out nuances in regulatory burden, costs, and other economic impacts (e.g., efficiencies, economies of scale) associated with Federal, State and local requirements, as well as voluntary industry activities. In particular, the EBD for the manifest proposal was meant to examine "real world" burden.

For example, the baseline ICR assumes generators providing waste to a rail transporter would forward three copies of the manifest to the next non-rail transporter by postal mail (about 10 minutes in labor burden/copy, plus 0.36/copy in postage). On the other hand, the EBD reflects a more aggressive assumption that many generators must forward their copies by a special overnight delivery service, in order to meet their "real world" schedule demands (12 minutes in labor burden/copy, plus $11/package in delivery fee). Because sending copies by overnight service is not a RCRA requirement, but an industry-imposed exigency, the ICR assesses burden for transmittal by regular mail, not by overnight service.

The table below identifies the differences between the EBD and the baseline ICR, explains the reason for the differences, and provides a rough estimate of the burden difference between the two documents. The table shows that the differences in the EBD account for roughly **129,000 additional hours** in burden over the baseline ICR. The reasons for discrepancies fall into the following categories:

Explanation of Differences Between Burden as Described in This Document, Compared to The RCRA Manifest System Baseline ICR Document Nr. 801 (October 1999)	
Inefficiencies:	The EBD looks more closely at variations in specific manifesting activities and resulting differences in burden than the baseline ICR. This closer examination is done to identify efficiencies or inefficiencies in the manifesting process, i.e., in order to see how the rule might improve inefficiencies. See Discrepant Activities #1 and 3. On the other hand, ICRs traditionally do not examine (in)efficiencies as such, but use standard unit assumptions for paperwork activities. [Note that, over the past several years, EPA-OSW has made a concerted effort to ensure that the burden assumptions in the Manifest ICR are consistent with other approved ICR's assumptions (e.g., for recordkeeping, transmittal].
Activities:	The EBD accounts for activities that are not explicitly required in the current regulations, such as manifesting of rejected loads. EPA believes, however, that many TSDFs are in fact manifesting their rejected loads under the current regulations. See Discrepant Activity #2. ICRs do not account for activities that are not required in the regulations.
Exigencies:	The EBD also accounts for specific industry practices that have arisen to deal with industry-imposed exigencies, limitations or desires. For example, it assumes waste handlers shipping carload or intermodal shipments must use an overnight service to accomplish the 40 CFR 262.23 or 263.20 transmittal requirements in order to meet the schedule demands of rail transport. Based on consultations with industry, ICF believes that overnight transmittal may be a prevalent activity. See Discrepant Activity #4.The ICR, however, does not account for this activity, since waste handlers are not explicitly required to use overnight services. (By contrast, the RCRA regulations sometimes require waste handlers to send documents to EPA by certified mail or use a certified engineer to conduct certain activities. In this case, the added expense is required by the regulations and would be accounted for in the ICR.)

Tolling:	The EBD includes recent data on tolling agreements that is not included in the ICR. See Discrepant Activity #5. The ICR for this element could be updated through an "Inventory Correction Worksheet" (ICW).
New manifests:	The EBD accounts for generators acquiring new manifests. However, the ICR does not address this element. See Discrepant Activity #6.

Furthermore, when EPA developed the ICR that, among other things, compares the burden from the baseline RCRA manifests regulations, to the modifications specified in the proposed rule, EPA had to ensure that the data and assumptions used in the proposed ICR are consistent with those in the baseline ICR.

Reconciling the burden numbers in the reference ICR with the EBD requires that EPA first determine which of the discrepant activities should be reflected in the baseline ICR. One primary benefit to adjusting the baseline ICR per some of the EBD's assumptions, is that the EBD's assumptions reflect recent data and more realistic industry practices (Activities #1, 4 and 5). However, including assumptions in the baseline ICR on the inefficiencies that waste handlers encounter, might open the door for stakeholders to ask for the same treatment in other ICRs (Activity #3). By including these inefficiencies and thereby increasing the baseline hours, EPA would also potentially overinflate the manifest program's burden relative to other RCRA programs, since OSW's ICRs do not normally account for major inefficiencies.[26] Finally, there is some question as to whether EPA considers manifesting of rejected loads and manifest acquisition as information collection requirements under the current RCRA program (Activities #2 and 6).

One option for reconciling these differences is for EPA to develop an Inventory Correction Worksheet (ICW) to adjust the baseline ICR's burden accordingly. The ICW would amend the Agency's baseline burden hours for the manifest program. The Agency could then develop the proposed ICR based on these EBD data and assumptions, and compare the baseline and proposed burdens.

[26] For example, the Part B ICR does not address the iterative submittals that permit applicants have with the Agency in responding to NODs.

EXPLANATION OF DIFFERENCES BETWEEN MANIFEST ECONOMICS BACKGROUND DOCUMENT (EBD), AND THE BASELINE MANIFEST ICR

Discrepant Activity	EBD	Baseline ICR	Comment
Manifest Preparation			
1.Increased Burden for Preparation of Initial Manifests (262.20)	Included	Not included	The EBD assumes 5% of all manifests are initial mani complete than "repeat" manifests (95%). The EBD di and repeat manifests to flesh out efficiencies associat The ICR assumes all manifests require equal burden. ICRs, such as the previous LDR Base ICR, which ass initial and repeat LDR notices. Burden increase of EBD over ICR: approx. 50,000 ho
2. Preparation of Manifest for Rejected Loads	Included	Not included	For purposes of analyzing EPA's rejected load proced number of rejected loads shipped by TSDFs. This wa EBD and is not reflected in the ICR because it is not requirement. Burden increase of EBD over ICR: approx. 2,700 hou
3. Transporter Revision of Manifests Incorrectly Prepared by Generators	Included	Not included	The EBD includes the burden for certain transporters incorrectly prepared by generators. This is not include reflects a "real world" assumption that mistakes and i in complying with the regulations. ICRs do not norma Burden increase of EBD over ICR: approx. 44,000 ho

Discrepant Activity	EBD	Baseline ICR	Comment
Manifest Transmittal			
4. Generator/ Transporter Transmittal of Manifests to Initial Non-Rail or Water Transporter (262.23 and 263.20)	Assumes delivery by overnight mail	Assumes delivery by regular postal mail	The EBD reflects "real world" transmittal assumptions: Carload shipments. The EBD assumes that generato manifests per rail or water shipment. They would sen overnight delivery service to the transporters' central them and return the signed manifests by FedEx. The the package to the next non-rail or water transporter. minutes per package (@ $11/package in delivery fee Intermodal shipments (i.e., highway to rail or water). T delivering truck would use special overnight delivery s the manifest to the next non-rail or water transporter. The ICR reflects "one size fits all" assumptions, and d industry practice for complying with the requirement : All carload and intermodal shipments. The ICR assum send each signed manifest to the next non-rail or wate minutes/copy by regular postal mail (@ $0.36/copy in Burden increase in EBD over ICR: approx 8,000 hou
5. Tolling Agreement Requirement (262.20(e))	Assumes 19,500 agreements	Assumes 1,044 agreements	The EBD is based on updated information recently re Safety Kleen on SQGs under a tolling agreement. Th to reflect this data. EPA approved this revision to the Burden increase in EBD over ICR: approx 18,300 ho
Manifest Acquisition			
6. Manifest Acquisition (262.21)	Included	Not included	The EBD includes burden for generators to acquire th the Manifest ICR, EPA and ICF agreed not to include ICR. Burden increase in EBD over ICR: approx 6,300 hou

APPENDIX B:

SPREADSHEETS FOR ESTIMATING NATIONAL BURDEN UNDER THE BASELINE RCRA HAZARDOUS WASTE MANIFEST SYSTEM

BASELINE: NATIONAL ANNUAL RCRA MANIFEST BURDEN
(Exhibits contain rounding error)

Preparing the Manifest

EXHIBIT B-1

Reviewing the Manifest Prepared by Designated TSDF					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs	506,999	0.03	15,210	$45.20	$687,490
SQGs	743,974	0.03	22,319	$45.20	$1,008,829
Total	1,250,973	0.03	37,529	$45.20	$1,696,320

EXHIBIT B-2

Completing Initial Manifest without Designated TSDF Assistance					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs - Federal	35,007	0.83	29,056	$45.20	$1,313,325
LQGs - State	26,955	0.30	8,087	$45.20	$365,516
SQGs - Federal	9,300	0.79	7,347	$45.20	$332,073
SQGs - State	7,161	0.29	2,077	$45.20	$93,863
TSDF Captive - Federal	3,871	0.89	3,445	$45.20	$155,719
TSDF Captive - State	2,981	0.32	954	$45.20	$43,111
TSDF Commercial - Federal	62,549	1.00	62,549	$45.20	$2,827,199
TSDF Commercial - State	48,162	0.17	8,188	$45.20	$370,080
Transporters - Federal	44,307	1.0	44,307	$45.20	$2,002,665
Transporters- State	34,116	0.17	5,800	$45.20	$262,149
Total[1]	155,033	varies	171,808	$45.20	$7,765,700

