COST IMPACT ANALYSIS FOR PROPOSED CHANGES IN THE DEFINITION OF SOLID WASTE AND MANAGEMENT STANDARDS FOR WASTES THAT ARE USED, REUSED, RECYCLED OR RECLAIMED

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The Environmental Protection Agency is proposing to amend the definition of solid waste and management standards for wastes that are used, reused, or reclaimed1/ under the Resource Conservation and Recovery Act (RCRA), in order to target the hazardous waste regulations more directly at those recycling operations that have the potential to pose a substantial hazard to human health or the environment. The proposed changes will reduce regulatory requirements under RCRA for establishments engaged in a number of recycling activities and will increase requirements for those engaged in other such activities. The purpose of this report is to assess the impact of the proposed changes on compliance costs for the directly-affected establishments.

This analysis was undertaken to comply with the requirements of Executive Order 12291. That order requires that the Agency prepare a Regulatory Impact Analysis which assesses the costs and benefits of proposed regulations for any major regulation or regulatory change. A "major rule" is one that is likely to result in:

1/These various types of activities are referred to generally as "recycling" throughout this report.

- an annual effect on the economy of $100 million or more;

- a major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions;

- significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The analysis described in this report assesses whether the proposed changes constitute a "major rule" as defined above, and hence whether a complete Regulatory Impact Analysis is required by Executive Order 12291. In order to determine the likelihood of major increases in costs or prices or of significant adverse effects on competition, employment, and other economic factors, changes in costs of compliance for the directly-affected establishments are calculated. This analysis of costs is based on "worst case" assumptions about the number and characteristics of the affected establishments and the unit costs of the affected regulatory activities, and therefore overstates cost increases and understates savings. If no industry experiences significant increases in cost as a result of the proposed changes based on this "worst case" analysis, then it is unlikely that any of the criteria for a major rule will apply.

The results of this analysis show that the proposed changes result in a net savings in compliance costs to the regulated community of $24.4 million. Three industries could experience moderate increases in costs, but significant adverse effects on competition, employment, or other economic factors are not expected to result from these cost increases. Therefore, the proposed changes in the definition of solid waste and management standards do not constitute a major rule as defined in Executive Order 12291.

The remainder of this report is organized as follows:

- Chapter II briefly describes the changes being proposed and characterizes the establishments affected by the changes.

- Chapter III describes the regulatory requirements affected by the proposed changes and calculates unit compliance costs for each activity.

- Chapter IV calculates the aggregate cost impacts of the proposed changes, based on information on the affected establishments and unit costs by activity developed in the previous two chapters.

- Chapter V discusses the effects of the proposed changes on those industries which will experience increased requirements.

- Appendix A provides a copy of the proposed definition of solid waste.

- Appendix B describes adjustments made by IEc to estimates developed by other contractors of the number of establishments affected by the proposed changes.

- Appendix C describes the adjustments made to the unit costs presented in Chapter III.

Exhibits referred to in each chapter are located at the end of the chapter.

DESCRIPTION OF AFFECTED ESTABLISHMENTS CHAPTER 2

This chapter identifies the number of establishments by industry that will be affected by the proposed changes in the definition of solid waste and management standards for wastes that are recycled, and also characterizes those establishments by types of storage used and by the volumes of affected wastes.

NUMBER OF AFFECTED ESTABLISHMENTS

A report prepared for the Agency by JRB Associates1/ (1) identifies the activities affected by the combination of the proposed changes in the definition of solid waste and certain exemptions, and (2) estimates the number of establishments practicing these activities.

A total of 102 types of recycling activities were identified by JRB as potentially affected, including on-site and off-site use, reuse, and reclamation of listed and non-listed spent materials, sludges, and by-products. Of the 102 potentially-affected activities, JRB determined that 44 activities would not be affected by the proposed changes and 58 activities would be subject to either reduced or increased regulatory requirements. From these

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1/JRB Associates, Impact on the Regulated Community of Possible Changes in the Definition of Solid Waste: Use, Reuse, Recycling, Reclamation, February 1983.

58 activities, 15 were selected for further study, 12 of which were identified as currently being practiced by industry. These 12 activities were selected for further study since they are likely to account for the vast majority of impacts resulting from the regulatory change. (See the report prepared by JRB Associates for details on the selection of specific activities.)

JRB then estimated the number of establishments engaged in these 12 activities by industry. Their review identified 39 industry categories which are involved in recycling that may be affected significantly. Of this total, estimates of the number of affected establishments were made in 28 industrial categories. (The number of affected establishments could not be quantified for the other 11 industry categories. However, a qualitative analysis of changes in requirements for these 11 industry categories is presented in the JRB report. See JRB report pp. 4-9 to 4-14 for this analysis). This report considers cost impacts only for those industry categories where the number of affected establishments was estimated by JRB. For two of the 12 activities studied, JRB determined that no establishments would be subject to changes in regulatory requirements. Therefore, IEc calculated cost impacts for ten activities (listed in Exhibit II-1).

The effect of some of the proposed changes is to exempt from the hazardous waste regulations certain materials destined for recycling which are now regulated under the hazardous waste management regulations. In other cases, materials not now covered under the hazardous waste management regulations will be regulated under the proposed changes. The proposed changes include the following:

- Establishments practicing on-site reclamation or using/reusing listed spent materials and by-products and all sludges (except when used/reused in a manner constituting disposal or burned to recover energy or to produce fuel), will either be subject to reduced regulatory requirements or will be released from control under the hazardous waste management regulations entirely.

- Off-site reclaimers of non-listed spent materials and by-products, as well as generators sending non-listed spent materials and by-products to those reclaimers, will be subject to increased regulatory requirements or will be newly regulated under the hazardous waste management regulations.

- Off-site use and reuse of listed spent materials and by-products and of all sludges (with the ex-

ceptions noted earlier) will also be subject to reduced regulatory requirements or released from the hazardous waste management regulations, both for the generator of the material and for the off-site user/reuser.

In addition to the proposed changes described above (and considered by JRB Associates as part of their analysis), the Agency is also proposing certain changes that were not considered by JRB Associates in their analysis. Some of the changes provide for exemptions from hazardous waste control, while others tailor the standards in ways that affect the costs of compliance. IEc has also evaluated the effects of these proposed changes in conducting this cost analysis. The additional changes considered in the cost analysis are:

- An exemption from hazardous waste control for generators and off-site recyclers of wastes where recycling is performed under a "batch-tolling" agreement. In batch-tolling, recycled materials are returned to the same generator who originated the material, the generator retains title to the materials throughout the process, the materials are kept separate from other recycled materials in processing, and the recycler is paid by the generator based on the amount of material returned.

- A reduction in requirements for generators and off-site recyclers of wastes where the recycling is performed under tolling arrangements other than batch-tolling agreements (typically, where the same or equivalent materials are returned to the generator in some proportion to the amount received from the generator, but where title is not retained by the generator and the materials are not segregated in processing).

A copy of the proposed definition of solid waste and of the proposed management standards is provided in Appendix A to this report. IEc made several adjustments to JRB's estimates of the number of affected establishments to reflect proposed regulatory changes not reflected in those estimates. These adjustments are described in Appendix B.

Establishments reusing or reclaiming affected materials on-site, or sending materials off-site for reuse/reclamation, will be subject to increased or decreased regulatory requirements as generators, as storage facilities or as "short storers" (40 CFR 262.34). The requirements for storage facilities are more strin-

gent than for "short storers"--the former requirements apply to establishments storing wastes for more than 90 days in tanks or containers or storing in waste piles or in surface impoundments for any length of time, while the latter apply to generators who store hazardous wastes for less than 90 days in tanks or containers. Under the proposed rules, affected materials being stored in surface impoundments will not be released from regulatory control. Off-site establishments which accept affected materials for reuse/reclamation will be subject to increased or decreased requirements as storage facilities. The affected generator, "short storage", and storage facility requirements are described in more detail in the next chapter.

Of the establishments subject to increased requirements, some do not now handle hazardous wastes and hence will be regulated under Subtitle C of RCRA for the first time as a result of the proposed changes. Others are already regulated under RCRA, and will simply be subject to requirements for additional volumes of waste. Similarly, establishments may be subject to requirements for smaller volumes of waste or may be released from the hazardous waste management regulations entirely, depending on whether or not they currently handle other hazardous wastes.

Based on information provided by the JRB report, by the background materials cited in that report, and by OSW personnel, IEc classified the affected establishments by industry for each of the ten activities considered. The number of affected establishments for each activity and industry, and the nature of the change in requirements for each, are identified in Exhibit II-2.

CHARACTERISTICS OF AFFECTED ESTABLISHMENTS

In order to calculate changes in compliance costs, it was necessary to estimate the volumes of waste affected by the proposed changes and to determine what methods of storage are used by the affected establishments. A number of sources were used to determine the characteristics of these establishments.

Where Standard Industrial Classification (SIC) codes were available for the relevant industries, data on waste volumes and on storage practices were obtained from the Hazardous Waste Data Management System (HWDMS). This data base includes information submitted to the Agency on Notification forms and Part A permit applications. Only the Part A applications, however, provide data on waste volumes and on the types of storage used (containers, tanks, waste piles, or surface impoundments). Part A data reported by establishments regulated as storage facilities in

each industry were obtained from the HWDMS. In the absence of more reliable information, it was assumed that the average waste volumes per facility and the relative use of different storage methods reported by storage facilities are typical of other facilities in the same industry handling the same wastes.

Where the required information could not be estimated from the HWDMS database, IEc reviewed the JRB report, the background material cited by JRB, and other sources2/ to obtain information on volumes of affected wastes and on storage practices for the relevant industries. Exhibit II-3 presents the average volumes of affected wastes and the associated storage practices estimated by IEc for the affected establishments.

The next chapter describes the generator, "short storage" and storage facility requirements affected by the proposed changes and develops estimates of the changes in compliance costs for each type of activity.

2/Arthur D. Little, Inc.,Economic Impact Analysis of RCRA Interim Status Standards, November 1981; Development Planning & Research Associates, Impact Analysis of Proposed RCRA-FSS Regulations 1980-1990, November 1980; and information provided by industry sources or by OSW personnel.

Exhibit II-1

LIST OF CURRENTLY-PRACTICED ACTIVITIES
SIGNIFICANTLY AFFECTED BY THE PROPOSED CHANGES[1]

Activity No.[2]	Activity Description
Activities Subject to Decreased Requirements	
16a	On-site reclamation of listed spent materials (spent solvents).
17a	On-site reclamation of listed sludges.
18a	On-site reclamation of listed by-products.
23b	Off-site reclamation of non-listed sludges (for reclamation of lead, copper, zinc, aluminum, mercury and tin) where the reclaimed material is not used by the reclaimer.
46a	On-site use and reuse of listed spent materials (spent pickle liquor).
48a	On-site use and reuse of listed by-products.
49a	Off-site use and reuse of listed spent materials (spent pickle liquor).
50a and b	Off-site use and reuse of listed and non-listed sludges.
Activities Subject to Increased Requirements	
22b	Off-site reclamation of non-listed spent materials (spent solvents, spent activated carbon, spent catalysts and metals) where the reclaimed material is not used by the reclaimer.
28b and 31b	Off-site reclamation of non-listed spent materials (spent lead-acid batteries).

[1] Includes only those activities for which the number of affected establishments was estimated by JRB.

[2] Activity numbers are those used in the JRB report, op. cit.

