ECONOMICS BACKGROUND DOCUMENT

ECONOMIC ASSESSMENT OF THE USEPA'S 2001 FINAL RULE REVISING THE RCRA "MIXTURE & DERIVED-FROM" RULES:

ESTIMATE OF NATIONAL COST SAVINGS FOR THE EXPANDED EXEMPTION OF "DECHARACTERIZED" HAZARDOUS WASTES FROM THESE RULES

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On 20 November 2000, USEPA submitted a draft of this document to the final rule workgroup for review, consisting of a total 64 members, 5 from state governments, 15 from USEPA regional offices, 17 from USEPA HQ, and 27 from USEPA's Office of Solid Waste. In January 2001, USEPA submitted a post-workgroup review revised draft of this document, to the White House Office of Management and Budget (OMB) for review.

EXECUTIVE SUMMARY

This report presents USEPA's estimate of the anticipated national economic impacts – in the form of anticipated **cost savings** to RCRA hazardous waste handlers -- associated with the decharacterized waste exemption provision of USEPA's final rule notice, which revises the RCRA *"mixture and derived-from"* hazardous wastes rules. As listed below, the final rule notice contains two regulatory components:

Final Rule Revisions to USEPA's RCRA Hazardous Waste "*Mixture and Derived-from*" Rules	
Regulatory Provision of Final Rule	Description
Decharacterized waste exemption:	Revises the current exemption (40 CFR 261.3(a)(2)(iii)) from RCRA Subtitle C hazardous waste management requirements which applies to only waste "***mixtures***", to also include "***derived-from***" and "***as generated***" hazardous waste classes, which are RCRA-listed as hazardous wastes, solely for ignitability, corrosive, and/or reactivity "characteristics". These two additional types of waste classes will also become exempt from RCRA Subtitle C handling and tracking requirements, when they no longer exhibit any characteristic of hazardous waste (i.e. are "decharacterized"), and if the wastes comply with RCRA disposal (LDR) standards.
"Mixed waste" conditional exemption:	In a separate *Federal Register* final rule announcement, revises 40 CFR 266 Subpart N to include a conditional exemption for certain low-level "*mixed wastes*" (i.e. waste that is both radioactive and RCRA hazardous).

The scope of this Economics Background Document only addresses the "*decharacterized waste*" exemption. USEPA's economic analysis for the "*mixed waste*" exemption is available as a different document from the RCRA Docket in conjunction with the separate *Federal Register* announcement for the "*mixed waste*" exemption.

The table below summarizes USEPA's estimate of the eligible waste quantities, and annual cost savings for reduction in waste disposal costs and waste shipment manifesting burden, under the "*decharacterized waste*" exemption revision of the final rule, as pertaining to the two newly eligible classes of wastes:

Summary of USEPA's Estimate of National Cost Savings for the Final Rule "*Decharacterized Waste*" Exemption Revision to the RCRA "*Mixture and Derived-from*" Rules	
Impact Metric	Estimated Quantity
Expected Annual Industry Waste Disposal Cost Savings =	$4.3 to $6.6 million per year*
Industrial Process Waste Annual Quantity Exempt =	3.6 million tons per year
Total Number of Eligible Industrial Wastestreams =	236 industrial wastestreams
Total number of facilities generating eligible wastestreams =	120 facilities
Number of Economic Sectors Affected (SIC code count) =	18 economic sectors

* Note: USEPA's national cost savings estimate expressed as a range representing -15% to +30% cost estimation uncertainty around USEPA's cost savings point estimate; this uncertainty percentage interval represents a "Class 4" level of estimate classification, which is appropriate to confirmation of economic feasibility based on parametric and modeling techniques, as applied in this document. This level of cost estimation uncertainty is based on American National Standards Institute (ANSI) Standard nr. Z94.2-1989 (http://www.ansi.org/), and the Association for the Advancement of Cost Engineering International (AACE) Recommended Practice Nr. 18R-97 (http://www.aacei.org/technical/rps/).

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SECTION I: INTRODUCTION

I.A. PURPOSE OF THIS DOCUMENT

This report presents USEPA's estimate of the anticipated national economic effects of the final rule revising the "*decharacterized waste*" exemption of the RCRA hazardous waste "*mixture and derived-from*" rules. The final rule finalizes this regulatory provision of USEPA's 1999 proposed rule (*Federal Register*, Vol.64, No.223, 19 November 1999, pp.63382-63461). EPA's "*Economics Background Document*" in support of the 1999 proposed rule is available at: http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm .

I.B. SUMMARY OF PUBLIC COMMENTS DIRECTED AT USEPA'S "*ECONOMICS BACKGROUND DOCUMENT*" FOR THE 1999 PROPOSED RULE

The "*decharacterized waste*" exemption provision of USEPA's 1999 proposed rule was available for a **90-day public comment period** extending to 17 February 2000.[1] EPA received **50 public comments** on the 1999 proposed rule by the deadline. A separate "*Response to Public Comments Background Document*" is available from the RCRA Docket[2], which contains EPA's complete responses to all comments. For purpose of summary reader convenience here, Exhibit I-3 below displays the **seven public comments** USEPA received, which contained topics/issues directed at the USEPA's 1999 economic assessment of the "*decharacterized waste*" exemption.

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[1] In addition to the "*decharacterized waste*" exemption, the 19 November 1999 proposed rule also contained two other components:

"*Mixed wastes*": A proposed conditional exemption from the RCRA hazardous waste "*mixture and derived-from*" rules for "*mixed wastes*" (i.e. radioactive and RCRA hazardous wastes mixed together); this regulatory provision appeared in a separate *Federal Register* notice of proposed rulemaking on the same day (*Federal Register* Vol.64, No.223, 19 November 2000, pp.63464-63501), and

"*Exemption levels*": Description of an "*implementation framework*" for a proposed exemption from RCRA hazardous waste management regulations, for wastes that meet chemical-specific exemption levels, also known as the "*Hazardous Waste Identification Rule*" (HWIR), from two prior USEPA proposed rules:

- FR Vol.xx, No.xxx, 20 May 1992, pp.21450-xxxxx (withdrawn 30 Oct 1992, 57 FR 49280).
- FR Vol.60, No.245, 21 Dec 1995, pp.66344-66469.

USEPA initially established the public comment period for this provision of the proposed rule at six months (i.e. 17 May 2000 deadline), and then twice extended the public comment period:

- first to 15 August 2000 (FR Vol.65, No.76, 19 April 2000, pp.20934-20935),
- and then to 16 October 2000 (FR Vol.65, No.138, 18 July 2000, pp.44491-44506).

The public comments received for these two other proposed rule provisions are also available to the public from the RCRA Docket; they are not summarized in this *Economics Background Document*.

[2] USEPA RCRA Docket Information Center and RCRA Hotline: Crystal Gateway One, 1235 Jefferson Davis Highway (first floor), Arlington, Virginia; phone: 800-424-9346; email: rcra-docket@epa.gov .

Summary of Public Comments Concerning Economics Issues on the USEPA's 19 November 1999 Proposed Rule Notice (64 FR 63382-63461) to Revise the "*Decharacterized Waste*" Exemption of the RCRA "*Mixture and Derived-from*" Rules			
Item	Topic of Public Comment	Excerpt from Public Comment Which Contains an Economics Topic/Issue	Identity of Commenters
1	Magnitude of national annual cost savings for proposed waste exemption	EPA has estimated that adopting the current proposal would result in a reduction of between $4.3 and $6.5 million dollars per year in unnecessary compliance, transportation and disposal costs. 64 Fed. Reg. at 63447-48. This represents only a small portion of the potential billion dollar reduction in regulatory costs that EPA estimates will result if all unnecessary regulation of low risk waste is eliminated (57 Fed. Reg. 21500). However, the current proposal represents a good starting point for reducing unnecessary expenditures and opens the door for shifting these resources to more worthy environmental initiatives. Thus, EPA's changes to the derived-from rule will ultimately result in a public benefit by eliminating unnecessary costs and providing an additional source of funds for programs involving wastes that actually do pose substantial threats to human health and the environment.	Chemical Manufacturers Association Panels (WH2P-00039)
2		The regulatory relief provided by this proposal is insufficient in light of the overall regulatory burden imposed by the mixture and derived-from rules. A minor regulatory modification that generates $4 to $6 million in cost savings cannot be said to constitute a true revision of the mixture and derived-from rules.	Synthetic Organic Chemical Manufacturers Association (WH2P-00035)
3	Hazardous waste transport and landfill operation economic resources	Compliance with Subtitle C often requires the expenditure of vast amounts of money and energy (with concurrent emissions and waste generation) to process wastes and to transport these wastes to special hazardous waste landfills. These hazardous waste landfills have limited space, must meet strict compliance standards and require large expenditures of money and energy to sustain and operate. These economic and environmental resources are best applied to those wastes that are truly hazardous and most likely to pose significant risks to human health and the environment. No benefit to public health or the environment is achieved by requiring these energy intensive procedures for low risk wastes such as those covered by the current proposal.	Chemical Manufacturers Association Panels (WH2P-00039)
4	LDR treatment standards are costly	GM does not support the requirement for these excluded wastes to meet the land disposal restrictions of 40 CFR Part 268. Applying LDR's to a waste which is exempt because it no longer meets the hazardous waste criteria is unnecessarily burdensome, costly and is a contradiction of the RCRA program fundamental requirements, as explained below.	General Motors Corporation (WH2P-00038)
5	Potential costs from environmental damages caused by exempted wastes	The economic benefit associated with exempting the 29 ICR listed waste codes was estimated by EPA at $4.6 million nationwide (see page 63448). Yet EPA has done no evaluation of the negative environmental impact associated with eliminating these codes. As EPA notes in proposing to maintain the mixture and derived-from rules, many Superfund sites and damage cases are associated with the disposal of waste residues that contain substantial levels of toxic constituents. This is true also of these 29 ICR listed waste codes, and damages could result from the hazardous constituents still present in these waste. The concentrations can be low enough to not exhibit an ICR type of physical hazard, yet high enough to cause environmental damage. One damage case or Superfund site can cause far in excess of the $4.6 million estimated savings predicted by EPA. The elimination of these 29 waste codes is therefore not justified economically, and EPA is not justified in going forward with this action since the potential health and environmental impact costs have not been assessed.	Environmental Technology Council (WH2P-00034)

6	State implementation (inspection & enforcement) costs need funding	We would also like to point out that the proposed rule would place a significant new burden on inspection and enforcement personnel, particularly at the state and local government level. Implementing this proposed rule without providing additional funding for inspection and enforcement will result in fewer inspections and enforcement actions, a lesser overall enforcement presence, and a lower compliance rate less protective of human health and the environment. We also anticipate that the budget for laboratory analysis required to test an exempt waste stream will increase exponentially with the proposed rule. If this proposed rule is adopted, we strongly recommend that EPA increase funding to the states to account for the additional duties and laboratory expenses necessary to implement the rule.	Missouri Department of Natural Resources (WH2P-00025)
7	Attachment of RCRA Land Disposal Restrictions (LDRs) to proposed exemption	GE is concerned that statements made in the preamble could be misinterpreted to impose new LDR requirements on mixtures and extend them to derived-from residuals that EPA proposes to have subject to the same standard.... EPA should clarify that it did not intend to revise application of the current LDR rules without any discussion of why such a change would be necessary. Such a change could have significant cost implications to the regulated community without providing any significant environmental benefit and certainly would require justification by EPA.	General Electric Corporation (WH2P-00005)

Note: This public comment summary table represents only the limited subset of comments received by USEPA which contain economics-related topics addressing the "*decharacterized waste*" exemption provision of the 19 November 1999 proposed rule. Other topics also contained in this subset of comments are not summarized above. Refer to the RCRA Docket "*Response to Public Comments Background Document*" for the final rule, for complete public comments with USEPA's responses, and to USEPA's discussion of public comments in the *Federal Register* notice for the final rule.