EXHIBIT B-3

Completing Repeat Manifest					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
MANIFESTS PREPARED WITHOUT DESIGNATED TSDF					
LQGs - Federal	665,134	0.4	266,054	$45.20	$12,025,625
LQGs - State	512,153	0.12	61,458	$45.20	$2,777,919
SQGs - Federal	176,694	0.38	67,144	$45.20	$3,034,895
SQGs - State	136,054	0.11	14,966	$45.20	$676,462
TSDF Captive - Federal	73,547	0.43	31,625	$45.20	$1,429,461
TSDF Captive - State	56,631	0.13	7,362	$45.20	$332,765
TSDF Commercial - Federal	210,496	0.32	67,359	$45.20	$3,044,614
TSDF Commercial - State	162,082	0.17	27,554	$45.20	$1,245,437
MANIFESTS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	1,250,973	0.32	400,311	$45.20	$18,094,076
TSDF Commercial - State	963,249	0.17	163,752	$45.20	$7,401,608
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	8,096	0.24	1,943	$45.20	$87,825
TSDF Commercial - State	6,234	0.04	249	$45.20	$11,271
Total[1]	2,384,940	varies	1,109,778	$45.20	$50,161,961

Preparing the Manifest

EXHIBIT B-4

Completing Continuation Sheets					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
CONTINUATION SHEETS PREPARED WITHOUT DESIGNATED TSDF					
LQGs - Federal	33,257	0.17	5,654	$45.20	$255,545
LQGs - State	25,608	0.08	2,049	$45.20	$92,597
SQGs - Federal	8,835	0.16	1,414	$45.20	$63,893
SQGs - State	6,803	0.08	544	$45.20	$24,599
TSDF Captive - Federal	3,677	0.18	662	$45.20	$29,919
TSDF Captive - State	2,832	0.08	227	$45.20	$10,239
TSDF Commercial - Federal	10,525	0.17	1,789	$45.20	$80,874
TSDF Commercial - State	8,104	0.08	648	$45.20	$29,304
CONTINUATION SHEETS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	62,549	0.17	10,633	$45.20	$480,627
TSDF Commercial - State	48,162	0.08	3,853	$45.20	$174,154
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	405	0.02	8	$45.20	$366
TSDF Commercial - State	312	0.01	3	$45.20	$141
Total[1]	119,248	varies	27,484	$45.20	$1,242,256

EXHIBIT B-5

Electronic Records					
Waste Handler	No. of Records	Burden per Records	Total Burden	Labor Rate	Total Cost
LQGs	350,071	0.07	24,505	$27.00	$661,633
SQGs	92,997	0.07	6,510	$27.00	$175,764
TSDF Captive	38,709	0.07	2,710	$27.00	$73,160
Total	481,776	0.07	33,724	$27.00	$910,557

EXHIBIT B-6

Preparation Summary		
Waste Handler	Total Burden	Total Cost
LQG	412,072	$18,179,651
SQG	122,320	$5,410,377
TSDF Captive	46,984	$2,074,375
TSDF Commercial	748,840	$33,847,578
Transporter	50,106	$2,264,813
Total	1,380,322	$61,776,794

1. Totals include the number of Federal forms only, I.e. state portions of the forms are not reflected.

Transmitting the Manifest

EXHIBIT B-7

Transmitting the Manifest						
Waste Handler	No. of Manifest Copies	Burden per Copy	Total Burden	Postage	Labor Rate	Total Cost
GENERATORS						
LQGs	1,207,140	0.01	12,071	-	$53.00	$639,784
SQGs	929,968	0.01	9,300	-	$53.00	$492,883
TSDF Captive	77,418	0.01	774	-	$53.00	$41,032
TSDF Commercial	218,592	0.01	2,186	-	$53.00	$115,854
TRANSPORTERS						
Transporters	2,433,118	0.17	413,630	-	$53.00	$21,922,393
DESIGNATED TSDFs						
Reviewing Manifest at Delivery	2,421,118	0.17	411,590	-	$53.00	$21,814,273
Sending Copies to Generators	2,421,118	0.16	387,379	$ 0.36	$27.00	$11,330,832
Total	9,708,472	varies	1,236,930	$ 0.36	$46.52	$56,357,051

EXHIBIT B-8

Transmitting the Manifest (rail and water carload shipments - 33%)						
Waste Handler	No. of Transmittals	Burden per Transmittal	Total Burden	Postage	Labor Rate	Total Cost
GENERATORS						
LQGs	35,852	0.20	7,170	$11.00	$27.00	$587,974
SQGs	27,620	0.20	5,524	$11.00	$27.00	$452,969
TSDF Captive	2,299	0.20	460	$11.00	$27.00	$37,709
TSDF Commercial	6,492	0.20	1,298	$11.00	$27.00	$106,472
TRANSPORTERS						
Transporters	36,132	0.20	7,226	$11.00	$27.00	$592,562
Total	108,395	0.20	21,679	$11.00	$27.00	$1,777,685

EXHIBIT B-9

Transmitting the Manifest (rail and water intermodal shipments - 66%)						
Waste Handler	No. of Transmittals	Burden per Transmittals	Total Burden	Postage	Labor Rate	Total Cost
All Truck Deliveries	7,226	0.20	1,445	$11.00	$27.00	$118,512
Total	7,226	0.20	1,445	$11.00	$27.00	$118,512

EXHIBIT B-10

Transmitting the Manifest (export shipments)						
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Exports	12,000	0.03	360	$0.00	$53.00	$19,080
Total	12,000	0.03	360	$0.00	$53.00	$19,080

Transmitting the Manifest

EXHIBIT B-11

Transmitting the Manifest (reclamation agreements)						
Waste Handler	No. of Reclamation Agreements	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Transporters	19,500	1.00	19,500	$0.00	$53.00	$1,033,500
Total	19,500	1.00	19,500	$0.00	$53.00	$1,033,500

EXHIBIT B-12

Transmittal Summary		
Waste Handler	Total Burden	Total Cost
LQGs	19,242	$1,227,758
SQGs	14,824	$945,852
TSDF Captive	1,234	$78,740
TSDF Commercial	802,453	$33,367,431
Transporters	442,162	$23,686,047
Total	1,279,915	$59,305,828

Recordkeeping of Manifests

EXHIBIT B-13

Recordkeeping the Manifest (clerical filing costs and mailing costs for transporters)						
Waste Handler	No. of Manifest Copies/ Transmittals	Burden per Copy/ Transmittal	Total Burden	Postage	Labor Rate	Total Cost
GENERATORS						
LQGs	2,414,280	0.10	241,428	$0.00	$27.00	$6,518,556
SQGs	1,859,936	0.10	185,994	$0.00	$27.00	$5,021,827
TSDF Captive	154,836	0.10	15,484	$0.00	$27.00	$418,057
TSDF Commercial	437,184	0.10	43,718	$0.00	$27.00	$1,180,397
TRANSPORTERS						
Placing Copies on File	2,433,118	0.17	413,630	$0.00	$27.00	$11,168,012
Sending Copies to Central Office by Overnight Mail - 50%	228	0.00	0.00	$5,600.00	$27.00	$1,274,000
Sending Copies to Central Office by US Postal Mail - 50%	55,353	0.08	4,428	$0.90	$27.00	$169,382
DESIGNATED TSDF						
Designated TSDF	2,421,118	0.17	411,590	$0.00	$27.00	$11,112,932
Total	9,775,825	varies	1,316,272	varies	$27.00	$36,863,162

EXHIBIT B-14

Recordkeeping the Manifest (intermodal shipments)						
All Waste Handlers	No. of Transmittals	Burden per Transmittal	Total Burden	Postage	Labor Rate	Total Cost
Ramp/Dock Personnel	7,226	0.08	578	$0.90	$27.00	$22,113

EXHIBIT B-15

Recordkeeping the Manifest (capital cost for file cabinets)						
All Waste Handlers	No. of Manifest Copies	Copies per Cabinet	Cost per Cabinet	Total Cabinets	Total Cost	Total Annualized Cost
All Handlers	29,161,416	16,000	$549	1,823	$1,000,601	$381,281

EXHIBIT B-16

Recordkeeping Summary		
Waste Handler	Total Burden	Total Cost
Filing Activities		
LQGs	241,428	$6,613,255
SQGs	185,994	$5,094,782
TSDF Captive	15,484	$424,131
TSDF Commercial	455,308	$12,405,444
Transporters	418,636	$12,728,944
Total	1,316,850	$37,266,556

Acquiring the Manifest

EXHIBIT B-17

Acquiring Manifest (manifest form costs)			
Waste Handler	No. of Manifests	Cost of Manifest	Total Cost
LQGs / Brokers	350,071	$2.50	$875,177
SQGs / Brokers	92,997	$2.50	$232,492
TSDF Captive	77,418	$2.50	$193,545
TSDF Commercial	1,801,866	$2.50	$4,504,664
Transporters	110,767	$2.50	$276,917
Totals	2,433,118	$2.50	$6,082,795

EXHIBIT B-18

Acquiring Manifest (labor acquisition cost)						
Waste Handler	No. of Waste Handlers	No. of Form Orders	Burden per Order	Total Burden	Labor and Telephone Costs	Total Cost
LQGs / Brokers	8,044	1.5	0.25	3,017	$32.00	$96,528
SQGs / Brokers	1,669	0.4	0.25	156	$32.00	$5,007
TSDF Captive	1,518	1.5	0.25	569	$32.00	$18,216
MANIFESTS OBTAINED FOR CUSTOMERS						
TSDF Commercial 56%	283	2.0	0.25	142	$32.00	$4,534
TSDF Commercial 44%	223	10.0	0.25	557	$32.00	$17,811
MANIFESTS OBTAINED FOR OUTBOUND SHIPMENTS						
TSDF Commercial	506	8.0	0.25	1,012	$32.00	$32,384
Transporters	125	10.0	0.25	313	$32.00	$10,000
Totals	varies	varies	0.25	5,765	$32.00	$184,480