Exhibit II-2

ESTABLISHMENTS AFFECTED BY PROPOSED CHANGES IN THE DEFINITION OF SOLID WASTE AND MANAGEMENT STANDARDS FOR WASTES THAT ARE RECYCLED

Activity	Industry (SIC)	# Facilities Affected	Nature of Change in Requirements
16a	Paint & Allied Products (2851)	66	Reduced generator and reduced "short storage" requirements (40CFR262.34) due to reduced volume of hazardous wastes being regulated.
on-site reclam. listed sp. matr'ls	Metals Manufacturing (35, 36, 37, 39)	2322	"
	Pesticide Production (2879)	530	"
	Pharmaceuticals (2833)	1240	"
	Dry Cleaning (7216)	360-720	"
		4158-4878	
17a	Secondary Lead Smelters (3341)	100	Reduced generator requirements and reduced storage requirements due to reduced volume of hazardous wastes being regulated. (Listed emission control dusts usually stored in piles; therefore, released from storage requirements; contains no free liquids).
on-site reclam. listed sludges			
18a	Chlorine Producer (Mercury Cell) (2812)	1	Reduced generator and storage requirements due to reduced volume of hazardous wastes being regulated. (Brine purification muds usually stored in piles; therefore, released from storage requirements).
on-site reclam. listed by-prods.			

Exhit II-2
(con't)

Activity	Industry (SIC)	# Facilities Affected	Nature of Change in Requirements
22b** off-site reclam. non-listed sp.matr'ls	Paint & Allied Products (2851)	42*	Newly regulated as generators and as "short storers" (under 40CFR262.34) of non-listed solvents being sent to off-site reclaimers, except solvents reclaimed under batch tolling arrangements.
	Solvent Reclaimers	150-200	Additional storage facility requirements for non-listed solvents which are reclaimed, except solvents reclaimed under batch tolling agreements; in addition, reduced storage facility requirements for listed solvents (which are currently regulated) when reclaimed under batch tolling agreements.
28b and 31b on-site reclam. non-listed sp. matr'ls and off-site reclam. non-listed sp. matr'ls	Secondary Lead Smelters (3341)	60-80	Additional storage facility requirements due to cracking of spent batteries (store in trailers/drums/piles).
	Independent Battery Crackers	20-50	Additional storage facility requirements due to cracking of spent batteries (store in trailers/drums/piles).
23b off-site reclam. non-listed sludges	Secondary Lead Smelters (3341)	103	Reduced storage facility requirements associated with reclamation of lead from non-listed sludges (sludges from battery mfgr. and sludges from production of tetraethyl lead).
	Secondary Zinc Smelters (3341)	50	Reduced storage facility requirements associated with reclamation of zinc from non-listed sludges from numerous sources (brass mills, secondary copper smelters, etc.).

Exh II-2
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Activity	Industry (SIC)	# Facilities Affected	Nature of Change in Requirements
46a on-site use/reuse listed sp. matr'ls	Steel Finishers (3315-3317)	8	Reduced generator and "short storage" requirements (40CFR262.34) associated with on-site use/reuse of spent pickle liquors in wastewater treatment facilities.
48a on-site use/reuse listed by-prods	Steel Mills (3312) (Coking Operations)	30	Reduced generator and "short storage" requirements (40CFR262.34) due to on-site use/reuse of decanter tank tar sludge from coking operations. (Contains no free liquids.)
	Organic Chemical Producers (2869)	17	Reduced generator and "short storage" requirements (40CFR262.34) associated with on-site use/reuse of listed by-products as raw materials (2 facilities reusing 5 by-products each, 2 reusing 3 each, the remainder reusing 1 each).
49a off-site use/reuse listed sp. matr'ls	Steel Finishers (3315-3317)	10	Reduced generator and "short storage" requirements (40CFR262.34) associated with spent pickle liquor being sent off-site (to Canada) for use/reuse in wastewater treatment facilities.
	" "	60	Reduced generator and "short storage" requirements (40CFR262.34) for spent pickle liquor being sent to off-site domestic facilities for use/reuse in wastewater treatment facilities, water purification facilities, and in iron oxide or ferric chloride production.

Exhi. . II-2
(con't)

Activity	Industry (SIC)	# Facilities Affected	Nature of Change in Requirements
49a (con't)	Iron Oxide Producers (2819)	4	Released from storage facility requirements (and thus relieved from all requirements under the hazardous waste management regulations) associated with acceptance of spent pickle liquors for use/reuse.
	" "	2	Reduced storage facility requirements associated with acceptance of spent pickle liquors for use/reuse.
	Ferric Chloride Producers (2819)	10	Reduced storage facility requirements associated with acceptance of spent pickle liquors for use/reuse.
	Water Purification Plants	2	Released from storage facility requirements (and thus relieved from all requirements under the hazardous waste management regulations) associated with acceptance of spent pickle liquors for use/reuse in water purification.
	Brokers Handling Pickle Liquors	8	Reduced storage facility requirements associated with acceptance of pickle liquors for resale and reuse.
	Privately-Owned Wastewater Treatment Facilities	4	Reduced storage facility requirements associated with acceptance of spent pickle liquor for use/reuse in wastewater treatment.
	Publicly-Owned Treatment Works (POTWs)	47	Released from permit-by-rule requirements (40CFR122.26(c)) associated with acceptance of spent pickle liquors for use/reuse in wastewater treatment.

Exhibit II-2
(con't)

Activity	Industry (SIC)	# Facilities Affected	Nature of Change in Requirements
50a and b off-site use/reuse listed & non-listed sludges	Fertilizer Manufacturers (2873/2874)	3	Released from storage facility requirements (and thus relieved from all requirements under the hazardous waste management regulations) associated with acceptance of listed emission control dusts from steel producers used/reused for their zinc content. (Contains no free liquids.)
	Fertilizer Manufacturers (2873/2874)	20	Released from storage facility requirements (and thus relieved from all requirements under the hazardous waste management regulations) associated with acceptance of non-listed sludges from metal finishing facilities used/reused for their zinc content.

*Estimate adjusted as described in Appendix B.

**Three carbon reclaimers were estimated by JRB to be newly regulated as storage facilities due to the acceptance of non-listed spent carbon (under the present regulations these wastes are not regulated when reclaimed). However, as a result of additional changes to the proposed management standards, we now estimate that no carbon reclaimers will be affected by the proposed changes to the hazardous waste management regulations. See Appendix B for details.

Exhibit II-3

CHARACTERISTICS OF AFFECTED ESTABLISHMENTS

Activity	Industry (SIC)	Storing in Containers		Storing in Tanks		Storing in Waste Piles	
		No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]
16a	Paint & Allied Products (2851)	51	142	15	727	-	-
	Metals Manufacturing (35,36,37,39)	2,055	927	267	1,000	-	-
	Pesticide Production (2879)	324	5,000	206	5,000	-	-
	Pharmaceuticals (2833)	726	500	514	1,500	-	-
	Dry Cleaning (7216)	180	40	180	100	-	-
17a	Secondary Lead Smelters (3341)	-	-	-	-	100	5,600
18a	Chlorine Producer (Mercury Cell) (2812)	-	-	-	-	1	5,952

Exhibit II-3
(con't)

Activity	Industry (SIC)	Storing in Containers		Storing in Tanks		Storing in Waste Piles	
		No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]
22b	Paint & Allied Products (2851)	37	154	5	506	-	-
	Solvent Reclaimers	25	2000[2]	25	2000[2]	-	-
	Solvent Reclaimers	75	290[2]	75	290[2]	-	-
28b and 31b	Secondary Lead Smelters (3341)	70	18,000[3]	-	-	10	18,000[3]
	Independent Battery Crackers	25	18,000[3]	-	-	25	18,000[3]
23b	Secondary Lead Smelters (3341)	42	2,000	-	-	61	2,000
	Secondary Zinc Smelters (3341)	-	-	-	-	50	2,000
46a	Steel Finishers (3315-3317)	1	16,000	7	16,000	-	-
48a	Steel Mills (3312) (Coking Operations)	5	2,000	25	2,000	-	-

Exhibit II-3
(con't)

Activity	Industry (SIC)	Storing in Containers		Storing in Tanks		Storing in Waste Piles	
		No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]
48a (con't)	Organic Chemical Producers[4] (2869)	1	10,000	1	10,000	-	-
		1	6,000	1	6,000	-	-
		2	2,000	11	2,000	-	-
49a	Steel Finishers (3315-3317)	1	16,000	9	16,000	-	-
	Steel Finishers (3315-3317)	5	16,000	55	16,000	-	-
	Iron Oxide Producers (2819)	1	11,800	3	36,600	-	-
	Iron Oxide Producers (2819)	-	-	2	36,600	-	-
	Ferric Chloride Producers (2819)	-	-	10	314,000	-	-
	Water Purification Plants	1	1,000,000[5]	1	1,000,000[5]	-	-
	Brokers Handling Pickle Liquors	2	500,000	6	500,000	-	-
	Privately-Owned Wastewater Treatment Facilities	1	1,000,000[5]	3	1,000,000[5]	-	-
	Publicly-Owned Treatment Works (POTWs)	6	1,000,000[5]	41	1,000,000[5]	-	-

Exhibit II-3
(con't)

Activity	Industry (SIC)	Storing in Containers		Storing in Tanks		Storing in Waste Piles	
		No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]	No. of Facilities	Average Volume[1]
50a and b	Fertilizer Manufacturers (2873/2874)					3	4,540
	Fertilizer Manufacturers (2873/2874)					20	1,000

[1] Average annual volume of wastes affected by the proposed changes, in metric tons.

[2] Estimate based on information provided in the Background Document: Subtitle C, Identification and Listing of Hazardous Waste (Finalization of May 19, 1980 Hazardous Waste List), November 14, 1980 pp. 44; adjusted as described in Appendix B.

[3] Estimate based on information provided to OSW personnel by industry sources.

[4] Seventeen facilities, two of which experience reduced requirements for five wastes each, two for three wastes each and 13 for one waste each, with estimated average volume per affected waste of 2000 MT/year.

[5] Estimate provided by OSW personnel.

This chapter presents estimates of unit compliance costs for the RCRA requirements affected by the proposed changes. The basic cost estimates were obtained from previous cost impact analyses performed for or by EPA, and were adjusted by IEc to provide unit cost estimates in a form suitable for this analysis. Except where regulatory requirements have changed or more recent cost data are available, IEc did not change the basic cost estimates reported in these previous studies.

SOURCE OF COST ESTIMATES

IEc obtained estimates of unit compliance costs for the affected regulatory requirements from a number of sources. The costs of activities required under Interim Status were obtained from the Arthur D. Little, Inc. (ADL) Economic Impact Analysis for those regulations.1/ The costs for the revised financial assurance requirements were calculated based on the results of the Regulatory Impact Analysis for those regulations,2/ as adjusted in the Regulatory Analysis for the land disposal

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1/Arthur D. Little, Inc., Economic Impact Analysis of RCRA Interim Status Standards, November 1981.

2/Putnam, Hayes & Bartlett, Inc., and Industrial Economics, Inc., Regulatory Impact Analysis of the Financial Assurance and Liability Insurance Regulations, September 1981.

regulations.3/ Cost estimates for Final (General) Status Standards for waste piles were also obtained from the Regulatory Analysis for the land disposal regulations.4/ Estimates of Final (General) Status Standard costs for the other affected storage practices (tanks and containers) were obtained from preliminary analyses performed by OSW personnel. JRB Associates has developed more refined estimates of certain tank and container compliance costs. Where possible, the preliminary OSW cost estimates were updated based on the results of the JRB study.5/

UNIT COST ESTIMATES

IEc categorized the unit costs of each requirement into initial expenses and capital investments (which are one-time expenditures incurred at the outset to comply with RCRA), recurring annual costs, and costs incurred at the end of facility life (closure costs). In addition, costs are distinguished by whether they are fixed or variable with respect to the number or volume of wastes handled. Finally, all costs are expressed as annualized after-tax costs, in constant 1981 dollars. Appendix C describes the adjustments made to the unit cost estimates in more detail.