SECTION II: REGULATORY BACKGROUND TO RCRA AND THE "MIXTURE AND DERIVED-FROM" RULES

II.A. BRIEF BACKGROUND TO RCRA:

In 1976, Congress passed the Resource Conservation and Recovery Act (RCRA) to address nationwide problems associated with the large quantities of municipal and industrial waste generated each year nationwide.[3] This Act, which was significantly amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), resulted in the establishment of four programs which regulate underground storage, and solid, medical, and hazardous wastes. The regulations under study in this document primarily relate to Subtitle C and Subtitle D of RCRA:

RCRA's Two Statutory Provisions Addressing Solid Waste Management	
RCRA Subtitle C	Addresses ***hazardous* wastes** and was developed to protect human health and the environment from the risks posed by these wastes. RCRA Subtitle C requires "*cradle-to-grave*" management of hazardous waste, by regulating three categories of waste managers: generators, transporters, and operators of waste management facilities. Subtitle C regulations include treatment standards established under the Land Disposal Restrictions (LDRs) as well as requirements related to hazardous waste storage, transport, recycling, and disposal.
RCRA Subtitle D	Focuses on ***non-hazardous* wastes**, and differs from RCRA Subtitle C in two important ways. First, while Subtitle C regulations are developed and promulgated by the USEPA, the development and implementation of RCRA Subtitle D requirements is the responsibility of the states. In addition, non-hazardous wastes regulated under Subtitle D are subject to standards that are generally less stringent and less costly than those under Subtitle C.

The final rule revises the RCRA "*mixture and derived-from*" rules (regulations) for defining hazardous wastes, by providing a means for certain types of wastes to become exempt from the RCRA Subtitle C hazardous waste management system, and instead be managed under less stringent RCRA Subtitle D non-hazardous waste management requirements.

[3] Additional descriptive information on RCRA waste is available from: (1) USEPA's Office of Solid Waste Internet website (http://www.epa.gov/osw ; (2) USEPA's May 1998 *RCRA Orientation Manual*, report nr. EPA-530-4-98-004, which is available from the National Service Center for Environmental Publications at 800-490-9198 or via the Internet website http://www.epa.gov/epaoswer/general/orientat/index.htm ; and (3) the RCRA Public Hotline at 800-424-9346 or via the Internet at http://www.epa.gov/epaoswer/hotline .

II.B. RCRA SUBTITLE C "HAZARDOUS" WASTE CRITERIA

Under Subtitle C of RCRA, wastes are identified as "***hazardous***" if they are placed on "***lists***" developed by the USEPA through a series of regulatory actions (40 CFR 261 Subpart D (261.30-261.33)), or if they exhibit certain hazardous waste "***characteristics***" (40 CFR 261 Subpart B (261.10) & Subpart C (261.20-261.24)). USEPA designates wastes as "*hazardous*" through a RCRA listing procedure (40 CFR 261 Subpart B (261.11)).[4] The Agency has studied wastes generated from a wide array of industrial sectors and identified those wastes that should be inherently defined as hazardous, and therefore "***listed***". A waste may be listed if it exhibits one of the characteristics of a hazardous waste, is acutely toxic or hazardous, meets other criteria established in the RCRA regulations, or meets the statutory definition of a hazardous waste. USEPA has identified listed wastes in the following three categories:

Three Categories of RCRA "*Listed*" Hazardous Wastes			
RCRA Listing Category	Waste code	CFR citation	Description
Non-specific source wastes	Fxxx	40 CFR 261.31	This category includes generic wastes produced by manufacturing and industrial processes, such as halogenated solvents used in degreasing.
Specific source wastes	Kxxx	40 CFR 261.32	This category identifies waste from specific industries, such as wood preserving and organic chemical manufacturing.
Discarded commercial chemical products	Pxxx (acutely toxic)	40 CFR 261.33(e)	This category includes discarded commercial chemical products, off-specification species, container residues, and spill residues.
	Uxxx (toxic)	40 CFR 261.33(f)	

USEPA may also classify a waste as hazardous if it has properties or characteristics that would present a potential hazard if the waste is managed improperly. The Agency has identified various physical characteristics which, if exhibited by a waste, lead to a hazardous classification (40 CFR 261 Subpart C (261.20-261.24)). These characteristics are ignitability, corrosivity, reactivity, and toxicity (i.e. chemical leachability). Wastes exhibiting any of these characteristics defined by USEPA are subject to Subtitle C hazardous waste management regulations.

II.C. RCRA "*MIXTURE AND DERIVED-FROM*" RULES

With respect to their origins and sources (generation), there are basically three possible categories or classes of wastes, as defined in the table below. Although these definitions are formulated within the context of the RCRA hazardous waste program and a particular RCRA final rule, these categories may be said to represent general waste categories, such that all types of solid wastes (i.e. hazardous and non-hazardous, household and industrial) may be classified according to one or more of these categories:

[4] CFR= Code of Federal Regulations. The CFR is published by the Office of the Federal Register, National Archives and Records Administration (NARA). The CFR is a codification of the general and permanent rules published in the Federal Register (FR) by the Executive departments and agencies of the Federal Government. It is divided into 50 titles which represent broad areas subject to Federal regulation; Title 40 of the CFR is "Protection of Environment", and contains USEPA's regulations. The CFR is kept up to date by the individual daily issues of the Federal Register, and each volume of the CFR is updated annually. Full texts of the CFR and the Federal Register are available in electronic format at NARA's Internet website: http://www.nara.gov/fedreg or at the US Government Printing Office's website http://www.access.gpo.gov/nara .

Three Generalized Waste Classes With Respect to Waste Origin/Source	
"***As generated***" wastes	Wastes at their initial life-cycle source or point of generation (i.e. wastes that have not been chemically or physically altered or treated beyond the point of initial generation). "As generated" wastes may be antecedents (predecessors) of both waste "mixtures" and "derived-from" wastes.
Waste "***mixtures***"	The physical combination, blending or commingling of two or more waste components or constituents, into a single composite waste. Waste "mixtures" may involve the combination of two or more "as generated" and/or "derived-from" wastes and/or other existing waste "mixtures". As of year 2000, the term "mixture" is used formally in the RCRA regulatory definition of hazardous waste at 40 CFR 261.3. (Note: the expression "waste mixtures" as defined here, is not synonymous to "mixed wastes" which refers to the combination of chemically hazardous wastes with radioactive wastes).
"***Derived-from***" wastes	Wastes generated from the handling or management (i.e. storage, transport, treatment or disposal) of a previously existing waste. Examples of "derived-from" wastes include wastewater treatment sludges, waste incineration ashes, other types of waste treatment residues*, waste spill residues, landfill leachate, rainfall runoff from waste, and chemically-stabilized wastes. "Derived-from" wastes may be generated (as successors) from either "as generated" wastes, from waste "mixtures", or from the secondary or tertiary treatment of other existing "derived-from" wastes (note: it is possible for some wastes to be subject to multiple (i.e. secondary, tertiary) treatment steps before ultimate disposition/disposal at end of their management life-cycle).
Explanatory Notes: (a) These three waste classes are not formally defined in 40 CFR 260 Subpart B pertaining to USEPA's regulatory definitions of the RCRA hazardous waste management system. (b) One other type of "treatment" process may actually be classified as both a waste "mixture" and a "derived-from" waste: "*solidification* wastes" are wastes which have been combined with one or more other non-waste materials for purpose of encapsulating the waste by forming a solid material (e.g. monolithic block, clay-like material, granular particulate), which does not necessarily involve a chemical interaction between the waste and the solidifying material or activities (see USEPA's report "Solidification/Stabilization Resource Guide", Office of Solid Waste & Emergency Response, Technology Innovation Office, report nr. EPA-542-B-99-002, April 1999 (http://www.epa.gov/clu-in.org) for additional information about stabilized wastes. (c) Note: This Economics Background Document uses the terms "*waste*" and "*wastestream*" synonymously.	

These three categories reflect the possibility that over the duration of a waste's life-cycle in the economy[5], a waste may be subject to multiple waste handling and management steps – such as mixing, storage, transportation, and/or one or more types of chemical or physical treatment -- before arriving at its ultimate destination and disposition (i.e. over the course of the management of wastes from their initial origin, to their ultimate disposal, destruction, or recycling/reuse).

On 19 May 1980 (Federal Register, Vol.45, No.98, p.33084), USEPA promulgated the RCRA "***mixture and derived-from rules***" to ensure that RCRA-listed hazardous wastes continue to be managed as hazardous waste as they undergo these various types of chemical and physical treatments:

RCRA "*Mixture and Derived-From*" Rules Defined		
RCRA ***mixture rule***:	40 CFR 261.3(a)(2) (iii) & (iv)	A mixture of any amount of nonhazardous solid waste with any amount of RCRA-listed "hazardous" waste, is also a "hazardous" waste under this rule.

