ECONOMIC IMPACTS OF SUPERFUND TAXES

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BACKGROUND AND PURPOSE

The Hazardous Substance Response Trust Fund, otherwise known as Superfund, was established in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to pay for the cleanup of uncontrolled hazardous waste sites. The fund was originally financed by excise taxes on crude oil and feedstock chemicals. In 1986, the fund was reauthorized through 1991 by the Superfund Amendments and Reauthorization Act (SARA). SARA expanded Superfund's size and revenue sources by (1) creating an environmental tax on corporate income and a tax on imported chemical substances, (2) increasing the CERCLA tax on crude oil, and (3) instituting minor changes in CERCLA's excise tax on feedstock chemicals. Congress extended SARA to 1995 as part of its FY 1991 budget agreement. Program authorization was extended for only three years, through 1994, in order to motivate early consideration of a full reauthorization package.

In anticipation of Superfund reauthorization, EPA, Congress and others are debating potential changes in the structure and function of the program. Important issues under consideration include the economic impacts, equity and efficiency of program financing. To support Agency evaluation of these issues, EPA's Office of Policy Analysis (OPA) is analyzing the current structure and function of Superfund financing, and exploring possible changes to the financing system. As part of this effort, Industrial Economics, Incorporated (IEc) has reviewed the performance of the current Superfund tax system.

In November 1992, IEc completed an assignment analyzing the Superfund tax system. The products of this effort were the following three memoranda to EPA.

- Literature Review on Superfund Financing,
- SARA Tax Revenues and the Distribution of the Tax Burden, and
- Economic Impacts of Superfund Taxes.

This report synthesizes IEc's previous work, revising the analyses to incorporate new information. In addition, the report evaluates SARA taxes with respect to several broad policy objectives.

ORGANIZATION

The report is organized as follows:

- **Chapter 2, Overview of SARA Taxes,** describes each of the four Superfund tax mechanisms -- the petroleum tax, feedstock chemical tax, imported chemical substances tax, and corporate environmental tax.

- **Chapter 3, Tax Revenues and Distribution of the Tax Burden,** presents data on the revenues generated by the four taxes from 1987 to 1991, and on the distribution of these revenues by source.

- **Chapter 4, Economic Impacts,** characterizes the economic impacts of the taxes by providing estimates of the maximum percentage impact of the taxes on petroleum, chemical, and overall industry prices.

- **Chapter 5, Evaluation with Respect to Policy Objectives,** discusses the strengths and weaknesses of the four SARA taxes with respect to administrative feasibility, economic efficiency, equity, and incentives for waste reduction and improved waste management.

- **Chapter 6, Conclusion,** summarizes the report's findings, discusses potential implications for Superfund reauthorization, and describes planned next steps in the exploration of Superfund financing.

In addition, Appendix A presents a review of the literature on Superfund financing. Appendix B provides supporting data and calculations used for the economic impacts analysis presented in Chapter 4.

SUMMARY OF FINDINGS

Our analysis of the Superfund tax system leads to the following findings and conclusions:

- For the first five years after the passage of SARA, total tax revenues fell short of initial projections by $786 million, approximately 12 percent of total revenues expected.

- The petroleum excise tax accounts for about 45 percent of total revenues; the chemical taxes account for approximately 20 percent; and the corporate environmental tax accounts for 35 percent. This is a significant shift from pre-SARA Superfund taxes, which derived approximately 85 percent of total revenues from the chemical feedstock tax and only 15 percent from the petroleum excise tax.[1]

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[1] Environmental Emergency Response Act, Report of Senate Committee on Environment and Public Works, Report 96-848, July 11, 1980. Since the revenues generated under SARA are more than four times those collected under the original statute, this shift does not represent an absolute decrease in the Superfund tax burden on the chemicals industry. It does, however, indicate that the tax burden on the petroleum industry has increased substantially, and that a significant share of revenues is also derived from industries outside the petroleum and chemical sectors.

- The chemical excise tax is relatively small (generally less than two percent of chemical prices), is not substantially different than in the pre-SARA period, and is likely to be passed through to consumers in the form of higher prices.

- The maximum percentage impact of the petroleum tax on petroleum prices increased substantially with the imposition of the SARA tax rates; however, it is still relatively small (less than one percent).

- As an income tax that falls primarily on larger firms, the corporate environmental tax is not likely to threaten a firm's economic viability. Eighty-nine percent of the corporate environmental tax is paid by firms with assets exceeding $250 million.

- SARA taxes are primarily revenue raisers. Because they are not directly linked to the generation of hazardous waste, the taxes are at best a crude instrument for improving economic efficiency; they provide limited incentive to minimize waste generation, and no direct incentive to manage waste more responsibly.

The remainder of this report presents the analyses that support these general conclusions.

Superfund is currently financed primarily by an excise tax on domestic and imported crude oil, an excise tax on 42 feedstock chemicals, an excise tax applied to 72 chemical substances imported into the United States, and an environmental tax on corporate income.[2] The Superfund Amendments and Reauthorization Act of 1986 (SARA) created the environmental tax on corporate income and the tax on imported chemical substances. SARA also increased the CERCLA tax on crude oil and instituted minor changes in CERCLA's excise tax on feedstock chemicals. This chapter provides an overview of the four SARA taxes, including information on their application and rates.[3]

TAX ON PETROLEUM

The Superfund petroleum taxes consist of a tax on domestic crude oil and a tax on imported crude oil and petroleum products -- which include natural and refined gasoline, refined and residual oil, and certain other liquid hydrocarbon products. The tax on domestic crude oil is imposed when crude oil is received at a U.S. refinery, and is paid by the refiner. The tax on imported crude and petroleum products is imposed when the product enters the U.S., and is paid by the importer.

The tax code grants petroleum tax credits when crude oil is removed from a pipeline and a portion of it is subsequently returned to a stream of crude in the same pipeline. This provision is intended to ensure that quantities of crude oil that are mixed with other crude oil in the pipeline are not taxed twice.

As of January 1987, SARA raised CERCLA's 0.79 cents per barrel petroleum tax to 8.2 cents per barrel for domestic crude oil and 11.7 cents per barrel for imported crude and petroleum products. Effective January 1989, Congress changed the tax rate to 9.7 cents per barrel for both domestic and imported oil in order to equalize the burden and comply with international trade agreements.

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[2] In addition to revenues from these taxes, appropriations from general revenues and receipts from cost recovery actions against parties found liable for damages associated with hazardous waste disposal contribute to the fund. This report is limited to a discussion of the four tax mechanisms.

[3] Most of the information presented in this section was obtained from the 1986 Joint Explanatory Statement of the Committee of Conference.

TAX ON FEEDSTOCK CHEMICALS

The SARA version of the chemical feedstock tax took effect in January 1987 and is virtually identical to CERCLA's. The tax is imposed on the use or sale of the 42 organic and inorganic chemicals indicated in Exhibit 2-1. Exemptions from the chemical feedstock tax are provided for certain chemicals used for specific purposes, and credits or refunds are allowed for taxes paid on chemicals that are later used or sold for use in an exempt purpose. The metals listed are taxable only if processed to the point where they are commercially known or sold as metal. As a result, ores (except chromite), concentrates, alloys, and scraps of the listed metals are not subject to the tax.

With the exception of xylene, SARA did not change chemical tax rates.[4] The tax rates, originally established in 1980, were set at the lower of two figures: (1) two percent of the estimated wholesale price prevailing at that time, or (2) $4.87 per ton for organic chemicals and $4.45 per ton for inorganic chemicals. Exhibit 2-1 lists the 42 chemicals and their current tax rates.

TAX ON IMPORTED CHEMICAL SUBSTANCES

In addition to reimposing the taxes on petroleum and feedstock chemicals, SARA imposed a new tax on the sale of imported chemical substances. The tax on imported chemical substances is imposed on the importer of a listed substance at the time the substance is sold or used. Certain listed substances are exempt from the tax when used as or in the manufacture of fuel, fertilizer or animal feed. Unlike the other SARA taxes, this tax did not go into effect until January 1, 1989. This delay allowed time for a study of implementation issues required by SARA.

Exhibit 2-2 lists the substances currently subject to the tax on imported chemical substances. All of these substances are taxed at a rate equal to the amount that would have been imposed by the feedstock tax if the substance had been manufactured in the U.S. using taxable feedstock chemicals. The tax is calculated by determining the number of tons of each taxable feedstock chemical used in the manufacture of one ton of the imported substance, or by determining the percentage of taxable metals in the substance. The feedstock tax rate for the particular chemical is then applied to the relevant quantity. If the importer does not have sufficient information to determine these quantities, the tax is set at five percent of the appraised value of the imported chemical substance.

CORPORATE ENVIRONMENTAL TAX

SARA also imposed a new environmental tax on corporate income. Congress initially imposed the tax for corporate fiscal years beginning between January 1, 1987 and December 31, 1991. The termination date was later extended four years to include fiscal years beginning before December 31, 1995. The corporate environmental tax is based on corporate alternative minimum

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[4] SARA clarified that the feedstock tax on xylene does not apply to separated isomers. Taxes paid under CERCLA on xylene isomers were refunded or credited under SARA. To make up for the lost revenues, the tax rate on xylene was increased from $4.87 per ton to $10.13 per ton from January 1987 to December 1992. In January 1993 the tax rate for xylene was reset at $4.87 per ton.

Exhibit 2-1

FEEDSTOCK CHEMICALS AND TAX RATES

CHEMICAL	RATE ($/ton)	CHEMICAL	RATE ($/ton)
Organic		Inorganic	
Acetylene	4.87	Ammonia	2.64
Benzene	4.87	Antimony	4.45
Butadiene	4.87	Antimony Trioxide	3.75
Butane	4.87	Arsenic	4.45
Butylene	4.87	Arsenic Trioxide	3.41
Ethylene	4.87	Barium Sulfide	2.30
Methane	3.44	Bromine	4.45
Napthalene	4.87	Cadmium	4.45
Propylene	4.87	Chlorine	2.70
Toluene	4.87	Chromium	4.45
Xylene	4.87	Chromite	1.52
		Cobalt	4.45
		Cupric Oxide	3.59
		Cupric Sulfate	1.87
		Cuprous Oxide	3.97
		Hydrochloric Acid	0.29
		Hydrogen Fluoride	4.23
		Lead Oxide	4.14
		Mercury	4.45
		Nickel	4.45
		Nitric Acid	0.24
		Phosphorous	4.45
		Potassium Dichromate	1.69
		Potassium Hydroxide	0.22
		Sodium Dichromate	1.87
		Sodium Hydroxide	0.28
		Stannous Chloride	2.85
		Stannic Chloride	2.12
		Sulfuric Acid	0.26
		Zinc Chloride	2.22
		Zinc Sulfate	1.90

Source: Internal Revenue Service, Department of the Treasury, Form 6627, revised January 1993.

Exhibit 2-2

IMPORTED CHEMICAL SUBSTANCES SUBJECT TO TAX*

2-ethyl hexanol**	Methyl acrylate**
2-ethylhexyl acrylate**	Methyl chloroform**
Acetone	Methyl isobutyl ketone**
Acrylic and methacrylic resins	Methylene chloride
Acrylonitrile	Nickel oxide
Alpha-methylstyrene**	Nickel powders
Ammonium nitrate	Nickel waste and scrap
Bisphenol-A**	Normal butyl acetate**
Butyl acrylate**	Normal propyl acetate**
Carbon tetrachloride	Perchloroethylene**
Chloroform	Phenolic resins
Chromic acid	Phthalic anhydride
Cumene	Polyalphaolefins
Cyclohexane	Polybutadiene
Decabromodiphenyl oxide**	Polyethylene resins (total)
Ethyl acrylate**	Polyethylene terephthalate pellets
Ethyl alcohol for nonbeverage use	Polypropylene
Ethyl dibromide**	Polypropylene resins
Ethyl methyl ketone	Polystyrene homopolymer resins
Ethylbenzene	Polystyrene resins and copolymers
Ethylene dichloride	Polyvinylchloride resins
Ethylene glycol	Propylene glycol
Ethylene oxide	Propylene oxide
Ferrochrome, > 3% carbon	Styrene
Ferrochromium, not > 3% carbon	Styrene-butadiene (latex)
Ferronickel	Styrene-butadiene (non-specific)
Formaldehyde	Synthetic rubber (not containing fillers)
Hydrogen peroxide	Tetrabromobisphenol-A**
Isobutyl acetate**	Trichloroethylene**
Isophthalic acid	Unwrought nickel
Isopropyl acetate**	Urea
Isopropyl alcohol	Vinyl acetate**
Linear alpha olefins	Vinyl chloride
Maleic anhydride	Vinyl resins
Melamine	Vinyl resins (non-specific)
Methanol	Wrought nickel rods and wire

* Other chemical substances are taxed if taxable feedstocks comprise greater than 50 percent of either the molecular weight or value of the raw materials used to produce the chemical derivative.

** These substances are additions to the original January 1, 1989 list and are combined as "other" chemical substances in Exhibit 3-4.

Source: Internal Revenue Service, Department of the Treasury, Form 6627, revised January 1993.

taxable income (AMTI) and is imposed on all corporations with AMTI greater than $2 million, whether or not the taxpayer is subject to the alternative minimum tax. The amount of the tax is equal to 0.12 percent of AMTI in excess of $2 million (i.e., $12 per $10,000 of the excess AMTI).

GENERAL PROVISIONS

All SARA taxes are currently scheduled to terminate after December 31, 1995. The taxes could terminate earlier if cumulative Superfund tax receipts exceed $11.97 billion, or if the unobligated balance of the Superfund exceeds $3.5 billion at the end of a calendar year and is expected to exceed that amount at the end of the next calendar year.[5]

[5] The cap for cumulative receipts is a $5.32 billion increase over the $6.65 billion cap established for the 5-year period initially covered by SARA. The history of Superfund tax receipts suggests that it is unlikely that this cap will be exceeded.

This chapter presents information on Superfund tax revenues since the passage of SARA. It compares initial Congressional estimates of tax revenues to actual tax receipts and/or liabilities from 1987 through 1991; provides detailed data on revenues from the petroleum, chemical feedstock, and imported chemical substances taxes; and reports the distribution of corporate environmental tax payments across industries. It also presents the Treasury Department's estimates of Superfund tax revenues from 1992 through 1995.

COMPARISON OF CONGRESSIONAL ESTIMATES AND TAX REVENUES

Congress estimated that over the five-year period initially authorized by SARA, the four Superfund taxes would generate $6.7 billion in Superfund revenues. The estimates for the individual taxes are as follows:

- Tax on petroleum: $2.759 billion,
- Tax on feedstock chemicals: $1.365 billion,
- Tax on imported chemical substances: $0.057 billion,
- Corporate environmental tax: $2.522 billion.

Based on tax receipt data for the period 1987 through 1991, we find that Superfund tax revenues are almost 12 percent lower than Congress anticipated in 1986, falling short of expectations by approximately $786 million. As shown in Exhibit 3-1, most of this difference is attributable to a $669 million shortfall in the corporate environmental tax.[6] The revenues from this tax are likely to be understated because the receipt data do not include taxes on 1991 income declared in tax year

[6] There is also a substantial shortfall in combined revenues generated by the taxes on feedstock chemicals and imported chemical substances. This may be due in part to the fact that the tax on imported chemical substances was not effective until 1989; therefore, the receipts for this tax cover three years instead of five.

1992 and subject to the tax of the initial five year reauthorization period. Therefore, we have made a $221 million adjustment to account for this difference.[7] Even with this adjustment, corporate environmental tax receipts fall short of Congressional estimates by $448 million. This shortfall may be attributable to unforeseen weakness in the national economy during the period of interest.

Exhibit 3-1 also lists tax liabilities attributable to the petroleum and chemical taxes over the five-year period initially covered by SARA. Tax liabilities represent amounts reported on tax returns as owed, whereas tax receipts represent amounts actually credited to the fund. As shown, liabilities for these taxes exceed actual receipts by approximately 8 percent. This difference is due in part to the fact that receipts are accounted for on an October to September fiscal year, while liabilities are reported for the tax processing year. In addition, some firms may fail to pay their taxes.[8] Because the available tax receipt data are not broken down at a level that allows us to analyze the distribution of the tax burden, the detailed discussions of the chemical feedstock tax, the imported chemical tax, and the corporate environmental tax that follow are based on tax liability rather than tax receipt data.

Tax on Petroleum

As shown in Exhibit 3-1, tax revenues from the Superfund tax on petroleum, totaling $2.635 billion over five years, are approximately $124 million lower than those anticipated by Congress. Exhibit 3-2 provides a more detailed analysis of tax receipts, broken down by year and by domestic versus imported oil. Over the five-year period, the tax on domestic oil generated $1.28 billion in revenues, while the tax on foreign oil generated $1.35 billion. Between 1987 and 1989 total annual revenues from the tax increased from $419 million to $595 million, with annual increases of approximately 20 percent. Between 1989 and 1991 revenues decreased from $595 million to $547 million, with annual decreases of approximately 4 percent.

Tax on Feedstock Chemicals

Exhibit 3-3 presents revenue data by chemical for the chemical feedstock tax. Although these 1987 to 1991 Statistics of Income data represent tax liabilities for the tax year, not receipts for the fiscal year, they indicate that a small number of chemicals account for the vast majority of revenues generated by this tax, reflecting the large quantities of certain chemicals used nationally. The tax liability data for 1987 to 1991 indicate that four organic chemicals (ethylene, propylene, xylene, and benzene), together with one inorganic chemical (chlorine), account for over 80 percent of total tax liabilities. As has always been the case for this tax, the tax on organic chemicals accounts for the majority of the revenues. From 1987 to 1991, the use and sale of organic chemicals accounted for $1.16 billion (82 percent) of the total revenue from the feedstock chemical tax. The excise tax on the sale and use of ethylene alone accounts for $82 to $95 million annually, approximately one-third of annual revenues generated by the chemical feedstock tax. Of the inorganic chemicals, chlorine generates approximately $30 million in tax revenues per year -- approximately 11 percent of the total for all chemicals and 59 percent of the revenues from inorganic chemicals.

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[7] See footnote 10 for an explanation of this adjustment.

[8] Discussion with Sara Boroshok from Statistics of Income, U.S. Treasury Department, June 1993.