Unit costs were developed for the generator requirements, the Interim Status Standards (ISS) which apply to establishments prior to receiving permits, and the Full (General) Status Standards which add design, operating, and other standards to the ISS requirements already in effect. The regulatory requirements affected by the proposed changes and the unit compliance costs for each requirement are presented in separate sections below.

3/Unit costs for the various land disposal requirements were obtained from Sobotka & Company, Inc. and Pope-Reid Associates. These cost estimates were subsequently published in the Docket Report, Supporting Documents for the Regulatory Analysis of the Part 264 Land Disposal Regulations.

4/Ibid.

5/JRB Associates, Inc., Macro Profile: Cost Factors for Storage Facilities, Draft Report, March 1982. More complete estimates of the costs of container and tank requirements are now being prepared for OSW by Pope-Reid Associates. These cost calculations were not available in time for use in this study.

A. Generator Requirements

Generators who generate wastes that are recycled must comply with the following requirements under RCRA (40 CFR 262)6/:

- Determine whether the wastes are hazardous by consulting the list of hazardous wastes issued by EPA (for listed wastes) or by determining whether the waste exhibits any one of four characteristics (ignitability, corrosivity, reactivity, or EP toxicity); also determine whether the waste is excluded from the hazardous waste management regulations.

- Obtain an identification number from EPA.

- Meet the requirements specified for "short storage" under 40 CFR 262.34 if wastes are stored in tanks or containers for less than 90 days.

- Submit a biennial report on hazardous waste activities.7/

Generators who ship wastes off-site for recycling must also perform a number of additional recordkeeping and reporting duties associated with manifests for the wastes shipped, and must label containers and ship in approved containers. Generators who contract for recycling under tolling arrangements (other than batch tolling agreements which are proposed to be exempt from all hazardous waste requirements) are not required to prepare manifests for the wastes shipped but must meet other requirements for shipping. In addition, generators of spent lead-acid batteries are exempt from control under the Subtitle C regulations. Therefore, manifesting and all other subsequent requirements do not apply.

6/Hazardous wastes generated by small quantity generators--those generating less than 1000 kg of hazardous waste per month or 1 kg of acutely hazardous waste per month, or accumulating no more than 1000 kg of hazardous waste or 1 kg of acutely hazardous waste over any period of time--are conditionally excluded from regulation under the hazardous waste management regulations. Other specific wastes, such as pesticides used by farmers, are also conditionally excluded from the hazardous waste management regulations.

7/The Agency has substituted a biennial report for the annual report proposed originally (48 Fed. Reg. 3977 (Jan. 28, 1983)).

Exhibit III-1 presents unit cost data for all generator requirements except those associated with "short storage" activities (for which unit costs are described later in this section). All costs in this exhibit were obtained from the ADL report on ISS requirements and were updated to 1981 dollars by IEc. All existing generators that are affected by the proposed changes are assumed to be in compliance with the hazardous waste management regulations. Hence, for generators already subject to RCRA regulations, all initial costs have already been incurred. For establishments newly regulated under the proposed changes, these costs have not yet been incurred.

B. Storage Facility Requirements: General

Establishments that accept hazardous wastes from others and store those wastes prior to recycling are subject to RCRA requirements as storage facilities. Generators who store wastes for more than 90 days prior to recycling in tanks or containers, or in waste piles or surface impoundments for any length of time, are also regulated as storage facilities. All storage facilities must meet the general administrative requirements as well as standards specific to the type of storage used (tanks, containers, waste piles or surface impoundments).

Exhibit III-2 presents unit cost estimates for the general requirements affecting all storage facilities. These requirements include:

- obtaining an EPA identification number,
- application for Part A and Part B permits,
- biennial report on hazardous waste activities,
- periodic inspections of the facility,
- contingency planning,
- personnel training,
- analysis of wastes being stored, with more extensive requirements for off-site facilities receiving wastes from others (facilities performing recycling under tolling arrangements will be exempt from waste analysis requirements; reclaimers of spent lead-acid batteries are also exempt from the waste analysis requirements),

preparation of a closure plan,

manifest handling (for wastes transported off-site; will not be required, however, for facilities recycling under non-batch tolling arrangements),

obtaining liability insurance to cover claims for injury to persons or property in the event of sudden accidents,

closure of the facility at the end of the facility life in accordance with the closure plan (specific requirements for closure vary by type of storage used),

providing assurance of financial capability to cover estimated closure costs, assuming the maximum anticipated inventory of wastes is held at the facility at the time closure is required, by using one of several allowed instruments (trust funds, insurance policy, letter of credit, or security bond) or by meeting a test of financial strength.

The ADL report on ISS requirements describes these requirements in more detail and is the source of all cost estimates shown in Exhibit III-2.8/ The ADL costs were updated to 1981 dollars by IEc. Costs for closure and financial assurance requirements are presented in the sections on specific types of storage facilities below.

C. Storage Facility Requirements: Containers

Aside from the general requirements described above, storage facilities are subject to specific design and operating requirements for different types of storage methods. Facilities storing hazardous wastes in containers (unless the containers are holding hazardous wastes that do not contain free liquids) are required to provide secondary containment by placing containers on an

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8/With the exception of the costs of a Part B permit application and liability insurance--see the notes to Exhibit III-2.

impermeable base designed to control runoff. Preliminary cost estimates for secondary containment were provided by OSW personnel and are shown in Exhibit III-3.

All facilities were assumed to use containers that meet Department of Transportation requirements for wastes ultimately sent off-site and therefore no incremental costs are estimated for upgrading containers when shipped. Facilities storing in containers prior to on-site recycling are subject to goodhousekeeping requirements which do not specify the type of container to be used. Again, no incremental expenditures to upgrade containers to meet those requirements were included in the estimated costs.

Finally, containers must be emptied, materials and residues must be disposed of in approved facilities, and containers must be decontaminated at closure. Costs for closure were estimated based on information provided by OSW personnel. Annual costs for providing financial assurance for the estimated closure costs are calculated using costs as a function of closure costs for each instrument and assuming a distribution of the instruments used (as described in the notes to Exhibit III-3).

D. Storage Facility Requirements: Tanks

RCRA regulations specify design standards for tanks which may require retrofit of some existing tanks. The regulations also specify allowable inspection procedures and closure requirements (primarily decontamination of tanks). Preliminary estimates of costs for these requirements were provided by OSW personnel and are shown in Exhibit III-4.

E. Storage Facility Requirements: Waste Piles

The land disposal regulations apply to facilities storing wastes in waste piles. Under these regulations, facilities may choose one of several combinations of design, inspection and monitoring requirements. The regulations also require wind control and specify closure requirements. The unit costs of these requirements were developed by Sobotka & Company, Inc., with technical information provided by Pope-Reid Associates. The cost estimates for storage in waste piles are shown in Exhibit III-5.

F. "Short-Storage" Requirements

Generators who store hazardous wastes in tanks or containers for less than 90 days prior to reuse/recycle are eligible under Part 40 CFR 262.34 for less stringent storage requirements than those applied to storage facilities. The "short-storage" requirements include the following storage facility requirements:

- contingency planning and emergency equipment,
- personnel training,
- routine (ISS) inspection requirements.

The unit costs for these activities were described previously. As with container storage facilities, no incremental costs are calculated for upgrading containers at "short storage" establishments using containers. Exhibit III-6 provides a summary of costs for "short-storage" requirements.

G. "Permit-By-Rule" Requirements

Publicly-Owned Treatment Works (POTWs) handling hazardous wastes are subject to limited requirements under 40 CFR 122.26. POTWs must comply with their NPDES permits, must meet applicable pretreatment standards, and must meet the notification, manifest and reporting requirements imposed on other facilities under RCRA. POTWs meeting these requirements will be issued a "permit-by-rule." Decreases in regulatory requirements will affect only the requirements imposed by RCRA; unit cost estimates for these requirements are presented in Exhibit III.7

Exhibit III-1

UNIT COSTS FOR GENERATOR REQUIREMENTS
(all ISS; before-tax)

Requirement	Initial Costs		Annual Costs	
	Fixed	Variable	Fixed	Variable
Obtain EPA ID Number[1]				
Test for Characteristics		838.00/ non-listed waste		
Compliance Review for Waste Designations		102.00/waste	138.00	
Document Waste Inventory	152.00			
Establish Off-site Shipping Procedures[5]	478.00			
Design Shipping System[5]	926.00			
Manifest Preparation and Container Labeling[5]			955.00	.22/MT[2]
Manifest Signing, Handling, Filing[5]			407.00	
Exception Reports[5]				.06/MT[3]
Report Storage			152.00	
Biennial Report[4]			88.00/ report	

[1] Included in storage facility and "short storage" unit costs only, to avoid double-counting.

[2] $4.40/shipment, assuming 20 MT per shipment.

[3] $25.40/report, assumed to be incurred once every 20 shipments, assuming 20 MT per shipment.

[4] The cost of completing the report is equal to the annual report cost reported in ADL. This cost will be incurred every other year.

[5] Applies only to generators shipping wastes off-site. Generators shipping wastes to off-site facilities for recycling under non-batch tolling agreements are exempt from manifest requirements. Where the costs reported by ADL include both container labeling and manifest requirements, generators who are exempt from the manifest requirements are assumed to incur only half of the reported costs. In addition, spent lead-acid batteries being sent for reclamation are also exempt from generator requirements.

Source: ADL, op. cit., Appendix B, updated to 1981 dollars using inflation indices in Exhibit C-1.

Exhibit III-2

UNIT COSTS FOR STORAGE FACILITIES: GENERAL REQUIREMENTS
(all ISS except where noted; before-tax)

Requirement	Initial Costs		Capital Costs		Annual Costs	
	Fixed	Variable	Fixed	Variable	Fixed	Variable
Obtain EPA ID No.[1]	44					
Prepare Waste Analysis Plan[4,8]	7,763					
Prepare Inspection Plan	130					
Part A Permit	5,041					
Part B Permit (FSS)[5]	8,373					
Closure Plan	1,902					
Systems Design	1,515					
Regulation Review	597					
Design Training Course[1]	14,726					
Prepare Contingency Plan[1]	1,890					
Contingency Equipment[1]			12,000			
Training[1]					5,850	
Maintain Training Records[1]					179	
Testing of Wastes - On-Site[3]					4,420	
Testing of Wastes - Off-Site[2,4,8]					1,040	3.25/MT
Inspections[1]					940	
Manifest Handling[2,4,8]					407	
Incident Reporting					141	
Biennial Report[6]					51	
Liability Insurance[7]					1,500	

See attached for notes.

Exhibit III-2

NOTES

[1]Applies to "short storage" under 40CFR262.34 (see Exhibit III-6).

[2]Applies only for wastes sent to off-site facilities.

[3]Applies only for wastes managed at on-site facilities.

[4]Does not apply to wastes recycled under non-batch tolling arrangements.

[5]An estimate of the cost of preparing a Part B permit application was obtained from Pope-Reid Associates, who developed the estimate in connection with their current work on the costs of container and tank requirements. Pope-Reid's estimates of the costs of specific parts of the Part B application were summed, using the following assumptions:

- seismic standard compliance is not required because only new facilities must meet the standards and only existing facilities are considered in this report;
- where different options for compliance were costed by Pope-Reid, IEc used a simple average of the costs of the alternatives;
- IEc assumed that half of the affeced facilities would have to develop new information to evaluate the applicability of flood plain requirements and that 10% of the facilities are located in flood plains.

[6]The cost of completing the report is equal to the annual report cost reported in ADL. This cost will be incurred every other year.

[7]EPA has promulgated requirements for liability insurance. Land-based disposal facilities are required to obtain coverage for damages resulting from non-sudden events, while storage facilities must obtain coverage only for sudden events. Costs for the required coverage were obtained from the Regulatory Impact Analysis of the Financial Assurance and Liability Insurance Regulations, prepared by Putnam, Hayes & Bartlett, Inc., and Industrial Economics, Inc. (11 September 1981). That report assumes that three-fourths of facilities already have the required sudden event coverage under normal commercial policies. That assumption is adopted here.