[5] In addition to possible physical and chemical transformations induced from multiple and sequential management and handling steps throughout a waste's life-cycle in the economy, it is also possible for wastes to undergo physical and chemical transformation after contact with the natural environment. Classification of the environmental transformation of wastes is beyond the scope of this background document.

RCRA ***derived-from rule***:	40 CFR 261.3(c)(2)(i))	Hazardous waste treatment, storage, and disposal processes and facilities often generate residues (or secondary wastes), that may contain high concentrations of hazardous chemical constituents. Any material (residues) derived from a RCRA-listed hazardous waste is also a hazardous waste under this rule.

USEPA developed the "*mixture and derived-from rules*" to close loopholes in the RCRA Subtitle C hazardous waste management system. Without a "*mixture rule*", generators of hazardous waste could potentially evade regulatory requirements by mixing listed hazardous waste with other wastes. Such a mixture would result in a waste that may continue to pose a serious hazard but is not designated as hazardous, since it no longer meets the original listing description and may not exhibit a hazardous characteristic. Likewise, without a "*derived-from rule*", owners and operators of hazardous waste management facilities could potentially evade regulation by minimally treating or otherwise altering a listed hazardous waste and claiming that the resulting residue is no longer the listed waste, despite the potential hazard which the residue may pose to human health and the natural environment.

II.D. RCRA HAZARDOUS WASTE EXEMPTION CRITERIA

There are two methods by which a hazardous waste currently may gain exemption from RCRA Subtitle C requirements. The exemption process is relatively straightforward for characteristic wastes; once the characteristic is removed and any applicable land disposal requirements are met, the waste is no longer subject to most Subtitle C requirements. In contrast, listed wastes generally must remain in the Subtitle C system regardless of the hazards they pose. The only exemption mechanism that currently exists for listed waste is the delisting program.

The RCRA delisting program (40 CFR 260.22) is a formal application process in accordance with the requirements of the Administrative Procedures Act. As part of this process, USEPA or an authorized state agency reviews exemption petitions for individual wastestreams at individual facilities. Prior to approval, a generator or waste manager must demonstrate that the concentrations of the constituents for which the waste was listed do not pose significant risk to human health or the environment, and that no additional constituents are present which might cause the waste to be hazardous. The Agency publishes the results of its review in the *Federal Register* for public comment, and develops proposed and final regulations to establish the exemption. This process can be lengthy, difficult, and expensive for both USEPA and waste generators and managers.

II.E. SUMMARY OF THE FINAL RULE'S "*DECHARACTERIZED WASTE*" EXEMPTION

One of the two provisions of the final rule revises the current RCRA exemption (i.e. 40 CFR 261.3(a)(2)(iii)) which only applies to *mixtures* of industrial wastes that are listed solely for the presence of the ignitability, corrosivity, or reactivity hazardous waste characteristic. Based on the inventory of RCRA hazardous wastes listed in the *Code of Federal Regulations* (CFR) as of 1999 (40 CFR 261 Subpart D), this provision will apply to a total of **29 "characteristically-listed" waste types** (i.e. RCRA wastecodes) and their associated hazardous characteristics (refer to following exhibits in this section for an overview of these eligible wastestreams).

As described in the final rule, the exemption requirements for characteristically-listed wastes are similar to current RCRA requirements for characteristic only wastes. That is, any characteristically-listed waste may exit the Subtitle C system if it meets the following conditions:

- The waste has been treated to remove the hazardous characteristic(s); and
- The waste meets the appropriate LDR treatment standards (including treatment for all underlying hazardous constituents).

This provision will allow industrial wastes meeting these requirements to be disposed in RCRA Subtitle D facilities for non-hazardous wastes. Thus, generators and managers of these wastes may avoid the cost of transport to, and disposal in, relatively more distant and expensive RCRA Subtitle C facilities permitted for RCRA hazardous wastes.

Applicability of the Final Rule Exemption, Compared to the Existing RCRA Exemption

Item	Waste Category (source or origin)	Applicability of	
		Current RCRA exemption	Final rule exemption
1	"*As generated*" RCRA-listed* haz wastes	No	✔
2	"*Mixtures*" of RCRA-listed* haz wastes	✔	✔
3	Waste residues "*derived-from*" RCRA-listed* haz wastes	No	✔

* Only if listed as a RCRA hazardous waste in 40 CFR 261 Subpart D, solely for the presence of one or more of the ignitability (I), corrosivity (C), or reactivity (R) hazardous characteristics.

SECTION III: USEPA'S ESTIMATE OF ECONOMIC IMPACT OF THE DECHARACTERIZED WASTE EXEMPTION IN THE 2001 FINAL RULE

III.A. ANTICIPATED ECONOMIC IMPACT OF THE "*DECHARACTERIZED* WASTE" EXEMPTION

The final rule exemption applies to 29 RCRA industrial hazardous wastecodes (as of 1999), which are generated by an estimated **236 industrial facilities** in the US. The estimated national generation of these industrial hazardous wastes is **3.62 million tons** annual "*as generated*" waste quantity. This quantity corresponds to "as generated" wastes (i.e. waste quantities at the point or source of initial generation). After their treatment (via incineration)to meet the RCRA hazardous waste land disposal restriction (LDR) standards (40 CFR 268.40), the resultant annual quantity of waste residual (i.e. "*derived-from*" waste) – which may have been decharacterized by the incineration treatment -- is estimated at **57,400 tons** (which represents an overall 98.4% reduction in the initial "*as generated*" waste volume).

One feature of the final rule, is an exemption for industrial hazardous wastes listed solely for the presence of a RCRA hazardous "***characteristic***" (i.e. ignitability, corrosivity, and/or reactivity). This exemption will affect one or more of 29 listed wastecodes which indicate the presence of a hazardous characteristic, by exempting these wastes from RCRA Subtitle C regulation if they are de-characterized, and if they also meet the appropriate RCRA LDR standards for any underlying hazardous constituents. Under this exemption, industrial wastes that have been treated for the RCRA "characteristic", may then be disposed in non-hazardous Subtitle D disposal facilities, thus avoiding the relatively higher costs for disposal in waste management units meeting RCRA Subtitle C design and operating requirements. This section provides an estimate of the anticipated national cost savings of the exemption for "characteristically listed" wastes, as well as the identity of the economic sectors which USEPA anticipates will be affected by this final rule exemption.

III.B. OVERVIEW OF RCRA HAZARDOUS WASTECODES ELIGIBLE FOR THE EXEMPTION

To assess the potential economic benefits of this exemption, USEPA screened a database containing descriptive, quantitative information on a sample sub-population of US industrial hazardous wastes. This database is a **"hybrid" database**, constructed by combining two USEPA industrial hazardous waste databases:

- USEPA's 1986 "*National Survey of Hazardous Waste Generators*"
- USEPA's 1996 "*National Hazardous Waste Constituent Survey*"

USEPA based its analysis of the final rule's "decharacterized waste" exemption upon the information contained in this "hybrid" database. Both the 1996 NHWCS database and the "hybrid" database are available for public review from the RCRA Docket, according to the instructions in the preamble of the Federal Register notice.

Based on the information contained in the database, as shown in Exhibit III-1, 236 RCRA hazardous wastestreams associated with 29 characteristically-listed RCRA wastecodes, are potentially eligible for this exemption. These wastestreams total 3.6 million tons in annual generation quantity (as benchmarked in the database to 1993). The majority of these wastestreams carry only the **F003 wastecode** (indicating that they consist of spent non-halogenated solvents), or carry the F003 wastecode plus a RCRA characteristic code such as D001, which indicates that the waste is ignitable (see 40 CFR 261.32).

It is estimated that 18 of the 236 wastestreams also contain either of two **metals** (i.e. chromium (D007) or barium (D005), which are subject to the toxicity characteristic test at 40 CFR 261.24 (i.e. may not exceed regulatory concentration levels expressed in milligrams-per-liter). According to the industrial waste database, these two metals are at or lower than the toxicity characteristic regulatory limit concentrations, so no additional treatment costs are anticipated in this economic analysis. Otherwise, wastestreams must meet the toxicity characteristic standards.

Wastes identified as potentially eligible for exemption commonly contain **organic constituents** such as toluene, acetone, methanol, and xylenes, and others which are also subject to the toxicity characteristic test. The database indicates that all eligible wastestreams are currently **incinerated** (i.e. thermal waste treatment applied), which are assumed in this analysis to mostly destroy the organic compounds, so no further treatment cost is anticipated in this analysis for meeting the toxicity characteristics.

As of 1999, there are 29 industrial hazardous wastecodes within the RCRA program listed *solely* for three "hazardous" chemical properties of industrial wastes, which the USEPA uses for defining "characteristics" of industrial hazardous wastes, as displayed in Exhibit III-1:

Exhibit III-1:
Relationship Between Three Hazardous Waste "Characteristics" and RCRA Codes

Type of RCRA Hazardous Waste "Characteristic"	RCRA Hazard Code (40 CFR 261.30)	RCRA Characteristic Wastecode
1. Ignitability (40 CFR 261.21)	I	D001
2. Corrosivity (40 CFR 261.22)	C	D002
3. Reactivity (40 CFR 261.23)	R	D003

Exhibit III-7 at the end of this section presents a list of the identity of these 29 affected RCRA wastecodes, summarizes the basis for their RCRA listing, and provides their associated RCRA Land Disposal Restriction (LDR) treatment standards (for both wastewaters and non-wastewaters physical forms), according to the regulatory table provided at 40 CFR 268.40. The distribution of characteristic hazard codes (i.e. I, C or R; see 40 CFR 261.30), and wastecode categories (i.e. Fxxx, Kxxx, Pxxx or Kxxx; see 40 CFR 261.31-33) for these 29 RCRA wastecodes are displayed in Exhibit III-2:

Exhibit III-2:
Overview of 29 RCRA Wastecodes Eligible for the Final Rule's
Revised "*Decharacterized Waste*" Exemption
for the RCRA Hazardous Waste "*Mixture and Derived-from*" Rules

RCRA Hazard Code Count		RCRA Wastecode Count	
I = Ignitability	20	Fxxx (non-specific industry sources)	1
C = Corrosivity	1 (also with an R)	Kxxx (specific industry sources)	3
R = Reactivity	9	Pxxx (off-spec/discarded acute toxic chemicals)	3

Uxxx (off-spec/discarded toxic chemicals)	22

As currently specified at 40 CFR 261.3(a)(2)(iii), a ***mixture*** of such characteristic wastes and a solid waste, is no longer a RCRA hazardous waste if the mixture does not exhibit one or more of these three hazardous characteristics (i.e. hazard codes I, C, or R), and meets the RCRA Land Disposal Restriction (LDR) treatment standards.