Exhibit 3-1

COMPARISON OF FIVE-YEAR ESTIMATES FOR SUPERFUND REVENUES

Taxes	Congressional Estimate (1)		Tax Receipts (2)		Difference		Tax Liabilites (3)
	($000)	% of Total	($000)	% of Total	($000)	%	($000)
Tax on Petroleum	2,759,000	41.2%	2,635,300	44.5%	(123,700)	-4.5%	2,741,518
Tax on Feedstock Chemicals	1,365,000	20.4%	1,208,000	20.4%	(214,000)	-15.0%	1,410,988
Tax on Imported Chemical Substances	57,000	0.9%	***	***	***	***	29,323 *
Corporate Environmental Income Tax	2,522,000	37.6%	1,853,000	31.3%	(669,000)	-26.5%	Not Available
Adjustments**	0	0	220,917	3.7%	220,917	0.0%	
Total	6,703,000	100.0%	5,917,217	100.0%	(785,783)	-11.7%	

* Includes tax liability data for 1989-91 only. The tax was not effective prior to that.

** Tax receipts are adjusted to account for 1992 income subject to the corporate environmental tax but not included in the five-year data.

*** Included in the total for the tax on feedstock chemicals.

Sources:

(1) Atkeson, T.B., Goldberg, S., Ellrod, F.E., Conners, S.L.; "An Annotated Legislative History of the Superfund Amendments and Reauthorization Act of 1986 (SARA)", Superfund Deskbook, Environmental Law Institute, Washington, DC, 1986.

(2) U.S. Treasury Department, Office of Tax Analysis, Superfund Tax Receipts, June 1992.

(3) U.S. Treasury Department, Statistics of Income, Environmental Tax Statistics and Tabulations, July 1993.

Exhibit 3-2

TAX ON PETROLEUM

Petroleum	Tax Receipts ($000) (1)					Five Year Total ('87 to '91)	
	1987	1988	1989	1990	1991	Tax Receipts ($000)	Congressional Estimate ($000) (2)
Domestic	208,100	229,300	247,400	295,000	305,400	1,285,200	
Imported	210,700	273,500	347,200	276,700	242,000	1,350,100	
Total	418,800	502,800	594,600	571,700	547,400	2,635,300	2,759,000

Sources:

(1) U.S. Treasury Department, Office of Tax Analysis, Superfund Tax Receipts, June 1992.

(2) Atkeson, T.B., Goldberg, S., Ellrod, F.E., Conners, S.L.; "An Annotated Legislative History of the Superfund Amendments and Reauthorization Act of 1986 (SARA);" Superfund Deskbook, Environmental Law Institute, Washington, DC, 1986.

Exhibit 3-3

TAX ON FEEDSTOCK CHEMICALS: LIABILITIES

Chemicals	Tax Liabilities ($000) (1)					Five Year Total ('87 to '91)	
	1987	1988	1989	1990	1991	Tax Liabilities ($000)	Congressional Estimate ($000) (2)
Organic							
Acetylene	726	752	756	775	775	3,785	
Benzene	29,660	33,023	28,243	29,138	28,964	149,027	
Butane	3,621	2,048	2,964	3,304	3,023	14,961	
Butylene	4,457	3,272	3,649	2,342	3,084	16,804	
Butadiene	6,296	9,361	8,498	8,850	8,557	41,561	
Ethylene	87,316	93,556	81,722	92,157	95,364	450,116	
Methane	7,462	8,035	8,674	9,206	9,153	42,529	
Napthalene	125	133	88	115	54	515	
Propylene	41,326	44,993	43,049	46,726	46,770	222,863	
Toluene	9,352	10,348	9,238	11,458	7,802	48,197	
Xylene	34,479	35,773	32,581	32,765	33,781	169,379	
Organic Total	224,821	241,294	219,462	236,835	237,326	1,159,738	
Inorganic							
Ammonia	9,451	10,436	10,902	8,677	8,113	47,580	
Antimony	23	41	19	38	22	142	
Antimony Trioxide	99	91	94	112	96	493	
Arsenic	3	1	1	1	1	6	
Arsenic Trioxide	68	93	23	54	65	302	
Barium Sulfide	2	*	*	*	0	2	
Bromine	732	958	751	619	608	3,668	
Cadmium	9	9	5	8	8	38	
Chlorine	27,836	30,872	28,749	30,226	31,088	148,771	
Chromium	35	33	24	93	86	272	
Chromite	480	393	287	302	263	1,725	
Potassium Dichromate	*	0	*	*	0	1	
Sodium Dichromate	82	14	3	2	4	105	
Cobalt	20	23	14	28	24	110	
Cuperic Sulfate	71	59	47	55	59	291	
Cuperic Oxide	52	44	37	45	43	220	
Cuperous Oxide	19	21	24	22	23	109	
Hydrochloric Acid	232	299	296	251	278	1,356	
Hydrogen Fluoride	1,281	1,463	1,483	1,250	1,149	6,625	
Lead Oxide	1,433	1,715	1,620	1,561	1,829	8,158	
Mercury	90	0	17	2	0	110	
Nickel	403	351	259	468	446	1,927	
Phosphorous	1,592	1,450	1,143	1,222	1,313	6,719	
Stannous Chloride	*	*	2	3	*	5	

Exhibit 3-3
(continued)

TAX ON FEEDSTOCK CHEMICALS: LIABILITIES

Chemicals	Tax Liabilities ($000) (1)					Five Year Total ('87 to '91)	
	1987	1988	1989	1990	1991	Tax Liabilities ($000)	Congressional Estimate ($000) (2)
Inorganic (continued)							
Stannic Chloride	23	25	16	23	23	111	
Zinc Chloride	35	30	41	42	35	182	
Zinc Sulfate	38	50	42	17	41	189	
Potassium Hydroxide	56	74	70	78	87	366	
Sodium Hydroxide	2,495	2,603	2,455	2,468	2,931	12,952	
Sulfuric Acid	1,454	1,430	1,235	1,430	1,389	6,938	
Nitric Acid	356	427	332	332	319	1,766	
Inorganic Total	48,472	53,009	49,990	49,428	50,351	251,249	
Total	273,292	294,303	269,452	286,264	287,677	1,410,988	1,365,000

* To avoid disclosure, these data are not shown; the tax liabilities for these chemicals are included in the totals.

Sources:

(1) U.S. Treasury Department, Statistics of Income, Environmental Tax Statistics and Tabulations, July 1993.
(2) Atkeson, T.B., Goldberg, S., Ellrod, F.E., Conners, S.L.; "An Annotated Legislative History of the Superfund Amendments and Reauthorization Act of 1986 (SARA);" Superfund Deskbook, Environmental Law Institute, Washington, DC, 1986.

The distribution of the tax burden by chemical is relatively stable over the five years analyzed. While additional analysis would be needed to reach defensible conclusions, this stability suggests that the taxes are not currently placing a disproportionate burden on certain compounds or causing shifts in the use of chemical feedstocks.[9]

Tax on Imported Chemical Substances

Revenues from taxes on imported chemical substances represent a small portion (less than one percent) of the revenues from Superfund taxes. Because this tax was not effective until 1989, there were no revenues for the years 1987 and 1988. Tax receipt data for this tax are combined with tax receipts for the chemical feedstock tax and do not allow for detailed analysis. Tax liability data for 1989 through 1991, however, are presented in Exhibit 3-4, and show that the tax on imported chemical substances generated approximately $29 million dollars in Superfund revenues. This represents only 51 percent of the total revenues Congress projected for this tax.

Exhibit 3-4 also indicates the breakdown of tax liabilities by chemical substance. As shown, the importation of methanol, polyethylene resins, and styrene together accounts for approximately 36 percent of total liabilities. Another 26 percent ($7.482 million) is not accounted for due to non-disclosure requirements.

Corporate Environmental Tax

As shown in Exhibit 3-1, tax receipts indicate that revenues generated from the corporate environmental tax have fallen short of Congressional expectations by $669 million. This figure is likely to overestimate the shortfall because it does not account for taxes on 1991 income declared in tax year 1992, which could amount to $221 million.[10] Part of the discrepancy between current estimates and Congressional estimates for the corporate environmental tax revenue is attributable to this underestimation. In addition, corporate environmental tax receipts may be lagging behind liabilities. Estimates of corporate environmental tax liabilities for 1987, 1988, and 1989, based on a sample of corporate income tax returns and reported by the U.S. Treasury Department's Statistics of Income Division, are substantially higher than actual tax receipts.

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[9] This is not to say that such shifts did not occur when the tax was first imposed under CERCLA in 1980. The tax data, however, provide no basis for inferring whether such shifts occurred.

[10] We estimate that tax liabilities for 1991 income declared in tax year 1992 total $221 million. We arrive at this estimate by calculating the percentage difference between 1988 revenues, which represent all firms, and 1987 revenues, which represent only those firms with tax years beginning after December 31, 1986 (37 percent), and applying it to the 1991 tax revenues: (313,000 - 196,000) / 313,000 * 591,000.

Exhibit 3-4

TAX ON IMPORTED CHEMICAL SUBSTANCES: LIABILITIES

Chemicals	Tax Liabilities ($000) (1) 1989	1990	1991	3 Year Total	Chemicals	Tax Liabilities ($000) (1) 1989	1990	1991	3 Year Total	Congressional Estimate ($000) (2)
Acetone	*	*	*	*	Nickel oxide	0	0	0	0	
Acrylic and methacrylic resins	*	21	*	21	Nickel powders	0	0	0	0	
Acrylonitrile	*	*	13	13	Nickel waste and scrap	0	0	*	0	
Ammonium nitrate	*	*	253	253	Phenolic resins	3	6	6	15	
Carbon tetrachloride	*	*	*	*	Phthalic anhydride	53	*	*	53	
Chloroform	*	*	0	0	Polyalphaolefins	0	0	*	0	
Chromic acid	*	*	65	65	Polybutadiene	*	109	110	219	
Cumene	*	*	1,281	1,281	Polyethylene resins (total)	1,473	1,464	1,447	4,385	
Cyclohexane	0	*	*	0	Polyethylene terrephthalate pts.	*	0	*	0	
Ethyl alcohol for nonbeverage use	*	*	921	921	Polypropylene	42	*	*	42	
Ethyl methyl ketone	*	*	*	*	Polypropylene resins	0	*	*	0	
Ethylbenzene	*	*	*	*	Polystyrene homopolymer resins	*	*	41	41	
Ethylene dichloride	*	*	*	*	Polystyrene resins and copolymers	*	30	66	96	
Ethylene glycol	355	241	356	951	Polyvinylchloride resins	33	64	227	323	
Ethylene oxide	*	*	*	*	Propylene glycol	*	*	*	*	
Ferrochrome, > 3% carbon	*	*	90	90	Propylene oxide	0	*	*	0	
Ferrochromium, not > 3% carbon	0	0	*	0	Styrene	425	831	1,264	2,520	
Ferronickel	*	*	*	*	Styrene-butadiene (latex)	25	*	35	60	
Formaldehyde	0	0	0	0	Styrene-butadiene (non-specific)	0	*	0	0	
Hydrogen peroxide	*	*	*	*	Synthetic rubber (not containing fillers)	226	407	292	925	
Isophthalic acid	0	*	*	0	Unwrought nickel	0	0	0	0	
Isopropyl alcohol	*	151	100	251	Urea	*	171	72	243	
Linear alpha olefins	0	*	*	0	Vinyl chloride	*	*	649	649	
Maleic anhydride	0	5	8	13	Vinyl resins	*	107	*	107	
Melamine	0	0	0	0	Vinyl resins (non-specific)	*	0	*	0	
Methanol	1,453	1,021	1,267	3,741	Wrought nickel rods and wire	0	0	0	0	
Methylene chloride	*	13	*	13	Other chemical substances	349	1,824	2,376	4,549	
					Total Imported Chemical Tax	7,761	9,708	11,854	29,323	57,000

* To avoid disclosure, these data are not shown. The tax liabilities for these chemicals are included in the totals.

Sources:

(1) U.S. Treasury Department, Statistics of Income, Environmental Tax Statistics and Tabulations, July 1993.

(2) Atkeson, T.B., Goldberg, S., Ellrod, F.E., Conners, S.L.; "An Annotated Legislative History of the Superfund Amendments and Reauthorization Acto of 1986 (SARA);" Superfund Deskbook, Environmental Law Institute, Washington, DC, 1986.

Exhibit 3-5 presents the breakdown of tax receipts by year. As the exhibit shows, receipts in 1987 were substantially lower than in 1988, because corporations with 1987 tax years beginning before January 1987 (e.g., July 1986 or October 1986) were not required to pay the tax.[11] In 1988, the first year that captures all corporate tax payers, $313 million in revenues were collected. Collections fell by 7 percent in 1989, but substantially increased by 58 percent in 1990 due in part to a corporate tax law change in the method for calculating AMTI.[12] In 1991, receipts grew by another 28 percent.

Tax receipt data are not available for individual industrial groups. To evaluate the distribution of the corporate environmental tax burden, we instead examine the tax liability estimates provided by the Treasury Department's Corporate Source Books for the years 1987 through 1990. This source compiles data from tax returns for a sample of companies to estimate industry-wide financial statistics.[13] Exhibit 3-6 presents the breakdown of 1987 through 1990 corporate environmental tax liabilities by major industrial group (two-digit Standard Industrial Code). In each of these years, the data show that six of the 55 industry groups incurred more than $20 million in corporate environmental taxes. Those with the highest tax bills were petroleum and coal products (SIC 29), chemical and allied products (SIC 28), and electric, gas, and sanitary services (SIC 49). Together, these groups account for 25 percent of the four-year total tax liabilities. Other major contributing industries include insurance (SIC 63), communication (SIC 48), and banking (SIC 60), which together account for an additional 20 percent of four-year total tax liabilities.

Because the corporate environmental tax is based on corporate income, the tax liabilities simply reflect income in these SIC groups. However, it is interesting to note that the three industries paying the most are major generators and handlers of hazardous wastes, and that the chemical and petroleum industries, in addition to making large contributions to Superfund through the chemical and petroleum excise taxes, are making substantial contributions via the corporate environmental tax.

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[11] The corporate environmental tax was imposed for corporate fiscal years beginning between January 1, 1987 and December 31, 1991. This ensures that firms pay the tax for five full years regardless of when their fiscal years begin. It is important to note that taxes collected for the 1987 tax year do not represent all firms, because those with 1987 fiscal years beginning before January 1987 (e.g., July or October 1986) did not pay the tax. These firms did, however, pay the tax in 1992 because their 1992 fiscal year began before December 31, 1991.

[12] Interpretation of Jerry Silverstein of the U.S. Treasury Department's Office of Tax Analysis in July 1993.

[13] The 1987 total tax liability reported in the Corporate Source Book ($351 million) is $155 million more than the total receipts ($196 million) reported by the Office of Tax Analysis. The 1988 total tax liability reported ($488 million) is $175 million more than the total receipts ($313 million). The 1989 total tax liability reported ($472 million) is $180 million more than the total receipts ($292 million). The 1990 total tax liability reported ($520 million) is $59 million more than the total receipts ($461 million). The discrepancies are likely due to differences in reporting -- government fiscal year versus tax processing year -- and differences in what is actually credited to the fund and what is owed.

Exhibit 3-5

CORPORATE ENVIRONMENTAL TAX: COLLECTIONS

Receipts ($000) (1)					Five Year Total ('87-'91)	
					Current Estimate ($000)	Congressional Estimate ($000) (2)
1987	1988	1989	1990	1991		
196,000	313,000	291,900	461,000	591,100	1,853,000	2,522,000

Sources:

(1) U.S. Treasury Department, Office of Tax Analysis, Superfund Tax Receipts, June 1992.

(2) Atkeson, T.B., Goldberg, S., Ellrod, F.E., Conners, S.L.; "An Annotated Legislative History of the Superfund Amendments and Reauthorization Act of 1986 (SARA);" Superfund Deskbook, Environmental Law Institute, Washington, DC, 1986.