EXHIBIT B-19

Acquisition Summary		
Waste Handler	Total Burden	Total Cost
LQGs	3,017	$971,705
SQGs	156	$237,499
TSDF Captive	569	$211,761
TSDF Commercial	1,710	$4,559,393
Transporters	313	$286,917
Total	5,765	$6,267,275

Submitting Copies to States

EXHIBIT B-20

Sending Copies to States							
	Submittals	Burden per Submittal	Total Burden	Postage	Copy	Labor Rate	Total Cost
GENERATORS - 4 PART							
Regular Mail	279,809	0.16	44,769	$0.36	$0.10	$27.00	$1,336,368
Certified Mail	279,809	0.16	44,769	$2.60	$0.10	$27.00	$1,964,259
GENERATORS - 6 PART							
Regular Mail	304,140	0.16	48,662	$0.36	$0.00	$27.00	$1,423,375
Certified Mail	304,140	0.16	48,662	$2.60	$0.00	$27.00	$2,104,649
GENERATORS - 8 PART							
Regular Mail	352,802	0.16	56,448	$0.36	$0.00	$27.00	$1,651,113
Certified Mail	352,802	0.16	56,448	$2.60	$0.00	$27.00	$2,441,390
DESIGNATED TSDFs							
DTSDF	4,554	0.16	729	$3.10	$0.00	$27.00	$33,791
Total	1,878,056	0.16	300,489	varies	varies	$27.00	$10,954,945

EXHIBIT B-21

Summary for Sending Copies to States		
Waste Handler	Total Burden	Total Cost
LQGs	148,720	$5,418,299
SQGs	114,572	$4,174,201
TSDF Captive	9,538	$347,494
TSDF Commercial	27,659	$1,014,951
Transporters	-	$0
Total	300,489	$10,954,945

EXHIBIT B-22

Exception Reports - Generators							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage	Copying	Labor Rate	Total Cost
LQGs	6,036	1.10	6,639	$0.36	$0.10	$45.20	$302,871
SQGs	4,650	0.50	2,325	$0.36	$0.10	$45.20	$107,225
TSDF Captive	387	1.10	426	$0.36	$0.10	$45.20	$19,424
TSDF Commercial	1,093	1.10	1,202	$0.36	$0.10	$45.20	$54,845
Total	12,166	varies	10,592	$0.36	$0.10	$45.20	$484,366

EXHIBIT B-23

Discrepancy Reports- Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage and Telephone Costs	Copying	Labor Rate	Total Cost
DTSDFs	8,858	2.50	22,145	$5.36	$0.10	$45.20	$1,049,331

EXHIBIT B-24

Unmanifested Waste Reports - Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage	Copying	Labor Rate	Total Cost
DTSDFs	370	2.00	740	$0.36	$0.10	$45.20	$33,618

EXHIBIT B-25

Reporting Summary		
Waste Handler	Total Burden	Total Cost
LQGs	6,639	$302,871
SQGs	2,325	$107,225
TSDF Captive	426	$19,424
TSDF Commercial[6]	24,088	$1,137,794
Total	33,478	$1,567,314

6. Includes commercial TSDFs acting as generators and destination sites.

Employee Training

EXHIBIT B-26

Employee Training							
Waste Handler	No. of Waste Handlers	Introductory Burden	Refresher Burden	Total Biennial Burden	Labor Rate	Total Biennial Cost	Annualized Cost
LQGs / Brokers	8,044	4.00	2	48,264	$90.00	$4,343,760	$2,402,498
SQGs / Brokers	1,669	2.40	1.2	6,008	$90.00	$540,756	$299,088
TSDF Captive	1,518	5.60	2.8	12,751	$90.00	$1,147,608	$634,733
TSDF Commercial	506	25.60	12.8	19,430	$90.00	$1,748,736	$967,212
Transporters (clerical)	500	150.00	75	112,500	$90.00	$10,125,000	$5,600,054
Total	12,237	varies	varies	198,954	$90.00	$17,905,860	$9,903,584

EXHIBIT B-27

Training Summary		
Waste Handler	Total Burden	Total Cost
LQGs	24,132	$2,402,498
SQGs	3,004	$299,088
TSDF Captive	6,376	$634,733
TSDF Commercial	9,715	$967,212
Transporters	56,250	$5,600,054
Total	99,477	$9,903,585

National Total Annual Burden (Hours & Cost)

EXHIBIT B-28

Total Aggregate Annual Burden and Cost		
Waste Handler	Total Burden	Total Cost
LQGs	855,250	$35,116,037
SQGs	443,195	$16,269,024
TSDF Captive	80,611	$3,790,658
TSDF Commercial	2,069,773	$87,299,803
Transporters	967,467	$44,566,775
Total	4,416,296	$187,042,297

APPENDIX C:

ANALYTIC ASSUMPTIONS FOR LQG AND SQG MANIFEST PREPARATION

Under 40 CFR 262.20, a generator must prepare and transmit a manifest with shipments of hazardous waste to the TSDF. Based on consultations with generators and TSDFs in 1995, EPA developed assumptions and estimated the number of manifests prepared by type of waste handlers. This appendix describes the assumptions made, and presents the number of manifests prepared by type of waste handler. For purposes of this analysis, EPA assumes that LQGs and SQGs rely on various means for preparing their manifests (i.e., by brokers, designated TSDFs, or the generator itself). On the other hand, this analysis assumes that all captive and commercial TSDFs prepare their manifests without any third party. The following paragraphs provide additional EPA analytic assumptions on the number of LQG and SQG manifests prepared by brokers, designated TSDFs, and the generators themselves. This economic analysis report applies these assumptions for analyzing both the baseline (i.e. current or existing) RCRA manifest system, and the proposed modifications. (See Chapter II.)

Figure C-1 summarizes the number of LQG manifests prepared by brokers, designated TSDFs, and LQG themselves. As shown in the figure, EPA estimates that 58 percent (or 700,141) of LQG manifests are prepared by the LQG or its broker. Of these manifests, about 75 percent (or 525,106 manifests) are prepared by LQGs and 25 percent (or 175,035 manifests) are prepared by their brokers. The remaining 42 percent (or 506,999) of LQG manifests are prepared by the designated TSDF. That is, EPA assumes that a percentage of LQGs rely on the designated TSDF to prepare a pre-printed manifest, which the LQG need only review and sign at waste pick-up.

Figure C-1: LQG Manifest Preparation

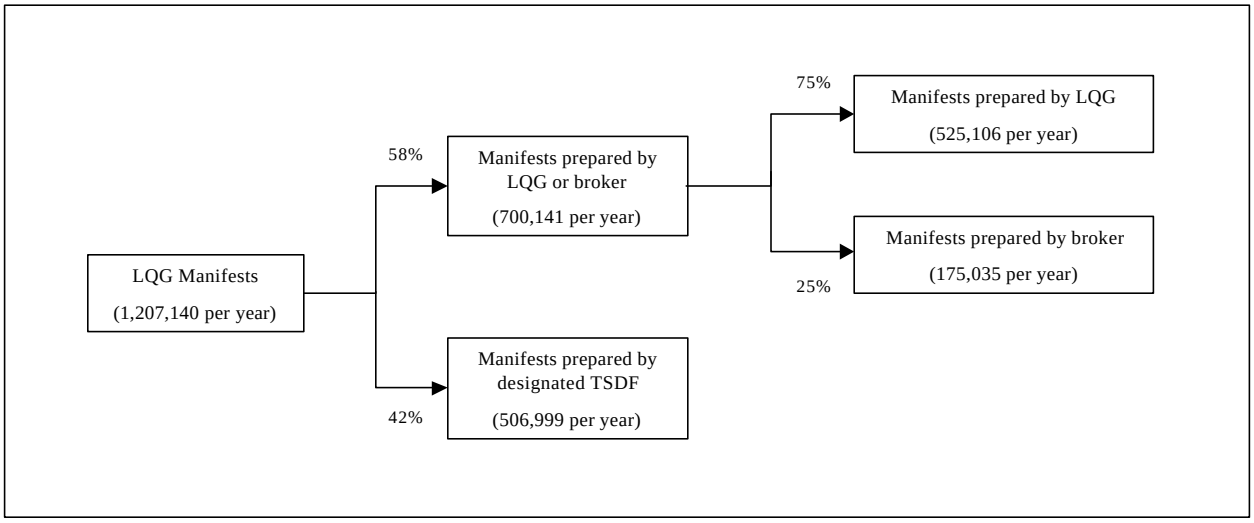
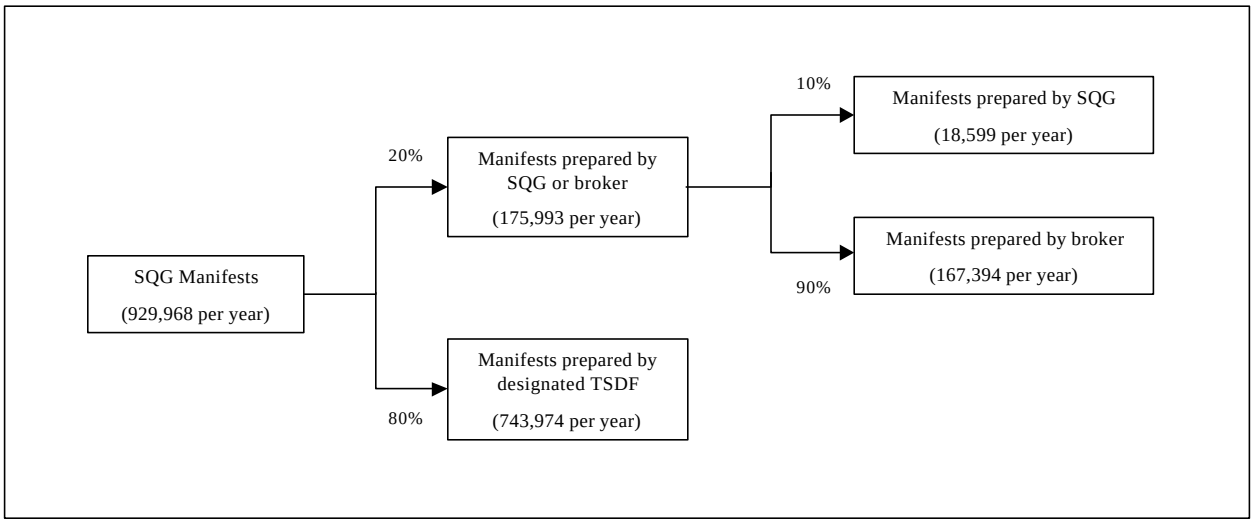