However, this decharacterized waste mixture exemption currently does not apply to other types of decharacterized wastes, even if they no longer exhibit a characteristic at the point of land disposal. From a human and environmental risk perspective, it is not consistent to address characterized waste mixtures differently from other characteristically listed wastes, namely "***as-generated***" and "***derived-from***" characteristically-listed wastes. USEPA believes that all types of industrial wastes listed solely because they exhibit the ignitability, corrosivity or reactivity characteristics, should be regulated similarly, whether they are waste mixtures, waste treatment residuals, or as-generated wastes meeting the original listing description.

The final rule's "*decharacterized waste*" exemption will exempt industrial characteristic wastes listed solely under I, C or R hazard codes, from RCRA Subtitle C waste regulation, if such wastes have been de-characterized and meet the associated LDR treatment standards, i.e. the final.

III.C. ESTIMATE OF NATIONAL QUANTITIES OF ELIGIBLE WASTE

To estimate the potential economic impact of exempting these 29 characteristically-listed RCRA wastecodes, USEPA first analyzed the type and quantity of RCRA industrial hazardous wastes contained in the two combined databases (i.e. the "hybrid" database) which underlie the USEPA's HWIR Economic Model[6] (i.e. the 1986 "*Hazardous Waste Generator Survey*", and the 1996 "*National Hazardous Waste Constituent Survey*"). USEPA estimated the following seven quantitative indicators of wastes potentially eligible for this "decharacterization waste" exemption proposal. (Note: the raw data extracted from the "hybrid" database, and analyzed data findings of this impact analysis, are presented in a series of exhibits at the end of this section of the report). The major findings are:

USEPA Estimated Quantity of RCRA Hazardous Wastes Eligible for the Final Rule "*Decharacterized Waste*" Exemption from the RCRA Hazardous Waste "*Mixture and Derived-from*" Rules

Indicator	Estimated Quantity Eligible or Otherwise Affected
National number of eligible waste-streams	236 potentially eligible industrial wastestreams, totaling 3.6 million short tons in annual generation by an estimated 120 facilities, located in at least 15 states (AL, AZ, CA, GA, IL, IN, KS, LA, MI, MO, OH, PR, TX, WI, WV). Note: these 15 states are associated only with the the 24 eligible facilities identified in the HWIR Economic Model database [48 eligible database wastestreams are displayed in Exhibit II-8, associated with a non-duplicative count of 24 facilities based on USEPA ID numbers shown]; the estimated total of 120 applicable facilities, represents an additional 96 unidentified facilities located in unidentified states, estimated by applying a database "scaling" (i.e. extrapolation) factor. This factor is applied for the purpose of estimating the relevant universe of wastestreams and facilities for this HWIR exemption.
Eligible waste physical form	As generated, these eligible wastestreams consist of 99% liquids, and 1% non-liquids (sludges). Exhibit II-3 below summarizes the physical forms of these eligible wastes.

[6] For information about the USEPA Office of Solid Waste's "*HWIR Economic Model*", refer to the descriptive information provided in Section IV.A of the "*Economics Background Document*" (29 October 1999) in support of USEPA's 19 November 1999 proposed rule (64 FR 63382-63461). The 1999 economic analysis is available to the public from USEPA's RCRA Docket (800-424-9346), or at the following USEPA website: http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/economic.htm .

Eligible "as generated" wastes	The 3.6 million annual tons of applicable "as generated" wastestreams, represents only 1.4% of the total RCRA industrial hazardous waste universe (1993 BRS = 258 million tons), and it represents 2.2% of the 162.0 million ton subset of the RCRA waste universe corresponding to characteristic wastes only.
Predominant RCRA wastecode	Approximately 75% of the applicable wastestreams are identified by wastecode F003 (spent non-halogenated solvents), plus a characteristic wastecode (e.g. D001= ignitability), and 19% are identified by wastecode F003 only.
Eligible industry sectors	Applicable wastestreams are located in 17 four-digit level SIC code industrial sectors **(18 economic sectors** counting waste truck transportation). 146 (62%) of the 236 estimated number of applicable wastestreams are generated by industries in SIC code 28 (i.e. NAICS code 325), particularly in the four-digit sectors SIC 2869, 2833 and 2851. Three other sectors have relatively large shares of applicable wastestreams (SIC codes 7389, 3711, 7532). In addition, the local trucking services sector (SIC= 4212, NAICS= 562111 (non-hazardous waste shipment) & 562112 (hazardous waste shipment)) will be affected, by no longer requiring processing of RCRA hazardous waste manifests and using special trucking equipment (note: because the unit costs for waste treatment and disposal applied in this document include average trucking costs, the incremental cost savings impacts to the trucking sector are not estimated separately in this document).
Constituents in eligible wastes	There are 51 different hazardous chemical constituents in these wastestreams; prevalent ones include: ethylbenzene, toluene, methyl ethyl ketone, methanol, ethyl acetate, xylenes, acetone, methylene chloride, and n-butyl alcohol. Two wastestreams contain metals (chromium and barium).
Eligible "derived-from" wastes	After treatment to destroy their hazardous "characteristic" properties, the 236 wastestreams result in the annual disposal of about **57,400 short tons** of treatment residuals, primarily in the form of incineration ash. This quantity of waste would potentially become eligible for RCRA exemption under this proposal (after conformance with all relevant LDR treatment standards). This estimated annual quantity represents a very small percentage (i.e. 0.00075%) of the 7.6 billion tons of US national RCRA Subtitle D (i.e. non-hazardous industrial waste) land-based disposal capacity, according to the 1987 statistics summarized below in Exhibit II-4.

Exhibit II-3: Summary of Eligible Waste Physical Forms

Item	Eligible Waste Physical Form ("as generated")	BRS Form Codes	Annual quantity (tons)	Relative %
1	Inorganic liquids	B101, B102	3,169,148	88%
2	Organic liquids	B201, B202, B203, B204, B206, B207, B212, B219	408,372	11%
3	Non-liquids	B602, B??? (non-liquid)	44,951	1%
		Column totals =	3,622,472	100%

Note: Physical form subtotals in this table, based on data supplied in Exhibit III-8 near the end of this document.

Exhibit II-4:
US National RCRA Subtitle D (Non-Hazardous Industrial Waste) Land Disposal Capacity (1987 survey)

Type of Disposal Unit	Nr. of Establishments	Nr. of Units	1987 US Capacity (mst*)
1. Landfills	2,320	2,760	86.4
2. Surface impoundments	6,680	15,250	7,366.9
3. Land application units	2,140	4,300	99.3

4. Wastepiles	4,200	5,330	77.1
Column totals** =	12,000	27,640	7,629.7

Explanatory Notes:
(1) * mst = million short tons (1.0 short ton = 2,000 pounds = 0.9070 metric tons).
(2) ** Column total establishments reflects non-duplicative count of total establishments (i.e. some establishments operate multiple units).
(3) The 1987 survey actually estimated a total of 72,400 establishments using US RCRA Subtitle D units, of which 12,000 estimated as using the four types of land-based disposal units on-site; the remainder 60,400 establishments used other (i.e. non-land based) types of disposal units on- and off-site, such as incineration, boiler combustion, underground injection, tank treatment, and recycling.
(4) Source: USEPA "Screening Survey of Industrial Subtitle D Establishments: Draft Final Report", prepared by Westat, Inc. (contract nr. 68-01-7359), for Office of Solid Waste, 29 Dec 1987, p.xii (note: metric tons data from source transformed to short-tons for this exhibit).
Although this study is over ten years old, it represents the most comprehensive US national survey on this topic available as of 1999. Some or many of the establishments and units estimated in 1987 may have closed, whereas new establishments/units may have opened.

III.D. SCOPE OF POTENTIAL NATIONAL ECONOMIC IMPACT (COST SAVINGS) ESTIMATED IN THIS DOCUMENT

The economic impact estimated in this analysis, consists of potential reduction in two industry activities associated with the management of industrial waste:

Economic Impacts Estimated in this Document		
Item	Impact Category	Description
1	Anticipated reduction in the cost of disposing eligible wastestream treatment residuals.	USEPA modeled the anticipated waste disposal cost savings, as the $80/ton unit cost difference, between disposing of waste treatment residuals for these 29 wastecodes in RCRA hazardous landfills, at an average unit cost of $130/ton (i.e. current or "baseline" practice), compared to the average $50/ton unit cost for non-hazardous landfill disposal. These average unit costs for landfilling waste, include the average cost of truck shipment of wastes to disposal sites, but do not include the burden hours associated with RCRA hazardous waste manifesting (which are estimated separately below).
2	Potential reduction in the preparation cost of manifesting eligible waste residuals for shipment as "hazardous" waste.	The second impact category consists of the potential national cost savings associated with preparation of fewer annual waste shipment manifests. USEPA modeled this impact category in this document, based on manifest preparation burden-hour and burden-cost information provided in the USEPA "*Information Collection Request*" (ICR) for the RCRA Hazardous Waste Manifest System (ICR Nr. 801.12, 26 July 1999).[7] The ICR is available from the RCRA Docket (see instructions in the *Federal Register* notice). USEPA estimated the potential reduction in the number of annual manifests prepared, by dividing the estimated eligible 57,400 tons in annual post-treatment waste residual, by an average of 20 tons per truckload shipment to (RCRA Subtitle D) disposal site, which provides an estimate of 2,870 truck shipments and associated manifests avoided. The supporting data for truckload shipment volumes of industrial waste are displayed in Exhibit III-4.

[7] The RCRA Subtitle C program is designed to manage hazardous waste from "*cradle-to-grave*". The "*Uniform Hazardous Waste Manifest*" (USEPA Form 8700-22; http://www.epa.gov/epaoswer/hazwaste/gener/manifest/pdf/form.pdf), plays a crucial part in this management system, by allowing all parties involved in hazardous waste management (i.e.. waste generators, waste transporters, waste treatment, storage, disposal, recycling facilities (TSDRFs), USEPA, and state agencies), to track the movement of hazardous waste from the point of generation, to the point of ultimate treatment, storage, and/or disposal. Each time a waste is shipped, the RCRA manifest must be signed to acknowledge receipt of the waste, a copy retained by each individual in the shipment chain, and a copy returned to the generator by the ultimate recipient. A RCRA manifest consists of one-page with a one-page continuation sheet, and contains basically four types of information: name/address/EPAID number of all parties; USDOT description of the waste's hazards; quantity of the waste shipped and container type; and generator certification. See EPA's website http://www.epa.gov/epaoswer/hazwaste/gener/manifest for more information about the RCRA hazardous waste manifest system.