Exhibit 3-6

CORPORATE ENVIRONMENTAL TAX
Estimated Revenues by Standard Industrial Classification (SIC)

SIC	Description	Estimated Tax Liabilities								4 Year Total	% of Total
		1987		1988		1989		1990			
		($000)*	% of Total	($000)	% of Total	($000)	% of Total	($000)	% of Total		
	AGRICULTURE, FORESTRY, AND FISHING										
01/02	Agricultural production	312	0.09%	694	0.14%	1,006	0.21%	797	0.15%	2,809	0.15%
07/08/09	Agricultural services, forestry, fishing, hunting and trapping	156	0.04%	160	0.03%	226	0.05%	268	0.05%	810	0.04%
	MINING										
10	Metal mining	1,291	0.37%	2,981	0.61%	1,538	0.33%	2,102	0.40%	7,912	0.43%
11/12	Coal mining	849	0.24%	1,451	0.30%	1,325	0.28%	951	0.18%	4,576	0.25%
13	Oil and gas extraction	2,276	0.65%	4,548	0.93%	5,613	1.19%	6,645	1.28%	19,082	1.04%
14	Nonmetallic minerals (except fuels)	1,147	0.33%	987	0.20%	749	0.16%	646	0.12%	3,529	0.19%
	CONSTRUCTION										
15	General building contractors and operative builders	994	0.28%	1,795	0.37%	941	0.20%	829	0.16%	4,559	0.25%
16	Heavy construction contractors	632	0.18%	1,357	0.28%	1,157	0.25%	1,429	0.27%	4,575	0.25%
17	Special trade contractors	183	0.05%	303	0.06%	407	0.09%	304	0.06%	1,197	0.07%
	MANUFACTURING										
20	Food and kindred products	14,276	4.06%	19,153	3.93%	20,940	4.44%	18,558	3.57%	72,927	3.98%
21	Tobacco manufacturers	5,947	1.69%	12,156	2.49%	9,913	2.10%	11,562	2.22%	39,578	2.16%
22	Textile mill products	1,180	0.34%	2,219	0.45%	1,572	0.33%	1,406	0.27%	6,377	0.35%
23	Apparel and other textile products	1,030	0.29%	1,864	0.38%	1,898	0.40%	1,949	0.37%	6,741	0.37%
24	Lumber and wood products	3,623	1.03%	4,063	0.83%	3,761	0.80%	2,967	0.57%	14,414	0.79%
25	Furniture and fixtures	1,241	0.35%	1,272	0.26%	1,271	0.27%	1,077	0.21%	4,861	0.27%
26	Paper and allied products	6,961	1.98%	11,492	2.36%	11,602	2.46%	10,695	2.06%	40,750	2.23%
27	Printing and publishing	8,672	2.47%	12,051	2.47%	10,973	2.33%	10,280	1.98%	41,976	2.29%
28	Chemicals and allied products	29,948	8.53%	39,225	8.04%	38,771	8.22%	45,846	8.81%	153,790	8.40%
29	Petroleum (including integrated) and coal products	29,379	8.36%	37,497	7.68%	38,915	8.25%	53,824	10.35%	159,615	8.72%
30	Rubber and miscellaneous plastics products	2,089	0.59%	2,563	0.53%	2,435	0.52%	1,869	0.36%	8,956	0.49%
31	Leather and leather products	171	0.05%	534	0.11%	678	0.14%	581	0.11%	1,964	0.11%
32	Stone, clay and glass products	3,962	1.13%	3,629	0.74%	3,232	0.69%	4,049	0.78%	14,872	0.81%
33	Primary metal industries	4,415	1.26%	9,108	1.87%	10,164	2.15%	7,577	1.46%	31,264	1.71%
34	Fabricated metal products	5,620	1.60%	6,011	1.23%	5,316	1.13%	5,840	1.12%	22,787	1.24%
35	Machinery, except electrical	16,756	4.77%	26,071	5.34%	21,424	4.54%	23,163	4.45%	87,414	4.77%
36	Electrical and electronic equipment	11,249	3.20%	21,277	4.36%	19,755	4.19%	21,910	4.21%	74,191	4.05%
37	Motor vehicles and equipment	11,284	3.21%	19,598	4.02%	16,954	3.59%	14,799	2.85%	62,635	3.42%
37	Transportation equipment, except motor vehicles	9,556	2.72%	15,485	3.17%	10,797	2.29%	12,787	2.46%	48,625	2.66%
38	Instruments and related products	4,031	1.15%	7,703	1.58%	4,936	1.05%	7,769	1.49%	24,439	1.33%
39	Miscellaneous manufacturing and manufacturing not allocabl	1,666	0.47%	2,793	0.57%	3,137	0.66%	3,224	0.62%	10,820	0.59%

Exhibit 3-6
(continued)
CORPORATE ENVIRONMENTAL TAX
Estimated Revenues by Standard Industrial Classification (SIC)

SIC	Description	Estimated Tax Liabilities								4 Year Total	% of Total
		1987		1988		1989		1990			
		($000)*	% of Total	($000)	% of Total	($000)	% of Total	($000)	% of Total		
	TRANSPORTATION AND PUBLIC UTILITIES										
40-47	Transportation	11,763	3.35%	15,753	3.23%	13,483	2.86%	11,832	2.27%	52,831	2.89%
48	Communication	20,004	5.70%	28,730	5.89%	30,917	6.55%	36,951	7.10%	116,602	6.37%
49	Electric, gas, and sanitary services	31,804	9.05%	35,214	7.22%	34,653	7.35%	40,007	7.69%	141,678	7.74%
50-51	WHOLESALE TRADE	9,918	2.82%	15,690	3.22%	14,041	2.98%	14,018	2.69%	53,667	2.93%
	RETAIL TRADE										
52	Building materials, garden supplies, and mobile home dealer	838	0.24%	514	0.11%	1,059	0.22%	775	0.15%	3,186	0.17%
53	General merchandise stores (excludes nonstore retailers)	9,512	2.71%	9,862	2.02%	10,505	2.23%	12,262	2.36%	42,141	2.30%
54	Grocery stores, other food stores	2,652	0.76%	2,462	0.50%	4,103	0.87%	6,406	1.23%	15,623	0.85%
55	Automotive dealers and service stations	271	0.08%	386	0.08%	431	0.09%	420	0.08%	1,508	0.08%
56	Apparel and accessory stores	1,740	0.50%	2,534	0.52%	2,834	0.60%	2,927	0.56%	10,035	0.55%
57	Furniture and home furnishings stores	2,116	0.60%	2,514	0.52%	799	0.17%	570	0.11%	5,999	0.33%
58	Eating and drinking places	1,872	0.53%	2,722	0.56%	2,602	0.55%	3,445	0.66%	10,641	0.58%
59	Miscellaneous retail stores	1,952	0.56%	3,375	0.69%	2,723	0.58%	2,899	0.56%	10,949	0.60%
NONE	Wholesale and retail trade not allocable	0	0.00%	0	0.00%	0	0.00%	12	0.00%	12	0.00%
	FINANCE, INSURANCE, AND REAL ESTATE										
60	Banking	23,382	6.66%	31,754	6.51%	29,079	6.16%	29,394	5.65%	113,609	6.20%
61	Credit agencies other than banks	8,682	2.47%	10,565	2.17%	10,156	2.15%	19,008	3.65%	48,411	2.64%
62	Security, commodity brokers and services	2,361	0.67%	3,275	0.67%	2,463	0.52%	3,575	0.69%	11,674	0.64%
63	Insurance	26,533	7.55%	30,434	6.24%	35,142	7.45%	35,674	6.86%	127,783	6.98%
64	Insurance agents, brokers, and service	1,312	0.37%	1,687	0.35%	969	0.21%	1,502	0.29%	5,470	0.30%
65	Real estate	1,684	0.48%	2,404	0.49%	2,877	0.61%	1,773	0.34%	8,738	0.48%
67	Holding and other investment companies	3,270	0.93%	4,575	0.94%	4,744	1.01%	4,182	0.80%	16,771	0.92%
	SERVICES										
70	Hotels and other lodging places	936	0.27%	1,198	0.25%	1,228	0.26%	1,203	0.23%	4,565	0.25%
72	Personal services	373	0.11%	539	0.11%	881	0.19%	896	0.17%	2,689	0.15%
73	Business services	3,070	0.87%	4,640	0.95%	5,321	1.13%	5,759	1.11%	18,790	1.03%
75-76	Auto repair; miscellaneous repair services	566	0.16%	1,181	0.24%	791	0.17%	982	0.19%	3,520	0.19%
78-79	Amusement and recreational services	1,500	0.43%	3,161	0.65%	5,606	1.19%	2,953	0.57%	13,220	0.72%
80	Other services	2,238	0.64%	2,751	0.56%	2,963	0.63%	5,038	0.97%	12,990	0.71%

Exhibit 3-6
(continued)
CORPORATE ENVIRONMENTAL TAX
Estimated Revenues by Standard Industrial Classification (SIC)

SIC	Description	Estimated Tax Liabilities								4 Year Total	% of Total
		1987		1988		1989		1990			
		($000)*	% of Total	($000)	% of Total	($000)	% of Total	($000)	% of Total		
NONE	NATURE OF BUSINESS NOT ALLOCABLE**	6	0.00%	0	0.00%	4	0.00%	0	0.00%	10	0.00%
Total		351,253 (1)		487,926 (2)		471,779 (3)		520,167 (4)		1,831,125	

* These figures are substantially lower than for 1988-1990 because companies with fiscal years beginning prior to January 1987 did not have to pay the 1987 corporate environmental tax.

** This figure was estimated based on a small sample of returns.

(1) There is a $155 million difference between this tax liability figure and the $196 million account of OTA's Superfund tax receipts, June 1992. (Exhibit 3-5)
(2) There is a $175 million difference between this tax liability figure and the $313 million account of OTA's Superfund tax receipts, June 1992. (Exhibit 3-5)
(3) There is a $180 million difference between this tax liability figure and the $292 million account of OTA's Superfund tax receipts, June 1992. (Exhibit 3-5)
(4) There is a $59 million difference between this tax liability figure and the $461 million account of OTA's Superfund tax receipts, June 1992. (Exhibit 3-5)

Sources:

U.S. Treasury Department, Statistics of Income Division, Source Book 1987, 1988, 1989, 1990, Corporation Income Tax Returns.

ESTIMATED REVENUES FOR 1992 TO 1995

Exhibit 3-7 presents estimated SARA tax revenues for the period 1992 through 1995 -- the currently authorized period. The U.S. Treasury Department's Office of Tax Analysis made these estimates based on forecasts of production levels (in the case of petroleum and chemical taxes) and corporate income (in the case of the corporate environmental tax). The estimates show a distribution of revenues by source similar to that experienced under the first five years of SARA. Total estimated petroleum tax revenues for this period comprise approximately 39 percent of total Superfund taxes; chemical tax revenues account for 18 percent, and corporate environmental tax revenues constitute 44 percent. Over the four-year period, petroleum tax revenues are expected to increase by an average of two percent annually. Total chemical taxes, including both feedstock chemicals and imported chemical substances, are also projected to increase by an average of two percent per year. The largest increase in revenues is forecast for the corporate environmental tax. After a drop in revenues, from $591 million in 1991 to $513 million in 1992, the Treasury Department estimates that revenues from this tax will increase by almost 23 percent in 1993 and nine and six percent in 1994 and 1995, respectively.

SUMMARY

The analysis presented in this chapter demonstrates that the SARA taxes in general have generated less revenue than anticipated by Congress. Our analysis suggests that the revenues generated over the first five-year period covered by SARA fall short of Congressional projections by approximately $786 million (12 percent).

As shown in Exhibit 3-8, the increase in the tax on petroleum raised revenues by more than tenfold and increased the share of total Superfund revenues derived from this source from 15 to almost 45 percent. In contrast, revenues from chemical taxes under the first five years of SARA are comparable to those received in the initial five years of the CERCLA program, reflecting the unchanged feedstock chemical tax rates and the minimal contribution of the tax on imported chemical substances. As a result, the portion of the total tax burden derived from chemical taxes has decreased significantly, from 85 to 20 percent. The corporate environmental tax, newly-instituted by SARA, now accounts for approximately 35 percent of fund revenues. This distribution represents a significant shift from CERCLA's initial approach, which derived approximately 85 percent of total revenues from the chemical feedstock tax and only 15 percent from the petroleum excise tax.[14] Since the revenues generated under SARA are more than four times those collected under the original statute, this shift does not represent an absolute decrease in the Superfund tax burden on the chemicals industry. It does, however, indicate that the tax burden on the petroleum industry has increased substantially, and that a significant share of revenues is also derived from industries outside the petroleum and chemical sectors.

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[14] Environmental Emergency Response Act, Report of Senate Committee on Environment and Public Works, Report 96-848, July 11, 1980.

Exhibit 3-7

ESTIMATED SUPERFUND REVENUES THROUGH 1995

Tax	Estimated Receipts ($000) (1)					
	1992	1993	1994	1995	Total	% of Total
Petroleum	552,000	558,000	575,000	579,000	2,264,000	38.6%
Feedstock Chemical & Imported Substances	254,000	255,000	263,000	270,000	1,042,000	17.8%
Corporate	513,000	629,000	684,000	729,000	2,555,000	43.6%
Total	1,319,000	1,442,000	1,522,000	1,578,000	5,861,000	100.0%

Source:

(1) U.S. Treasury Department, Office of Tax Analysis, Superfund Receipts Projections (January 1994).

Exhibit 3-8

COMPARISON OF INITIAL CERCLA AND SARA TAX REVENUES

Period: / Taxes	Initial CERCLA (1) 1981 to 1985		SARA (2) 1987 to 1991	
	($000)	% of Total	($000)	% of Total
Tax on Petroleum	225,000	15.0%	2,635,300	44.5%
Tax on Feedstock Chemicals	1,275,000	85.0%	1,208,000	20.4%
Tax on Imported Chemical Substances	NA	NA	*	*
Corporate Environmental Income Tax	NA	NA	1,853,000	31.3%
Adjustments**	NA	NA	220,917	3.7%
Total	1,500,000	100.0%	5,917,217	100.0%

* Included in the total for the tax on feedstock chemicals.

** Adjusted to account for 1992 income subject to the corporate environmental tax but not included in the five-year data.

Sources:

(1) Environmental Emergency Response Act, Report of Senate Committee on Environment and Public Works, Report 96-848, July 11, 1980.

(2) U.S. Treasury Department, Office of Tax Analysis, Superfund Tax Receipts, June 1992.

This chapter presents a screening analysis of the economic impacts of the SARA taxes. To characterize the economic impacts of the three excise taxes on the sale or use of chemicals and petroleum, we estimate the maximum percentage impact of the tax on prices and discuss the likelihood of passing the tax through to consumers in the form of price increases. For the corporate environmental tax, we estimate the maximum percentage impacts of the tax on prices for different industrial sectors and examine the characteristics of the companies paying the tax.

TAX ON PETROLEUM

Under CERCLA, domestic and imported crude oil were initially taxed at a rate of 0.79 cents per barrel. Effective in 1987, SARA increased the tax rate to 8.2 cents per barrel for domestic crude oil and 11.7 cents per barrel for imported crude oil. In 1989, to comply with international trade agreements, the rates for domestic and imported oil were equalized at 9.7 cents per barrel. This section examines the economic impact of these tax rate changes by estimating the maximum percentage impact of the tax on petroleum prices over time. First, it discusses the approach and data sources used for the analysis; then it presents the results.

Approach

In order to estimate the impact of petroleum taxes on the prices of crude oil, we calculated the ratio of the tax to the price for both domestic and imported crude oil. This ratio represents the maximum impact of the tax on petroleum prices, assuming the entire tax is passed through to consumers.

Reports of the Energy Information Administration (EIA) provided data on domestic crude oil prices for 1980 through 1992.[15] We calculated imported crude oil prices from cost and quantity data also reported by EIA.[16] The average annual crude oil prices are presented in Exhibit 4-1, together with the results of the analysis.

Results

As shown in Exhibit 4-1, there is a distinct change in the percentage impact of the tax on petroleum prices in 1987, reflecting the increased tax rates imposed by SARA. Before SARA (1980-1986), the percentage price impacts ranged from 0.02 percent to 0.06 percent for both domestic and imported crude oil.[17] Between 1987 and 1992 the percentage increased by roughly an order of magnitude, to between 0.48 and 0.90, with imported oil percentages at both the lower and upper end of the range. In 1987, the increase in the petroleum taxes boosted their potential impact on prices to 0.53 percent for domestic oil and 0.68 percent for imported oil. In the following year, the difference between the maximum impact of the taxes collected in the domestic and imported oil markets grew; the maximum percentage impact was 0.65 for domestic and 0.90 for imported. In 1989, when the tax rates for domestic and imported oil were equalized, the disparity diminished.

Even though the maximum impact of the tax on price increased by more than a factor of ten with the imposition of SARA tax rates, it remains less than one percent. In comparison to other factors that may affect petroleum demand, the tax is of little significance. Because the tax is relatively small and demand for oil is relatively inelastic, it is likely that the tax is largely passed on to consumers in the form of increased prices, with relatively little impact on demand.

TAX ON FEEDSTOCK CHEMICALS

The chemical feedstock tax, initially imposed by CERCLA, is levied on the sale or use of 42 organic and inorganic feedstock chemicals. The tax rates were originally established at the lower of: (1) two percent of the estimated wholesale price prevailing at the time or (2) $4.87 per ton for organic chemicals and $4.45 per ton for inorganic chemicals. These tax rates remained basically

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[15] Energy Information Administration, Annual Energy Review, 1992, DOE/EIA-0384(92). The domestic crude oil price is the annual U.S. average of the first purchase price (a weighted average of all first purchasers' purchases).

[16] We calculated a weighted average of prices of crude oil imported from representative countries using the data from the "Landed Cost of Crude Oil Imports from Selected Countries" and the "Petroleum Imports by Country of Origin" tables in the EIA Annual Review, 1992. The representative countries are Algeria, Indonesia, Nigeria, Saudi Arabia, Venezuela, Canada, Mexico, and the United Kingdom.

[17] In 1986, a significant decrease in prices caused the maximum price impact of the taxes to climb to 0.06 percent in both domestic and imported markets.

Exhibit 4-1

MAXIMUM IMPACT OF TAX ON PETROLEUM PRICES

PETROLEUM	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992*
DOMESTIC													
Price ($/bbl)	21.59	31.77	28.52	26.19	25.88	24.09	12.51	15.40	12.58	15.86	20.03	16.54	15.98
Tax ($/bbl)	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.082	0.082	0.097	0.097	0.097	0.097
Tax/Price	0.04%	0.02%	0.03%	0.03%	0.03%	0.03%	0.06%	0.53%	0.65%	0.61%	0.48%	0.59%	0.61%
IMPORTED													
Price ($/bbl)**	32.42	35.35	31.71	27.74	27.86	26.30	13.25	17.27	13.06	17.48	20.14	16.71	16.48
Tax ($/bbl)	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.0079	0.117	0.117	0.097	0.097	0.097	0.097
Tax/Price	0.02%	0.02%	0.02%	0.03%	0.03%	0.03%	0.06%	0.68%	0.90%	0.55%	0.48%	0.58%	0.59%

* These figures are preliminary.

** Weighted average landed cost of crude oil imports by quantity imported from Algeria, Indonesia, Nigeria, Saudi Arabia, Venezuela, Canada, Mexico, and the United Kingdom.

Source of petroleum price data: Energy Information Administration, Annual Energy Review, 1992, DOE/EIA-0384(92), pp. 131,157,159.

unchanged by SARA. The one change resulted from the clarification that the xylene tax does not apply to separated xylene isomers. Because taxes paid on xylene isomers under CERCLA were refunded or credited under SARA, the legislation increased the tax rate on xylene from $4.87 per ton to $10.13 per ton to make up the difference in revenues.[18]

This section, examines the economic impact of CERCLA and SARA chemical feedstock taxes by estimating the maximum percentage impact on the prices of the chemicals. It first describes the approach and data sources used for the analysis, and then presents the results.

Approach

In order to estimate the impact of chemical feedstock taxes on the prices of chemicals, we calculated the ratio of the tax rate to the price for each chemical. This ratio represents the maximum percentage impact of the tax on chemical prices, assuming the entire tax is passed through to consumers.