Figure C-2 summarizes the number of SQG manifests prepared by brokers, designated TSDFs, and SQG themselves. As shown in the figure, EPA estimates that 20 percent (or 175,993) of SQG manifests are prepared by the SQG or its broker. Of these manifests, about 10 percent (or 18,599 manifests) are prepared by SQGs and 90 percent (or 167,394 manifests) are prepared by their brokers. The remaining 80 percent (or 743,974) of SQG manifests are prepared by the designated TSDF. As with the LQGs, EPA assumes that a percentage of SQGs rely on the designated TSDF to prepare a pre-printed manifest, which the SQG need only review and sign at waste pick-up.

Figure C-2: SQG Manifest Preparation



APPENDIX D:

**SPREADSHEETS FOR ESTIMATING NATIONAL ANNUAL BURDEN
UNDER THE PROPOSED
RCRA MANIFEST MODIFICATIONS**

- HIGH ADOPTION RATE

Preparing the Manifest

EXHIBIT D-1

Reviewing the Manifest Prepared by Designated TSDF					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs	506,999	0.03	15,210	$45.20	$687,490
SQGs	743,974	0.03	22,319	$45.20	$1,008,829
Total	1,250,973	0.03	37,529	$45.20	$1,696,320

EXHIBIT D-2

Completing Initial Manifest without Designated TSDF Assistance					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs - Federal	35,007	0.83	29,056	$45.20	$1,313,325
LQGs - State	26,955	0.10	2,696	$45.20	$121,839
SQGs - Federal	9,300	0.79	7,347	$45.20	$332,073
SQGs - State	7,161	0.10	716	$45.20	$32,367
TSDF Captive - Federal	3,871	0.89	3,445	$45.20	$155,719
TSDF Captive - State	2,981	0.10	298	$45.20	$13,472
TSDF Commercial - Federal	62,549	1.00	62,549	$45.20	$2,827,199
TSDF Commercial - State	48,162	0.10	4,816	$45.20	$217,694
Transporters - Federal	44,307	1.00	44,307	$45.20	$2,002,665
Transporters - State	34,116	0.10	3,412	$45.20	$154,205
Total[1]	155,033	varies	158,641	$45.20	$7,170,557

Preparing the Manifest

EXHIBIT D-3

Completing Repeat Manifest					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
MANIFESTS PREPARED WITHOUT DESIGNATED TSDF - MANUALLY					
LQGs - Federal	332,567	0.40	133,027	$45.20	$6,012,813
LQGs - State	256,077	0.04	10,243	$45.20	$462,987
SQGs - Federal	98,772	0.38	37,533	$45.20	$1,696,509
SQGs - State	76,054	0.04	3,042	$45.20	$137,507
TSDF Captive - Federal	36,774	0.43	15,813	$45.20	$714,731
TSDF Captive - State	28,316	0.04	1,133	$45.20	$51,195
MANIFESTS PREPARED WITHOUT DESIGNATED TSDF - ELECTRONICALLY					
LQGs - Federal	332,567	0.15	49,885	$45.20	$2,254,805
LQGs - State	256,077	0.02	5,122	$45.20	$231,493
SQGs - Federal	77,922	0.15	11,688	$45.20	$528,310
SQGs - State	60,000	0.02	1,200	$45.20	$54,240
TSDF Captive - Federal	36,774	0.15	5,516	$45.20	$249,325
TSDF Captive - State	28,316	0.02	566	$45.20	$25,597
TSDF Commercial - Federal	210,496	0.32	67,359	$45.20	$3,044,614
TSDF Commercial - State	162,082	0.04	6,483	$45.20	$293,044
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	8,096	0.32	2,591	$45.20	$117,101
TSDF Commercial - State	6,234	0.04	249	$45.20	$11,271
MANIFESTS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	1,250,973	0.32	400,311	$45.20	$18,094,076
TSDF Commercial - State	963,249	0.04	38,530	$45.20	$1,741,555
Total[1]	2,376,844	varies	790,291	$45.20	$35,721,171

Preparing the Manifest

EXHIBIT D-4

Completing Continuation Sheets					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
CONTINUATION SHEETS PREPARED WITHOUT DESIGNATED TSDF - MANUALLY					
LQGs - Federal	16,628	0.17	2,827	$45.20	$127,770
LQGs - State	12,804	0.03	384	$45.20	$17,362
SQGs - Federal	4,939	0.16	790	$45.20	$35,719
SQGs - State	3,803	0.03	114	$45.20	$5,157
TSDF Captive - Federal	1,839	0.18	331	$45.20	$14,962
TSDF Captive - State	1,416	0.03	42	$45.20	$1,920
CONTINUATION SHEETS PREPARED WITHOUT DESIGNATED TSDF - ELECTRONICALLY					
LQGs - Federal	16,628	0.03	499	$45.20	$22,548
LQGs - State	12,804	0.02	256	$45.20	$11,575
SQGs - Federal	3,896	0.03	117	$45.20	$5,283
SQGs - State	3,000	0.02	60	$45.20	$2,712
TSDF Captive - Federal	1,839	0.03	55	$45.20	$2,494
TSDF Captive - State	1,416	0.02	28	$45.20	$1,280
TSDF Commercial - Federal	10,525	0.17	1,789	$45.20	$80,874
TSDF Commercial - State	8,104	0.03	243	$45.20	$10,989
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	405	0.03	12	$45.20	$549
TSDF Commercial - State	312	0.01	3	$45.20	$141
MANIFESTS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	62,549	0.17	10,633	$45.20	$480,627
TSDF Commercial - State	48,162	0.03	1,445	$45.20	$65,308
Total[1]	119,248	varies	19,630	$45.20	$887,268

EXHIBIT D-5

Electronic Records					
Waste Handler	No. of Records	Burden per Record	Total Burden	Labor Rate	Total Cost
LQGs	350,071	0.07	24,505	$27.00	$661,633
SQGs	92,997	0.07	6,510	$27.00	$175,764
TSDF Captive	38,709	0.07	2,710	$27.00	$73,160
Total	481,776	0.07	33,724	$27.00	$910,557

EXHIBIT D-6

Preparation Summary		
Waste Handler	Total Burden	Total Cost
LQG	273,709	11,925,638
SQG	91,437	4,014,469
TSDF Captive	29,937	1,303,854
TSDF Commercial	597,014	26,985,042
Transporter	47,718	2,156,870
Total	1,039,815	$46,385,873

Transmitting the Manifest

EXHIBIT D-7

Transmitting the Manifest - General

Waste Handler	No. of Manifest Copies	Burden per Copy	Total Burden	Equipment / O & M Cost	Annualized Equipment Cost	Labor Rate	Total Cost
GENERATORS							
LQGs	1,207,140	0.01	12,071	$0	$0	$53.00	$851,034
SQGs	929,968	0.01	9,300	$0	$0	$53.00	$639,353
TSDF Captive	77,418	0.01	774	$0	$0	$53.00	$68,128
TSDF Commercial	218,592	0.01	2,186	$0	$0	$53.00	$192,361
TRANSPORTERS							
Paper Copy	1,234,211	0.17	209,816	$0	$0	$53.00	$11,120,238
Electronic	1,198,907	0.17	203,814	$1,280,000	$487,746	$53.00	$11,289,902
DESIGNATED TSDFs							
Reviewing Manifest at Delivery	2,421,118	0.17	411,590	$0	$0	$53.00	$21,814,273
Completing Waste System Codes	1,864,261	0.02	37,285	$0	$0	$53.00	$1,976,117
Total	9,151,615	varies	886,837	$1,280,000	$487,746	$53.00	$47,951,404

EXHIBIT D-8

Transmitting the Manifest - Transmitting Copies to Other Parties

Waste Handler	No. of Transmittals	Burden per Transmittal	Total Burden	Equipment Cost	Annualized Equipment Cost	Postage	Labor Rate	Total Cost
DESIGNATED TSDF's SENDING COPIES TO GENERATORS								
Electronic	1,192,994	0.02	23,860	$0	$0	$0.00	$27.00	$644,217
Regular Post	982,499	0.16	157,200	$0	$0	$0.36	$27.00	$4,598,095
Fax	245,625	0.08	19,650	$0	$0	$0.30	$27.00	$604,237
Total	2,421,118	varies	200,710	$0	$0	$0.36	$27.00	$5,846,548