[8]Does not apply to storage facilities which subsequently reclaim spent lead-acid batteries.

Exhibit III-3

UNIT COSTS FOR STORAGE FACILITIES: CONTAINERS
(before-tax)

Requirement	Initial		Capital		Annual		Closure	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Secondary Containment[1] (includes runoff control) (FSS)			2360	0.11/MT				
Closure[2]								0.22/MT
Financial Assurance for Closure[3]					224	.033/MT		

See attached for notes.

Exhibit III-3

NOTES

[1]Secondary containment is required only for wastes containing free liquids. Estimates of secondary containment costs for facilities with 100, 200 and 500 containers per facility were obtained from OSW personnel. These costs were estimated as a function of facility lifetime capacity (converted from numbers of 55 gal. containers per facility to metric tons per facility using the conversion factors developed in Exhibit C-3) by fitting a linear function to obtain the following cost function for secondary containment:

cost = $2360 + $0.11/MT

[2]Closure for container facilities requires removal of wastes and residues, decontaminating containers, and disposal of residues in approved facilities. It is assumed that materials in containers are recycled prior to closure, and therefore no costs for disposal of materials other than residues are included in closure costs. The following closure costs are calculated based on estimates provided by OSW personnel:

drum reconditioning	$6.50/container (55 gal.)
transportation and disposal of residue	$6.53/container (.125 x 55 gal. = 6.875 gal. residue/container; $.50/gal. disposal + $ .45/gal. transportation)

total closure costs = $13.03/container

Closure costs as a function of facility lifetime capacity (converted from number of containers to metric tons using the conversion factors shown in Exhibit C-3) are calculated as follows:

lifetime capacity = 55 gal./container x 12 times per year turnover x 20 year lifetime ÷ 220 gal./MT
= 60 MT per container

cost = $13.03/container ÷ 60 MT lifetime capacity per container
= $ .22/MT lifetime capacity

[3]Facilities must provide financial assurance for the costs of closure assuming the maximum anticipated inventory has to be removed at the time of closure. For storage prior to recycling, removal of wastes is not included as an incremental closure cost but financial assurance must be demonstrated for both the incremental costs of closure and the costs of removing and disposing of the stored materials in approved facilities.

The amount for which financial assurance must be provided includes the costs estimated for closure (note 2 above) plus an estimated $.95/gal. or $52.25/container for disposal of materials (estimate obtained from OSW personnel). This equals $.87 per MT of lifetime capacity, where lifetime capacity is calculated as shown in note 2 above. Assuming that all containers are full at the time of closure, the cost for which financial assurance must be provided is therefore:

cost = $ .87/MT + .22/MT
= $1.09/MT lifetime capacity

Exhibit III-3

NOTES
(con't)

The annual cost of providing financial assurance for this amount depends on the instruments used to provide assurance (trust funds, financial tests, insurance, letters of credit, or surety bonds).

In analyzing financial assurance costs for the Regulatory Impact Analysis for the land disposal regulations, OSW assumed the following distribution of facilities by type of instrument used:

50%	financial test
18%	trust fund
18%	insurance
14%	letters of credit and surety bonds

This distribution is also assumed for this cost analysis. Annual costs for the individual instruments as a function of the amount of funds assured were obtained from the Regulatory Impact Analysis of the Financial Assurance and Liability Insurance Regulations, as follows:

Instrument	1981 Annual Cost (before tax)
financial test	$78
trust fund	$514 + .1424 x C
insurance	$514 + .0142 x C
letters of credit and surety bonds	.0174 x C

where C equals the before-tax amount for which financial assurance must be provided. Weighting the cost functions by the distribution of facilities by instrument used provides the following weighted average cost function for financial assurance:

$$\text{annual cost} = \$224 + .0306 \times C$$

Since C for container facilities is $1.09/MT, the annual cost of financial assurance is:

$$\text{cost} = \$224 + .0306\ (\$1.09/\text{MT})$$

$$= \$224 + \$.033/\text{MT}$$

Exhibit III-4

UNIT COSTS FOR STORAGE FACILITIES: TANKS
(before-tax)

Requirement	Initial		Capital		Annual		Closure	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Recoating (FSS)[3] (retrofit)	6,470	.126/MT						
Inspections: (FSS)[1]								
Inspection Gauge			1,150					
Decontamination for Inspection					310	.085/MT		
Closure[2]							620	.031/MT
Financial Assurance for Closure (ISS)[4]					243	.007/MT		

See attached for notes.

Exhibit III-4

NOTES

[1]Comprehensive inspections may be performed without emptying tanks by using an ultrasonic gauge (cost = $2300) or by emptying and decontaminating the tank and inspecting the inside visually (see note 2 for cost of decontamination). Half of tank storage facilities are assumed to inspect with a gauge and half by visual inspection. Periodic inspections are assumed to be made once a year. Therefore, one-half of the facilities incur a capital cost of $2300 for purchase of a gauge (or an average of $1150 for all facilities) and one-half incur annual costs of $620 + .17/MT for decontaminating tanks (or an average for all facilities of half that amount--$310 + .085/MT). The cost of the inspections themselves is included in general storage facility costs (Exhibit III-2).

[2]Closure requires removing and disposing of materials and residues in tanks and decontaminating the tanks. Since materials are removed and recycled, no incremental closure cost for disposal of materials was estimated. OSW's estimates of decontaminating costs per tank are:

Tank Size (gals)	Capital Cost/Tank
10,000	$1,000
20,000	1,300
50,000	2,200

In order to develop a cost function for decontaminating tanks, IEc calculated costs for various facility sizes assuming different tank sizes and numbers of tanks. It was assumed that the maximum tank size used for waste storage was 50,000 gallons based on conversations with OSW personnel.

Number Tanks	Size of Tanks (gals)	Decontamination Cost	Annual Capacity (MT)
2	10,000	$ 2,000	2,000
	50,000	4,400	25,500
5	50,000	11,000	63,750
10	50,000	22,000	127,500
25	50,000	55,000	318,750

A linear function was fit to costs and lifetime capacity (20 years x annual capacity) to provide the following cost function for tank decontamination at the time of closure:

cost = $620 + $.008/MT lifetime capacity

The same costs were also expressed as a function of annual capacity to calculate the costs of decontamination for annual inspections (see note 1 above). The resulting cost function is:

cost = $620 + .17/MT annual capacity

Exhibit III-4

NOTES
(con't)

[2]Estimates of costs for disposal of residues were also obtained from OSW personnel, as follows:

.125 x tank capacity = amount of residue; cost of transport and disposal of residues = $.95/gal.

Calculating costs for a 50,000 gal. tank (assuming 12,750 MT/annual capacity per 50,000 gal. tank from Exhibit C-3) yields the following estimate for residue disposal:

cost = (amount of residue/tank x cost of residue disposal) ÷ lifetime capacity per tank
= (.125 x 50,000 gal. x .95/gal.) ÷ 255,000 MT/tank
= .023/MT

The total cost of closure is therefore:

cost = $620 + $.031/MT

[3]If tanks do not meet the design standards specified in Part 264, the tanks must be replaced or recoated. For this analysis, it was assumed that one-third of the storage tanks would have to be recoated to meet the Part 264 standards. OSW personnel provided the following unit costs for recoating tanks.

Tank Size (gals)	Cost/Tank
10,000	$ 11,166
20,000	17,588
50,000	32,397

IEc calculated the following costs for different facility sizes, assuming different numbers and sizes of tanks:

Number Tanks	Size of Tanks (gals)	Recoating Cost	Annual Capacity (MT)
2	10,000	$ 22,332	2,000
	50,000	64,794	25,500
5	50,000	161,985	63,750
10	50,000	323,970	127,500
25	50,000	809,925	318,750

A linear function was fit to these costs and lifetime capacity to provide the following cost function for recoating:

cost = $6470 + $0.126/MT

Exhibit III-4

NOTES
(con't)

[4] As described in note 3 to Exhibit III-3, financial assurance must be provided for the maximum potential cost of closure, including removal and disposal of materials stored in tanks at the time of closure.

For tanks, the costs for which assurance must be provided include the closure costs calculated above plus the cost of removing and disposing of materials at a cost of $ .95/gal. removed. Based on the facility sizes used previously, and assuming that tanks are full at the time of closure, the cost of materials disposed (expressed as a function of lifetime capacity) is:

cost = (amount to be disposed/tank x cost of disposal) ÷ lifetime capacity
= (50,000 gal. x .95/gal.) ÷ 255,000 MT/tank
= .186/MT

The total amount for which financial assurance must be provided is therefore:

cost = 620 + $.217/MT

Assumptions used to estimate the annual cost of providing financial assurance are described in note 3 to Exhibit III-3. The annual cost developed in that note as a function of the amount for which assurance must be provided (C) is $224 + .0306 x C. The annual cost of financial assurance for tanks is therefore:

cost = $224 + .0306 (620 + .217/MT)
= $243 + .007/MT

Exhibit III-5

UNIT COST FOR STORAGE FACILITIES: WASTE PILES
(before-tax)

Requirement	Initial		Capital		Annual		Closure	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
Sturdy Base (FSS)[1]			17,168	.021/MT				
Groundwater Monitoring[1]	2,140		15,000		750			
Closure[2]							80,690	.249/MT
Financial Assurance[3]					2,693	.027/MT		

[1]Storage facilities storing in waste piles have several options for complying with the land disposal regulations. For this cost analysis, it was assumed that all facilities install the sturdy (impermeable) base and that half inspect by moving the waste pile for visual inspection. No incremental costs are assumed for inspection because it is assumed that the base will be inspected when wastes have been removed for recycling. The other half of the facilities do not inspect the base visually and, therefore, must conduct groundwater monitoring. Therefore, only half of the facilities will incur the groundwater monitoring costs (initial costs of $4,280, capital costs of $30,000, and annual costs of $1,499).

[2]Closure of waste piles requires excavation, transport and disposal of the contaminated base. No incremental cost is assumed for disposal of materials in the waste pile, which are assumed to be recycled prior to closure.

[3]Financial assurance must be provided for the cost of disposing of materials in the waste pile as well as for the incremental closure costs estimated above. These disposal costs are $.625 per metric ton of lifetime facility capacity. Therefore, financial assurance must be provided for a total of $80,690 plus $.874 per metric ton. As described in note 3 to Exhibit III-3, the annual financial assurance costs are $224 + .0306 x C, where C is the cost for which financial assurance must be provided. Therefore, the annual cost of financial assurance for waste piles is:

$$\begin{aligned} \text{cost} &= \$224 + .0306\ (\$80{,}690 + .874/\text{MT}) \\ &= \$2{,}693 + .027/\text{MT} \end{aligned}$$

Exhibit III-6

UNIT COSTS FOR "SHORT STORAGE" REQUIREMENTS
(all ISS; before tax)

Requirement	Initial		Capital		Annual		Closure	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
EPA ID Number	44							
Design Training Course	14,726							
Contingency Plan	1,890							
Training					5,850			
Training Records					179			
Inspections					940			
Contingency Equipment			12,000					

Source: See Exhibits III-3, III-4 and III-5.

Exhibit III-7

UNIT COSTS FOR "PERMIT-BY-RULE" REQUIREMENTS
(all ISS; before-tax)

Requirement	Initial		Annual	
	Fixed	Variable	Fixed	Variable
EPA ID Number	44			
Manifest Handling			407	
Incident Reporting			141	
Biennial Survey			55	

Source: Exhibit III-2.