We obtained organic chemical price data from the International Trade Commission's (ITC) Synthetic Organic Chemicals, U.S. Production and Sales for the years 1980-84, 1986, and 1988-91.[19] For all years analyzed, prices for at least eight of the eleven taxed feedstock organic chemicals were available from this source. Unfortunately, no source similar to the ITC publication is available for inorganic chemical prices; therefore, we used the Census of Manufactures, Industrial 1987 Organic and Inorganic Chemicals Series for inorganic chemical prices. The only relevant years for which this source provides prices are 1982 and 1987; we used these data to represent both pre-SARA and post-SARA economic effects. Data from both years are available for only ten of the thirty-one taxed inorganic chemicals.[20]

Results

Exhibit 4-2 presents the tax rates, prices, and percentage price impacts for the organic chemicals taxed under Superfund. The price impacts (tax/price) demonstrate that in most of the years before SARA (1980-1985), the maximum percentage impact of the organic chemical tax on chemical prices was below two percent (the maximum basis of the tax rates) for all organic chemicals except butane, which shows a price impact only slightly greater than two percent. In 1986, the tax rates for more than half of the chemicals for which we have data (all except acetylene, butylene, butadiene, and ethylene) are greater than two percent of the respective chemical price. These increases are due to significant decreases (between 18 and 53 percent) in organic chemical prices, reflecting 1986 decreases in the price of oil.

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[18] In January 1993, the tax rate for xylene was reset to $4.87 per ton.

[19] We were unable to acquire data for 1985 and 1987. The reports for those years are out of print.

[20] In our attempt to collect as much price data as possible, we looked into the possibility of using the spot chemical prices presented weekly in the Chemical Marketing Reporter. While the prices of many organic and inorganic chemicals taxed under SARA are reported, the relationship between spot and annual prices is too uncertain to rely on spot prices.

Exhibit 4-2

MAXIMUM IMPACT OF FEEDSTOCK CHEMICAL TAX ON PRICES OF ORGANIC CHEMICALS

	1980			1981			1982			1983			1984		
Chemical	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)
Acetylene	4.87	NA	NA	4.87	1,020	0.48	4.87	800	0.61	4.87	940	0.52	4.87	880	0.55
Benzene	4.87	260	1.87	4.87	460	1.06	4.87	420	1.16	4.87	400	1.22	4.87	360	1.35
Butane	4.87	220	2.21	4.87	240	2.03	4.87	240	2.03	4.87	220	2.21	4.87	220	2.21
Butylene	4.87	460	1.06	4.87	560	0.87	4.87	480	1.01	4.87	460	1.06	4.87	500	0.97
Butadiene	4.87	540	0.90	4.87	680	0.72	4.87	700	0.70	4.87	600	0.81	4.87	580	0.84
Ethylene	4.87	440	1.11	4.87	500	0.97	4.87	360	1.35	4.87	380	1.28	4.87	360	1.35
Methane	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA
Napthalene	4.87	560	0.87	4.87	560	0.87	4.87	480	1.01	4.87	NA	NA	4.87	NA	NA
Propylene	4.87	340	1.43	4.87	380	1.28	4.87	380	1.28	4.87	320	1.52	4.87	360	1.35
Toluene	4.87	340	1.43	4.87	380	1.28	4.87	360	1.35	4.87	320	1.52	4.87	300	1.62
Xylene	4.87	260	1.87	4.87	380	1.28	4.87	340	1.43	4.87	320	1.52	4.87	300	1.62

	1986			1988			1989			1990			1991		
Chemical	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)	Tax Rate ($/ton)	Price ($/ton)	Tax/ Price (%)
Acetylene	4.87	720	0.68	4.87	CBI	NA	4.87	CBI	NA	4.87	754	0.65	4.87	672	0.72
Benzene	4.87	240	2.03	4.87	280	1.74	4.87	354	1.38	4.87	409	1.19	4.87	336	1.45
Butane	4.87	140	3.48	4.87	160	3.04	4.87	154	3.15	4.87	209	2.33	4.87	200	2.44
Butylene	4.87	380	1.28	4.87	460	1.06	4.87	481	1.01	4.87	390	1.25	4.87	400	1.22
Butadiene	4.87	340	1.43	4.87	440	1.11	4.87	390	1.25	4.87	518	0.94	4.87	272	1.79
Ethylene	4.87	280	1.74	4.87	500	0.97	4.87	472	1.03	4.87	445	1.09	4.87	363	1.34
Methane	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA	3.44	NA	NA
Napthalene	4.87	NA	NA	4.87	NA	NA	4.87	NA	NA	4.87	NA	NA	4.87	NA	NA
Propylene	4.87	220	2.21	4.87	320	1.52	4.87	363	1.34	4.87	336	1.45	4.87	327	1.49
Toluene	4.87	200	2.44	4.87	240	2.03	4.87	281	1.73	4.87	318	1.53	4.87	254	1.92
Xylene	4.87	200	2.44	10.13	240	4.22	10.13	327	3.10	10.13	300	3.38	10.13	236	4.29

Note: Data on chemical prices for 1985 and 1987 were not available.

Sources: Internal Revenue Service, Department of the Treasury, Form 6627.

International Trade Commission, Synthetic Organic Chemicals, United States Production and Sales, 1980-84,1986,1988-91.

In 1988-1991, following the 1986 Superfund reauthorization, the tax as a percent of price decreased from the 1986 levels, reflecting increases in prices. In general, the tax remained below two percent of the chemical price, with the exceptions of butane and xylene. Butane levels were 3.04 percent and 3.15 percent in 1988 and 1989 respectively, and xylene levels ranged from 3.10 to 4.29 percent for the 1988 to 1991 period.

The results of the price impact analysis for inorganic chemicals is presented in Exhibit 4-3. As shown, in 1982 the tax as a percentage of chemical price is below one percent for all chemicals except chlorine (3.18 percent). In 1987, following the implementation of SARA, the maximum impact of the tax on prices was slightly greater, but still less than two percent for all the inorganic chemicals except chlorine and ammonia, which were just over two percent. Some of these percentages are lower than expected based on our understanding that the tax rates were established in 1980 at approximately two percent of the price. Since we do not have 1980 price data or more detailed information on the basis of the tax rates, we have not identified the source of the apparent discrepancy.

Because SARA did not change the tax rates for feedstock chemicals, any changes in the percentage impact of the tax on prices in the post-SARA years are due to changes in chemical prices. As evidenced by the results of our analysis, there is no apparent trend in prices that would suggest significant changes over time in tax-to-price ratios. In general, the price impacts of the tax, if any, are small.

Several EPA studies have examined the ability of the chemical industry to raise prices and effectively pass the tax on to consumers. In general, they have concluded that the demand for many of the feedstock chemicals is relatively inelastic; thus, it is likely that the tax is passed through to consumers in the form of higher prices.[21] Even so, the small size of the tax relative to chemical prices suggests that it has little adverse impact on consumers.

TAX ON IMPORTED CHEMICAL SUBSTANCES

The tax on imported chemical substances was first implemented in 1989, after having been authorized by SARA in 1986. Each substance is taxed at a rate comparable to that which would have been imposed by the domestic chemical feedstock tax if the substance had been manufactured in the United States. The tax is calculated by applying the feedstock tax rates to the quantity of each taxable chemical used in the manufacture of one ton of the imported substance. If the importer does not have sufficient data to determine these quantities, however, the tax is set at five percent of the appraised value of the chemical substance. This section examines the average impact of the imported chemical substance tax on the prices of several of the imported chemical substances in the years 1989, 1990, and 1991.

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[21] ICF Incorporated, Preliminary Analysis for Comparing Alternative Tax Systems Under CERCLA Section 301(a)(1)(G); A Report to the Office of Emergency and Remedial Response, U.S. EPA (preliminary draft not intended for circulation); October 28, 1983, pp. 1-20, 1-21. U.S. EPA, Office of Solid Waste and Emergency Response, The Feasibility and Desirability of Alternative Tax Systems for Superfund CERCLA Section 301(a)(1)(G) Study; Final Report; December 1984, pp. 5-1 through 5-4.

Exhibit 4-3

MAXIMUM IMPACT OF FEEDSTOCK CHEMICAL TAX ON PRICES OF INORGANIC CHEMICALS

Chemical	1982 Tax Rate ($/ton)	1982 Price ($/ton)	1982 Tax/ Price (%)	1987 Tax Rate ($/ton)	1987 Price ($/ton)	1987 Tax/ Price (%)
Ammonia *	2.64			2.64	111.86	2.36
Antimony	4.45			4.45		
Antimony Trioxide	3.75			3.75		
Arsenic	4.45			4.45		
Arsenic Trioxide	3.41			3.41		
Barium Sulfide	2.30			2.30		
Bromine	4.45	493.95	0.90	4.45	526.24	0.85
Cadmium	4.45			4.45		
Chlorine	2.70	84.95	3.18	2.70	134.04	2.01
Chromium	4.45			4.45		
Chromite	1.52			1.52		
Potassium Dichromate	1.69			1.69		
Sodium Dichromate	1.87			1.87	586.56	0.32
Cobalt	4.45			4.45		
Cuperic Sulfate	1.87			1.87		
Cuperic Oxide	3.59			3.59		
Cuperous Oxide	3.97	2,270.83	0.17	3.97		
Hydrochloric Acid	0.29	125.98	0.23	0.29	80.50	0.36
Hydrogen Fluoride **	4.23	1,219.82	0.35	4.23	419.88	1.01
Lead Oxide	4.14			4.14		
Mercury	4.45	10,853.18	0.04	4.45		
Nickel	4.45			4.45		
Phosphorous	4.45	1,357.00	0.33	4.45	1,265.60	0.35
Stannous Chloride	2.85			2.85		
Stannic Chloride	2.12			2.12		
Zinc Chloride	2.22			2.22		
Zinc Sulfate	1.90	483.19	0.39	1.90	451.51	0.42
Potassium Hydroxide	0.22	407.46	0.05	0.22	422.71	0.05
Sodium Hydroxide	0.28	188.69	0.15	0.28	95.06	0.29
Sulfuric Acid	0.26	53.60	0.49	0.26	50.03	0.52
Nitric Acid + **	0.24	182.52	0.13	0.24	101.97	0.24

+ 1982 price represents mixtures of sulfuric and nitric acids.

* Only listed in 1987 Census of Manufactures, Industrial Organic Chemicals, Table 4-7.

** 1982 data taken from 1987 Census of Manufactures, Industrial Inorganic Chemicals and 1987 data taken from 1987 Census of Manufactures, Industrial Organic Chemicals.

Sources: Census of Manufactures, Industrial Inorganic Chemicals, 1982.
Census of Manufactures, Industrial Inorganic Chemicals, 1987.
Internal Revenue Service, Department of Treasury, Form 6627.

Approach

We evaluate the economic impact of the imported chemical substance tax using the ratio of annual tax liabilities for selected chemical substances to the total annual customs value for those chemical substances.[22] This ratio represents the maximum percentage impact of the tax on chemical prices, assuming that the tax is passed through in the form of price increases.

The U.S. Treasury Department, Statistics of Income Division reports annual tax liabilities for 23 of the 68 taxed substances in the 1990-92 publications of Environmental Tax Statistics and Tabulations.[23] For the other 45 chemical substances, there were either no tax liabilities for either 1989, 1990, or 1991, or the data were withheld to avoid disclosure, making it impossible to estimate the impact of the tax on individual chemical prices. The U.S. Department of Commerce, Bureau of the Census reports customs values by chemical in the 1989-91 FT247 U.S. Imports for Consumption Series. Of the 23 chemical substances for which we have tax liability data, however, only ten were included in this series. The ten chemical substances analyzed below are those for which all relevant data for at least one of the three years analyzed were available.

Results

Based on our limited analysis, the impact of the imported chemical substance tax on the substances examined appears to be minimal. As shown in Exhibit 4-4, the maximum percentage impact of the 1989 tax on the prices of the six chemical substances analyzed ranged from 0.01 percent to 1.0 percent. The range is very similar for 1990 and 1991. For 1991, however, data on vinyl chloride (not available for the other years) indicate a maximum percentage price impact of 2.62 percent. These relatively small price impacts are not likely to have any significant effect on the quantities of the chemical substances imported. Given the direct correlation between the domestic feedstock taxes and the taxes on imported chemical substances, it is unlikely that these taxes would cause any change in a manufacturer's or an industry's mix of domestic and imported chemical substances. However, additional analysis comparing domestic and imported chemical prices would be necessary to make such a determination.

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[22] The customs value is generally defined as the price actually paid or payable for merchandise when sold for export to the United States, excluding U.S. import duties, freight, insurance, and other charges incurred in bringing the merchandise to the United States. These values may be somewhat higher than the values of substances actually taxed since there are exemptions for certain listed substances when used as or in the manufacture of fuel, fertilizer or animal feed.

[23] Since the imported chemical substances tax went into effect on January, 1, 1989, 22 additions have been made to the list of chemicals subject to this tax. Four of these chemical substances were added as of January 1, 1993, and are therefore not included in the 1990-1992 data.

Exhibit 4-4

MAXIMUM IMPACT OF IMPORTED CHEMICAL TAX ON PRICES OF SELECTED IMPORTED CHEMICALS*

Chemicals	1989			1990			1991		
	Tax Liabilities ($000)	Customs Value** ($000)	Tax/Value (%)	Tax Liabilities ($000)	Customs Value** ($000)	Tax/Value (%)	Tax Liabilities ($000)	Customs Value** ($000)	Tax/Value (%)
Ethylene glycol	355	140,316	0.25	241	105,628	0.23	356	95,410	0.37
Isopropyl alcohol	***	NA	NA	151	20,828	0.73	100	20,257	0.49
Maleic anhydride	0	NA	0.00	5	4,270	0.11	8	3,627	0.23
Methanol	1,453	145,478	1.00	1,021	109,532	0.93	1,267	164,898	0.77
Methylene chloride	***	NA	NA	13	2,994	0.43	***	NA	0.00
Phenolic resins	3	25,354	0.01	6	25,191	0.02	6	22,311	0.03
Phthalic anhydride	53	6,339	0.84	***	NA	NA	***	NA	NA
Polypropylene	42	26,396	0.16	***	NA	NA	***	NA	NA
Styrene	425	148,389	0.29	831	231,377	0.36	1,264	161,908	0.78
Vinyl chloride	***	NA	NA	***	NA	NA	649	24,761	2.62

* The chemicals analyzed are those for which tax and price data are available.

** Measure of the value of merchandise that has cleared through Customs, including merchandise that enters consumption channels immediately, is withdrawn for consumption from warehouses under Customs custody, or is entered into U.S. Customs territory from Foreign Trade Zones. These values may be higher than the values of the substance actually taxed since there are exemptions for certain substances used for specific purposes.

*** To avoid disclosure, these data are not available.

NA Not available.

Sources: U.S. Treasury Department, Statistics of Income, Environmental Tax Statistics and Tabulations, July 1993.

U.S. Department of Commerce, Bureau of the Census, U.S. Imports for Consumption, Harmonized TSUSA Commodity by Country of Origin, FT247, 1989-1991.

CORPORATE ENVIRONMENTAL TAX

The corporate environmental tax, newly created by SARA, is imposed on firms with alternative minimum taxable income (AMTI) exceeding $2 million, and is set at 0.12 percent of AMTI over this threshold (i.e., $12 per $10,000 of the excess AMTI).[24] This section discusses the economic impact of this tax on different industry sectors and different sized companies. It first discusses the approach and data sources used for the analysis, and then presents results. Appendix B provides the data used for, and the details of, the analysis.

Approach

Using data provided by the Statistics of Income Source Book for tax year 1990, we compiled information on environmental tax liabilities, business receipts, total income tax, and size of assets for all firms with net income in all industrial sectors at the 2-digit SIC level.[25] Since environmental tax liabilities are incurred for only some of the firms in a given industrial sector (those firms with an AMTI above $2 million) and business receipts and total income tax represent all firms with net income, we adjusted the business receipts and total income tax data, based on the ratio of the total number of returns specifying environmental tax liabilities to the estimated total number of returns in asset groups paying the tax.

Ideally, the adjustment factor would be specific to each asset group and industrial sector, but data on the number of firms paying the tax for each asset group and sector are not available. Therefore, we use an overall ratio of the total number of returns with net income specifying environmental tax liabilities in 1990 (12,199) divided by the total number of returns with net income in all asset groups paying the tax in that year (375,140).[26] The implicit assumption in using this adjustment method is that the same proportion of firms in each asset group and sector pay the

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[24] The corporate environmental tax applies to all firms except regulated investment companies and real estate investment trusts. AMTI is calculated by adding certain deductions or exclusions, known as "tax preference items", back into the regular taxable income base, thus recapturing "excessive" tax savings.

[25] U.S. Department of the Treasury, Internal Revenue Service, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns with accounting periods ending July 1990-June 1991, Publication 1053. Data presented in the Source Book are based on a representative sample of returns designed to include all major corporations. The Source Book compiles data for "Returns with and without net income" and "Returns with net income only". Because 99 percent of the environmental tax is paid by firms with net income and these firms comprise only about half of all firms, we used data on firms filing "Returns with net income only" for this analysis. Corporations are classified into ESIC groups according to the activity that accounts for the greatest portion of business receipts. We converted ESIC groups to SIC groups.

[26] For example, the Source Book estimates $272,599 million in total business receipts for chemical and allied product firms (SIC 28) with net income and assets greater than $250 million (Exhibit B-5). We adjusted this figure by multiplying it by 12,199/375,140. The resulting $8,864 million is the estimated business receipts for those firms in this group that paid the environmental tax in 1990.

environmental tax. Intuitively, however, we would expect a larger percentage of firms in the larger asset groups to pay environmental taxes. By applying a constant ratio to business receipts and total income taxes in all asset groups, the analysis overestimates business receipts and total income taxes for small asset groups and underestimates these figures for large asset groups. Since the large asset groups have the greatest business receipts and income taxes, the result is an overall underestimate of both figures for those firms paying the environmental tax.

We assess the economic impact of the tax by estimating the maximum effect of the tax on affected firms' prices, as indicated by the ratio of the tax liability to the firms' receipts. We also examine the portion of firms' income tax burden attributed to the environmental tax, and the distribution of the taxes paid by size of assets. Because of the bias in the adjustment factor used (discussed above), both receipts and income tax are most likely underestimated. Since these are the denominators in the economic impact indicator ratios, the analysis overestimates economic impacts. Therefore, the results of this analysis must be interpreted as an upper bound on the potential impacts of the corporate environmental tax.