Exhibit III-4: Truckload Volumes for Shipping Industrial Waste by Roadways - Supporting Data*			
Physical Form of Waste	Waste Density (average)	Full Truckload Volume	Type of Truck Waste Container
1. Bulk liquids	8.34 lbs/gallon	25 tons	6,000 gallon tanker truck
2. Bulk solids	1.2 tons/cu.yard	24 tons	20 cubic yard roll-off trailer
3. Drums (liquid, solid, semi-solid)	55 gallons or 500 lbs/drum (9.09 lbs/gal.)	20 tons	40 drums truckload full capacity
Truckload size applied in this study as "average" size =		20 tons	(lower-end of range for solids)

Explanatory Notes:
(1) The *Federal Aid Highway Act Amendments of 1974* established for the *National System of Interstate and Defense Highways*, a "*maximum gross vehicle weight*" (MGVW) of 80,000 pounds (40 tons); this includes the weight of the truck, plus the weight of the truck's cargo freight (source: US Dept of Transportation regulations, 23 CFR Part 658.17). However, states may issue special permits for vehicles carrying divisible loads in excess of 80,000 pounds.
(2) On average, trucks reportedly do not use the maximum weight allowed; for example, 5-axle tractor-semitrailer combinations with specialized body types (e.g. dump trucks, tank trucks, grain trucks) for hauling bulk commodities, use about 93% of the allowed 80,000 pounds MGVW, which is about 74,000 pounds (source: US Dept of Transportation "*Comprehensive Truck Size and Weight Study*", report no. FHWA-PL-00-029 (Volumes I, II, III, IV), 31 August 2000, p.III-8, http://www.fhwa.dot.gov/reports/tswstudy/).
(3) Hazardous waste truckloads may be "partial truckloads" (i.e. less than 20 to 25 tons).
(4) * Data source: DPRA Inc. "Transportation Cost Model" developed for the USEPA-OWPE study: "Estimating Costs for the Economic Benefits of [RCRA] Noncompliance", 1993.

It is important to indicate that these two impact categories represent what USEPA believes to **upper-bound scenarios** for this impact analysis, which recognizes the fact that some annual volumes of RCRA hazardous wastes may be generated and treated/disposed at the same or adjacent geographic site (i.e. facility). For the category of "*as generated*" wastes, this may pertain to situations where the RCRA hazardous waste "generator" is also permitted as an operator of its own on-site RCRA Subtitle C hazardous waste treatment, storage, or disposal facility (TSDF). This may also pertain to RCRA hazardous waste "*mixtures" and "derived-from*" wastes, in situations where a RCRA Subtitle C permitted commercial TSDF receives a hazardous waste from off-site, then mixes or treats the waste, thereby generating a "*mixture*" or "*derived-from*" waste, respectively, and then disposes the waste on-site.

It is also conceivable that some such dual function RCRA Subtitle C permitted facilities may not have Subtitle D non-hazardous waste disposal capacity, and may incur truck transport costs, for transporting the newly-exempted wastes off-site to a non-hazardous disposal facility (e.g. RCRA Subtitle D landfill), although a RCRA hazardous waste manifest would not be required. However, in such cases, USEPA anticipates that the net impact of this final rule exemption will be annual cost savings to these facilities, when the less-costly waste disposal requirement is combined with any such additional transport costs.

III.E. ESTIMATE OF POTENTIAL NATIONAL ANNUAL COST SAVINGS

Based on the burden hour and burden cost equivalent estimated provided in the USEPA's RCRA Hazardous Waste Manifest System ICR cited above, the average RCRA manifest requires **1.3 hours** preparation time. At a loaded labor cost of $122 per hour, reduction in 2,870 manifests annually, equates to a reduction in 3,730 preparation hours, which equates to $455,000 in annual cost reduction (rounded to nearest $1,000). Based on these two costs saving elements, USEPA estimates potential annual industry cost savings for this provision of the final rule, at **$5.048 million**, consisting of:

Economic Impact (Annual Cost Savings) Elements Estimated in this Study	
Annual Savings	Basis of Estimate
$4.593 million	Annual savings from disposing the wastestream treatment residuals in Subtitle D (i.e. $50/ton RCRA-D non-hazardous rather than in $130/ton RCRA- C hazardous) landfills.
$0.455 million	Annual savings from avoided hazardous waste shipment manifest preparation costs (i.e. 2,870 manifests per year x 1.3 hours per manifest x $122 per hour).
$5.048 million	= Total estimated annual savings

Applying an analytical estimation uncertainty range[8] of -15% to +30%, to the point estimate of $5.048 million/year, results in an annual cost savings estimate range of **$4.29 to $6.56 million**. Exhibit III-5 summarizes these findings.

Exhibit III-5:
Summary of Applicable Industrial Wastestreams and Cost Savings Estimates
(Quantities below scaled from sample "hybrid" database, to applicable facility universe)

Waste Category	Quantity of Wastestreams (tons per year)		Number of Applicable Industrial Facilities	Residual Disposal + Truck Manifest Cost Savings ($/year)
	Pre-treatment	Post-treatment		
1. Liquid wastes	3,166,800 (87%)	2,400 (4%)	10	$210,000 (4%)
2. Non-liquid wastes	455,700 (13%)	55,000 (96%)	110	$4,838,000 (96%)
Column Totals =	3,622,500	57,400	120	$5,048,000
			Uncertainty range applied to total (-15% to +30%) =	**$4.29 to $6.56 million**

III.F. DISTRIBUTION OF NATIONAL IMPACTS ACCORDING TO ECONOMIC SECTORS

USEPA estimates that a total of **18 economic sectors** will be affected by the "decharacterized waste" exemption provision of the final rule. As displayed in the final two exhibits at the end of this section, there are 17 industry sectors expected to benefit from this provision of the final rule, either as a type of industrial waste generator, or as a type of industrial waste management facility. In addition to these 17 sectors, the

[8] The cost (savings) estimation uncertainty range of -15% to +30% adopted above, is based on the "Class 4" estimate level prescribed by "Recommended Practice Nr. 18R-97" (15 June 1998), of the Association for the Advancement of Cost Estimation (AACE) International (http://www.aacei.org/technical/rps/), which is based on the American National Standards Institute (ANSI) standard nr. Z94.2-1989 (http://www.ansi.org). This cost estimate classification system provides guidelines for applying general principles to various phases and stages of cost estimating projects, which can be applied across a wide variety of industries. The "Class 4" uncertainty category reflects a screening type study involving a relatively low degree of unit cost itemization, and based on stochastic estimating methods using gross unit costs, numerical factors, and/or other parametric and modeling techniques. The computations in this "*Economic Background Document*" involve both a relatively gross level of unit cost itemization, as well as the use of waste data sample extrapolation factors.

local trucking services sector will be affected by a reduction in manifest requirements, as well as by any changes in waste transport destinations and waste volumes hauled. Exhibit III-6 summarizes the estimated annual cost savings, according to three categories corresponding to these 17 industry sectors

Exhibit III-6:
Summary of Economic Sectors Potentially Affected
Under the RCRA "Decharacterized Waste" Exemption Provision of the Final Rule

Industry Sector Categories	Nr. of 4-digit SIC Codes	Nr. of Waste streams	Pre-treatment waste quantity (tons/yr)	Post-treatment waste quantity (tons/yr)	Estimated Average Annual Cost Savings (millions)	Row % $
1. Manufacturing Industries	12	196	1,343,363	37,230	$3.274	65%
2. Utilities	1	5	4,120	412	$0.036	<1%
3. Service Industries & Other	4	35	2,274,989	19,772	$1.738	34%
Column Totals=	17	236	3,622,472	57,414	$5.048	100%

Explanatory Notes:
(1) The industry sector and SIC code count in this exhibit do not include the local trucking services sector (SIC= 4212, NAICS= 562111 & 562112), which will be affected by a reduction in waste manifesting requirements; however, the costs of reduced manifesting are estimated separately in this document.
(2) Source: Based upon the disaggregated data displayed in the final exhibit of this Section of the report.

III.G. LIMITATIONS OF THIS ANALYSIS

It is important to note that this "average annual" type of estimate is contingent upon the 1986, 1993, and 1996 data reflected in the hazardous waste survey-based database used in deriving this estimate. Although these findings are based on identification of specific facilities and wastestreams from the combined database, conditions in these industries may change over time (e.g. facility closures, new facilities, increase or decrease in facility waste generation, chemical feedstock changes, chemical processing changes, waste composition and volume changes).

Consequently, some of the facilities identified in the database may no longer be applicable to this provision; the findings in this document should be interpreted as estimates, rather than as exact and conclusive findings. This cost savings estimate is contingent upon at least three factors: (a) industry's eventual voluntary implementation of this provision; (b) future quantities of eligible waste generation, as determined by future numbers of applicable facilities and applicable wastestreams, and (c) state adoption of this voluntary regulatory proposal.

Additional details of this analysis are provided in supplemental exhibits in the next few pages, which present the extracted data associated with the 29 wastecodes in the USEPA's *HWIR Economic Model* database, including the following data elements:

- Identity of database sample generator facilities (n=48; this count is unscaled, and facilities listed may no longer generate the type of waste shown in the database; additional US facilities not in the database are represented by "scaling" the sample data shown).

- Waste treatment techniques applied.

- "Unscaled" and "scaled" waste quantities.[9]
- Potential annual cost savings.
- Unit cost assumptions for landfill disposal as RCRA hazardous versus non-hazardous waste.

The series of computer spreadsheets reproduced on the next few pages of this section as Exhibits III-7 to III-11, provide the detailed, supporting data and cost savings computations for this analysis.

[9] The extracted raw data on potentially eligible wastestreams from the database are "unscaled" in the sense that the associated unscaled quantities (i.e. numbers of wastestreams and wastestream annual quantities in tons) only represent responses to the survey questionnaires which form the underlying databases; the data do not directly represent all potentially relevant wastestreams and facilities suspected to be present in the industrial RCRA hazardous waste universe. To construct and estimate of all waste volumes (and associated potential cost savings), we "scaled" (i.e. increased) the raw data by extrapolation multipliers.