COST IMPACT OF PROPOSED CHANGES IN THE DEFINITION OF SOLID WASTE AND MANAGEMENT STANDARDS FOR WASTES THAT ARE RECYCLED

CHAPTER 4

This chapter presents estimates of the changes in cost resulting from the proposed changes in the definition of solid waste and management standards. The next chapter provides a more detailed discussion of the impact on those industries which will experience increased requirements.

Changes in compliance costs for each establishment were calculated by applying the unit cost estimates discussed in the previous chapter to the estimated average volumes of wastes affected. These average costs were then multiplied by the number of affected establishments in each industry to calculate aggregate cost savings or increases.

The procedures used generally yield a "worst-case" estimate of cost impacts, by understating savings and overstating increases, for the following reasons:

- JRB's estimate of the number of establishments affected were consistently conservative, in that the number of facilities identified as having increased requirements was overstated and the number with reduced burdens understated.1/

1/The JRB report discusses the nature of possible over- and understatements.

- Where JRB reported a range for the number of establishments affected, costs were calculated for the maximum number of establishments with increased regulatory requirements, and for the minimum number of establishments with reduced regulatory requirements.

- These calculations assume that the affected establishments will continue their current activities despite increased or decreased costs resulting from the proposed changes. For example, it is assumed that paint and allied product manufacturers who use non-listed solvents, and who will be newly-regulated under RCRA, will continue to use non-listed solvents in the same quantities. In fact, the affected industries may be able to reduce the costs of the proposed changes by switching to other solvents or otherwise altering their activities. By assuming no such adjustments, the calculations overstate cost increases and understate cost savings.

- Finally, some of the establishments identified as having reduced regulatory requirements may in fact be released from regulations entirely if, as a result of the proposed changes, the volume of hazardous wastes they generate drops below the 1000 kg/month "small quantity generator" cutoff. If released from the hazardous waste management regulations, these establishments would experience cost savings larger than those estimated in this report. No attempt was made in this study to estimate how many of the establishments with reduced regulatory requirements would in fact be released from the hazardous waste management regulations.

In addition, aggregate cost impacts were calculated in two ways. The first relies on a "best estimate" of the unit costs for the affected regulatory requirements, and the second relies on maximum unit cost increases for establishments facing increased requirements and on minimum unit cost savings for establishments subject to decreased requirements. The "best estimate" and maximum increase/minimum savings or "worst case" unit costs differ as follows:

"Best Estimate"	"Worst Case"
• three-fourths of the establishments already have the required liability insurance for sudden events.	• no establishments with increased requirements currently have the required coverage; all establishments with decreased requirements have such coverage (and will continue to after the proposed changes).
• one-third of storage tanks require recoating to meet design standards.	• all tanks at establishments with increased requirements require recoating; no tanks at establishments with decreased requirements require recoating.

Exhibit IV-1 summarizes the ("best estimate") changes in compliance costs resulting from the proposed changes in the definition of solid waste and management standards for wastes that are recycled. The costs shown are the annualized after-tax cost savings or increases experienced by the regulated community as a whole. The results show that the proposed changes will cause an estimated net decrease in compliance costs to the affected establishments of $24.4 million. This figure represents the sum of increases and decreases in annualized costs for all affected establishments, including:

- A decrease in costs of $24.7 million for establishments with reduced regulatory requirements or for establishments which are released from the hazardous waste management regulations entirely.

- An increase in costs of $0.3 million for newly-regulated establishments or for those facing increased regulatory requirements.

In those industries which will experience increased regulatory requirements, 42 establishments are expected to be newly-regulated under the hazardous waste management regulations, with average annualized compliance costs of $5600 each. Another 200 establishments that are already regulated under the hazardous waste management regulations are expected to incur an average increase of $500 in annualized compliance costs. A somewhat larger number of establishments will have reduced regulatory burdens under the proposed changes--76 establishments being released from the hazardous waste management regulations entirely,

with average annualized cost savings of $50,400 per establishment, and 299 establishments2/ with average cost savings of $70,300 due to reduced regulatory requirements.

In the aggregate, then, the proposed changes result in net cost savings to the regulated community. Considering only those aspects of the changes which cause increased requirements, the resulting cost increases are well below the $100 million criterion for "major rules."

The size of estimated cost increases and decreases, while not a burden to the regulated community in the aggregate, varies for different industries depending on the volumes of wastes affected, on the extent of baseline regulatory requirements for wastes which will not be affected, and on the types of storage used. Exhibit IV-2 presents the estimated changes in compliance costs for each affected activity and industry (again, based on the "best estimate" calculations). That exhibit shows that, while moderate savings are experienced by a large number of establishments, large volume on-site reclaimers of spent solvents (pesticides and pharmaceuticals producers) and establishments reusing spent pickle liquor (iron oxide and ferric chloride producers, public and private wastewater treatment works, and water purification plants) account for a large portion of the aggregate savings.

Only three industry categories are expected to experience cost increases, as a result of off-site reclamation for non-listed spent materials. The largest estimated cost increases are incurred by paint and allied product establishments sending non-listed solvents to off-site reclaimers. In addition, contract solvent reclaimers and independent battery crackers will experience moderate increases in costs. Secondary lead smelters who crack batteries will be subject to increased requirements for that activity, but also experience cost savings associated with reduced requirements for other activities. As shown in Exhibit IV-3, these smelters will experience a net decrease in costs when all changes in requirements are considered.

A large number of establishments (4,582) are subject to decreased requirements under the proposed regulations but were found to experience negligible cost savings as a result. Because these facilities are regulated as on-site generators and "short

2/The proposed changes also decrease regulatory requirements for another 4,582 establishments, but these establishments are expected to experience only negligible cost savings as a result.

storers," the reduction in volumes regulated as hazardous is expected to have a negligible impact on costs. Most of the costs associated with on-site generation and short storage are initial expenditures and are not affected by subsequent changes in the volume of waste regulated. Other costs may in fact vary with the volume of waste handled but were estimated as fixed costs in the sources used for cost data. For example, the cost of inspections is likely to vary with the volumes of waste stored but is treated here as a fixed cost. Where costs that vary somewhat with volume are estimated as fixed, cost savings for establishments with decreased volumes and cost increases for establishments with increased volumes are both understated. The number of establishments experiencing decreases in the volume of regulated waste (4,928) is substantially larger than the number of establishments with increased burdens (200). Therefore, the effect of treating as fixed some costs which in fact vary with volume is to understate the total cost savings resulting from the proposed changes.

The results of the "worst case" calculations are summarized in Exhibit IV-4. A comparison of that exhibit with Exhibit IV-1 shows that use of "worst case" assumptions (which minimizes estimated cost savings and maximizes estimated cost increases) has little impact on the aggregate results of the analysis.

Exhibit IV-1

SUMMARY OF CHANGES IN COMPLIANCE COSTS
DUE TO PROPOSED CHANGES: "BEST ESTIMATE"
(annualized costs in thousands of 1981 dollars, after-tax)

	Number of Affected Establishments	Total Cost Impact	Average Change in Costs per Establishment
Establishments with Increased Requirements:			
Newly Regulated	42	$ 235	$ 5.6
Increased Burden	200	91	0.5
Establishments with Decreased Requirements:			
Released from RCRA	76	(3833)	(50.4)
Reduced Burden	298*	(20,939)	(70.3)

*Excludes 4582 establishments for whom regulatory requirements decrease but who are estimated to experience negligible cost savings as a result.

Exhibit IV-2

CHANGES IN COMPLIANCE COSTS
DUE TO PROPOSED CHANGES BY INDUSTRY: "BEST ESTIMATE"
(annualized after-tax; 1981 dollars)

Activity Number	Industry	Number of Establishments	Type of Storage[1]	Increase (Decrease) in Compliance Costs: Average per Establishment ($)	Total ($ thousands)
16a	Paint & Allied Products	51	C	0	0
		15	T	0	0
	Metals Manufacturing	2,055	C	0	0
		267	T	0	0
	Pesticide Production	324	C	0	0
		206	T	0	0
	Pharmaceuticals	726	C	0	0
		514	T	0	0
	Dry Cleaning	180	C	0	0
		180	T	0	0
17a	Secondary Lead Smelters[2]	100	WP	(106)	(10.6)
18a	Chlorine Producer	1	WP	(113)	(0.1)
22b	Paint & Allied Products	37	C	5,598	207.1
		5	T	5,647	28.2
	Solvent Reclaimers	25	C	(3,298)	(82.5)
		25	T	(3,334)	(83.4)
	Solvent Reclaimers	75	C	477	35.8
		75	T	483	36.2
28b and 31b	Secondary Lead Smelters[2]	70	C	432	30.2
		10	WP	342	3.4
	Independent Battery Crackers	25	C	432	10.8
		25	WP	342	8.6
23b	Secondary Lead Smelters[2]	42	C	(3,298)	(138.5)
		61	WP	(3,288)	(200.6)
	Secondary Zinc Smelters	50	WP	(3,288)	(164.4)
46a	Steel Finishers	1	C	0	0
		7	T	0	0

Exhibit IV-2
(con't)

Activity Number	Industry	Number of Establishments	Type of Storage[1]	Increase (Decrease) in Compliance Costs: Average per Establishment ($)	Total ($ thousands)
48a	Steel Mills	5	C	0	0
		25	T	0	0
	Organic Chemicals	1	C	0	0
		1	T	0	0
		1	C	0	0
		1	T	0	0
		7	C	0	0
		6	T	0	0
49a	Steel Finishers	1	C	(2,240)	(2.2)
		9	T	(2,240)	(20.2)
	Steel Finishers	5	C	(2,240)	(11.2)
		55	T	(2,240)	(123.2)
	Iron Oxide Producers	1	C	(24,489)	(24.5)
		3	T	(66,265)	(198.8)
	Iron Oxide Producers	2	T	(61,012)	(122.0)
	Ferric Chloride Producers	10	T	(523,438)	(5,234.4)
	Water Purification Plants	1	C	(1,654,031)	(1,654.0)
		1	T	(1,672,253)	(1,672.2)
	Brokers of Pickle Liquor	2	C	(824,500)	(1,649.0)
		6	T	(833,500)	(5,001.0)
	Wastewater Treatment Facilities	1	C	(1,649,000)	(1,649.0)
		3	T	(1,667,000)	(5,001.0)
	POTWs	6	C	(613)	(3.7)
		41	T	(613)	(25.1)
50a and b	Fertilizer Manufacturers	3	WP	(16,135)	(48.4)
	Fertilizer Manufacturers	20	WP	(10,315)	(206.3)

[1] C = containers, T = tanks, WP = waste piles, SI = surface impoundments.

[2] See Exhibit IV-3.

Exhibit IV-3

ADJUSTMENTS FOR SECONDARY LEAD SMELTERS AFFECTED
BY CHANGED REQUIREMENTS FOR MORE THAN ONE ACTIVITY

Number of Establishments[2]	Activity	Increase (Decrease) in Costs[1]	Net Increase (Decrease) in Costs	
			Per Establishment	Total
80	17a	(106)		
	23b	(3,292)		
	28b and 31b	421		
			(2,977)	(238,160)
20	17a	(106)		
	23b	(3,292)		
			(3,398)	(67,960)
3	23b	(3,292)	(3,292)	(9,876)

[1] Weighted average for different types of storage, based on "best estimate" calculations.

[2] As shown in Exhibit II-2, 103 secondary lead smelters are subject to reduced requirements associated with reclamation of land from non-listed sludges (activity 23b). It is assumed that the 100 smelters subject to reduced costs associated with activity 17a are a subset of the 103, and that the 60-80 smelters subject to increased costs associated with activities 28b and 31b are in turn a subset of the 100. The larger estimate of smelters subject to increased costs (80) was used to provide a conservative estimate of net cost savings. Thus, 80 smelters are affected for all three activities, an additional 20 for two activities and only 3 for activity 23b.