Results

Exhibit 4-5 presents a breakdown of estimated environmental taxes paid by firms with net income in 1990 by firm size, as measured by corporate assets. As shown, 89 percent of the approximately $513 million 1990 corporate environmental tax was paid by corporations with assets greater than $250 million, thus illustrating that large corporations pay the majority of the tax. We also examined the distribution of the tax by asset group for individual industrial sectors, and found that a similar pattern exists across SICs, with the majority of the tax paid by the greater than $250 million asset group.

In 1990, only 12,199 corporate tax returns out of a total of 3,716,650 (0.3 percent) reported environmental tax liabilities.[27] Given that 12,199 corporations paid the tax in that year, the average tax paid per corporation was approximately $42,000. However, due to the structure of the tax, larger corporations pay substantially more than smaller corporations. Exhibit 4-6 illustrates the potential differences in average taxes paid, by firm assets and by industrial sector. As shown, the larger the firm assets, the larger the average tax paid.[28] For example, estimated environmental tax liabilities for affected firms in the $10 to $25 million asset range average $8.2 thousand, while firms with greater than $250 million in assets average liabilities of $3.5 million. This pattern is fairly consistent across industries. However, the $250 million asset group in the manufacturing and transportation/public utilities sectors averages estimated environmental tax liabilities of approximately $10 million, as opposed to between one and six million dollars for the other industries. This difference may be due to the presence of larger companies in these sectors, with assets much greater than $250 million.

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[27] Glen Hentz of the Department of Revenue's Statistics of Income, Corporate Division, January 1994.

[28] The differences between tax liabilities of large and small firms may be somewhat exaggerated by our estimation methods, since we assume that the same proportion of all firms in each asset group pay the tax. If the larger asset groups have a greater proportion of firms that pay the tax, then the average tax for those groups would be lower. Conversely, if firms in smaller asset groups have a lower proportion, then the average tax would be higher.

Exhibit 4-5

ESTIMATED DISTRIBUTION OF 1990 CORPORATE ENVIRONMENTAL TAX BY FIRM ASSET SIZE

Firm Assets ($000)	Tax Liability ($000)	% of Total
250,000+	457,006	89.07
100,000-250,000	23,971	4.67
50,000-100,000	11,241	2.19
25,000-50,000	10,377	2.02
10,000-25,000	4,230	0.82
5,000-10,000	859	0.17
1,000-5,000	596	0.12
500-1,000	56	0.01
250-500	62	0.01
100-250	34	0.01
1-100	39	0.01
ZERO*	4,594	0.90
Total	513,067	100.00

* Returns with zero assets included returns of: (1) liquidating or dissolving corporations which had disposed of all their assets; (2) merging corporations whose assets and liabilities were included in the returns of the acquiring corporations; (3) corporations filing a part-year tax return because of a change in accounting period; and (4) foreign corporations with income effectively connected with the conduct of a trade or business within the United States.

Source: U.S. Treasury Department, Statistics of Income Division; Source Book 1990, Corporation Income Tax Returns, U.S. Total Table. The data used are for the group of returns with net income.

Exhibit 4-6

ESTIMATED AVERAGE 1990 CORPORATE ENVIRONMENTAL TAX LIABILITIES FOR FIRMS THAT PAID THE TAX, BY CORPORATE SIZE AND INDUSTRIAL SECTOR ($000)

Industrial Sector	Firm Assets ($mil)												Average Tax for Sector
	ZERO**	.001-.1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
Agriculture, Forestry, and Fishing	0.15					0.01	6.36	11.62	43.33	154.94	453.59	1,356.15	4.45
Mining	27.75				1.15	0.37	6.01	27.48	86.52	208.64	563.14	4,169.51	95.25
Construction	0.16	0.01				0.01	0.31	5.03	19.17	107.09	211.42	1,611.62	1.48
Manufacturing	8.48	0.23	0.14	0.01	0.02	0.17	1.36	12.30	116.15	171.47	532.01	9,880.99	177.03
Transportation and Public Utilities	0.81	0.01				0.08	1.71	14.57	59.75	152.36	587.73	10,129.56	56.29
Wholesale Trade	1.81					0.04	0.91	5.23	32.42	85.17	307.17	2,462.48	9.15
Retail Trade	0.16					0.03	0.11	2.66	34.00	136.27	445.80	6,020.76	36.36
Finance, Insurance, and Real Estate	6.23		0.12	0.06	0.07	0.43	2.11	5.26	13.26	19.67	41.15	994.59	28.80
Services	0.63			0.03		0.28	1.70	11.90	66.81	157.31	382.86	2,798.90	10.35
Nature of Business Not Allocable													
Overall Average for Asset Category	2.59	0.02	0.14	0.05	0.07	0.17	1.25	8.15	43.11	65.12	176.23	3,527.54	
Overall Average Tax as a Percent of Assets*	NA	0.030%	0.079%	0.012%	0.009%	0.006%	0.017%	0.047%	0.115%	0.087%	0.101%	NA	

* The midpoint of the range of assets was used to determine the tax-to-asset ratio.

** Returns with zero assets included returns of: (1) liquidating or dissolving corporations which had disposed of all their assets; (2) merging corporations whose assets and liabilities were included in the returns of the acquiring corporations; (3) corporations filing a part-year tax return because of a change in accounting period; and (4) foreign corporations with income effectively connected with the conduct of a trade or business within the United States.

Source: Calculated based on environmental tax liabilities reported in the U.S. Treasury Department's 1990 Source Book on Corporation Income Tax Returns, divided by the adjusted number of returns with corporate environmental tax liabilities (total number of firms in asset group x total number of firms paying the tax (12,199) / total number of firms in asset groups paying the tax (375,140). Refer to Appendix B, Exhibit B-1 for environmental taxes and to Exhibit B-2 for adjusted number of returns. Also, note that the data used are for the group of returns with net income.

The corporate environmental tax is structured to tax those who can afford to pay. Since the tax is only 0.12 percent of AMTI over $2 million, it is designed not to have a significant economic impact on industry profits. It is interesting to note, however, that because the tax is based on AMTI not regular taxable income, the environmental tax may represent a larger component of a firm's total income tax than might be expected considering it's low tax rate. This is illustrated in Exhibit 4-7, which shows the environmental tax as a percent of estimated total income tax for those companies that pay the tax. The percentages represent weighted averages of the minor industry and asset groups. The portion that the corporate environmental tax represents of the total tax paid by these companies ranges from a low of one percent for the agriculture, forestry, and fishing industry to a high of five percent for the mining sector. It is important to emphasize that these estimates represent an upper bound on the environmental tax as a percent of total tax, since our method for estimating total tax may underestimate the actual amount.

Although the structure of the corporate environmental tax suggests that it should not have a significant impact on industry profits, it may affect prices. In order to gain an understanding of the potential impact of the tax on industry prices, we have calculated the ratio of the tax to estimated business receipts for those firms paying the tax. The results of this analysis are presented in Exhibit 4-8. As shown in this exhibit, the maximum estimated impact on the prices charged by affected firms does not exceed one percent in any of the major industrial categories, and is 0.09 percent across all industries. The finance/insurance/real estate industry shows the largest potential impact, at approximately 0.25 percent. Again, due to the adjustments described above, these estimates of potential price impacts are likely to overstate the true impacts. With this in mind, upper bound estimates of this magnitude are not likely to impose significant economic burdens.

SUMMARY

This screening analysis of the economic impacts of Superfund taxes suggests that the amount of the taxes relative to prices is small enough to avoid significant economic impacts. We make the following observations on the impacts of the individual taxes:

- The chemical excise tax is relatively small (generally less than 2 percent of chemical prices), is not substantially different than in the pre-SARA period, and is likely to be passed through to consumers in the form of higher prices.

- The maximum percentage impact of the petroleum tax on petroleum prices increased substantially with the imposition of the SARA tax rates; however, it is still relatively small (less than one percent).

- As an income tax that falls primarily on larger firms, the corporate environmental tax is not likely to threaten a firm's economic viability. Eighty-nine percent of the corporate environmental tax is paid by firms with assets exceeding $250 million.

Exhibit 4-7

PORTION OF FEDERAL INCOME TAX BURDEN ATTRIBUTABLE TO THE CORPORATE ENVIRONMENTAL TAX FOR THOSE FIRMS PAYING THE TAX

Industrial Sector	Number of Firms*	Environmental Tax ($000)**	Total Income Tax ($000)*	Wt. Avg. of Env. Tax/Total Inc. Tax (%)***
Agriculture, Forestry, and Fishing	238	1,061	13,219	0.90
Mining	107	10,203	70,338	4.74
Construction	1,720	2,551	41,657	3.03
Manufacturing	1,470	260,146	2,053,928	2.77
Transportation and Public Utilities	1,531	86,161	538,529	1.92
Wholesale Trade	1,506	13,789	165,767	1.50
Retail Trade	808	29,383	240,499	3.41
Finance, Insurance, and Real Estate	3,246	93,489	723,877	3.70
Services	1,572	16,274	152,536	3.66
Nature of Business Not Allocable	0	0	0	0.00
Total	12,199	513,057	4,000,351	2.93

* These numbers reflect adjustments made to the number of firms reported in the U.S. Treasury Department's Source Book to account only for those firms paying the tax. Refer to Appendix B, Exhibit B-2 (Adjusted Number of Returns) and Exhibit B-3 (Corporate Income Tax), for a breakdown by minor industry and asset groups.

** The discrepancy between the total calculated environmental tax ($513,057,000) and total from the Source Book ($513,067,000) is due to the rounding of minor and major group data for some asset groups. Refer to Appendix B, Exhibit B-1 (Corporate Environmental Taxes), for a breakdown by minor industry and asset groups.

*** The weighted average ratio of the environmental tax to total income tax accounts for differences in the estimated numbers of firms paying the tax in different minor industry and asset groups. Refer to Appendix B, Exhibit B-4, for a breakdown by these groups.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit 4-8

MAXIMUM IMPACT OF THE CORPORATE ENVIRONMENTAL TAX ON PRICES FOR THOSE FIRMS PAYING THE TAX

Industrial Sector	Number of Firms*	Environmental Tax ($000)**	Business Receipts ($000)*	Wt. Avg. of Env. Tax/ Receipts (%)***
Agriculture, Forestry, and Fishing	238	1,061	913,462	0.03
Mining	107	10,203	2,311,441	0.14
Construction	1,720	2,551	5,995,424	0.01
Manufacturing	1,470	260,146	85,454,981	0.05
Transportation and Public Utilities	1,531	86,161	20,515,928	0.02
Wholesale Trade	1,506	13,789	33,259,806	0.01
Retail Trade	808	29,383	26,443,857	0.01
Finance, Insurance, and Real Estate	3,246	93,489	20,907,078	0.25
Services	1,572	16,274	9,815,906	0.07
Nature of Business Not Allocable	0	0	0	0.00
Total	12,199	513,057	205,617,882	0.09

* These numbers reflect adjustments made to the number of firms reported in the U.S. Treasury Department's Source Book to account only for those firms paying the tax. Refer to Appendix B, Exhibit B-2 (Adjusted Number of Returns) and Exhibit B-5 (Corporate Business Receipts), for a breakdown by minor industry and asset groups.

** The discrepancy between the total calculated environmental tax ($513,057,000) and total from the Source Book ($513,067,000) is due to the rounding of minor and major group data for some asset groups. Refer to Appendix B, Exhibit B-1 (Corporate Environmental Taxes), for a breakdown by minor industry and asset groups.

*** The weighted average ratio of the environmental tax to business receipts accounts for differences in the estimated numbers of firms paying the tax in different minor industry and asset groups. Refer to Appendix B, Exhibit B-6, for a breakdown by these groups.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

- The estimated ratio of the corporate environmental tax to the business receipts of firms paying the tax is less than one percent for all industrial sectors. This suggests that if firms are able to pass the tax through to consumers in the form of higher prices, the overall impact on prices will be small.

- Considering it's low tax rate, the corporate environmental tax appears to represent a relatively large portion of the total federal income tax burden for firms that pay the tax; upper bound estimates range from a low of one percent in the agriculture, forestry and fishing industry to a high of five percent in the mining sector.

OVERVIEW

The fundamental purpose of all Superfund taxes is to generate sufficient revenues for the cleanup of uncontrolled hazardous waste disposal sites. Secondarily, however, Superfund taxes can be designed to accomplish other purposes, such as placing the tax burden on those responsible for hazardous waste management or otherwise motivating environmentally responsible behavior. In Section 301(a)(1)(G) of CERCLA, Congress established the following factors to be considered in evaluating the feasibility and desirability of alternative tax mechanisms:

- The likelihood of a release of a hazardous substance,
- The degree of hazard and risk of harm to public health, welfare and the environment resulting from any such releases,
- Incentives to proper handling, recycling, incineration, and neutralization of hazardous waste, and disincentives to improper or illegal handling or disposal of hazardous materials,
- Administrative and reporting burdens on government and industry, and
- The extent to which the tax burden falls on the substances and parties which create the problems addressed by CERCLA.[30]

The first two of these factors concern the economic efficiency of the tax scheme, suggesting that the tax burden be allocated in proportion to the risks, or social costs, associated with the production and use of particular substances. Consideration of these factors would place the tax

[30] These factors were established in CERCLA for the purpose of evaluating the performance of the original CERCLA taxes and alternative approaches in preparation for reauthorization in 1986. The results of this evaluation were reported in: U.S. EPA, Office of Solid Waste and Emergency Response, The Feasibility and Desirability of Alternative Tax Systems for Superfund CERCLA Section 301(a)(1)(G) Study, December 1984.

burden on activities associated with the production of hazardous waste, and thus would attempt to capture the social costs of unsafe waste disposal. The third factor suggests that tax mechanisms should not only place society's hazardous substance burden on the responsible parties, but also should provide economic incentives to minimize that burden. The fourth factor notes the importance of designing a workable system of tax assessment and collection, while the final factor suggests that, for reasons of fairness and equity, those who are responsible for hazardous waste problems should pay.

In this chapter we evaluate the degree to which the four SARA taxes -- tax on petroleum, tax on feedstock chemicals, tax on imported chemical substances, and corporate environmental tax -- address each of the policy objectives implied by these factors. We consider the following four objectives:

- Administrative feasibility,
- Economic efficiency,
- Equitable distribution of the tax burden, and
- Incentives for waste reduction and improved waste management.

We do not attempt to fully evaluate each of these policy objectives, but rather discuss them qualitatively, raising issues that may warrant further consideration. Although we discuss each objective separately, there is overlap between them that is apparent in the course of the discussion.

ADMINISTRATIVE FEASIBILITY

Administrative feasibility is an important feature of any tax. While economists and policy analysts might envision any number of schemes to meet other policy objectives -- equity, economic efficiency, and the creation of proper incentives -- such approaches must not be so complex to administer that they collapse of their own weight. To limit administrative complexity, those responsible for paying the tax should be clearly identifiable, and the mechanism for assessing and paying the tax should be straightforward and enforceable.

Experience with the petroleum and chemical feedstock taxes indicates that these taxes are relatively simple to administer and enforce. This is largely because a relatively small number of substances are subject to the taxes, large volumes of these substances are produced, imported, and exported, and there are definite points at which the taxes are assessed. Because these taxes were established under CERCLA, administrative systems and information sources were in place, and their continuation under SARA imposed no additional administrative burden.

The tax on imported chemical substances is also an excise tax, and, like the petroleum and feedstock chemical taxes, is relatively simple to administer and enforce. Since this tax was newly imposed by SARA, new systems have been developed to monitor tax payments and potential liabilities.

The corporate environmental tax is a broad-based industry tax that affects a substantially larger number of firms than the excise taxes. However, because this tax is calculated using data already collected and reported for income tax purposes, it is relatively easy to administer. Collection and enforcement are also straightforward because the tax is incorporated into federal income tax schedules. As a result, the incremental administrative burden imposed by SARA's corporate environmental tax is minimal.

ECONOMIC EFFICIENCY

According to economic theory, the production of hazardous waste imposes costs on society at large. If these costs are not reflected in market decisions -- that is, if they remain "externalities" that are not directly taken into account in determining the costs of producing goods and services -- an economically inefficient allocation of resources will result. To ensure a more efficient allocation of resources, the market must internalize these social costs.

The social costs associated with the production of hazardous waste are the risks imposed on the public by unsafe disposal of the waste. These costs are reflected in two of the tax evaluation considerations that Congress initially established under Section 301(a)(1)(G) of CERCLA:

- The likelihood of a release of a hazardous substance, and
- The degree of hazard and risk of harm to public health, welfare and the environment resulting from any such releases.

To ensure that firms face these costs in their production and disposal decisions, Superfund taxes should be levied in proportion to the risks that particular activities pose. In this way, the external costs of producing and disposing hazardous substances can be internalized, closing the gap between private and social costs and achieving greater economic efficiency.

As discussed in Chapter 3, the petroleum and chemical feedstock taxes account for 45 and 20 percent of SARA tax revenues, respectively. These taxes attempt, at least in part, to capture the social costs associated with the generation and disposal of hazardous waste. By taxing petroleum and chemical feedstocks early in the production process, firms producing many of the substances responsible for the risk posed at CERCLA sites have paid into the fund.[31] Because the impact of the tax is likely to be passed on through various stages of production, those responsible for the risks posed by spills of the feedstocks themselves, releases of hazardous products made using the feedstocks, or wastes released at various stages of the production process would theoretically be affected.

Thus, it is arguable that the petroleum and chemical feedstock taxes improve economic efficiency; however, the precision with which these excise taxes internalize social costs is limited. The excise taxes are not structured in a way that recognizes the relationship between specific substances and the risks that they pose; indeed, the tax rate for many of the substances is identical,

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[31] However, some substances posing risks at Superfund sites may be unrelated to the currently taxed substances.

despite significant differences in degree of hazard. In addition, because the taxes are levied on commercial products rather than hazardous wastes, they do not discriminate between uses that generate small quantities of waste and those that generate large quantities. Because they are not directly linked to the generation of hazardous waste, the excise taxes are at best a crude instrument for improving economic efficiency.