Transmitting the Manifest

EXHIBIT D-9

Transmitting the Manifest (rail and water carload shipments - 33%)						
Waste Handler	No. of Transmittals	Burden per Transmittal	Total Burden	EDI / Postage	Labor Rate	Total Cost
GENERATORS						
LQGs - Overnight Mail	14,341	0.20	2,868	$11.00	$27.00	$235,192
LQGs - Electronic Mail	17,926	0.08	1,434	$0.00	$27.00	$38,720
LQGs - Fax	3,585	0.08	287	$0.30	$27.00	$8,820
SQGs - Overnight Mail	11,486	0.20	2,297	$11.00	$27.00	$188,363
SQGs - Electronic Mail	13,263	0.08	1,061	$0.00	$27.00	$28,648
SQGs - Fax	2,871	0.08	230	$0.30	$27.00	$7,064
TSDF Captive - Overnight Mail	920	0.20	184	$11.00	$27.00	$15,084
TSDF Captive - Electronic Mail	1,150	0.08	92	$0.00	$27.00	$2,483
TSDF Captive - Fax	230	0.08	18	$0.30	$27.00	$566
TSDF Commercial - Overnight Mail	2,597	0.20	519	$11.00	$27.00	$42,589
TSDF Commercial - Electronic Mail	3,246	0.02	65	$0.00	$27.00	$1,753
TSDF Commercial - Fax	649	0.08	52	$0.30	$27.00	$1,597
TRANSPORTERS						
Overnight Mail	14,662	0.20	2,932	$11.00	$27.00	$240,464
Electronic Mail	17,804	0.08	1,424	$0.00	$27.00	$38,456
Fax	3,666	0.08	293	$0.30	$27.00	$9,017
Total	108,396	varies	13,758	varies	$27.00	$858,816

EXHIBIT D-10

Transmitting the Manifest (rail and water intermodal shipments - 66%)						
Delivery	No. of Manifests	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
All Truck Deliveries	7,226	0.20	1,445	$11.00	$27.00	$118,512
Total	7,226	0.20	1,445	$11.00	$24.00	$118,512

EXHIBIT D-11

Transmitting the Manifest (export shipments)						
Shipment Type	No. of Manifests	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Exports	12,000	0.03	360	$0.00	$53.00	$19,080
Total	12,000	0.03	360	$0.00	$53.00	$19,080

Transmitting the Manifest

EXHIBIT D-12

Transmitting the Manifest (reclamation agreements)						
Waste Handler	No. of Reclamation Agreements	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Transporters	19,500	1.00	19,500	$0.00	$53.00	$1,033,500
Total	19,500	1.00	19,500	$0.00	$53.00	$1,033,500

EXHIBIT D-13

Transmittal Summary		
Waste Handler	Total Burden	Total Cost
LQGs	16,660	$1,133,766
SQGs	12,888	$863,428
TSDF Captive	1,068	$86,260
TSDF Commercial	615,122	$27,899,121
Transporters	439,585	$23,869,169
Total	1,085,323	$53,851,744

Recordkeeping the Manifest

EXHIBIT D-14

Recordkeeping the Manifest (clerical filing costs and mailing costs for transporters)

Waste Handler	No. of Copies/ Transmittals	Burden per Copy/ Transmittal	Total Burden	EDI / Postage	Labor Rate	Total Cost
GENERATORS						
LQGs - Filing Electronic Copy	1,207,140	0.01	12,071	$0.00	$27.00	$325,928
LQGs - Filing Paper Copy	1,207,140	0.10	120,714	$0.00	$27.00	$3,259,278
SQGs - Filing Electronic Copy	893,139	0.01	8,931	$0.00	$27.00	$241,148
SQGs - Filing Paper Copy	966,797	0.10	96,680	$0.00	$27.00	$2,610,352
TSDF Captive - Filing Electronic Copy	77,418	0.01	774	$0.00	$27.00	$20,903
TSDF Captive - Filing Paper Copy	77,418	0.10	7,742	$0.00	$27.00	$209,029
TSDF Commercial - Filing Electronic Copy	218,592	0.01	2,186	$0.00	$27.00	$59,020
TSDF Commercial - Filing Paper Copy	218,592	0.10	21,859	$0.00	$27.00	$590,198
TRANSPORTERS						
Filing Electronic Copy	1,198,907	0.01	11,989	$0.00	$27.00	$323,705
Filing Paper Copy	1,234,211	0.17	209,816	$0.00	$27.00	$5,665,027
Sending Copies to Central Office by Overnight Mail	115	0.00	-	$5,600.00	$27.00	$1,274,000
Sending Copies to Central Office by US Postal Mail	28,078	0.08	2,246	$0.90	$27.00	$85,920
Sending Copies via EDI to Central Office	1,091,006	0.02	21,820	$0.00	$27.00	$589,143
DESIGNATED TSDFs						
Filing Electronic Copy	1,192,994	0.01	11,930	$0.00	$27.00	$322,108
Filing Paper Copy	1,228,124	0.17	208,781	$0.00	$27.00	$5,637,087
Total	9,720,472	varies	737,540	varies	$27.00	$21,212,845

EXHIBIT D-15

Recordkeeping the Manifest (intermodal shipments)

All Waste Handlers	No. of Transmittals	Burden per Transmittal	Total Burden	Postage	Labor Rate	Total Cost
Ramp/Dock Personnel	7,226	0.08	578	$0.90	$27.00	$22,113

Recordkeeping the Manifest

EXHIBIT D-16

Recordkeeping the Manifest (capital cost for file cabinets)						
All Waste Handlers	No. of Manifest Copies	Copies per Cabinet / Diskette	Cost per Cabinet/ Diskette	Total Cabinets/ Diskette	Total Cost	Total Annualized Cost
File Cabinets for Hard Copies	14,792,266	16,000	$549	925	$507,560	$193,406
Electronic Storage for Electronic Copies	14,369,150	14	$0.37	1,026,368	$379,756	$144,707
Total	29,161,416	varies	varies	506,207	$887,316	$338,113

EXHIBIT D-17

Recordkeeping Summary		
Waste Handler	Total Burden	Total Cost
Filing Activities		
LQGs	132,785	3,679,946
SQGs	105,611	2,888,553
TSDF Captive	8,516	236,007
TSDF Commercial	244,756	6,713,033
Transporters	246,449	8,055,530
Total	738,117	$21,573,069

5. This row includes the number of transporter companies (118) involved in highway overnight delivery.

Acquiring the Manifest

EXHIBIT D-18

Acquiring Manifest (manifest form costs)			
Waste Handler	No. of Manifests	Cost of Manifest	Total Cost
LQGs / Brokers	350,071	$2.50	$875,177
SQGs / Brokers	92,997	$2.50	$232,492
TSDF Captive	77,418	$2.50	$193,545
TSDF Commercial	1,801,866	$2.50	$4,504,664
Transporters	110,767	$2.50	$276,917
Total	2,433,118	$2.50	$6,082,795

EXHIBIT D-19

Acquiring Manifest (labor acquisition cost)						
Waste Handler	No. of Waste Handlers	No. of Form Orders	Burden per Order	Total Burden	Labor and Telephone Costs	Total Cost
LQGs / Brokers	8,000	1.0	0.25	2,000	$32.00	$64,001
SQGs / Brokers	1,552	0.4	0.25	146	$32.00	$4,656
TSDF Captive	1,518	1.0	0.25	380	$32.00	$12,144
TSDF Commercial	253	2.0	0.25	127	$32.00	$4,048
Transporters	125	2.0	0.25	63	$32.00	$2,000
Total	11,448	varies	0.25	2,714	$32.00	$86,850

EXHIBIT D-20

Registering with EPA to Print Manifest Forms						
Waste Handler	No. of Waste Handlers	Annual Burden per Registration	Total Burden	Labor Costs	Mailing Costs	Total Cost
Brokers of LQGs	44	0.17	7.48	$45.20	$0.36	$353.94
Brokers of SQGs	119	0.17	20.23	$45.20	$0.36	$957.24
TSDF Commercial	253	0.17	43.01	$45.20	$0.36	$2,035.13
Total	416	0.17	70.72	$45.20	$0.36	$3,346.30

EXHIBIT D-21

Acquisition Summary		
Waste Handler	Total Burden	Total Cost
LQGs / Brokers	2,008	$939,532
SQGs / Brokers	166	$238,106
TSDF Captive	380	$205,689
TSDF Commercial	170	$4,510,748
Transporters	63	$278,917
Total	2,787	$6,172,992

Sending Copies to States

EXHIBIT D-22

Sending Copies to States							
	Submittals	Burden per Submittal	Total Burden	EDI / Postage	Copy	Labor Rate	Total Cost
4-PART - GENERATOR							
Regular Mail	113,547	0.16	18,168	$0.36	$0.10	$27.00	$542,756
Certified Mail	113,547	0.16	18,168	$2.60	$0.10	$27.00	$797,103
Electronic Submission	275,749	0.08	22,060	$0.00	$0.00	$27.00	$595,617
Fax	56,774	0.08	4,542	$0.30	$0.00	$27.00	$139,663
6-PART GENERATOR							
Regular Mail	123,421	0.16	19,747	$0.36	$0.00	$27.00	$577,611
Certified Mail	123,421	0.16	19,747	$2.60	$0.00	$27.00	$854,074
Electronic Submission	299,727	0.08	23,978	$0.00	$0.00	$27.00	$647,410
Fax	61,711	0.08	4,937	$0.30	$0.00	$27.00	$151,808
8-PART GENERATOR							
Regular Mail	143,168	0.16	22,907	$0.36	$0.00	$27.00	$670,028
Certified Mail	143,168	0.16	22,907	$2.60	$0.00	$27.00	$990,726
Electronic Submission	347,683	0.08	27,815	$0.00	$0.00	$27.00	$750,996
Fax	71,584	0.08	5,727	$0.30	$0.00	$27.00	$176,097
DESIGNATED TSDFs							
DTSDF	4,554	0.16	729	$3.10	$0.00	$27.00	$33,791
Total	1,878,055	varies	211,431	varies	varies	$27.00	$6,927,679