Exhibit IV-4

SUMMARY OF CHANGES IN COMPLIANCE COSTS
DUE TO PROPOSED CHANGES: "WORST CASE"
(annualized costs in thousands of 1981 dollars, after-tax)

	Number of Affected Establishments	Total Cost Impact	Average Change in Costs per Establishment
Establishments with Increased Requirements:			
Newly Regulated	42	$ 235	$ 5.6
Increased Burden	200	92	0.5
Establishments with Decreased Requirements:			
Released from RCRA	76	(3827)	(50.3)
Reduced Burden	299*	(19,441)	(65.2)

*Excludes 4582 establishments for whom regulatory requirements decrease but who are estimated to experience negligible cost savings as a result.

In order to determine whether the proposed changes in the definition of solid waste and management standards for wastes that are recycled will cause major increases in costs or prices for any industry, or will otherwise have significant adverse effects on competition, employment, and other economic factors, this chapter considers impacts on those industries which will experience increased requirements in more detail. The industries facing increased requirements under the proposed changes include:

Paint & Allied Products (42 establishments)	Newly-regulated
Solvent Reclaimers (100-150 contract facilities)	Additional storage facility requirements
Battery Crackers (60-80 secondary lead smelters and 20-50 independent battery crackers)	Additional storage facility requirements

IEc's analysis indicates that none of the affected establishments will incur significant increases in costs, as described below.

PAINT AND ALLIED PRODUCTS

The 42 establishments newly-regulated under the hazardous waste management regulations will face approximately $5,600 in additional costs (after-tax annualized) per establishment on the

average. The additional costs are relatively low because the establishments will be required to meet only requirements for generators and for short-term storage under 40 CFR 262.34. These costs represent 0.2 percent of the estimated 1981 value added per establishment, and less than 0.1 percent of sales, for the paint and allied products industry (SIC 2851).

The cost increases estimated in this analysis are likely to be overstated. It was assumed that all paint and allied product establishments sending non-listed solvents to off-site reclaimers would be newly-regulated as a result of the proposed changes. In fact, many of the affected facilities may currently be subject to the hazardous waste management regulations by virtue of handling other hazardous wastes. If already regulated, these establishments would experience only minor increases in costs as a result of the proposed changes. IEc was not able to obtain reliable estimates of the percentage of paint and allied product establishments that are currently regulated because they recycle non-listed solvents off-site, however, and therefore it was assumed conservatively that all such establishments would be newly-regulated.

SOLVENT RECLAIMERS

An estimated 150 solvent reclaimers accepting non-listed solvents for reclamation are assumed not to accept these wastes under batch tolling agreements (see Appendix B.). These establishments will be subject to increased regulatory requirements under the proposed changes, but because they currently accept listed solvents as well will not be newly-regulated. These establishments will face minimal cost increases (an average of $480 per establishment after-tax annualized). These costs are negligible because these facilities are subject to increased requirements for only a small additional volume of waste on the average. If these establishments do in fact accept some of the non-listed solvents under batch tolling agreements, cost increases will be less than those estimated. Further, any of these facilities also accepting listed solvents under batch tolling agreements is likely to experience net savings.

BATTERY CRACKERS

Up to 80 secondary lead smelters who recover lead from spent batteries will face increased regulatory requirements under the proposed changes. However, these same facilities will experience reduced requirements associated with on-site reclamation of lead from emission control dusts and reclamation of lead from non-listed sludges. As shown in Exhibit IV-3, these facilities

experience an estimated net reduction in costs of $2,977 (after-tax, annualized) per facility as a result of these changes.

Independent battery crackers are also subject to increased requirements as a result of the proposed changes. As many as 50 establishments are estimated to incur approximately $342 in additional costs each if they store in waste piles, and $432 if they store in containers (after-tax annualized costs). Representatives of the trade association for independent battery crackers informed IEc that most if not all of its members are currently in compliance with the design standards of the hazardous waste management regulations and thus would experience only moderate increases in cost as a result of the proposed regulations. The major concern expressed about the effects of the proposed changes dealt with the potential impacts on independent battery crackers' ability to compete for the supply of spent batteries with secondary lead smelters. This concern was based on a belief that those supplying batteries would be required to comply with manifest requirements as a result of the proposed changes. Since this is not the case, it does not appear that the proposed changes will impose significant costs or otherwise affect the competitive position of independent battery crackers adversely.

APPENDIX A

PROPOSED DEFINITION OF SOLID WASTE AND MANAGEMENT STANDARDS FOR WASTES THAT ARE RECYCLED

For the reasons set out in the preamble, it is proposed to amend Title 40 of the Code of Federal Regulations as follows:

PART 260 - HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for Part 260 is as follows:

AUTHORITY: Sections 1006, 2002(a), 3001 through 3007, and 3010 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended [42 USC 6905, 6912(a), 6921 through 6927, and 6930].

2. Section 260.10 is amended by adding new definitions for "Boiler" and "Industrial Furnace" to appear alphabetically and by amending the definition of "Incinerator:"

§260.10 Definitions.

* * * * *

"Boiler" means an enclosed device using controlled flame combustion and having the following design characteristics:

(1) The unit has provision for heat recovery; and

(2) The combustion chamber and heat recovery section are of integral design. The combustion chamber and heat recovery sections are of integral design if formed physically into one manufactured or assembled unit. (A unit in which the furnace or combustion chamber and heat recovery section are joined by ducts or connections carrying flue gas is not integrally designed); and

(3) Significant heat recovery takes place in the combustion chamber section by radiant transfer of heat to the transfer medium.

"Incinerator" means an enclosed device using controlled flame combustion, and having a combustion chamber and heat recovery section, if any, that are not of integral design.

"Industrial Furnace" means any of the following devices that are integral components of manufacturing processes and use flame combustion or elevated temperature to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns, phosphate kilns, blast furnaces, smelting furnaces, methane reforming furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, and pulping liquor recovery furnaces. The Administrator may decide to add devices to this list on the basis of one or more of the following factors:

(1) The device is designed and used primarily to accomplish recovery of material products;

(2) The device burns secondary materials as ingredients in an industrial process to make a material product;

(3) The device burns secondary materials as effective substitutes for raw materials in processes using raw materials as principal feedstocks;

(4) The device burns raw materials to make a material product;

(5) The device is in common industrial use to produce a material product; and

(6) Other factors, as appropriate.

* * * * *

PART 261: IDENTIFICATION AND LISTING OF HAZARDOUS WASTES

3. The authority citation for Part 261 reads as follows:

Authority: Sections 1006, 2002(a), 3001, and 3002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended [42 U.S.C. 6905, 6912(a), 6921, and 6922].

4. In §261.1, paragraph (b) is revised to read as follows:

§261.1 Purpose and scope.

* * * * *

(b) (1) The definition of solid waste contained in this Part applies only with respect to the regulations implementing Subtitle C of RCRA.

(2) This Part identifies only some of the materials which are solid wastes and hazardous wastes under Sections 3007, 3013, and 7003 of RCRA. A material which is not defined as a solid waste in this Part, or is not a hazardous waste identified or listed in this Part, is still a solid waste and a hazardous waste for purposes of these sections if:

(i) In the case of Sections 3007 and 3013, EPA has reason to believe that the material may be a solid waste within the meaning of Section 1004(27) of RCRA and a hazardous waste within the meaning of Section 1004(5) of RCRA; or

(ii) In the case of Section 7003, the statutory elements are established.

5. §261.2 is revised to read as follows:

§261.2 Definition of solid waste.

(a) A solid waste is any discarded material that is not excluded by §261.4(a). A "discarded material" is any material that fits one of the descriptions in paragraphs (a)(1) and (a)(2) of this section.

(1) Any garbage, refuse, sludge, or any other solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities that is:

(i) Abandoned by being disposed of; or

(ii) Abandoned by being burned or incinerated; or

(iii) Accumulated, stored, or treated prior to-- or in lieu of -- paragraphs (a)(1) (i) or (ii) of this section.

(2) Any of the following materials, when used, reused, or reclaimed in the following ways or accumulated, stored, or treated prior thereto:

(i) Any spent material, sludge, or by-product, or any material listed in §261.33 that is not ordinarily used by being applied to the land, that is used or reused without essential change to its identity, or after simple mixing, in a manner that constitutes disposal;

(ii) Any spent material or sludge, or any by-product listed in §§261.31 or 261.32, or any material listed in §261.33 that is not itself a fuel, that is being burned for the purpose of energy recovery, or that is being used to produce a fuel, and any fuel that contains one or more of these materials;

(iii) Any spent material, any sludge listed in §§261.31 or 261.32, or any by-product listed in §§261.31 or 261.32, that is reclaimed (as this activity is explained in paragraph (c)(1) of this section). This provision does not apply, however, to materials reclaimed at the plant site and then reused within the original process in which they were generated;

(iv) Any spent material, sludge, or by-product that is accumulated speculatively (as this activity is explained in paragraph (c)(2) of this section);

(v) Any spent material, sludge, or by-product that is accumulated for use, reuse, or reclamation without sufficient amounts being used, reused, or reclaimed during a one-year period (as this activity is explained in paragraph (c)(3) of this section);

(3) Materials that meet the criteria stated in paragraph (i) below, and that are listed in paragraph (ii) are solid wastes when used or reused:

(i)(A)(1) The materials are ordinarily disposed of, burned or incinerated, or

(2) The materials contain toxic constituents listed in Appendix VIII of Part 261 and these constituents are not ordinarily found in raw materials or products for which the materials substitute and are not used or reused during the recycling process; and

(B) The materials may pose a substantial hazard to human health and the environment when used or reused.

(ii) Hazardous Waste Nos. F020, F021, F022, and F023.

(b) For the purpose of this section:

(1) A "spent material" is any material that has been used and has served its original purpose;

(2) "Sludge" has the same meaning used in §260.10 of this chapter;

(3) A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process.

(c) For the purposes of this section and §261.6:

(1) A material is "reclaimed" if it is processed to recover usable products, or if it is regenerated. (Examples are recovery of lead values from spent batteries and regeneration of spent solvents.) However, a material that is used or reused in the following ways is not considered to be reclaimed:

(i) Used or reused as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, sludges used as ingredients in cement production, or distillation bottoms from one process used as a feedstock in another process), provided that distinct components of the material are not recovered as separate end products (as in recovery of metals from metal-containing secondary materials); or

(ii) Used or reused as effective substitutes for raw materials in processes using raw materials as principal feedstocks (for example, sludges used as substitutes for ore concentrate in primary smelting); or

(iii) Used or reused in a particular function

or application as an effective substitute for a commercial product (for example, spent pickle liquor used as a phosphorous precipitant and sludge conditioner in wastewater treatment).

(2) A material is "accumulated speculatively" if it is potentially usable, reusable, or reclaimable but is held without having any known market or disposition, or is held without having any feasible means of use, reuse, or reclamation. However, when a material that has been accumulated speculatively is removed from accumulation for use, reuse, or reclamation, it is no longer considered to be a solid waste for purposes of this paragraph.

(3) A material is "accumulated without sufficient amounts being used, reused, or reclaimed" if -- during the calendar, fiscal, or inventory year period -- the amount of material that is used, reused, reclaimed, or transferred to a different site for use, reuse, or reclamation does not equal at least 75 percent by volume of the amount of that material accumulated at the beginning of the period. However, paragraphs (c)(3) (i) and (ii) of this section provide certain exceptions to this principle. (In addition materials excluded from regulation

under §261.6(b)(1)(vi) - (vii) are not to be included in making this calculation.)

(i) Spent materials, sludges, or by-products are not considered to be solid wastes under this paragraph if after being accumulated initially without sufficient amounts being used, reused, or reclaimed, they are removed from accumulation for use, reuse, or reclamation.