The corporate environmental tax accounts for approximately 35 percent of SARA tax revenues. This broad-based tax is not linked to potential releases of hazardous substances or the degree of hazard associated with such releases. It makes no attempt to impose the negative social costs associated with hazardous wastes on the activities directly responsible for those costs. As a result, this tax does not lead to greater economic efficiency.

EQUITABLE DISTRIBUTION OF TAX BURDEN

While the concepts of equity and fairness invite many definitions, fairness in the context of environmental taxes is often measured by the degree to which the tax system adheres to the principle, "the polluter pays." (This principle is also closely linked to the goal of economic efficiency, described above.) In the context of Superfund, the principle clearly applies, but immediately begs the questions, "Who is the polluter?" and "How can we best ensure that he pays?"[32]

One point of view is that the best way to ensure that the polluter pays is to tax petroleum and chemical feedstocks, the building blocks of the hazardous substances most frequently found at Superfund sites. To the extent that these taxes are ultimately borne by the parties responsible for generating hazardous waste, this approach seems fair. As noted above, however, the ultimate distribution of the excise tax burden is not directly linked to the generation of hazardous waste; thus, those responsible for past or future Superfund sites may or may not pay the bulk of the tax. One could assume at least some correlation between the use of hazardous materials and responsibility for problem waste sites, but that correlation is likely to be far from perfect.

The corporate excise tax offers an alternative approach to creating an equitable allocation of Superfund taxes. This approach embodies the view that society at large bears responsibility for the problem of hazardous waste. The argument underlying this view is that all segments of society benefit from products whose manufacture and use generate hazardous waste. Thus, the corporate environmental tax distributes the tax burden throughout society. (To the extent that the petroleum and excise taxes are passed through to consumers in the form of higher prices, one can also argue that these taxes, in effect, spread the costs of the Superfund program over all segments of society.)

INCENTIVES FOR WASTE REDUCTION AND IMPROVED WASTE MANAGEMENT

The need for Superfund taxes to generate a steady stream of revenues while limiting adverse economic impacts directly conflicts with the goal of creating incentives to curtail waste generation and associated disposal externalities. To the extent that Superfund taxes could be designed to provide incentives for waste reduction or changes in management practices, their ability to effectively generate a large and stable stream of revenues would be undermined.

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[32] Superfund's liability provisions attempt to have the polluter pay by recovering the costs of cleanup from parties directly responsible for the wastes causing the problems.

The excise taxes on petroleum and chemicals raise the prices of inputs that presumably lead to the generation of hazardous wastes. As discussed in Chapter 4, our preliminary analysis of such price increases suggests that they are not likely to be large enough to reduce demand for these substances significantly. As a result, these tax structures provide limited incentive to use less damaging chemicals. They also provide limited incentive to minimize waste generation, and no direct incentive to manage waste more responsibly.

The corporate environmental tax has no direct or indirect link to waste generation or management; therefore, this tax provides no obvious incentive to reduce waste generation.

SUMMARY

Superfund taxes serve two broad purposes: (1) they generate revenues for the cleanup of uncontrolled hazardous waste sites, and (2) they serve as a policy tool that can both place the burden of cleanup on parties whose activities are responsible for the problem, and provide economic incentives to minimize the generation of waste and subsequent disposal externalities. Unfortunately, these purposes often conflict with one another, and it is difficult to establish a system that strikes a balance in which both are achieved.

Our work to date has demonstrated that the current system effectively generates a revenue stream that is large and relatively stable, using a combination of a broad-based income tax and commodity excise taxes. The excise taxes are themselves relatively broad-based, in that they are imposed on widely used substances fundamental to many manufacturing processes that generate or lead to the generation of hazardous wastes. To the extent that the taxes are passed on to consumers in the form of higher prices, their impact is broadly diffused, thus minimizing economic dislocation and ensuring that many of those responsible for hazardous waste disposal problems contribute to the fund. However, because the relationship between current taxes and the risks associated with uncontrolled hazardous waste sites is either indirect (excise taxes) or non-existent (corporate environmental tax), the system does not ensure that contributions to the fund are commensurate with disposal externalities. As a result, the taxes do not provide incentives for change that would result in waste minimization or improved waste management.

The analyses presented in this report demonstrate that the current Superfund tax system, which utilizes a combination of broad-based income tax and commodity excise taxes, provides a large and relatively stable source of revenue for the cleanup of uncontrolled hazardous waste sites, with limited economic impacts. However, the costs imposed by the taxes are not necessarily commensurate or directly linked with the externalities associated with the generation of hazardous wastes responsible for Superfund sites.

In considering financing alternatives for Superfund reauthorization, it is important to reexamine the objectives of the taxes and develop a system that strikes an effective balance between achieving revenue generation objectives and other policy objectives. If EPA's primary objective remains the generation of a large and steady flow of revenues, then the current system would need little change. If, however, EPA wishes to improve economic efficiency and equity and/or create greater incentives for waste reduction, then more extensive modifications to the current system would be warranted.

EPA must also reevaluate the size of the Superfund in light of other policy changes being considered for reauthorization. For example, proposed changes in cost allocation of orphan shares would result in decreased revenues from cost recovery actions, thus increasing the funding needed from the Superfund in order to support the cleanup program at its current level. Similarly, changes in remedy selection policies that require less extensive and costly cleanups might have significant implications for overall revenue needs. Options for changing the current system to adjust to the potentially changing revenue needs of the program include revising current tax rates and/or creating new mechanisms that increase revenues and address other policy objectives. Modifying the existing tax mechanisms is the simplest way to raise additional revenue.

The corporate environmental tax has the greatest potential for raising additional revenue, because it generates a large portion of the Superfund tax revenues (35 percent) at a very low rate (0.12 percent of AMTI greater than $2 million). Doubling the tax rate could double the revenue, adding approximately $600 million per year. Alternatively, the AMTI threshold could be lowered. If the threshold were lowered to $1 million, approximately $14.6 million in additional revenue would be generated on the additional $1 million for each of the 12,199 firms that currently pay. In addition, new firms would be drawn in from the lowering of the threshold. Assuming that the number of firms doubled, an additional $14.6 million would be generated. Lowering the threshold would have a relatively small impact on revenues from the tax since almost 90 percent of the revenues come from large corporations with assets greater than $250 million.

Another modification to the existing system would be to raise the tax rate on petroleum from the current 9.7 cents per barrel. For example, doubling the tax rate would increase annual revenues by approximately $600 million. Since the current rate is less than 0.5 percent of the price, this could probably be done without significant economic impacts; however this option would likely encounter strong political opposition, since the petroleum tax rate was increased substantially by SARA, and the revenues from the tax currently represent 45 percent of the Superfund tax revenues.

Alternatively, tax rates for feedstock chemicals could be increased. Current rates for most of the chemicals are less than two percent of the chemical prices. Two percent was the cap initially established when the tax rates were designed. If all tax rates were adjusted to two percent of chemical prices (an average increase of approximately 30 percent for organic chemicals and 617 percent for inorganic chemicals), approximately an additional $382 million in revenues could be raised.

The agency may also want to develop new mechanisms that increase revenues and address other policy objectives. One proposal designed to reduce transaction costs from disputes between insurers and insureds about CERCLA liability is an Environmental Insurance Resolution Fund. The fund would be financed by fees imposed on insurance companies and would offer holders of insurance policies comprehensive resolutions of their CERCLA claims against their insurers. Another option is a tax on wastes disposed at municipal landfills.

The next step to take in reevaluating Superfund financing for reauthorization is to evaluate the potential revenue raising effectiveness, economic impacts and efficiency of these and other promising financing mechanisms. In order to be able to evaluate the implications of possible changes in Superfund policies being considered for reauthorization, OPA is developing a computer model to determine the revenue raising effects of alternative Superfund tax options. Thus, as changes in revenue needs associated with different Superfund policy options are identified, OPA will be able to respond quickly with analyses of how Superfund financing can be changed to accommodate these new needs.

Appendix A

REVIEW OF LITERATURE ON SUPERFUND FINANCING

INTRODUCTION

As part of OPA's effort to evaluate the performance of Superfund taxes, IEc conducted a literature search designed to identify reports, position papers, and articles that raise issues and present innovative thinking on Superfund tax mechanisms. The works identified in this search are listed in the attached bibliography, which briefly describes the scope and focus of studies of particular interest to evaluating the performance of SARA taxes and developing possible alternatives. The bibliography, which includes studies conducted by federal agencies, trade associations, research organizations, and other groups, is organized chronologically and divided into pre-SARA and post-SARA sections, thereby identifying work completed before and after the major changes in Superfund financing imposed by the Act.

APPROACH

IEc employed Dialog, a computerized search system, to access bibliographic databases that include published articles and reports on Superfund tax policy. The databases searched (listed below) are maintained by a variety of government, industry, and private sources, and therefore reference studies that reflect different perspectives on Superfund financing issues.

- Enviroline -- Provides coverage of more than 5,000 international primary and secondary source publications reporting on all aspects of the environment.

- National Technical Information Service (NTIS) -- Consists of government-sponsored research, development, and engineering reports in addition to analyses prepared by federal agencies, contractors, or grantees.

- Economic Literature Index -- Indexes journal articles and book reviews from 260 economics journals and approximately 200 monographs per year.

- Government Printing Office Monthly Catalog -- The electronic media equivalent of the Monthly Catalog of United States Government Publications, which contains records of reports, studies, conference proceedings, etc. issued by all U.S. government agencies, including the U.S. Congress.

- PTS PROMT (Predicasts' Overview of Markets and Technology) -- Abstracts relevant information appearing in thousands of newspapers, business magazines, government reports, trade journals, bank letters, and special reports throughout the world.

- PTS Newsletter Database -- Covers over 100 specialized industry newsletters.

- Trade and Industry Index -- Indexes over 300 trade and industry journals and provides selective coverage of business and trade information from nearly 1,200 additional publications.

- McGraw-Hill Publications Online -- Provides the complete text for many major McGraw-Hill publications.

- Magazine ASAP -- Provides the complete text and indexing for over 100 general interest magazines from 1983 to the present.

The initial search of these databases identified approximately 950 articles, papers, and reports that were relevant to Superfund financing issues. This list of references was thoroughly screened to exclude works not directly related to the focus of this literature review, with the end result that less than 80 citations were included in the final bibliography. Many of the works originally identified were excluded because they focused on either revenues from cost recovery actions or reporting the progress of proposed reauthorization bills through Congress rather than on analyses, evaluations or suggestions concerning Superfund financing mechanisms.

In addition to the computerized searches, IEc contacted representatives of federal agencies and trade associations to obtain available reports or position papers. The agencies and associations contacted include EPA's Office of Policy, Planning and Evaluation, EPA's Office of the Comptroller, the Chemical Manufacturers Association, the American Petroleum Institute, the National Association of Manufacturers, and the American Insurance Association. The studies identified through these contacts and the computerized sources are listed in this appendix.

GENERAL FINDINGS

The results of our literature search indicate that no in-depth studies have been published evaluating alternative Superfund tax policies since the passage of SARA; however, many articles have addressed this subject and proposed alternative financing mechanisms. The work that has been done focuses on equity and economic efficiency issues, the degree to which the SARA taxes provide economic incentives for waste reduction and responsible waste management, and alternative financing means that might be needed if potential changes in the liability standard result in decreased revenues from cost recovery actions.

The alternative financing mechanisms discussed in the recent literature generally are more broad-based than the existing taxes. The proposed changes in Superfund financing include the following.

- Funding cleanups through a two percent surcharge on all commercial insurance premiums. This proposal, developed by the American International Group (an insurance underwriter), would free companies from liability for past pollution and thus reduce litigation costs associated with Superfund.

- Spreading the burden of the corporate environmental tax by increasing the tax rate and/or reducing the AMTI threshold from $2 million to $1 million.

- Imposing a solid waste disposal fee, to broaden the base of contributions to fund cleanups.

- Relying on general revenues and abandoning the program's liability component, thereby transforming Superfund into a public works program.

- Issuing tax exempt public purpose bonds for environmental programs.

- Imposing an excise tax on all nationwide lead-acid battery sales and using 50 percent of the tax to fund Superfund cleanups.

The literature on Superfund financing dated before 1987 is more extensive and in general was conducted in support of the 1986 reauthorization of the program. The majority of pre-SARA work is devoted to the analysis of waste-end and feedstock taxes. These tax mechanisms are typically evaluated against criteria that fall into five general categories: revenue generating capacity, administrative simplicity, equity, economic efficiency, and effectiveness in changing waste generation and management practices. These studies were performed by academics, government agencies, trade associations, individual companies, research organizations, and other groups, and represent diverse perspectives.

SUPERFUND FINANCING: AN ANNOTATED BIBLIOGRAPHY

POST-SARA

Carlson, J. Lon, et al. "Financing Superfund: An Evaluation of Alternative Mechanisms." Natural Resources Journal, Volume 27, pp. 103-122. Winter 1987.

- o This paper considers several tax mechanisms that could be employed to generate revenues for Superfund site clean-ups: (1) a feedstock tax on the primary production inputs of the chemical and petroleum industries resulting in the generation of hazardous wastes, (2) a broad-based industry tax that could be imposed on the revenues of firms that meet a certain criteria (e.g., a minimum level of sales), and (3) four versions of a waste-end tax.

- o The tax mechanisms are analyzed in the context of the following goals that are considered socially desirable: (1) administrative feasibility, (2) revenue generation, (3) incentives for waste reduction/alternative disposal methods, (4) equity, (5) economic efficiency, (6) reduced potential for litigation, and (7) complementarity of the tax to the overall regulatory scheme.

McNiel, Douglas W., et al. "New Superfund Legislation: Major Provisions, Revenue Sources, and Economic Incentives for Environmental Protection," Oil and Gas Tax Quarterly, Volume 35, pp. 610-619. 1987.

- o This article summarizes the new tax provisions included in SARA, and evaluates their impact on the equity and efficiency of Superfund financing.

Legislative History of Superfund Amendments and Reauthorization Act of 1986 (SARA), Public Law 99-499, 99th Congress, 2D Session, 100 Stat. 1613. Volume 3. H.R. 2817 (Congressional Records and Bills). Department of the Interior, Washington, DC. May 1988.

McNiel, Douglas W., et al. "Superfund Financing Alternatives," Policy Studies Review, Volume 7, pp. 751-760. Summer 1988.

- o This paper focuses on the evaluation of five categories of Superfund tax policies: (1) feedstock taxes, (2) waste-end taxes, (3) broad-based taxes on income or sales, (4) generation taxes, and (5) generation taxes with disposal credit. Within each category, original, amended and alternative tax policies are examined.

- The tax options are evaluated on the following criteria: (1) revenue generation, (2) capacity to complement EPA regulations designed to prevent additional future problems associated with hazardous waste disposal externalities, and (3) capacity to satisfy contending interest groups by meeting acceptable standards of equity and efficiency.

"Pennsylvania Assembly Passes Superfund Bill," American Metal Market, pp. 2,8. October 18, 1988.

- This article discusses a Superfund financing bill, passed by the Pennsylvania General Assembly in October 1988, that requires hazardous waste generators to be taxed for the transport, storage and disposal of their wastes. Specifically, the bill calls for a general corporate tax and for industries generating the waste to pay management fees to the state.

McNeil, Douglas W., et al. "Superfund Taxes and Expenditures: Regional Redistributions," Review of Regional Studies, Volume 18, pp. 4-9. Winter 1988.

- The principal objective of this paper is to evaluate the efficiency and equity aspects of Superfund financing arrangements, with particular emphasis on the regional distribution of the fund's revenues and expenditures.

- The method used to evaluate efficiency and equity involves statistically testing the extent to which variations in state Superfund tax contributions are explained by variations in the amount of hazardous waste generated and the number of hazardous waste sites in the states.

Yandel, Bruce. "Taxation, Political Action, and Superfund," Cato Journal, Volume 8, pp. 751-764. Winter 1989.

- This paper examines environmental taxes from a public choice perspective. Most of the discussion focuses on the evolution of tax theory as applied to environmental control problems. However, in the final section the author analyzes the Superfund tax program with respect to its success at setting economic incentives for the purpose of internalizing negative, external effects.

"Superfund Money Should Come from Surcharges on Insurance Premiums," Chemical Engineering, p. 27. March, 1989.

- This article presents a proposal by American International Group to finance Superfund through surcharges on property and casualty insurance premiums rather than taxes on oil and chemicals. The authors argue that this no-fault approach would generate the necessary revenue and improve the efficiency of Superfund financing by eliminating litigation costs.

"Insurance Fee Proposed for Superfund," Chemical & Engineering News, p. 21. March 27, 1989.

- This article is very similar in content and focus to the preceding article.

Hirschhorn, Joel S. "What Will It Cost?" Institutional Investor, pp. 15-16. July, 1990.

- This article briefly mentions some alternatives to the present Superfund financing approach and the problems associated with each option. The following options are mentioned: (1) Federal government financing; (2) increase current excise taxes; and (3) create a cleanup trust fund that would be financed by a surcharge on commercial and industrial property and casualty insurance transactions.

"New Superfund Financing Mechanisms Under Examination," Pesticide & Toxic Chemical News, Volume 19. January 9, 1991.

- This short article summarizes a study planned by Resources for the Future (RFF) to examine alternative Superfund financing mechanisms. Options under consideration include: (1) expanding the corporate environmental tax, (2) creating a trust fund to be financed by a nationwide environmental tax or a surcharge on corporate insurance, (3) combining liability elements with no-fault provisions, and (4) financing cleanups out of general revenues as a public works program.

- RFF planned to evaluate these options against the following criteria: fairness, revenue adequacy, effect on speed of cleanup, consistency with the "polluter pays" principle, efficiency in reducing both transaction costs and disincentives in waste disposal and voluntary cleanups.

"Superfund's Financial Call on Oil Industry Called 'Inequitable'," Platts Oilgram News, Volume 69, p. 4. November 14, 1991.

- o This brief article reports on the testimony presented before the House Public Works Investigations subcommittee. The testimony asserts that if Congress exempts municipalities from liability, the "inequity" of the oil industry's Superfund financial burden will worsen.

"Secondary Smelters Hope to Head Off Cardin Bill with Battery Tax Proposal," Metals Week, p. 8. December 30, 1991.