EXHIBIT D-23

Summary for Sending Copies to States		
Waste Handler	Total Burden	Total Cost
LQGs	107,458	$3,515,883
SQGs	77,960	$2,550,739
TSDF Captive	6,321	$206,817
TSDF Commercial	19,691.82	$654,240.62
Transporters	-	-
Total	211,431	$6,927,679

Submitting Reports

EXHIBIT D-24

Exception Reports - Generators							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage/ Email	Copying	Labor Rate	Total Cost
LQGs	6,036	1.10	6,639	$0.36	$0.10	$45.20	$302,871
SQGs	4,650	0.50	2,325	$0.36	$0.10	$45.20	$107,225
TSDF Captive	387	1.10	426	$0.36	$0.10	$45.20	$19,424
TSDF Commercial	1,093	1.10	1,202	$0.36	$0.10	$45.20	$54,845
Total	12,166	varies	10,592	$0.36	$0.10	$45.20	$484,365

EXHIBIT D-25

Discrepancy Reports- Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage and Telephone Costs	Copying	Labor Rate	Total Cost
DTSDFs	9,684	2.50	24,211	$5.36	$0.10	$45.20	$1,147,223

EXHIBIT D-26

Unmanifested Waste Reports - Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage	Copying	Labor Rate	Total Cost
DTSDFs	370	2.00	740	$0.36	$0.10	$45.20	$33,618

EXHIBIT D-27

Reporting Summary		
Waste Handler	Total Burden	Total Cost
LQGs	6,639	$302,871
SQGs	2,325	$107,225
TSDF Captive	426	$19,424
TSDF Commercial	26,153	$1,235,686
Total	35,543	$1,665,206

REVISED RCRA MANIFEST FORM, ELECTRONIC AUTOMATION, AND FAX:
HIGH ADOPTION RATE SCENARIO:
ANNUAL BURDEN AND COST TO WASTE HANDLERS

Employee Training

EXHIBIT D-28

Employee Training

Waste Handler	No. of Waste Handlers	Introductory Burden	Refresher Burden	Internet Burden	Biennial Burden	Labor Rate	Total Biennial Cost	Annualized Cost
LQGs / Brokers	8,044	4.00	2.0	0.0	48,264	$90.00	$4,343,760	$2,402,498
SQGs / Brokers	1,669	2.40	1.2	0.0	6,008	$90.00	$540,756	$299,088
TSDF Captive	1,518	5.60	2.8	0.0	12,751	$90.00	$1,147,608	$634,733
TSDF Commercial	506	21.50	12.8	0.0	17,356	$90.00	$1,562,022	$863,942
Transporters	500	126.00	75.0	0.0	100,500	$90.00	$9,045,000	$5,002,715
Total	12,237	varies	varies	0.0	184,879	$90.00	$16,639,146	$9,202,975

EXHIBIT D-29

Training Summary

Waste Handler	Total Burden	Total Cost
LQGs	24,132	$2,402,498
SQGs	3,004	$299,088
TSDF Captive	6,376	$634,733
TSDF Commercial	8,678	$863,942
Transporters	50,250	$5,002,715
Total	92,440	$9,202,976

EDI Costs and Total Annual Burden and Costs under Manifest System

EXHIBIT D-30

EDI Startup Costs			
Waste Handler	Number of Waste Handlers	Annualized Startup Cost	Total Annualized Startup Cost
LQG / Brokers	1,844	$1,183	$2,181,452
SQG / Brokers	119	$335	$39,865
TSDF Captive	759	$335	$254,265
TSDF Commercial	253	$1,463	$370,139
Transporter	200	$2,962	$592,400
Total	3,175	varies	$3,438,121

EXHIBIT D-31

EDI Operating Parameters					
Waste Handler	Number of Waste Handlers	Burden Hours	Total Burden	Labor Rate	Total Costs
LQG	1,844	15	27,660	$45.20	$1,250,232
SQG / Brokers	119	15	1,785	$45.20	$80,682
TSDF Captive	759	15	11,385	$45.20	$514,602
TSDF Commercial	253	15	3,795	$45.20	$171,534
Transporter	200	15	3,000	$45.20	$135,600
Total	3,175	15	47,625	$45.20	$2,152,650

EXHIBIT D-32

Total Aggregate Annual Burden and Cost		
Waste Handler	Total Burden	Total Cost
LQGs	591,051	$27,331,818
SQGs	295,176	$11,082,155
TSDF Captive	64,409	$3,461,651
TSDF Commercial	1,515,380	$69,403,486
Transporters	787,065	$40,091,201
Total	3,253,081	$151,370,311

APPENDIX E:

**SPREADSHEETS FOR ESTIMATING NATIONAL ANNUAL BURDEN
UNDER THE PROPOSED
RCRA MANIFEST SYSTEM MODIFICATIONS**

- LOW ADOPTION RATE

REVISED RCRA MANIFEST FORM, ELECTRONIC AUTOMATION, AND FAX:
LOW ADOPTION RATE SCENARIO:
ANNUAL BURDEN AND COST TO WASTE HANDLERS

Preparing the Manifest

EXHIBIT E-1

Reviewing the Manifest Prepared by Designated TSDF					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs	506,999	0.03	15,210	$45.20	$687,490
SQGs	743,974	0.03	22,319	$45.20	$1,008,829
Total	1,250,973	0.03	37,529	$45.20	$1,696,320

EXHIBIT E-2

Completing Initial Manifest without Designated TSDF Assistance					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
LQGs - Federal	35,007	0.83	29,056	$45.20	$1,313,325
LQGs - State	26,955	0.10	2,696	$45.20	$121,839
SQGs - Federal	9,300	0.79	7,347	$45.20	$332,073
SQGs - State	7,161	0.10	716	$45.20	$32,367
TSDF Captive - Federal	3,871	0.89	3,445	$45.20	$155,719
TSDF Captive - State	2,981	0.10	298	$45.20	$13,472
TSDF Commercial - Federal	62,549	1.00	62,549	$45.20	$2,827,199
TSDF Commercial - State	48,162	0.10	4,816	$45.20	$217,694
Transporters - Federal	44,307	1.00	44,307	$45.20	$2,002,665
Transporters - State	34,116	0.10	3,412	$45.20	$154,205
Total[1]	155,033	varies	158,641	$45.20	$7,170,557

EXHIBIT E-3

Completing Repeat Manifest					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
MANIFESTS PREPARED WITHOUT DESIGNATED TSDF - MANUALLY					
LQGs - Federal	498,851	0.40	199,540	$45.20	$9,019,225
LQGs - State	384,115	0.04	15,365	$45.20	$694,480
SQGs - Federal	137,733	0.38	52,339	$45.20	$2,365,700
SQGs - State	106,054	0.04	4,242	$45.20	$191,746
TSDF Captive - Federal	55,161	0.43	23,719	$45.20	$1,072,102
TSDF Captive - State	42,474	0.04	1,699	$45.20	$76,792
MANIFESTS PREPARED WITHOUT DESIGNATED TSDF - ELECTRONICALLY					
LQGs - Federal	166,283	0.15	24,942	$45.20	$1,127,400
LQGs - State	128,038	0.02	2,561	$45.20	$115,746
SQGs - Federal	38,961	0.15	5,844	$45.20	$264,156
SQGs - State	30,000	0.02	600	$45.20	$27,120
TSDF Captive - Federal	18,386	0.15	2,758	$45.20	$124,660
TSDF Captive - State	14,158	0.02	283	$45.20	$12,798
TSDF Commercial - Federal	210,496	0.32	67,359	$45.20	$3,044,614
TSDF Commercial - State	162,082	0.04	6,483	$45.20	$293,044
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	8,096	0.32	2,591	$45.20	$117,101
TSDF Commercial - State	6,234	0.04	249	$45.20	$11,271
MANIFESTS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	1,250,973	0.32	400,311	$45.20	$18,094,076
TSDF Commercial - State	963,249	0.04	38,530	$45.20	$1,741,555
Total[1]	2,376,844	varies	849,416	$45.20	$38,393,588