(ii) (A) If a material accumulates for one year without use, reuse, reclamation, or transfer of at least 75 percent of the accumulated volume, the Regional Administrator may determine that the accumulated material will not be a solid waste during the following year. To obtain this determination, the person accumulating the material must notify the Regional Administrator in writing, submitting the following information:

(1) The name and address of the person required to notify and the address of the location of the accumulated material, if different.

(2) A description of: (1) the material being accumulated, (2) why the material would be a hazardous

waste if deemed to be discarded (i.e., whether it is listed or exhibits a characteristic), (3) the quantity accumulated at the date of notification, and (4) the way the material is stored prior to use, reuse, reclamation, or transfer; and

(3) A statement of: (1) what the notifier expects the disposition (use, reuse, reclamation, or transfer) of the material to be, (2) why this expectation is reasonable (for example, because of past practice, market factors, or contractual arrangements), (3) why the material has accumulated for over one year, and (4) when the notifier expects the use, reuse, reclamation, or transfer to occur.

The Regional Administrator may then use this information to determine whether the material will not be a solid waste during the following year, or alternatively, may require further pertinent information from the notifier.

Such a determination will be based upon the reasonableness of the notifier's expectation that the material will be used, reused, reclaimed, or transferred for these purposes, taking into account: the past practices, market factors, and contractual arrangements; the character and quantity of the material being accumulated; and the manner in which the material is being stored. The notifier must keep appropriate records to demonstrate why he reasonably expects the accumulated material to be used, reused, reclaimed, or transferred for these purposes.

(B) After the second year without use, reuse, reclamation, or transfer of at least 75 percent of the total volume accumulated at the beginning of that year, the Regional Adminstrator may again determine that the accumulated material will not be a solid waste during the following year. To do this, he must receive in writing the same information set out in paragraph (c)(3)(ii)(A) of this section from the person accumulating the material; and at least 50 percent of the total volume accumulated at the beginning of the

year must have been used, reused, reclaimed, or transferred.

(C) If the material accumulates for a third year without use, reuse, reclamation, or transfer of at least 75 percent of the total volume accumulated at the beginning of that year, all material not actually used, reused, reclaimed, or transferred is a solid waste.

(d) Respondents in actions to enforce regulations implementing Subtitle C of RCRA who raise a claim that a certain material is not a solid waste, or is exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they are actually using, reusing, or reclaiming materials must show that they have the necessary equipment to do so.

6. Section 261.3 is amended by revising paragraph (c)(2) to read as follows:

§261.3 Definition of hazardous waste.

* * * * *

(c) * * *

(2) Any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off), is a hazardous waste. (However, materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence are not hazardous wastes under this provision.)

* * * * *

7. Section 261.5 is amended by revising paragraph (c) to read as follows:

§261.5 Special requirements for hazardous waste generated by small quantity generators.

* * * * *

(c) Hazardous waste that is used, reused, or reclaimed and that is excluded from regulation under §§261.6(b) and 261.6(e)(3) is not included in the quantity determinations of this section, and is not subject to any requirements of this section. Hazardous waste that is subject to the special requirements of §§261.6(c) and (d), and 261.6(e)(1) and (2) is included in the quantity determinations of this section and is subject to the requirements of this section.

* * * * *

8. Section 261.6 is revised to read as follows:

§261.6 Special requirements for regulated recyclable materials.

(a) Hazardous wastes that are used, reused, or reclaimed will be known as 'regulated recyclable materials.'

(b)(1) The following regulated recyclable materials are not subject to regulation under Parts 262 through 266 or Parts 122 through 124 of this Chapter and are not subject to the notification requirements of Section 3010 of RCRA:

(i) Regulated recyclable materials that are reclaimed by the person generating them, provided that sufficient amounts of materials are reclaimed during a one-year period (as defined in §261.2(c)(3)). This exemption does not apply, however, when the regulated recyclable materials are stored in a surface impoundment prior to reclamation, or are reclaimed or otherwise processed in a surface impoundment. This exemption also does not apply to spent lead-acid batteries being reclaimed.

(ii) Regulated recyclable materials that are reclaimed by a person who subsequently uses the reclaimed material in ~~its~~ his own operation, provided that sufficient amounts of materials are reclaimed during a one-year period (as defined in §261.2(c)(3)). This exemption does not apply, however, when the regulated recyclable materials are stored in a surface impoundment

prior to reclamation, or are reclaimed or otherwise processed in a surface impoundment. This exemption also does not apply to spent lead-acid batteries being reclaimed.

(iii) Regulated recyclable materials utilized for precious metal recovery, provided that sufficient amounts of materials are reclaimed during a one-year period (as described in §261.2(c)(3)).

(iv) Regulated recyclable materials reclaimed pursuant to batch tolling agreements. For purposes of this paragraph, a "batch tolling agreement" is a contractual arrangement pursuant to which the person generating the material retains ownership of the material, possession of the material is transferred within 180 days of generation to a reclaimer who reclaims that material and returns the reclaimed portion to the owner, reclamation and return of the reclaimed materials is completed within 90 days, the material is not commingled with that of any other person prior to or while being reclaimed, the reclaimer is paid according to the amount of reclaimed material returned to the owner, and the reclaimer is paid more as the amount of reclaimed material returned to the owner increases.

(v) Regulated recyclable materials (including any fuel produced from one or more of these materials) burned for energy recovery in an industrial furnace or in a boiler that is not regulated under Subpart O of Part 264 of this chapter. ("Industrial furnace" and "boiler" are defined in §260.10 of this chapter.) This exemption does not apply when any of these materials are accumulated, treated, or stored prior to being used to produce fuels by a person who did not generate them and who is not using the fuel in its own operation, or when regulated recyclable materials that are sludges or are listed as hazardous wastes in §§261.31 or 261.32 of this chapter are accumulated, treated, or stored prior to burning as a fuel or prior to use to produce a fuel. This exemption also does not apply when these materials are accumulated prior to burning as a fuel or prior to use to produce a fuel without sufficient amounts being used during a one-year period (as defined in in §261.2(c)(3)).

(vi) Used oil that exhibits one or more of the characteristics of hazardous waste identified in Subpart C of Part 261.

(vii) Used batteries returned to a battery manufacturer for regeneration (a used battery can be "regenerated" by addition of electrolyte, replacement of defective cells, or other minor processing).

(2) The Regional Administrator may decide on a case-by-case basis that persons accumulating, storing, or burning the regulated recyclable materials described in paragraphs (b)(1)(i)-(v) of this section should be subject to regulation under otherwise applicable provisions of this section or Subpart O of Part 264 of this chapter. The standard and procedures for this decision are set forth in paragraph (g) of this section.

(c) Generators and transporters of regulated recyclable materials are subject to the following requirements, unless the materials are regulated under Subparts C or D of Part 266 of this chapter, or exempted under paragraph (b)(1) of this section:

(1) Generators: Part 262 of this Chapter;

(2) Transporters: Part 263 of this Chapter.

(d) Owners or operators of facilities that store regulated recyclable materials are subject to the following requirements, unless regulated under Subparts C or D of Part 266 of this Chapter, or exempted under paragraph (b)(1) of this section:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

(e) Owners or operators of a facility that uses regulated

recyclable materials in a manner that constitutes disposal (within the meaning of §261.2(a)(2)(i) of the chapter) are subject to the following requirements:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A through F and M through N of Part 264 of this chapter;

(3) All applicable provisions in Subparts A through F and M through N of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

(f) The following regulated recyclable materials are regulated under Subparts C and D of Part 266 of this chapter and all applicable provisions in Parts 122 and 124 of this chapter:

(1) Regulated recyclable materials reclaimed pursuant to non-batch tolling agreements (Subpart C); and

(3) Spent lead-acid batteries being reclaimed (Subpart D).

(g)(1) The Regional Administrator may decide on a case-by-case basis that persons accumulating or storing the regulated recyclable materials described in paragraphs (b)(1)(i)-(v) of this section are subject to regulation under otherwise applicable provisions of this section. The basis for this decision is that the materials are being accumulated or stored in a manner insufficient to protect human health and the environment due to failure to contain the materials or their toxic constituents, or incompatibility of the materials being accumulated or stored. In making this decision, the Regional Administrator will consider the following factors:

(i) The materials accumulated or stored by the person, and the amounts accumulated or stored;

(ii) The method of accumulation or storage;

(iii) The length of time the materials have been accumulated or stored prior to being reclaimed;

(iv) Whether any contaminants are being released into the environment, or are likely to be so released; and

(v) Other relevant factors.

(2) The Regional Administrator may also decide on a case-by-case basis that persons who are burning regulated recyclable materials as fuels in boilers or in industrial furnaces are subject to regulation under Subpart O of Part 264 of this chapter. The basis for this decision is that the materials are being burned in a manner that is insufficient to protect human health and the environment based upon the quantity and toxicity of the stack emissions. In making this decision, the Regional Administrator will consider the following factors:

(i) The content and mass of the input;

(ii) The conditions under which the unit is operated;

(iii) The potential for stack emissions to pose a hazard to human health and the environment; and

(iv) Other relevant factors.

(3) The following procedures will be used in making the determination set forth in paragraphs (g)(1) and (g)(2) of this section.

(i) The Regional Administrator will issue a notice setting forth the factual basis for the decision. If the

person is accumulating the regulated recyclable material as a generator, the notice will state that the person must comply with the applicable requirements of Part 262 of this chapter. The notice will become final within 30 days unless the person served requests a public hearing to challenge the decision. Upon such request, the Regional Administrator will hold a public hearing, and after the conclusion of the hearing, will issue an appropriate final order. This final order may be appealed to the Administrator.

(ii) If the person is accumulating the regulated recyclable material as a storage facility or burning the material in a unit subject to regulation under Subpart O of Part 264 of this chapter, the notice will state further that the person must obtain a permit in accordance with all applicable provisions of Parts 122 and 124 of this chapter. The owner or operator of the facility must apply for a permit within 60 days of notice. If the owner or operator of the facility wishes to challenge the Regional Administrator's decision, he can do so in his permit application, or in a public hearing held on the draft permit. The question of whether the Regional Administrator's decision was proper will remain open for consideration during the public comment period under §124.11 of this chapter and in any subsequent hearing.

9. Section 261.31 is amended by revising the hazardous waste listings F007, F008, F009, F010, F011, and F012 to read as follows:

§261.31 Hazardous waste from non-specific sources.

* * * * *

Industry	EPA Hazardous Waste No.	Hazardous Waste	Hazard Code
Generic	F007	Spent cyanide plating bath solutions from electroplating operations	(R, T)
	F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process	(R, T)
	F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process	(R, T)
	F010	Quenching bath sludges from oil baths from metal heat treating operations where cyanides are used in the process	(R, T)
	F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations	(R, T)
	F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process	(T)

* * * * *

10. Section 261.33 is amended by revising the first clause to read as follows:

§261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.

The following materials or items are hazardous wastes when they are discarded or intended to be discarded in a manner described in §261.2(a)(1), when they are burned for purposes of energy recovery in lieu of their original intended use, when they are used to produce fuels in lieu of their original intended use, and when they are applied to the land in lieu of their original intended use:

* * * * *

PART 264 - STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

11. The authority citation for Part 264 reads as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3005 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended [42 U.S.C. 6905, 6912(a), 6924, and 6925].

12. In §264.1, paragraph (g)(2) is revised to read as follows:

§264.1 Purpose, scope, and applicability.

* * * * *

(g) * * *

(2) The owner or operator of a facility managing regulated recyclable materials described in §§261.6(b) or 261.6(f) of this chapter (except to the extent that requirements of this Part are referred to in Subparts C or D of Part 266 of this chapter).