- o This brief article discusses the desire of several secondary lead companies to propose an excise tax on all nationwide lead-acid battery sales. Fifty percent of this revenue would fund "orphaned" Superfund site cleanups.

Probst, Katherine N. and Paul R. Portney of Resources for the Future, Assigning Liability for Superfund Cleanups: An Analysis of Policy Options, 1992.

- o This report examines the current Superfund financing program and four new options for liability distribution. For each liability option considered, the report assumes that any decrease in revenues from cost recoveries would be offset by an increase in the corporate environmental tax. The five policy options are as follows:

  Option 1: The Current Superfund Program
  Option 2: Expanded Mixed Funding for Orphan Shares
  Option 3: Liability Release for All Closed Co-disposal Sites
  Option 4: Liability Release for All Pre-1981 Sites
  Option 5: Liability Release for Current NPL Sites

Steinzor, Rena J. and Matthew F. Lintner. "Should Taxpayers Pay the Cost of Superfund?" Environmental Law Reporter, Volume 22, pp. 10089-10091. February 1992.

- o This paper discusses the concern that Superfund's broad liability scheme is causing local governments, and consequently the nation's taxpayers, to be involved in third party Superfund lawsuits by PRPs. These lawsuits are based on the PRPs' assertion that local governments are liable for Superfund cleanup due to generation or transport of municipal solid waste (MSW) to sites that became Superfund sites. The authors argue that third-party suits against municipalities violate the basic Superfund principle that the polluter pays.

Chemical Manufacturers Association, Written Statement of the Chemical Manufacturers Association on Superfund Funding and Liability Issues Before the Committee on Ways and Means, U.S. House of Representatives. March 16, 1992.

- This paper was written in response to a request by the House Committee on Ways and Means' Subcommittee on Oversight for comments concerning the Superfund funding and liability issue. The first part of this document discusses issues concerning taxing and funding of the Superfund program. The second part deals with liability and programmatic problems. The paper's two general conclusions are that: (1) the Superfund financing mechanism works, but reporting on how funds are spent is inadequate; and (2) the cleanup program is ineffective, inefficient, and inequitable.

American Petroleum Institute, Testimony of the American Petroleum Institute on CERCLA/Superfund. March 16, 1992.

- This paper, like the CMA statement described above, was written in response to the House Subcommittee on Oversight's request for comments on the Superfund program. API discusses four major topics: funding, exemptions from liability, program management, and natural resource damages.

- API believes that the petroleum industry is paying an unfair share of Superfund taxes. It argues that the tax and liability structures are interlinked and should be reviewed jointly.

- API believes that proposals to exempt lenders and municipalities from liability are unwarranted. It argues that if lenders have the capacity to influence decisions related to hazardous waste disposal, then they should be considered liable for the cleanup of NPL sites. API also argues that since municipalities contribute the majority of waste to landfills, they should pay a portion of cleanup based on the toxicity and volume of their waste and the impact that those wastes have on cleanup costs.

Risk Management Roundtable. "The Environmental Dilemma: Who Shall Pay for Superfund?" Risk Management, Volume 39, p. 20. May 1992.

- This article presents the Risk Management Roundtable's view on who should pay for Superfund. It suggests that responsibility for past waste disposal practices is broad, and argues that three groups benefitted economically from inadequate waste management: consumers, who paid lower prices because environmental damage was not factored into pricing of products; resource suppliers, including labor, who received higher compensation; and polluters, who earned higher profits.

- The article focuses on liability issues but also mentions alternative second-tier funding options, including a no-fault system and a waste generation premium paid by polluters.

"The Toxic Mess Called Superfund: Industry and Environmentalists Agree: The Plan is a Disaster," Business Week, p. 32. May 11, 1992.

- This article summarizes several proposals to change the current Superfund program to decrease the amount of money spent on litigation. It discusses: (1) a no-fault program that would require all companies (even non-polluters) to help finance cleanup, (2) the proposed regulation that protects banks that hold mortgages on Superfund properties from liability, (3) a proposal that would cap municipal liability at four percent of cleanup costs, (4) the American International Group's proposal to exempt companies from liability for past pollution and to set up a trust fund to be financed by a two percent surcharge on all commercial insurance premiums, and (5) a tax on waste that would raise revenues while discouraging pollution.

"Superfund's Bank Balance Low," Engineering News-Record, Volume 228, No. 25, p. 8. June 22, 1992.

- This article mentions Congressional action to examine current Superfund taxes. It quotes J.J. Pickle (D-Tex.) as stating in a June 11, 1992 meeting of the House Ways and Means subcommittee on oversight that "the pace of cleanups is slow, the costs high and the tax revenue numbers staggering." The article cites alleged problems with EPA's Superfund accounts receivable system and EPA's management of contracts, programs and enforcement efforts.

"Bay Staters to Vote on Tax," Superfund Week, Volume 6. July 24, 1992.

- This article reports that Massachusetts is considering imposing an excise tax on the sale of toxic chemicals and petroleum products in order to fund the state's Superfund program.

"Rep. Owen's Legislation Would Clean up Superfund," Hazardous Waste Network Online Today, p. 1. July 24, 1992.

- This article reports on legislation introduced by Congressman Wayne Owens (D-UT) entitled the "Superfund Equitable Liability and Improved Cleanup Act of 1992." The purpose of the act would be to bring equity and efficiency to the Superfund cleanup program. The new liability scheme would require only "real" polluters to pay, speed up the cleanup process by setting definitive standards, and lower the corporate environmental tax threshold from $2 million to $1 million in AMTI (effectively increasing revenues from this broad-based tax).

"Problems in Program Management, Financing May Lead to CERCLA Rewrite, Panel Chairman Says," Environment Reporter, pp. 1249-1250. August 21, 1992.

- This article reports on the August 12 Superfund hearing held before the House Ways and Means Subcommittee on Oversight (chaired by J.J. Pickle) to review Superfund management and financing. Several witnesses testified on the difficulties with trust fund allocations, implementation of the program, and financing.

- The Chemical Manufacturers Association (CMA) suggested that a disclosure on how funds are spent be required. It also recommended a more broad-based tax to represent the diversity of PRPs.

- The American Petroleum Institute (API) asserted that the Superfund program has levied "inequitable and disproportionate taxes . . . on the petroleum industry" and described the liability system as "inefficient and inequitable."

- The American Insurance Association (AIA) stated that it is developing recommendations for a revised liability system that would exempt municipalities from a large portion of potential Superfund liability.

- Testimony submitted by the National Association of Manufacturers stated that the equitable distribution of costs for cleanup of municipal waste sites involves full cost sharing by all parties (including municipalities) that have contributed waste to these sites.

- The Landfill Solutions Group suggested the formation of a cleanup trust fund on a nationwide scale to finance the cleanup of closed landfills. Revenues for this fund might be generated by an increase in the corporate environmental tax and the establishment of a solid waste disposal fee, or by the establishment of tax-exempt "public purpose bonds" for environmental programs.

Brostoff, Steven. "Insurers Eye Superfund Reform Fight.", National Underwriter Property & Casualty-Risk & Benefits, pp. 1-2. March 1, 1993.

- This article discusses debates on Superfund reform at the National Association of Casualty and Surety Agents 1993 Conference. One suggestion, given by American International Group and supported by a representative of the Fireman's Fund, was to eliminate CERCLA's strict, retrospective, joint and several liability standard, replacing the current liability system with a tax-financed Environmental Trust Fund.

"IRS Rule Would Subject Natural Gasoline to Tax", Platts Oilgram News, Volume 71, p. 5. May 5, 1993.

- This brief article reports on an IRS proposal to clarify that natural gasoline produced at any processing plant should be subject to Superfund's domestic petroleum tax. This proposal is based on a clarification of the IRS definition of a refinery to include any facility that produces natural gasoline (e.g., gas fractionation plant).

"Around the States", Toxic Materials News, Volume 20, Number 21. May 26, 1993.

- This article cites a Minnesota bill designed to raise money for state funding of Superfund cleanups by applying a tax on the sale of "hazardous and problem" consumer, industrial, and institutional products.

PRE-SARA

Reese, C.E., and Frey, L.O. "Environmental Excise Taxes on Production or Importing of Crude Oil and Petrochemical Feedstocks," Oil and Gas Tax Quarterly, Volume 30, pp. 222-240. December 1981.

Hirschhorn, Joel S. "Hazardous Waste Source Reduction and A Waste-End Superfund Tax," Hazardous Waste Source Reduction Conference, Massachusetts Department of Environmental Management, pp. 36-37. October 13, 1983.

- The author argues that the federal Superfund Program can be directed toward encouraging waste reduction, which is considered as important as cleaning up hazardous waste sites. The creation of more uncontrolled hazardous waste can be prevented by motivating industry to employ source reduction technology. Within this context, the merits of feedstock and waste-end taxes are discussed.

ICF, Incorporated. Preliminary Analysis for Comparing Alternative Tax Systems Under CERCLA Section 301(a)(1)(G). A Report to the Office of Emergency and Remedial Response, U.S. Environmental Protection Agency (preliminary draft not intended for circulation). October 28, 1983.

- This document is a compilation of four papers intended to examine and develop analytic techniques that can be used to assess five aspects of alternative tax systems: (1) revenue generation capability, (2) economic impacts, (3) incentives and disincentives for proper waste management practices, (4) equity, and (5) administrative feasibility.

Belal, Rashida. "Superfund for Environmental Taxes, 1981 and 1982," Statistics of Income Bulletin. Fall 1983.

- Summary of Superfund tax revenues generated in 1981 and 1982.

Hirschhorn, Joel S., et al. "Point and Counterpoint: Feedstock or Waste-End Superfund Tax," Environmental Forum, Volume 2, pp. 18-26. December 1983.

- This article presents four perspectives contrasting the strengths and weaknesses of two possible tax options for financing Superfund: waste-end taxes and feedstock taxes.

Environmental Law Institute. Analysis of Superfund Revenue. Prepared for the U.S. Environmental Protection Agency, Office of Emergency and Remedial Response. December 22, 1983.

Pope-Reid Associates. Effects of Changing the CERCLA Tax Basis. Prepared for U.S. Environmental Protection Agency, Office of Policy Analysis. December 1983.

- This study was intended to assess the technical, economic, and policy effects of changing the basis of the Post-Closure Liability Trust Fund tax (a waste-end tax) from dry weight to gross weight or volume. The analysis focuses on the distributional effects of a change in the tax basis on generators and the disposal industry, including potential shifts in facility population, and the administrative complexities associated with the tax bases under consideration.

Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency. The Feasibility and Desirability of Alternative Tax Systems for Superfund: CERCLA Section 301(a)(1)(G) Study. Final Report. December 1984.

- This study was performed in fulfillment of Section 301(a)(1)(G) of CERCLA, which calls for a study of alternative tax options that could be used to finance the Superfund response program. Specifically, this study examines the feasibility and desirability of five alternative tax options with regard to six evaluative criteria.

- The five tax options examined include: (1) a feedstock tax with modified rates, (2) a feedstock tax with modified rates and substances, (3) a waste-end tax, (4) a feedstock tax and incentive waste-end tax, and (5) a feedstock tax and non-incentive waste-end tax.

- The criteria used to evaluate the tax options are: (1) economic impacts, (2) equity implications, (3) economic incentives, (4) revenue generating capacity, (5) administrative feasibility, and (6) programmatic effects.

U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation. Waste-End Tax: Technical Background Document. December 1984.

"Industry Hits IRS Plan to Revamp Superfund Tax," Oil and Gas Journal, Volume 82, pp. 82-83. February 6, 1984.

U.S. General Accounting Office. State Experiences with Taxes on Generators and Disposers of Hazardous Waste. Washington, D.C. May 4, 1984.

- In this report, the GAO examines the experience of three states (New York, New Hampshire and California) with waste-end taxes. The review focuses on four issues: (1) whether these states have achieved their revenue generation objectives, (2) the effectiveness of the taxes in changing waste management practices, (3) the concerns state officials have about federal waste-end taxes, and (4) the types of taxable waste and activities information that would be needed to implement a federal waste-end tax.

Nordhaus, Dr. William D. and Management Analysis Center, Inc. Financing Superfund: An Analysis of CERCLA Taxes and Alternative Revenue Approaches. Prepared for the Atlantic Richfield Company. June 1984.

- This study was intended to evaluate the economic impact of increases in CERCLA taxes and to assess whether alternative funding approaches would better accomplish the public policy objectives associated with financing Superfund.

- The authors used two models to analyze the effects of proposed CERCLA taxes: the Petrochemical Trade Model (used to show how CERCLA taxes affect U.S. imports and exports of a sample of primary petrochemicals and their primary derivatives) and the Tax Incidence Model (used to analyze the economic effects of a tax that is levied on the feedstock propylene, compared to a tax that is levied on a downstream product, phenol).

- Three categories of alternative tax options were analyzed in the study: (1) broad-based taxes (individual income tax, corporate income tax, and corporate receipts tax), (2) intermediate product taxes (hydrocarbons tax and chemical feedstocks tax), and (3) hazardous substance and waste taxes (production tax, waste generation tax, and waste disposal tax).

- Four public policy objectives were used to evaluate these alternative tax options: (1) revenue adequacy, (2) administrative simplicity, (3) equity, and (4) economic efficiency.

United States Senate Commission on Finance. Superfund Issues: Hearings, September 19 and 21, 1984. Volume 1703. 1985.

Ryan and Beavers. Economic Effects of a Superfund Tax on Louisiana. Research Report, Division of Business and Economic Research. University of New Orleans. January 23, 1985.

Fletcher, Linda. "Taxing Hazardous Waste: Economics, Design and Implementation," GAO Review, Volume 20, p. 12. Winter, 1985.

Office of Technology Assessment. Superfund Strategy Summary. March 1985.

Belal, Rashida. "Environmental Taxes: Superfund and Hazardous Waste, 1981-83," Statistics of Income Bulletin. Spring 1985.

- Summary of Superfund tax revenues generated from excise taxes levied on petroleum, petrochemicals, and inorganic chemicals from 1981 through 1983.

United States Congress, Joint Commission on Taxation. Background and Issues Relating to the Reauthorization and Financing of the Superfund: Scheduled for Hearings Before the Committee on Finance on April 25 and 26, 1985. 1985.

Chemical Manufacturers Association. Statement before the Water Resources Subcommittee of the Public Works and Transportation Committee, U.S. House of Representatives, on Superfund Reauthorization. May 1, 1985.

Lazarri and Gelb. Proposed Tax Increases and the U.S. Petrochemical Industry: An Economic Analysis. Congressional Research Service Report No. 85-81 E 7. 1985.

Foshee, Andrew W., et al. "Superfund Financing: Revenue Predictability Versus Incentives," Atlantic Economic Journal, Volume 13, p. 93. December 1985.

- This article evaluates the equity and efficiency of the Superfund tax program. The authors propose an alternative tax program, involving waste generation taxes and disposal credits, that they believe would be a more equitable and efficient means of financing Superfund.

Chemical Manufacturers Association. Superfund Collections and Disbursements. December 1985.

Mahoney, Richard J. "Manufacturer's Excise Tax Should Finance Superfund," Tax Notes, Volume 29, p. 1345. December 30, 1985.

Recio, Maria E. "A Starving Superfund has Congress on a Tax Hunt," Business Week, p. 60B. December 30, 1985.

Foshee, Andrew W., et al. "Economic Impact of Superfund Financing on the Petrochemical Industry," Oil and Gas Tax Quarterly, Volume 34, pp. 375-385. 1985.

- This article examines the equity and efficiency of existing and alternative tax measures for financing Superfund, with particular emphasis on the disproportionate effects of the existing tax program on regional economic activity.

Viard, Allen D. "Tax Issues Raised By Superfund Reauthorization," Tax Notes, Volume 28, pp. 1026-1031. 1985.

- This article examines the strengths and weaknesses of three categories of Superfund tax mechanisms: (1) feedstock taxes, (2) waste-end taxes, and (3) broad-based taxes. The authors summarize the debate surrounding each of these tax options.

O'Keefe, William F. "When It Comes to the Superfund Tax, the Solution Must Logically Fit the Problem," Oil Daily, p. 6. February 14, 1986.

Bureau of National Affairs. "Joint Committee on Taxation Staff Pamphlet Comparing Superfund Financing Provisions In HR 2005 as Passed by House and Senate: Prepared for Use of Conferees," Taxation and Accounting, pp. J20-36. February 28, 1986.

Harris, Richard E. "Tax Writers Consider Tax on Earnings and Profits to Pay for Superfund," Tax Notes, Volume 31. p. 763. May 26, 1986.

O'Keefe, William F. "Tap General Revenues for Superfund," Oil Daily, p. 4. September 18, 1986.

Baucas, Max. "Should Congress Adopt a Manufacturing Excise Tax to Help Finance the Environmental Superfund?: Pro and Con," Congressional Digest, pp. 170-191. June/July 1986.

- This work is a compilation of arguments presented on the Senate and House floors by U.S. congressmen concerning Superfund reauthorization legislation. The arguments present evaluations of various tax mechanisms through which Superfund can be financed, and focus on a manufacturing excise tax.

Agoos, Alice and Savage, Peter. "Superfund Taxes: Some Winners and Some Losers," Chemical Week, Volume 139, p. 6. December 17, 1986.