Preparing the Manifest

EXHIBIT E-4

Completing Continuation Sheets					
Waste Handler	No. of Manifests	Burden per Manifest	Total Burden	Labor Rate	Total Cost
CONTINUATION SHEETS PREPARED WITHOUT DESIGNATED TSDF - MANUALLY					
LQGs - Federal	24,943	0.17	4,240	$45.20	$191,662
LQGs - State	19,206	0.03	576	$45.20	$26,043
SQGs - Federal	6,887	0.16	1,102	$45.20	$49,807
SQGs - State	5,303	0.03	159	$45.20	$7,191
TSDF Captive - Federal	2,758	0.18	496	$45.20	$22,439
TSDF Captive - State	2,124	0.03	64	$45.20	$2,880
CONTINUATION SHEETS PREPARED WITHOUT DESIGNATED TSDF - ELECTRONICALLY					
LQGs - Federal	8,314	0.03	249	$45.20	$11,274
LQGs - State	6,402	0.02	128	$45.20	$5,787
SQGs - Federal	1,948	0.03	58	$45.20	$2,641
SQGs - State	1,500	0.02	30	$45.20	$1,356
TSDF Captive - Federal	919	0.03	28	$45.20	$1,246
TSDF Captive - State	708	0.02	14	$45.20	$640
TSDF Commercial - Federal	10,525	0.17	1,789	$45.20	$80,874
TSDF Commercial - State	8,104	0.03	243	$45.20	$10,989
MANIFESTS PREPARED BY TSDF FOR REJECTED LOADS					
TSDF Commercial - Federal	405	0.03	12	$45.20	$549
TSDF Commercial - State	312	0.01	3	$45.20	$141
MANIFESTS PREPARED FOR GENERATORS					
TSDF Commercial - Federal	62,549	0.17	10,633	$45.20	$480,627
TSDF Commercial - State	48,162	0.03	1,445	$45.20	$65,308
Total[1]	119,248	varies	21,271	$45.20	$961,454

EXHIBIT E-5

Electronic Records					
Waste Handler	No. of Records	Burden per Record	Total Burden	Labor Rate	Total Cost
LQGs	350,071	0.07	24,505	$27.00	$661,633
SQGs	92,997	0.07	6,510	$27.00	$175,764
TSDF Captive	38,709	0.07	2,710	$27.00	$73,160
Total	481,776	0.07	33,724	$27.00	$910,557

EXHIBIT E-6

Preparation Summary		
Waste Handler	Total Burden	Total Cost
LQG	319,068	13,975,905
SQG	101,266	4,458,750
TSDF Captive	35,514	1,555,909
TSDF Commercial	597,014	26,985,042
Transporter	47,718	2,156,870
Total	1,100,580	$49,132,476

REVISED RCRA MANIFEST FORM, ELECTRONIC AUTOMATION, AND FAX:
LOW ADOPTION RATE SCENARIO:
ANNUAL BURDEN AND COST TO WASTE HANDLERS

Transmitting the Manifest

EXHIBIT E-7

Transmitting the Manifest - General

Waste Handler	No. of Manifest Copies	Burden per Copy	Total Burden	Equipment / O & M Cost	Annualized Equipment Cost	Labor Rate	Total Cost
GENERATORS							
LQGs	1,207,140	0.01	12,071	$0	$0	$53.00	$851,034
SQGs	929,968	0.01	9,300	$0	$0	$53.00	$639,353
TSDF Captive	77,418	0.01	774	$0	$0	$53.00	$68,128
TSDF Commercial	218,592	0.01	2,186	$0	$0	$53.00	$192,361
TRANSPORTERS							
Paper Copy	1,833,664	0.17	311,723	$0	$0	$53.00	$16,521,313
Electronic	599,454	0.17	101,907	$640,000	$243,873	$53.00	$5,644,953
DESIGNATED TSDFs							
Reviewing Manifest at Delivery	2,421,118	0.17	411,590	$0	$0	$53.00	$21,814,273
Completing Handling Codes	1,864,261	0.02	37,285	$0	$0	$53.00	$1,976,117
Total	9,151,615	varies	886,837	$640,000	$243,873	$53.00	$47,707,531

EXHIBIT E-8

Transmitting the Manifest - Transmitting Copies to Other Parties

Waste Handler	No. of Transmittals	Burden per Transmittal	Total Burden	Equipment Cost	Annualized Equipment Cost	Postage	Labor Rate	Total Cost
DESIGNATED TSDF's SENDING COPIES TO GENERATORS								
Electronic	596,497	0.02	11,930	$0	$0	$0.00	$27.00	$322,109
Regular Post	1,459,696	0.16	233,551	$0	$0	$0.36	$27.00	$6,831,379
Fax	364,924	0.08	29,194	$0	$0	$0.30	$27.00	$897,713
Total	2,421,118	varies	274,675	$0	$0	$0.36	$27.00	$8,051,201

Transmitting the Manifest

EXHIBIT E-9

Transmitting the Manifest (rail and water carload shipments - 33%)						
Waste Handler	No. of Transmittals	Burden per Transmittal	Total Burden	EDI / Postage	Labor Rate	Total Cost
GENERATORS						
LQGs - Overnight Mail	21,511	0.20	4,302	$11.00	$27.00	$352,780
LQGs - Electronic Mail	8,963	0.08	717	$0.00	$27.00	$19,360
LQGs - Fax	5,378	0.08	430	$0.30	$27.00	$13,229
SQGs - Overnight Mail	16,791	0.20	3,358	$11.00	$27.00	$275,369
SQGs - Electronic Mail	6,632	0.08	531	$0.00	$27.00	$14,324
SQGs - Fax	4,198	0.08	336	$0.30	$27.00	$10,326
TSDF Captive - Overnight Mail	1,380	0.20	276	$11.00	$27.00	$22,625
TSDF Captive - Electronic Mail	575	0.08	46	$0.00	$27.00	$1,242
TSDF Captive - Fax	345	0.08	28	$0.30	$27.00	$848
TSDF Commercial - Overnight Mail	3,895	0.20	779	$11.00	$27.00	$63,883
TSDF Commercial - Electronic Mail	1,623	0.02	32	$0.00	$27.00	$876
TSDF Commercial - Fax	974	0.08	78	$0.30	$27.00	$2,396
TRANSPORTERS						
Overnight Mail	21,784	0.20	4,357	$11.00	$27.00	$357,256
Electronic Mail	8,902	0.08	712	$0.00	$27.00	$19,228
Fax	5,446	0.08	436	$0.30	$27.00	$13,397
Total	108,395	varies	16,418	varies	$27.00	$1,167,141

EXHIBIT E-10

Transmitting the Manifest (rail and water intermodal shipments - 66%)						
Delivery	No. of Manifests	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
All Truck Deliveries	7,226	0.20	1,445	$11.00	$27.00	$118,512
Total	7,226	0.20	1,445	$11.00	$24.00	$118,512

EXHIBIT E-11

Transmitting the Manifest (export shipments)						
Shipment Type	No. of Manifests	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Exports	12,000	0.03	360	$0.00	$53.00	$19,080
Total	12,000	0.03	360	$0.00	$53.00	$19,080

EXHIBIT E-12

Transmitting the Manifest (reclamation agreements)						
Waste Handler	No. of Reclamation Agreements	Burden per Manifest	Total Burden	Postage	Labor Rate	Total Cost
Transporters	19,500	1.00	19,500	$0.00	$53.00	$1,033,500
Total	19,500	1.00	19,500	$0.00	$53.00	$1,033,500

Transmitting the Manifest

EXHIBIT E-13

Transmittal Summary

Waste Handler	Total Burden	Total Cost
LQGs	17,521	$1,236,404
SQGs	13,524	$939,372
TSDF Captive	1,124	$92,843
TSDF Commercial	689,341	$30,124,990
Transporters	440,440	$23,727,240
Total	1,161,950	$56,120,849

Recordkeeping the Manifest

EXHIBIT E-14

Recordkeeping the Manifest (clerical filing costs and mailing costs for transporters)

Waste Handler	No. of Copies/ Transmittals	Burden per Copy/ Transmittal	Total Burden	EDI / Postage	Labor Rate	Total Cost
GENERATORS						
LQGs - Filing Electronic Copy	603,569	0.01	6,036	$0.00	$27.00	$162,964
LQGs - Filing Paper Copy	1,810,711	0.10	181,071	$0.00	$27.00	$4,888,920
SQGs - Filing Electronic Copy	446,571	0.01	4,466	$0.00	$27.00	$120,574
SQGs - Filing Paper Copy	1,413,365	0.10	141,337	$0.00	$27.00	$3,816,086
TSDF Captive - Filing Electronic Copy	38,708	0.01	387	$0.00	$27.00	$10,451
TSDF Captive - Filing Paper Copy	116,128	0.10	11,613	$0.00	$27.00	$313,545
TSDF Commercial - Filing Electronic Copy	109,296	0.01	1,093	$0.00	$27.00	$29,510
TSDF Commercial - Filing Paper Copy	327,888	0.10	32,789	$0.00	$27.00	$885,298
TRANSPORTERS						
Filing Electronic Copy	599,454	0.01	5,995	$0.00	$27.00	$161,853
Filing Paper Copy	1,833,664	0.17	311,723	$0.00	$27.00	$8,416,518
Sending Copies to Central Office by Overnight Mail	171	0.00	-	$5,600.00	$27.00	$1,274,000
Sending Copies to Central Office by US Postal Mail	41,716	0.08	3,337	$0.90	$27.00	$127,651
Sending Copies via EDI to Central Office	545,503	0.02	10,910	$0.00	$27.00	$294,572
DESIGNATED TSDFs						
Filing Electronic Copy	596,497	0.01	5,965	$0.00	$27.00	$161,054
Filing Paper Copy	1,824,621	0.17	310,185	$0.00	$27.00	$8,375,008
Total	9,720,472	varies	1,026,906	varies	$27.00	$29,038,003

EXHIBIT E-15

Recordkeeping the Manifest (intermodal shipments)