EXHIBIT III-7
29 RCRA Solely Characteristically-Listed Wastecodes and Associated LDR Treatment Standards

Item	Waste Code	Waste Description	Hazard Code	LDR Treatment Standard (Wastewaters)	LDR Treatment Standard (Non-wastewaters)
1	F003	Spent xylene and other non-halogenated solvents	(I)	0.014 to 5.6 mg/L, varies with constituent	2.6 to 170 mg/kg, varies with constituent
2	K044	Wastewater treatment sludges from manufacturing or processing of explosives	(R)	DEACT	DEACT
3	K045	Spent carbon from the treatment of wastewater containing explosives	(R)	DEACT	DEACT
4	K047	Pink/red water from TNT operations	(R)	DEACT	DEACT
5	P009	Ammonium Picrate	(R)	CHOXD; CHRED; CARBN; BIODG; or CMBST	CHOXD; CHRED; or CMBST
6	P081	Nitroglycerine	(R)	CHOXD; CHRED; CARBN; BIODG; or CMBST	CHOXD; CHRED; or CMBST
7	P112	Tetranitromethane	(R)	CHOXD; CHRED; CARBN; BIODG; or CMBST	CHOXD; CHRED; or CMBST
8	U001	Acetaldehyde	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
9	U002	Acetone	(I)	0.28 mg/L	160 mg/kg
10	U008	Acrylic Acid	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
11	U031	n-Butyl alcohol	(I)	5.6 mg/L	2.6 mg/kg
12	U020	Benzenesulfonyl chloride	(C,R)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
13	U055	Cumene	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
14	U056	Cyclohexane	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
15	U057	Cyclohexanone	(I)	0.36 mg/L	CMBST or 0.75 mg/L TCLP
16	U092	Dimethylamine	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
17	U096	Cumene Hydroperoxide	(R)	CHOXD; CHRED; CARBN; BIODG; or CMBST	CHOXD; CHRED; or CMBST
18	U110	Di-n-propylamine	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
19	U112	Ethyl Acetate	(I)	0.34 mg/L	33 mg/kg
20	U113	Ethyl Acrylate	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
21	U117	Ethyl Ether	(I)	0.12 mg/L	160 mg/kg
22	U124	Furan	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
23	U125	Furfural	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
24	U154	Methanol	(I)	(WETOX or CHOXD) fb CARBN; or CMBST or 5.6 mg/L	CMBST or 0.75 mg/L TCLP
25	U161	Methyl isobutyl ketone	(I)	0.14 mg/L	33 mg/kg
26	U186	1,3 Pentadiene	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
27	U189	Sulfur phosphide	(R)	CHOXD; CHRED; or CMBST	CHOXD; CHRED; or CMBST
28	U213	Tetrahydrofuran	(I)	(WETOX or CHOXD) fb CARBN; or CMBST	CMBST
29	U239	Xylene	(I)	0.32 mg/L	30 mg/kg

Sources:40 CFR 261.31 = List of RCRA hazardous wastecodes, wastecode descriptions, and hazard codes.
40 CFR 268.40 = List of RCRA land disposal restriction (LDR) hazardous waste treatment standards.

EXHIBIT III-8

PROPOSED EXTENSION OF RCRA DECHARACTERIZED WASTE EXEMPTION IN THE 1999 HWIR:
IDENTIFICATION OF ELIGIBLE INDUSTRIAL HAZARDOUS WASTESTREAMS
AND ESTIMATION OF POTENTIAL WASTE DISPOSAL COST SAVINGS
RAW DATA EXTRACTED FROM COMBINED USEPA DATABASES IN THE HWIR ECONOMIC MODEL

Item	Data item	Facility (EPA ID) Number	SIC code	Facility waste stream ID number	RCRA Hazardous Wastecodes Designated by Survey Respondents	Waste physical form	BRS physical form code*	Unscaled** pre-treatment wastestream quantity (tons/year)	HSWA LDR hazardous waste treatment	Unscaled** post-treatment waste residual for disposal (tons/year)	Unscaled potential annual cost savings for disposal of waste residual***	
A. NHWCS RCRA-Listed Only Eligible Wastestreams:												
	1	ILD066918327	3089	3	F003	Liquid	B203	773.1	inrin CT	77.3	$6,185	
	2	KSD980699209	2851	11	F003	Liquid	B201	2,190.8	inrin CT	215.6	$17,246	
	3	MID980616298	3711	17	F003	Liquid	B203	2,727.8	inrin CT	272.8	$21,822	
	4	MID980681088	2833	2	F003	Liquid	B203	580.0	inrin CT	58.0	$4,640	
	5	MID980681088	3479	15	F003	Liquid	B202	491.6	inrin CT	45.2	$3,619	
	6	MID980681088	3711	19	F003	Liquid	B203	499.0	inrin CT	45.9	$3,672	
	7	WID980829475	7389	1	F003	Non-Liquid	B602	9,007.2	inrin CT	2,251.8	$180,144	
	8	WVD004341191	2869	1	F003	Liquid	B201	9,966.0	inrin CT	995.6	$79,648	
	9	WVD004341191	2869	6	F003	Liquid	B201	5,748.0	inrin CT	574.8	$45,984	
		Listed Only Subtotals =						31,898.4		4,586.9	$362,953	39%
B. NHWCS RCRA-Listed and RCRA-Characteristic Eligible Wastestreams:												
	10	AI D981019045	2834	12	D001, F003	Liquid	B204	565.4	inrin CT	56.5	$4,523	
	11	CAD008252405	7532	2	D001, F003	Liquid	B203	8,926.8	inrin CT	892.7	$71,413	
METAL***	12	CA1670024350	3711	1	D001, F003	Liquid	B101	488,938.3	inrin CT	325.5	$26,036	
	13	IND001836082	2821	4	D001, F003	Liquid	B219	819.0	inrin CT	81.9	$6,552	
	14	IND001836082	2869	7	D001, F003	Liquid	B219	618.7	inrin CT	61.9	$1,950	
	15	IND006006067	2833	11	D001, F003	Liquid	B201	643.3	inrin CT	64.3	$5,147	
	16	IND006006067	2833	14	D001, F003	Liquid	B201	412.1	inrin CT	41.2	$3,297	
	17	IND072010348	2833	3	D001, F003	Liquid	B203	2,942.0	inrin CT	294.2	$23,536	
	18	IND072010348	2833	16	D001, F003	Liquid	B201	551.6	inrin CT	55.2	$1,413	
	19	KSD980699209	2851	2	D001, F003	Liquid	B201	2,190.8	inrin CT	215.6	$17,246	
	20	LAD040776809	2869	6	D001, U154	Liquid	B207	1,646.7	inrin CT	164.6	$37,165	
	21	MID980616298	3711	18	D001, F003	Liquid	B203	2,721.1	inrin CT	272.1	$21,793	
	22	MID980681088	3479	3	D001, D035, F003	Liquid	B203	850.0	inrin CT	85.0	$6,800	
	23	MID980681088	3711	4	D001, F003	Liquid	B202	706.5	inrin CT	70.6	$5,652	
	24	MID980681088	3711	10	D001, F003	Liquid	B203	610.2	inrin CT	61.0	$4,881	
	25	MID980681088	2833	12	D001, D018, F003	Liquid	B202	435.0	inrin CT	43.5	$3,480	
	26	MID980681088	3711	20	D001, F003	Liquid	B203	1,849.0	inrin CT	184.9	$14,792	
	27	MOD029729688	2800	1	D001, F003	Liquid	B203	765.0	inrin CT	76.5	$6,120	
	28	MOD029729688	2819	4	D001, F003	Liquid	B203	1,087.8	inrin CT	108.8	$8,702	
	29	MOD029729688	2800	7	D001, F003	Liquid	B203	765.0	inrin CT	76.5	$6,120	
	30	MOD029729688	4953	8	D001, F003	Liquid	B203	826.0	inrin CT	82.6	$6,608	
	31	MOD029729688	2869	15	D001, F003	Liquid	B203	765.0	inrin CT	76.5	$6,120	
	32	MOD029729688	0241	16	D001, F003	Liquid	B203	958.1	inrin CT	95.8	$7,665	
	33	MOD029729688	7389	19	D001, F003	Liquid	B203	765.0	inrin CT	76.5	$6,120	
METAL***	34	OI D004172623	2869	1	D001 003, D005, D018, D021,	Liquid	B206	9,181.0 - CT, inrin CT, stah		1,390.9	$111,274	
	35	OI D005048947	0511	13	D001, D018, F003	Liquid	B204	1,516.7	inrin CT	151.7	$12,133	
	36	OI D009452293	0511	2	D001, D035, F003	Liquid	B207	1,459.4	inrin CT	145.9	$11,675	
	37	OI D009452293	0511	3	D001, F003	Liquid	B102	479.2	inrin CT	119.8	$9,585	
	38	PI D009099718	2834	3	D001, F003	Liquid	B203	708.7	inrin CT	70.9	$5,670	
	39	PI D009099718	2833	4	D001, F003	Liquid	B203	798.0	inrin CT	79.8	$6,384	
	40	PI D009099718	2834	7	D001, F003	Liquid	B203	1,460.2	inrin CT	146.0	$11,682	
	41	PI D009099718	2879	12	D001, F003	Liquid	B203	1,461.8	inrin CT	146.2	$11,698	
	42	PI D009619357	2834	1	D001, F003	Liquid	B201	1,180.0	inrin CT	118.0	$9,440	
	43	TXD000676853	2819	3	D001, F003	Liquid	B201	493.7	inrin CT	49.4	$3,949	
	44	TXD000679212	2879	3	D001, F003	Liquid	B219	836.0	inrin CT	83.6	$6,688	
	45	TXD078432457	2869	1	D001, D002, D008, U113	Liquid	B101	200,937.0 neutr CT, inrin CT		152.2	$12,177	
	46	TXD078432457	2869	8	D001, F003	Liquid	B203	4,088.0	inrin CT	409.8	$32,744	
	47	WVD004325353	2869	2	D001, F003	Liquid	B212	501.6	inrin CT	50.2	$4,012	
		Listed & Characteristic subtotals =						694,074.2		6,972.0	$557,761	61%
		Total NHWCS Unscaled =						726,202.6		11,509.2	$920,734	100%
		Total NHWCS Scaled =						3,622,448.1		57,407.8	$4,592,622	
C. 1986 Generator Survey, RCRA-Listed and RCRA-Characteristic Eligible Wastestreams:												
	48	AZD980585256	2800	3	U154, U213	Non-Liquid		16.21	inrin CT	4.1	$324	
		Scaled Quantities =						23.51		5.9	$470	
D. 1995 NHWCS + 1986 Gen Survey Combined (A+B+C):												
		Total Unscaled Quantities =						726,248.8		11,513.2	$921,058	
		Total Scaled Quantities =						3,622,471.6		57,413.6	$4,593,092	
E. Scaled Quantities by Waste Physical Form Subtotals:												
		Liquid waste form subtotals =				Liquid		3577,520.2	99%	2382.6	$190,607	1%
		Non-liquid waste form subtotals =				Non-Liquid		44,951.4	1%	55,031.1	$4,402,485	96%