* * * * *

PART 265 - INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

13. The authority citation for Part 265 reads as follows:

Authority: Secs 1006, 2002(a), 3004, and 3005 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended [42 U.S.C. 6905, 6912(a), 6924, and 6925].

14. In §265.1, paragraph (c)(6) is revised to read as follows:

§265.1 Purpose, scope, and applicability.

* * * * *

(c) * * *

(6) The owner or operator of a facility managing regulated recyclable materials described in §§261.6(b) or 261.6(f) of this chapter (except to the extent that requirements of this Part are referred to in Subparts C or D of Part 266 of this chapter).

* * * * *

PART 266 - STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

15. The authority citation for Part 266 reads as follows:

Authority: Secs. 1006, 2002(a), and 3004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended [42 U.S.C. 6905, 6912(a), and 6924].

16. In Part 266, Subparts C and D are added to read as follows:

* * * * *

Subpart C - Regulated Recyclable Materials Reclaimed Pursuant to Non-Batch Tolling Agreements

§266.20 Applicability and requirements.

(a) The regulations of this Subpart apply to generators and transporters of regulated recyclable materials being reclaimed pursuant to non batch tolling agreements, and to owners or operators of facilities that store regulated recyclable materials pursuant to non-batch tolling agreements. For purposes of this Subpart, a "non batch tolling agreement" is a contractual arrangement pursuant to which the person generating the regulated recyclable material transfers the material to a reclaimer who returns reclaimed material to the person generating the material.

(b) Generators and transporters of regulated recyclable materials reclaimed pursuant to non batch tolling agreements are subject to the following requirements:

(1) Generators: Subparts A, C, D, and E of Part 262 of this chapter.

(2) Transporters: Subparts A and C of Part 263 of this chapter.

(c) Owners or operators of facilities that store regulated recyclable materials being reclaimed pursuant to non-batch tolling agreements are subject to the following requirements:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A, B (but not §264.13 (waste analysis)), C, D, E (but not §§264.71 and 264.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A, B (but not §265.13 (waste analysis)), C, D, E (but not §§265.71 and 265.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

Subpart D - Spent Lead-Acid Batteries Being Reclaimed

§266.30 Applicability and requirements.

(a) The regulations of this Subpart apply to persons who reclaim spent lead-acid batteries that are regulated recyclable materials ("spent batteries"). Persons who generate, transport, or collect spent batteries, or who store spent batteries but do not reclaim them are not subject to regulation under Parts 262 - 266 or Parts 122 - 124 of this chapter, and also are not subject to the requirements of Section 3010 of RCRA.

(b) Owners or operators of facilities that store spent batteries prior to reclaiming them are subject to the following requirements:

(1) Notification requirements under Section 3010 of RCRA;

(2) All applicable provisions in Subparts A, B (but not §264.13 (waste analysis)), C, D, E (but not §§264.71 or 264.72 (dealing with the use of the manifest and manifest discrepancies) and F through L of Part 264 of this chapter;

(3) All applicable provisions in Subparts A, B (but not §265.13 (waste analysis)), C, D, E (but not §§265.71 and 265.72 (dealing with use of the manifest and manifest discrepancies)), and F through L of Part 265 of this chapter;

(4) All applicable provisions in Parts 122 and 124 of this chapter.

ADJUSTMENTS TO ESTIMATES OF NUMBER OF AFFECTED ESTABLISHMENTS

APPENDIX B

INTRODUCTION

JRB's analysis of the number of affected establishments primarily considered changes in the definition of solid waste in combination with certain exemptions. In considering other exemptions (not evaluated by JRB as part of their analysis), IEc determined that fewer establishments are affected than predicted by JRB. It was therefore necessary to adjust JRB's estimates of the number of affected establishments to reflect these changes. This appendix discusses the adjustments made by IEc.

EXEMPTION FOR BATCH TOLLING

Under the proposed regulations, off-site recycling of non-listed hazardous wastes will be regulated for the first time. EPA has decided to exclude from regulation materials recycled under batch tolling arrangements. The following industries are potentially affected by this change.

Solvent Reclaimers

JRB had estimated that 150-200 solvent reclaimers accept solvents for reclamation. IEc estimated that these facilities accept approximately 2,870 MT/year of listed and non-listed solvents. An official of the National Association of Solvent Recyclers (NASR) provided preliminary results of a survey that indicate that approximately 80 percent of NASR members' business is handled under tolling arrangements. The official stated that

if tolling arrangements were used, they were likely to be batch tolling arrangements in all cases. The survey also shows that none of the respondents operate solely under tolling arrangements and the NASR official stated that virtually all facilities accept both listed and non-listed solvents. IEc assumed that approximately 10 percent of the solvents accepted are non-listed (287 MT/year per facility) and 90 percent are listed (2,580 MT/year per facility). Further, it was assumed that on average 80 percent of both listed and non-listed solvents are accepted under batch tolling agreements. Therefore, the net reduction in the volume of regulated wastes per facility is calculated as follows:

Decrease in Average Regulated Volume (listed wastes under batch tolling agreement)	(2,064)	(2,580 x 80%)
Increase in Average Regulated Volume (non-listed wastes not under batch tolling agreements)	57	(287 x 20%)
Net Decrease in Regulated Volume	(2,007)	

This estimate was applied only for 50 establishments (the approximate membership of NASR). The NASR survey covered only a small number of facilities and cannot be assumed to be representative of non-member facilities. Therefore, to provide a conservative estimate of cost impacts, it is assumed that the remaining 100-150 solvent reclaimers do not use batch tolling agreements. These facilities would therefore be subject to a net increase in the regulated volume of wastes of 287 MT/year (average volume of non-listed solvents, of which none is assumed to be accepted under batch tolling agreements).

Paint and Allied Products

Paint and allied product producers sending spent solvents to off-site reclaimers under batch tolling agreements will also be exempt from regulation under the proposed rules. Producers sending listed solvents to off-site under non-batch tolling agreements will be subject to reduced requirements, while those sending non-listed solvents off-site other than under tolling agreements will be subject to increased requirements. JRB did not provide an estimate of the number of establishments currently

regulated which would be subject to requirements for additional volumes, but did estimate that 56 establishments would be newly-regulated. Only these 56 establishments were therefore considered in this cost impact analysis. To be consistent, IEc did not calculate cost savings for paint and allied product establishments with reduced requirements associated with off-site batch tolling of listed solvents. Further, it was assumed that no establishments would be released from RCRA completely as a result of the batch tolling exemption. Thus, only the establishments potentially regulated for the first time were considered in this analysis. The results therefore substantially understate the savings resulting from the proposed changes for this industry.

As noted above, up to 80 percent of solvents received by some off-site reclaimers are accepted under batch tolling agreements. According to an official of NASR, it is unlikely that as much as 80 percent of paint solvents are handled under batch tolling arrangements, however. Batch tolling is economically feasible only above a minimum volume level, and many paint producers may generate too little solvent to justify batch tolling. IEc was not able to determine how many of the potentially-affected paint producers are large enough to send non-listed solvents to off-site reclaimers but too small to use batch tolling agreements. In the absence of reliable information, it was assumed conservatively that only 25 percent of the potentially-affected establishments would be exempted from regulatory requirements by virtue of batch tolling. It was further assumed that any paint producer using off-site solvent reclamation services will send all of their spent solvents to that off-site facility. Therefore, the number of establishments estimated to send non-listed solvents to off-site facilities (56) was reduced by 25 percent (to 42); but no adjustment was made to the average volume of waste affected for the remaining 42 establishments.

Carbon Reclaimers

Six carbon reclaimers accepting spent carbon for regeneration were identified by JRB. Three establishments were known to be regulated under the hazardous waste management regulations already. The other three establishments were initially assumed to be newly-regulated as a result of the proposed change. Further investigation by IEc revealed that one of the three establishments does not currently accept spent carbon they believe to be hazardous. The other two establishments are likely to handle all carbon under batch tolling agreements given the proposed regulatory changes. One of the two establishments currently handles approximately 98 percent of the spent carbon it handles

under batch-tolling agreements; it is assumed that this one establishment will no longer accept the remaining two percent to avoid being newly-regulated. The remaining establishment is exempt because all of its regeneration of carbon is currently conducted under batch tolling agreements.

A number of adjustments were made to the cost data obtained from various sources. First, all cost data were adjusted to 1981 dollars, using the inflation indices shown in Exhibit C-1. In addition, costs were classified (1) by whether they are variable with the volume or number of wastes handled or fixed with respect to volume, and (2) by whether costs have already been incurred, (that is, are "sunk" costs) and hence would not be affected by the proposed changes. It was assumed that all affected establishments (except those which would be newly-regulated) are currently in compliance with all Interim Status requirements. It was also assumed that the regulated establishments have not yet incurred the incremental costs required to meet Final Status Standards under 40 CFR 264. Exhibit C-2 identifies the unit cost categories applied for different types of changes in regulatory requirements.

In some cases, it was also necessary to translate the costs into cost functions appropriate for this analysis--for example, to translate costs expressed as a function of the number of tanks at a facility to costs expressed as a function of volume. The capacity factors used in these adjustments are shown in Exhibit C-3. For one-time expenditures which vary with the volume of waste, costs are expressed as a function of total facility lifetime capacity (assumed to be 20 years times annual capacity). Finally, in some cases it was necessary to make assumptions about how establishments would choose to comply with the hazardous waste management regulations or about how many establishments would have to undertake specific activities. All assumptions and adjustments are described in the notes to the tables providing costs for the specific requirements.

The unit costs for each requirement were translated to after-tax annualized costs, assuming a 20 year site life, (so that closure costs are incurred in year 20 and all one-time expenditures are annualized over 20 years) and a 3 percent real rate of return after-tax. The analysis assumed a marginal tax rate of 50 percent,1/ depreciation of property and equipment over 5 years, and a 10 percent investment tax credit.

1/Includes federal income taxes and state and local taxes.

Exhibit C-1

INFLATION INDICES

	M&S Equipment Cost Index[1]	CE Plant Cost Index[1]	Labor Rates[2]		
			Supervisory	Technical	Clerical
1979	599.4	238.7	27.50	29.00	9.00
1980	659.6	261.2	-	-	-
1981	721.3	308.4 (October)	39.80	37.60	13.25

[1]Source: Chemical Engineering.

[2]Source: JRB, Macro Profile: Cost Factors for Storage Facilities, March 1982, p. 5-2 (for 1981) and ADL, Economic Impact Analysis of RCRA Interim Status Standards, November 1981. Vol. 2 Appendix B, p. B-2 (for 1979).

Exhibit C-2

UNIT COST CATEGORIES APPLIED FOR DIFFERENT CHANGES IN REGULATORY REQUIREMENTS

	Newly-Regulated	Increased Requirements	Decreased Requirements	Released from Requirements
Initial Costs				
Variable	x	x		
Fixed: ISS	x			
Incremental FSS	x			x
Annual Costs				
Variable	x	x	x	x
Fixed: ISS	x			x
Incremental FSS	x			x
Closure Costs				
Variable	x	x	x	x
Fixed	x			x

Exhibit C-3

CAPACITY CONVERSION FACTORS
FOR TANKS AND CONTAINERS

Tanks

Size of Tanks (gals)	Annual Capacity (metric tons)	
	range	mid-point
10,000	0-2000	1000
30,000	2001-5500	3750
50,000	5501-20,000	12,750

Source: Arthur D. Little, Inc., Economic Impact Analysis of RCRA Interim Status Standards, November 1981, and OSW personnel.

Containers

No. of Containers per Facility	Annual Capacity[1] (gals)	Annual Capacity[2] (MT)
50	33,000	150
100	66,000	300
200	132,000	600
500	330,000	1500

[1]Assuming 30 day turnover and 55 gallons/container capacity.

[2]Assuming 10 lbs/gal conversion factor; gals ÷ 220 = MT.