All Waste Handlers	No. of Transmittals	Burden per Transmittal	Total Burden	Postage	Labor Rate	Total Cost
Ramp/Dock Personnel	7,226	0.08	578	$0.90	$27.00	$22,113

EXHIBIT E-16

Recordkeeping the Manifest (capital cost for file cabinets)

All Waste Handlers	No. of Manifest Copies	Copies per Cabinet / Diskette	Cost per Cabinet/ Diskette	Total Cabinets/ Diskette	Total Cost	Total Annualized Cost
File Cabinets for Hard Copies	21,976,838	16,000	$549	1,374	$754,080	$287,344
Electronic Storage for Electronic Copies	7,184,578	14	$0.37	513,184	$189,878	$72,353
Total	29,161,416	varies	varies	127,470	$943,958	$359,697

Recordkeeping the Manifest

EXHIBIT E-17

Recordkeeping Summary		
Waste Handler	Total Burden	Total Cost
Filing Activities		
LQGs	187,107	5,152,202
SQGs	145,802	3,972,981
TSDF Captive	12,000	330,430
TSDF Commercial	350,032	9,566,278
Transporters	332,543	10,397,921
Total	1,027,484	$29,419,812

5. This row includes the number of transporter companies (118) involved in highway overnight delivery.

Acquiring the Manifest

EXHIBIT E-18

Acquiring Manifest (manifest form costs)			
Waste Handler	No. of Manifests	Cost of Manifest	Total Cost
LQGs / Brokers	350,071	$2.50	$875,177
SQGs / Brokers	92,997	$2.50	$232,492
TSDF Captive	77,418	$2.50	$193,545
TSDF Commercial	1,801,866	$2.50	$4,504,664
Transporters	110,767	$2.50	$276,917
Total	2,433,118	$2.50	$6,082,795

EXHIBIT E-19

Acquiring Manifest (labor acquisition cost)						
Waste Handler	No. of Waste Handlers	No. of Form Orders	Burden per Order	Total Burden	Labor and Telephone Costs	Total Cost
LQGs / Brokers	8,022	1.0	0.25	2,006	$32.00	$64,177
SQGs / Brokers	1,610	0.4	0.25	151	$32.00	$4,831
TSDF Captive	1,518	1.0	0.25	380	$32.00	$12,144
TSDF Commercial	380	2.0	0.25	190	$32.00	$6,072
Transporters	125	2.0	0.25	63	$32.00	$2,000
Total	11,655	varies	0.25	2,788	$32.00	$89,224

EXHIBIT E-20

Registering with EPA to Print Manifest Forms						
Waste Handler	No. of Waste Handlers	Annual Burden per Registration	Total Burden	Labor Costs	Mailing Costs	Total Cost
Brokers of LQGs	22	0.17	3.74	$42.50	$0.36	$166.87
Brokers of SQGs	60	0.17	10.20	$42.50	$0.36	$455.10
TSDF Commercial	127	0.17	21.51	$42.50	$0.36	$959.50
Total	209	0.17	35.45	$42.50	$0.36	$1,581.47

EXHIBIT E-21

Acquisition Summary		
Waste Handler	Total Burden	Total Cost
LQGs / Brokers	2,009	$939,521
SQGs / Brokers	161	$237,778
TSDF Captive	380	$205,689
TSDF Commercial	211	$4,511,696
Transporters	63	$278,917
Total	2,824	$6,173,601

Sending Copies to States

EXHIBIT E-22

Sending Copies to States							
	Submittals	Burden per Submittal	Total Burden	EDI / Postage	Copy	Labor Rate	Total Cost
4-PART - GENERATOR							
Regular Mail	168,697	0.16	26,992	$0.36	$0.10	$27.00	$806,372
Certified Mail	168,697	0.16	26,992	$2.60	$0.10	$27.00	$1,184,254
Electronic Submission	137,874	0.08	11,030	$0.00	$0.00	$27.00	$297,809
Fax	84,349	0.08	6,748	$0.30	$0.00	$27.00	$207,497
6-PART GENERATOR							
Regular Mail	183,366	0.16	29,339	$0.36	$0.00	$27.00	$858,155
Certified Mail	183,366	0.16	29,339	$2.60	$0.00	$27.00	$1,268,896
Electronic Submission	149,863	0.08	11,989	$0.00	$0.00	$27.00	$323,705
Fax	91,683	0.08	7,335	$0.30	$0.00	$27.00	$225,541
8-PART GENERATOR							
Regular Mail	212,705	0.16	34,033	$0.36	$0.00	$27.00	$995,460
Certified Mail	212,705	0.16	34,033	$2.60	$0.00	$27.00	$1,471,919
Electronic Submission	173,842	0.08	13,907	$0.00	$0.00	$27.00	$375,498
Fax	106,353	0.08	8,508	$0.30	$0.00	$27.00	$261,627
DESIGNATED TSDFs							
DTSDF	4,554	0.16	729	$3.10	$0.00	$27.00	$33,791
Total	1,878,055	varies	240,972	varies	varies	$27.00	$8,310,522

EXHIBIT E-23

Summary for Sending Copies to States		
Waste Handler	Total Burden	Total Cost
LQGs	122,524	$4,221,133
SQGs	88,890	$3,062,391
TSDF Captive	7,207	$248,302
TSDF Commercial	22,350.51	$778,696.51
Transporters	-	-
Total	240,972	$8,310,522

Reporting to States

EXHIBIT E-24

Exception Reports - Generators							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage/ Email	Copying	Labor Rate	Total Cost
LQGs	6,036	1.10	6,639	$0.36	$0.10	$45.20	$302,871
SQGs	4,650	0.50	2,325	$0.36	$0.10	$45.20	$107,225
TSDF Captive	387	1.10	426	$0.36	$0.10	$45.20	$19,424
TSDF Commercial	1,093	1.10	1,202	$0.36	$0.10	$45.20	$54,845
Total	12,166	varies	10,592	$0.36	$0.10	$45.20	$484,365

EXHIBIT E-25

Discrepancy Reports- Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage and Telephone Costs	Copying	Labor Rate	Total Cost
DTSDFs	9,684	2.50	24,211	$5.36	$0.10	$45.20	$1,147,223

EXHIBIT E-26

Unmanifested Waste Reports - Designated TSDFs							
Waste Handler	No. of Reports	Burden per Report	Total Burden	Postage	Copying	Labor Rate	Total Cost
DTSDFs	370	2.00	740	$0.36	$0.10	$45.20	$33,618

EXHIBIT E-27

Reporting Summary		
Waste Handler	Total Burden	Total Cost
LQGs	6,639	$302,871
SQGs	2,325	$107,225
TSDF Captive	426	$19,424
TSDF Commercial	26,153	$1,235,686
Total	35,543	$1,665,206

REVISED RCRA MANIFEST FORM, ELECTRONIC AUTOMATION, AND FAX:
LOW ADOPTION RATE SCENARIO:
ANNUAL BURDEN AND COST TO WASTE HANDLERS

Employee Training

EXHIBIT E-28

Employee Training

Waste Handler	No. of Waste Handlers	Introductory Burden	Refresher Burden	Internet Burden	Biennial Burden	Labor Rate	Total Biennial Cost	Annualized Cost
LQGs / Brokers	8,044	4.00	2.0	0.0	48,264	$90.00	$4,343,760	$2,402,498
SQGs / Brokers	1,669	2.40	1.2	0.0	6,008	$90.00	$540,756	$299,088
TSDF Captive	1,518	5.60	2.8	0.0	12,751	$90.00	$1,147,608	$634,733
TSDF Commercial	506	21.50	12.8	0.0	17,356	$90.00	$1,562,022	$863,942
Transporters	500	126.00	75.0	0.0	100,500	$90.00	$9,045,000	$5,002,715
Total	12,237	varies	varies	0.0	184,879	$90.00	$16,639,146	$9,202,975

EXHIBIT E-29

Training Summary

Waste Handler	Total Burden	Total Cost
LQGs	24,132	$2,402,498
SQGs	3,004	$299,088
TSDF Captive	6,376	$634,733
TSDF Commercial	8,678	$863,942
Transporters	50,250	$5,002,715
Total	92,440	$9,202,976

EDI Cost and Total Burden

EXHIBIT E-30

EDI Startup Costs			
Waste Handler	Number of Waste Handlers	Annualized Startup Cost	Total Annualized Startup Cost
LQG / Brokers	922	$1,183	$1,090,726
SQG / Brokers	60	$335	$20,100
TSDF Captive	380	$335	$127,300
TSDF Commercial	127	$1,463	$185,801
Transporter	100	$2,962	$296,200
Total	1,589	varies	$1,720,127

EXHIBIT E-31

EDI Operating Parameters					
Waste Handler	Number of Waste Handlers	Burden Hours	Total Burden	Labor Rate	Total Costs
LQG	922	15	13,830	$45.20	$625,116
SQG / Brokers	60	15	900	$45.20	$40,680
TSDF Captive	380	15	5,700	$45.20	$257,640
TSDF Commercial	127	15	1,905	$45.20	$86,106
Transporter	100	15	1,500	$45.20	$67,800
Total	1,589	15	23,835	$45.20	$1,077,342

EXHIBIT E-32

Total Aggregate Annual Burden and Cost		
Waste Handler	Total Burden	Total Cost
LQGs	692,830	$29,946,376
SQGs	355,872	$13,138,365
TSDF Captive	68,727	$3,472,270
TSDF Commercial	1,695,685	$74,338,238
Transporters	872,514	$41,927,663
Total	3,685,628	$162,822,912