F. Explanatory Notes:

(a)* BRS = USEPA's Biennial Reporting System for RCRA Industrial Hazardous Wastes (http://www.epa.gov/epaoswer/hazwaste/data/tbrs)

Item	Code	Definition of Form Codes
1	B101	Aqueous inorganic liquid waste with low solvents.
2	B102	Aqueous inorganic liquid waste with low other toxic organics.
3	B201	Concentrated organic liquid solvent-water solution.
4	B202	Halogenated organic liquid solvent.
5	B203	Non-halogenated organic liquid solvent.
6	B204	Halogenated/Non-halogenated organic liquid solvent mixture.
7	B206	Waste oil (organic liquid).
8	B207	Concentrated organic liquid aqueous solution of other organics.
9	B212	Reactive or polymerizable organic liquid.
10	B219	Other organic liquids (not elsewhere classified).
11	B602	Organic sludge still bottoms of non-halogenated organic liquids.

(b)** Unscaled – Waste quantities in reference database reflect sample subset facilities; must be "scaled" up to all applicable facilities nationwide.

Scaling Factors: 1.45 Brings model totals to universe totals

3.44 Brings NHWCS respondents up to total NHWCS

Both multipliers applied for scaling NHWCS data (i.e. 1.45 x 3.44 = 4.991); only 1.45 multiplier applied for scaling 1986 Gen Survey data.

(c)*** Metal – indicates that facility reported at least one metal constituent (among other constituents) in the particular wastestream listed above.

(d)**** Waste management unit cost assumptions ($/ton/mt (averages); $80/ton savings between C ($130 minimum D ($50) disposal costs below:

Item	Method	Residual Factor	<=170 tons	<1,700 tons	<17,000 tons	<170,000 tons	<1,700,000 tons	>1,700,000 tons
1	Deactivation	0.01	$149	$149	$149	$149	$149	$149
2	General Incineration	0.25	$1,128	$1,128	$288	$105	$104	$152
3	Organic Liquid Incineration	0.10	$1,128	$1,128	$288	$105	$104	$152
4	Neutralization	1.01	$270	$14	$4	$1	$0	$0
5	RMR	0.00	$191	$191	$191	$191	$191	$191
6	Stabilization	1.50	$200	$150	$50	$23	$21	$21
7	Vitrification	1.50	$230	$230	$230	$230	$230	$230
8	Retort	1.00	$856	$856	$446	$194	$194	$194
9	Underground Injection	0.00	$0	$0	$0	$0	$0	$0
10	Acidification	0.00	$0	$0	$0	$0	$0	$0
11	Subtitle C Disposal		$130	$130	$130	$57	$34	$23
12	Subtitle D Disposal		$50	$50	$14	$14	$14	$14

EXHIBIT III-9

PROPOSED EXTENSION OF RCRA DECHARACTERIZED WASTE EXEMPTION:
IDENTIFICATION OF ELIGIBLE WASTESTREAMS IN THE HWIR DATABASE, 10/7/99
AND ESTIMATION OF POTENTIAL INDUSTRY COST SAVINGS. OSW EMRAD

ALPHABETIC LIST OF WASTESTREAM CONSTITUENTS

	Constituent count	CAS Nr.	Industrial Hazardous Waste Constituent	Nr. of waste streams if >0 ppm	Pre-treatment Whole waste min conc. (ppm)	Pre-treatment whole waste max conc. (ppm)	Constituent subtotal mass (tons)
	1	71 55 6	1,1,1 Trichloroethane [Methyl chloroform]	13	1	40,000	303.8
	2	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	4	3	9,000	45.8
	3	79-00-5	1,1,2-Trichloroethane [Vinyl trichloride]	3	3	13	4.4
	4	95-50-1	1,2-Dichlorobenzene [o-Dichlorobenzene]	5	2	4,300	25.5
	5	95-94-3	1,2,4,5-Tetrachlorobenzene	1	1,000	1,000	2.0
	6	106-46-7	1,4-Dichlorobenzene [p-Dichlorobenzene]	1	2	2	0.0
	7	123-91-1	1,4-Dioxane [1,4-Diethyleneoxide]	1	4,000	4,000	10.9
	8	110-80-5	2-Ethoxyethanol	1	2,000	2,000	4.0
	9	67-64-1	Acetone [2-Propanone]	30	80	874,000	29,610.0
	10	75 05 8	Acetonitrile [Methyl cyanide]	2	3,900	176,000	490.7
	11	79 10 7	Acrylic acid	1	3,700	3,700	2,659.8
METAL>	12	7440-39-3	Barium	1	100	100	3.3
	13	71-43-2	Benzene	8	3	5,000	71.5
	14	75-15-0	Carbon disulfide	1	3	3	3.9
	15	56-23-5	Carbon tetrachloride	2	3	310	14.1
	16	108-90-7	Chlorobenzene	3	3	5,000	24.2
	17	67-66-3	Chloroform	1		100,000	221.4
METAL>	18	7440-47-3	Chromium	1	1	1	1.0
	19	1319-77-3	Cresols, mixed isomers	2	16	255	33.1
	20	110 82 7	Cyclohexane	4	7,000	33,000	190.4
	21	108 94 1	Cyclohexanone	3	102	30,000	1,151.9
	22	141-78-6	Ethyl acetate	16	102	962,000	11,293.9
	23	140-88-5	Ethyl acrylate	1	20	20	14.1
	24	60-29-7	Ethyl ether [Ethane 1,1'-oxybis]	2	3	500	20.1
	25	100-41-4	Ethylbenzene	13	3	77,200	8,819.8
	26	50-00-0	Formaldehyde	1	10,000	10,000	29.3
	27	64-18-6	Formic Acid	1	3,900	3,900	9.0
	28	78 83 1	Isobutyl alcohol	12	102	51,400	1,991.7
	29	108 39 4	m Cresol [3 Methyl phenol]	3	10	2,500	98.3
	30	67 56 1	Methanol [Methyl alcohol]	27	2,506	913,000	67,395.5
	31	78-93-3	Methyl ethyl ketone [2-Butanone][MEK]	14	376	412,000	5,780.6
	32	108-10-1	Methyl isobutyl ketone	19	35	582,000	7,675.0
	33	80-62-6	Methyl methacrylate	1	5,000	5,000	17.1
	34	75-09-2	Methylene chloride [Dichloromethane]	14	105	100,000	3,461.7
	35	91-20-3	Naphthalene	2	4,000	4,000	29.8
	36	71-36-3	n-Butyl alcohol [n-Butanol]	14	102	150,000	3,263.5
	37	98-95-3	Nitrobenzene	2	5	120	12.2
	38	95 48 7	o Cresol [2 Methyl phenol]	3	0	50	11.8
	39	106 44 5	p Cresol [4 Methyl phenol]	4	0	10,000	41.4
	40	108 95 2	Phenol	2	1,000	3,900	11.0
	41	110-86-1	Pyridine	2	5	25	39.5
	42	127-18-4	Tetrachloroethylene [Perchloroethylene]	9	3	10,000	387.4
	43	109-99-9	Tetrahydrofuran	10	1,000	78,000	585.4
	44	74-93-1	Thiomethanol [Methyl mercaptan][Methanethiol]	1	32,300	32,300	96.6
	45	108-88-3	Toluene [Methylbenzene]	31	8	500,000	20,548.7
	46	79-01-6	Trichloroethylene	6	3	7,500	339.6
	47	75-69-4	Trichlorofluoromethane	3	3	5,000	13.3
	48	121-44-8	Triethylamine	1	20,000	20,000	46.0
	49	108 05 4	Vinyl acetate	2	5,000	21,000	75.7
	50	75 01 4	Vinyl chloride	1	1,000	1,000	2.0
	51	1330 20 7	Xylenes, mixed isomers [Xylenes, total]	27	8	890,000	28,682.2
			Column totals (non-duplicative) =	48			190,659

EXHIBIT III-10

PROPOSED EXTENSION OF RCRA DECHARACTERIZED WASTE EXEMPTION IN THE 1998 HWIR:
IDENTIFICATION OF ELIGIBLE INDUSTRIAL HAZARDOUS WASTESTREAMS
AND ESTIMATION OF POTENTIAL WASTE DISPOSAL COST SAVINGS

ELIGIBLE WASTESTREAMS SORTED BY SIC CODES (ASCENDING SORT ORDER)

			A. WASTE DATA EXTRACTED FROM SURVEYS (UNSCALED):			B. SCALED* WASTE DATA:			C. SIC CODE SUBTOTALS:		
Data item	SIC code count	SIC code	Pre-treatment wastestream quantity (tons/year)	Post-treatment waste residual for disposal (tons/year)	Potential annual cost savings for disposal of waste residual	Pre-treatment wastestream quantity (tons/year)	Post-treatment waste residual for disposal (tons/year)	Potential annual cost savings for disposal of waste residual	Pre-treatment wastestream quantity (tons/year)	Post-treatment waste residual for disposal (tons/year)	Potential annual cost savings for disposal of waste residual
1	1	2800	16.21	4.05	$324	23.5	5.9	$470	7,655.2	769.0	$61,524
2		2800	765.0	76.50	$6,120	3,815.8	381.6	$30,527			
3		2800	765.0	76.50	$6,120	3,815.8	381.6	$30,527			
4	2	2819	493.7	49.37	$3,949	2,462.3	246.2	$19,699	7,888.1	788.8	$63,105
5		2819	1,087.8	108.78	$8,702	5,425.8	542.6	$43,406			
6	3	2821	819.0	81.90	$6,552	4,085.3	408.5	$32,682	4,085.3	408.5	$32,682
7	4	2833	412.1	41.21	$3,297	2,055.6	205.6	$16,445	31,583.9	8,153.4	$652,271
8		2833	435.0	43.50	$3,480	2,169.8	217.0	$17,358			
9		2833	551.6	55.16	$4,413	2,751.3	275.1	$22,010			
10		2833	580.0	58.00	$4,640	2,893.0	289.3	$23,144			
11		2833	643.3	64.33	$5,147	3,208.9	320.9	$25,671			
12		2833	758.0	75.80	$6,064	3,780.8	378.1	$30,246			
13		2833	2,942.0	294.20	$23,536	14,674.6	1,467.5	$117,397			
14	5	2834	565.4	56.54	$4,523	2,820.3	282.0	$22,562	19,474.6	1,947.5	$155,797
15		2834	708.7	70.87	$5,670	3,534.9	353.5	$28,279			
16		2834	1,180.0	118.00	$9,440	5,885.8	588.6	$47,087			
17		2834	1,450.2	145.02	$11,602	7,233.8	723.4	$57,869			
18	6	2851	2,156.8	215.68	$17,246	10,752.9	1,075.3	$86,023	21,505.8	2,150.6	$172,046
19		2851	2,156.8	215.68	$17,246	10,752.9	1,075.3	$86,023			
20	7	2869	501.6	50.16	$4,012	2,501.7	250.2	$20,014	1,179,892.3	20,829.5	$1,666,361
21		2869	618.7	61.87	$4,950	3,086.2	308.6	$24,689			
22		2869	765.0	76.50	$6,120	3,815.8	381.6	$30,527			
23		2869	4,093.0	409.30	$32,744	20,415.9	2,041.6	$163,327			
24		2869	4,645.7	464.57	$37,165	23,172.5	2,317.8	$185,390			
25		2869	5,748.0	574.80	$45,984	28,671.0	2,867.1	$229,368			
26		2869	9,181.0	1,390.92	$111,274	45,794.8	6,937.9	$555,033			
27		2869	9,956.0	995.60	$79,648	49,660.5	4,966.1	$397,284			
28		2869	200,937.0	152.21	$12,177	1,002,273.8	759.2	$60,738			
29	8	2879	836.0	83.60	$6,688	4,170.0	417.0	$33,360	11,426.3	1,142.6	$91,410
30		2879	1,454.8	145.40	$11,638	7,256.3	725.6	$58,051			
31	9	3089	773.1	77.31	$6,185	3,856.1	385.6	$30,849	3,856.1	385.6	$30,849
32	10	3241	958.1	95.81	$7,665	4,779.1	477.9	$38,233	4,779.1	477.9	$38,233
33	11	3479	451.6	45.16	$3,613	2,252.6	225.3	$18,020	6,492.4	649.2	$51,939
34		3479	850.0	85.00	$6,800	4,239.8	424.0	$33,918			
35	12	3711	459.0	45.90	$3,672	2,289.5	228.9	$18,316	45,273.5	4,527.3	$362,188
36		3711	610.2	61.02	$4,881	3,043.5	304.4	$24,348			
37		3711	706.5	70.65	$5,652	3,523.9	352.4	$28,191			
38		3711	1,849.0	184.90	$14,792	9,222.8	922.3	$73,782			
39		3711	2,724.1	272.41	$21,793	13,587.6	1,358.8	$108,701			
40		3711	2,727.8	272.78	$21,822	13,606.2	1,360.6	$108,849			
41	13	4953	826.0	82.60	$6,608	4,120.3	412.0	$32,962	4,120.3	412.0	$32,962
42	14	7389	9,007.2	2,251.80	$180,144	44,927.9	11,232.0	$898,557	48,743.7	11,613.6	$929,084
43		7389	765.0	76.50	$6,120	3,815.8	381.6	$30,527			
44	15	7532	8,926.6	892.66	$71,413	44,526.0	4,452.6	$356,208	44,526.0	4,452.6	$356,208
45	16	9511	479.2	119.81	$9,585	2,390.4	597.6	$47,808	17,234.8	2,082.0	$166,564
46		9511	1,459.4	145.94	$11,675	7,279.3	727.9	$58,234			
47		9511	1,516.7	151.67	$12,133	7,565.1	756.5	$60,521			
48	17	9711	433,938.3	325.45	$26,036	2,164,484.2	1,623.4	$129,869	2,164,484.2	1,623.4	$129,869
Column totals						3,622,471.6	57,413.6	$4,593,092	3,622,471.6	57,413.6	$4,593,092

Explanatory Notes:

Source: Facility wastestream data as displayed in the prior exhibit in this report (EPA ID numbers have been removed). "Tons" = short tons = 2,000 pounds.

* Scaled = Waste quantities in reference database reflect sample subset facilities; must be "scaled" up to all applicable facilities nationwide.

Scaling Factors: 1.45 Brings model totals to universe totals
3.44 Brings NI WCS respondents up to total NI WCS

Both multipliers for scaling NHWCS data (i.e. 1.45 x 3.44 = 4.99); only 1.45 multiplier for scaling 1986 Gen Survey data.

OSW-EMRAD

PROPOSED EXTENSION OF RCRA DECHARACTERIZED WASTE EXEMPTION (40 CFR 261.3) IN THE 1999 HWIR:
IDENTIFICATION OF ELIGIBLE INDUSTRIAL HAZARDOUS WASTESTREAMS
AND ESTIMATION OF POTENTIAL WASTE DISPOSAL COST SAVINGS
SUBTOTALS BY SIC CODES (ASCENDING SORT ORDER)

OSW-EMPAD

A. IDENTITY OF INDUSTRY SECTORS:				B. NUMBER OF WASTESTREAMS:		C. SCALED* WASTE DATA:		D. POTENTIAL ANNUAL COST SAVINGS:			
SIC code count	SIC code**	Type of Industry	NAICS code***	Unscaled from database	Scaled to estimate universe	Pre-treatment wastestream quantity (tons/year)	Post-treatment waste residual for disposal (tons/year)	Disposal of treated waste residual	Reduction in waste shipment manifests****	Total cost savings	Percent of total cost savings
		Manufacturing Industries:									
1	2800	Chemicals & allied products	32xxxx	3	11	7,655.2	769.0	$61,524	$6,099	$67,622	1.3%
2	2819	Industrial inorganic chems.	See below	2	10	7,888.1	788.8	$63,105	$6,255	$69,360	1.4%
3	2821	Plastics materials & resins	325211	1	5	4,085.3	408.5	$32,682	$3,240	$35,922	0.7%
4	2833	Medicinal chems & botanicals	325411	7	35	31,533.9	3,153.4	$252,271	$25,006	$277,278	5.5%
5	2834	Pharmaceutical preparations	325412	4	20	19,474.6	1,947.5	$155,797	$15,443	$171,241	3.4%
6	2851	Paints & allied products	32551	2	10	21,505.8	2,150.6	$172,046	$17,054	$189,100	3.7%
7	2869	Industrial organic chems.	See below	9	45	1,179,392.3	20,829.5	$1,666,361	$165,178	$1,831,539	36.3%
8	2879	Pesticides & agricultural chems.	32532	2	10	11,426.3	1,142.6	$91,410	$9,061	$100,471	2.0%
9	3089	Plastics products	See below	1	5	3,856.1	385.6	$30,849	$3,058	$33,907	0.7%
10	3241	Hydraulic cement products	32731	1	5	4,779.1	477.9	$38,233	$3,790	$42,023	0.8%
11	3479	Metal coating & allied services	See below	2	10	6,492.4	649.2	$51,939	$5,148	$57,087	1.1%
12	3711	Motor vehicles & car bodies	See below	6	30	45,273.5	4,527.3	$362,188	$35,902	$398,090	7.9%
		Utilities:									
13	4953	Refuse systems	See below	1	5	4,120.8	412.0	$32,962	$3,267	$36,229	0.7%
		Service Industries & Others:									
14	7389	Business services, n.e.c.	See below	2	10	48,743.7	11,613.6	$929,084	$92,095	$1,021,179	20.2%
15	7532	Auto repair & auto paint shops	811121	1	5	44,526.0	4,452.6	$356,208	$35,309	$391,517	7.8%
16	9511	Waste management	92411	3	15	17,234.8	2,082.0	$166,564	$16,511	$183,074	3.6%
17	9711	National security (military bases)	811121	1	5	2,164,484.2	1,623.4	$129,869	$12,873	$142,742	2.8%
Column totals =				48	238	3,622,472	57,414	$4,593,092	$455,290	$5,048,382	100.0%

Explanatory Notes:

(a) Source: Facility wastestream data from prior exhibit in this report (EPAID numbers have been removed). All "tons" = short tons (i.e. 2,000 pounds).

(b) * Scaled = Waste quantities in reference database reflect sample subset facilities; must be "scaled" up to all applicable facilities nationwide.

Scaling Factors:	1.45	Brings model totals to universe totals
	3.44	Brings NI MCS respondents up to total NI MCS

Both multipliers for scaling NHMCS data (i.e. 1.45 x 3.44 = 4.99); only 1.45 multiplier for scaling 1986 Gen Survey data.

(c) ** SIC = Standard Industrial Classification System (http://www.census.gov/epcd/www/sic.html)

(d) *** NAICS = North American Industrial Classification System (http://www.census.gov/epcd/www/naicstab.htm)

SIC 2819	NAICS 211112, 325131, 325188, 325998, or 331311.
SIC 2869	NAICS 32511, 32512, 325188, 325193, or 325199.
SIC 3089	NAICS 326121, 326122, 326199, or 337215.
SIC 3479	NAICS 332812, 339911, 339912, or 339914.
SIC 3711	NAICS 336111, 336112, 33612, 336211, or 336992.
SIC 4953	NAICS 562211, 562212, 562213, 562219, or 56292.
SIC 7389	NAICS 86 possible alternative NAICS codes (refer to http://www.census.gov/epcd/www/naics87.htm).

(e) **** Reduction in hazardous waste shipment manifest costs estimated with following assumptions:

Average industrial waste shipment truckload (short tons)	20
Average hours to prepare waste shipment haz manifest	1.3
Average hourly technical level labor cost to prepare manifest	$122

(f) In addition to the 17 sectors above, the local trucking services sector (SIC 4212, NAICS 562111 (non hazardous waste) & 562112 (hazardous waste)) will also be affected, by no longer requiring to carry/process hazardous waste manifests, and to use special hazardous waste containers and other special provisions.