Appendix B

SUPPORTING TABLES FOR ECONOMIC IMPACTS ANALYSIS

Exhibit B-1

Corporate Environmental Taxes ($000)

SIC	Description	Asset Groups ($ million)												
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	Total
	AGRICULTURE, FORESTRY, AND FISHING	8	0	0	0	0	1	24	68	93	131	295	441	1,061
01/02	Agricultural production	8					1		48	81	114	102	441	795
07/08/0	Agricultural svcs,forestry,fishing,hunting							24	20	12	17	193	**	266
	MINING	277	0	0	0	7	23	58	277	377	441	879	7,864	10,203
10	Metal mining	***					***		120	33	146	84	1,664	2,056
11/12	Coal mining	***	***				***		11	***	***	***	***	931
13	Oil and gas extraction	255					20	58	123	180	238	557	5,141	6,572
14	Nonmetallic minerals (except fuels)	***	***			7			23	***	***	***	***	643
	CONSTRUCTION	31	12	0	0	0	1	25	196	144	397	330	1,415	2,551
15	Genl bldg contractors and operative builders	6	12					13	***	23	88	181	***	822
16	Heavy construction contractors	14					1	7	***	72	181	97	***	1,425
17	Special trade contractors	11						5	59	49	128	52	**	304
	MANUFACTURING	847	16	31	1	4	61	213	1,610	5,575	4,522	10,778	236,488	260,146
20	Food and kindred products	36					4	20	140	225	492	984	16,481	18,382
21	Tobacco manufacturers										23	**	11,539	11,562
22	Textile mill products	3						(-0)	20	***	***	506	683	1,389
23	Apparel and other textile products	***					3	2	25	74	176	568	***	1,948
24	Lumber and wood products	***	***					(-0)	53	19	34	315	***	2,967
25	Furniture and fixtures		***						20	***	***	***	859	1,076
26	Paper and allied products	5						9	43	62	120	512	9,687	10,438
27	Printing and publishing	10					30	16	68	145	233	853	8,873	10,228
28	Chemicals and allied products	32					(-0)	34	116	189	425	1,252	43,453	45,501
29	Petroleum (incl. integrated) and coal products					1		2	47	34	29	112	53,429	53,654
30	Rubber and miscellaneous plastics products	1						4	115	153	155	239	1,158	1,825
31	Leather and leather products	***							15	***	78	***	335	581
32	Stone, clay and glass products	551						12	55	105	128	169	2,987	4,007
33	Primary metal industries	29	1						30	141	218	512	6,407	7,338
34	Fabricated metal products	3		31	1	3		28	209	335	556	685	3,946	5,797
35	Machinery, except electrical	10						9	168	275	496	968	21,205	23,131
36	Electrical and electronic equipment	147	15				7	67	203	375	631	1,371	19,067	21,883
37	Motor vehicles and equipment								35	64	78	191	14,404	14,772
37	Transportation equipment,exc motor vehicles						6	(-0)	47	47	168	208	12,213	12,689
38	Instruments and related products	2						8	86	3,073	184	643	3,760	7,756
39	Miscellaneous mfg and mfg not allocable	10					11	2	115	113	178	431	2,360	3,220
	TRANSPORTATION AND PUBLIC UTILITIES	116	10	0	0	0	15	60	344	410	654	1,873	82,679	86,161
40-47	Transportation	2	6				5	35	207	255	318	1,066	9,157	11,051
48	Communication	18	4				10	18	109	109	189	484	35,113	36,054
49	Electric, gas, and sanitary services	96						7	28	46	147	323	38,409	39,056
50-51	WHOLESALE TRADE	272					38	145	442	838	817	1,788	9,449	13,789

Exhibit B-1
(continued)

Corporate Environmental Taxes ($000)

SIC	Description	Asset Groups ($ million)												
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	Total
	RETAIL TRADE	34	0	0	0	0	13	8	129	398	935	2,218	25,648	29,383
52	Bldg matls,garden supplies,mobile home dlrs	5							17	***	***	66	562	775
53	Genl merch. stores(excl. nonstore retailers)								6	31	65	124	12,036	12,262
54	Grocery stores, other food stores	21					(-0)		16	***	***	432	5,569	6,368
55	Automotive dealers and service stations						2	4	23	22	76	159	135	421
56	Apparel and accessory stores								7	29	48	252	2,586	2,922
57	Furniture and home furnishings stores						4	2	5	9	46	***	***	567
58	Eating and drinking places	1					7	(-0)	5	60	143	507	2,471	3,194
59	Miscellaneous retail stores	7						2	50	162	187	***	***	2,874
NONE	Wholesale and retail trade not allocable									6	**	**		6
	FINANCE, INSURANCE, AND REAL ESTATE	2,713	(-0)	2	48	46	284	221	744	1,592	2,193	3,819	81,827	93,489
60	Banking	2,145	***	***		***	18	7	21	25	66	484	25,863	28,629
61	Credit agencies other than banks	274			22	2	149		157	350	527	***	***	18,999
62	Security, commodity brokers and services	17							69	66	186	144	3,090	3,572
63	Insurance	46		2	6		25	15	106	546	491	1,574	32,038	34,849
641	Insurance agents, brokers, and service	9	***	***		***	10		4	61	32	***	***	1,502
65	Real estate	114	(-0)		7	27	38	75	205	303	301	272	423	1,765
67	Holding and other investment companies	108			13		44	124	182	241	590	691	2,183	4,176
	SERVICES	297	0	0	12	0	158	104	420	945	1,151	1,992	11,195	16,274
70	Hotels and other lodging places						25		1	49	95	26	1,000	1,196
72	Personal services							3	22	***	***	112	683	895
73	Business services	53					68	64	185	383	516	1,031	3,156	5,456
75-76	Auto repair; miscellaneous repair services						47		13	***	***	94	655	887
781-79	Amusement and recreational services	25					10	8	23	99	59	266	2,361	2,851
80	Other services	219			12		8	29	176	333	410	463	3,340	4,990
NONE	NATURE OF BUSINESS NOT ALLOCABLE													0
	Total tax paid by asset group	4,595	38	33	61	57	594	858	4,230	10,372	11,241	23,972	457,006	513,057
	Percent of tax paid by each asset group	0.90%	0.01%	0.01%	0.01%	0.01%	0.12%	0.17%	0.82%	2.02%	2.19%	4.67%	89.08%	99.10%

Key: ** Data combined with data in lower asset class to avoid disclosure. *** Data deleted to avoid disclosure, but included in industry totals. (-0) Less than $500 per return.

Assumptions:

If all data are available by industry sub-category and asset group, the industry division total per asset group is calculated by summing these data.

If all data are not available by industry sub-category and asset group but the industry division total from the Source Book is equal to the sum of these data, the industry division total per asset group is calculated by summing these data.

If all data are not available by industry sub-category and asset group and the industry division total is not equal to the sum of these data, the industry division total per asset group from the Source Book is used.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-2

Adjusted Number of Returns*

SIC	Description	Asset Groups ($ million)												
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	Total
	AGRICULTURE, FORESTRY, AND FISHING	52.68	0.00	0.00	0.00	0.00	172.15	3.77	5.85	2.15	0.85	0.65	0.33	238
01/02	Agricultural production	52.68	0.00	0.00	0.00	0.00	172.15	0.00	4.13	1.89	0.68	0.42	0.33	232
07/08/0	Agricultural svcs,forestry,fishing,hunting	0.00	0.00	0.00	0.00	0.00	0.00	3.77	1.72	0.26	0.16	0.23	0.00	6
	MINING	9.98	0.00	0.00	0.00	8.08	81.39	9.66	10.08	4.36	2.11	1.56	1.89	107
10	Metal mining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.33	0.10	0.10	0.26	1
11/12	Coal mining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	1
13	Oil and gas extraction	4.91	0.00	0.00	0.00	0.00	44.55	9.66	6.86	2.37	1.50	1.01	1.11	72
14	Nonmetallic minerals (except fuels)	0.00	0.00	0.00	0.00	6.08	0.00	0.00	1.69	0.00	0.00	0.00	0.00	8
	CONSTRUCTION	190.88	1,314.27	0.00	0.00	0.00	81.10	81.62	38.96	7.51	3.71	1.56	0.88	1,720
15	Genl bldg contractors and operative builders	75.83	1,314.27	0.00	0.00	0.00	0.00	39.74	0.00	3.84	1.66	0.98	0.00	1,436
16	Heavy construction contractors	5.92	0.00	0.00	0.00	0.00	81.10	14.60	0.00	2.08	1.07	0.39	0.00	105
17	Special trade contractors	109.13	0.00	0.00	0.00	0.00	0.00	27.28	11.93	1.59	0.98	0.20	0.00	151
	MANUFACTURING	99.86	68.68	222.65	148.25	168.09	355.46	157.03	130.92	48.00	26.37	20.26	23.93	1,470
20	Food and kindred products	2.15	0.00	0.00	0.00	0.00	61.86	14.86	15.09	5.11	3.22	2.02	2.37	107
21	Tobacco manufacturers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.23	0
22	Textile mill products	1.01	0.00	0.00	0.00	0.00	0.00	0.00	4.55	0.00	0.00	1.01	0.46	7
23	Apparel and other textile products	0.00	0.00	0.00	0.00	0.00	38.73	10.44	7.22	1.95	0.91	0.52	0.00	60
24	Lumber and wood products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39	1.01	0.33	0.49	0.00	6
25	Furniture and fixtures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.22	0.00	0.00	0.00	0.33	4
26	Paper and allied products	0.33	0.00	0.00	0.00	0.00	0.00	5.46	4.16	1.50	0.91	0.68	1.24	14
27	Printing and publishing	5.79	0.00	0.00	0.00	0.00	99.51	18.02	10.73	3.15	1.20	1.53	1.85	142
28	Chemicals and allied products	13.46	0.00	0.00	0.00	0.00	0.00	7.93	6.89	3.64	1.98	2.21	4.00	40
29	Petroleum (incl. integrated) and coal products	0.00	0.00	0.00	0.00	5.66	0.00	1.76	1.14	0.46	0.13	0.20	1.33	11
30	Rubber and miscellaneous plastics products	1.20	0.00	0.00	0.00	0.00	0.00	10.24	6.93	2.70	1.04	0.62	0.42	23
31	Leather and leather products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00	0.26	0.00	0.10	1
32	Stone, clay and glass products	0.26	0.00	0.00	0.00	0.00	0.00	4.88	3.15	1.50	0.72	0.49	0.75	12
33	Primary metal industries	0.46	7.22	0.00	0.00	0.00	0.00	0.00	4.16	1.85	1.04	1.11	1.40	17
34	Fabricated metal products	15.93	0.00	222.65	148.25	162.43	0.00	29.72	15.41	5.79	3.02	1.56	1.01	606
35	Machinery, except electrical	17.10	0.00	0.00	0.00	0.00	0.00	21.17	11.12	4.88	3.02	1.89	2.31	61
36	Electrical and electronic equipment	9.98	61.46	0.00	0.00	0.00	81.23	16.06	13.27	4.94	3.51	2.60	2.15	195
37	Motor vehicles and equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.19	0.78	0.75	0.49	0.68	6
37	Transportation equipment,exc motor vehicles	0.00	0.00	0.00	0.00	0.00	9.95	0.00	2.89	0.42	0.55	0.29	0.78	15
38	Instruments and related products	2.80	0.00	0.00	0.00	0.00	0.00	5.82	5.43	3.02	1.33	1.20	0.94	21
39	Miscellaneous mfg and mfg not allocable	16.13	0.00	0.00	0.00	0.00	64.16	10.67	6.86	2.50	1.20	0.85	0.98	103
	TRANSPORTATION AND PUBLIC UTILITIES	143.50	1,121.66	0.00	0.00	0.00	184.38	34.99	23.61	6.86	4.29	3.19	8.16	1,531
40-47	Transportation	120.22	1,001.31	0.00	0.00	0.00	146.11	21.27	13.76	3.67	2.24	1.37	1.72	1,312
48	Communication	11.61	120.35	0.00	0.00	0.00	38.27	9.01	6.86	2.24	0.98	0.81	1.33	191
49	Electric, gas, and sanitary services	11.67	0.00	0.00	0.00	0.00	0.00	4.72	2.99	0.94	1.07	1.01	5.11	28
50-51	WHOLESALE TRADE	150.17	0.00	0.00	0.00	0.00	1,066.41	160.22	84.48	25.85	9.59	5.82	3.84	1,506

Exhibit B-2
(continued)

Adjusted Number of Returns*

SIC	Description	Asset Groups ($ million)												
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	Total
	RETAIL TRADE	216.96	0.00	0.00	0.00	0.00	438.80	75.93	48.58	11.71	6.86	4.98	4.26	808
52	Bldg matls,garden supplies,mobile home dlrs	16.36	0.00	0.00	0.00	0.00	0.00	0.00	4.78	0.00	0.00	0.16	0.20	21
53	Genl merch. stores(excl. nonstore retailers)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.79	0.59	0.75	0.52	0.98	5
54	Grocery stores, other food stores	13.50	0.00	0.00	0.00	0.00	0.00	0.00	4.49	0.00	0.00	1.01	1.14	20
55	Automotive dealers and service stations	0.00	0.00	0.00	0.00	0.00	296.89	55.35	19.84	2.86	1.11	0.42	0.10	377
56	Apparel and accessory stores	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.76	0.72	0.49	0.49	0.49	5
57	Furniture and home furnishings stores	0.00	0.00	0.00	0.00	0.00	61.62	3.38	2.76	0.55	0.49	0.00	0.00	69
58	Eating and drinking places	84.39	0.00	0.00	0.00	0.00	80.29	0.00	3.64	1.24	0.91	0.65	0.59	172
59	Miscellaneous retail stores	102.73	0.00	0.00	0.00	0.00	0.00	17.20	8.52	2.60	1.50	0.00	0.00	133
NONE	Wholesale and retail trade not allocable	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0
	FINANCE, INSURANCE, AND REAL ESTATE	435.68	0.00	16.55	796.44	679.67	665.04	104.84	141.33	120.03	111.51	92.81	82.27	3,246
60	Banking	8.00	0.00	0.00	0.00	0.00	6.93	11.22	54.70	66.11	62.21	42.14	24.75	276
61	Credit agencies other than banks	10.96	0.00	0.00	37.27	27.41	41.59	0.00	10.73	12.65	18.08	0.00	0.00	159
62	Security, commodity brokers and services	32.45	0.00	0.00	0.00	0.00	0.00	0.00	2.83	1.95	1.43	1.04	1.89	42
63	Insurance	2.86	0.00	16.55	10.80	0.00	36.94	10.21	12.36	8.19	5.82	6.63	10.86	121
641	Insurance agents, brokers, and service	40.78	0.00	0.00	0.00	0.00	71.38	0.00	3.02	1.14	0.42	0.00	0.00	117
65	Real estate	264.51	0.00	0.00	638.37	452.98	405.73	52.81	26.05	8.26	3.32	2.08	0.78	1,855
67	Holding and other investment companies	76.13	0.00	0.00	110.01	0.00	102.47	30.60	31.64	21.72	20.23	23.54	28.00	444
	SERVICES	471.29	0.00	0.00	407.55	0.00	566.31	61.07	35.28	14.15	7.32	5.20	4.00	1,572
70	Hotels and other lodging places	0.00	0.00	0.00	0.00	0.00	42.79	0.00	1.04	0.78	0.46	0.33	0.42	46
72	Personal services	0.00	0.00	0.00	0.00	0.00	0.00	3.77	1.33	0.00	0.00	0.26	0.23	6
73	Business services	238.26	0.00	0.00	0.00	0.00	246.04	27.93	15.58	6.15	3.02	2.34	1.69	541
75-76	Auto repair; miscellaneous repair services	0.00	0.00	0.00	0.00	0.00	53.62	0.00	2.76	0.00	0.00	0.26	0.29	57
781-79	Amusement and recreational services	38.60	0.00	0.00	0.00	0.00	55.05	9.11	3.77	2.18	0.81	0.59	0.33	110
80	Other services	194.43	0.00	0.00	407.55	0.00	168.80	20.26	10.80	3.74	2.21	1.43	1.04	810
NONE	NATURE OF BUSINESS NOT ALLOCABLE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
	TOTAL	1,771	2,505	239	1,352	854	3,591	689	519	241	173	136	130	12,199

Key: * Returns by asset group are adjusted by a ratio of the total number of returns that actually paid environmental tax (12,199) divided by the estimated total number of returns in the asset groups paying the environmental tax (375,140).

0.00 Data combined with data in lower asset class to avoid disclosure.

0.00 Data deleted to avoid disclosure, and not included in industry sub-category totals.

0.00 Less than $500 of environmental tax per return.

Assumptions for unadjusted returns:

If all data are available by industry sub-category and asset group, the industry division total per asset group is calculated by summing these data.

If all data are not available by industry sub-category and asset group but the industry division environmental tax from the Source Book is equal to the sum of the environmental tax sub-category data, the industry division total of returns per asset group is calculated by summing the sub-category data.

If all data are not available by industry sub-category and asset group and the industry division environmental tax is not equal to the sum of the environmental tax sub-category data, the industry division total of returns per asset group from the Source Book is used.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-3

Corporate Income Tax ($000)

SIC	Description	Asset Groups ($ million)												Total
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	AGRICULTURE, FORESTRY, AND FISHING	11,142	0	0	0	0	90,749	20,219	33,302	39,976	39,018	66,069	106,041	406,516
01/02	Agricultural production	11,142					90,749		21,260	38,822	33,582	24,635	106,041	326,231
07/08/09	Agricultural svcs,forestry,fishing,hunting							20,219	12,042	1,154	5,436	41,434	**	80,285
	MINING	71,033	0	0	0	4,077	60,877	37,298	88,028	92,177	95,266	160,876	1,553,391	2,163,023
10	Metal mining	***					***		20,801	7,087	32,685	9,715	343,307	413,595
11/12	Coal mining	***	***				***		7,403	***	***	***	***	7,403
13	Oil and gas extraction	66,060					44,721	37,298	49,034	44,101	47,861	111,041	1,033,132	1,435,248
14	Nonmetallic minerals (except fuels)	***	***			4,077			10,790	***	***	***	***	14,867
	CONSTRUCTION	22,095	11,645	0	0	0	85,966	231,009	261,289	98,886	128,484	90,974	350,680	1,281,028
15	Genl bldg contractors and operative builders	3,983	11,645					84,452	***	33,994	33,065	54,975	***	222,114
16	Heavy construction contractors	8,229					85,966	58,810	***	38,693	56,347	20,769	***	268,814
17	Special trade contractors	9,883						87,747	92,411	26,199	39,072	15,230	**	270,542
	MANUFACTURING	333,741	7,346	31,581	16,477	56,905	318,743	619,644	1,311,958	1,825,812	1,511,474	3,097,161	54,030,941	63,161,783
20	Food and kindred products	8,310					56,663	48,132	131,488	113,325	156,223	256,890	4,127,782	4,898,813
21	Tobacco manufacturers										21,107	**	2,680,403	2,701,510
22	Textile mill products	7,714						(-0)	25,852	***	***	134,510	147,625	315,701
23	Apparel and other textile products	***					25,762	26,540	35,071	35,291	39,442	167,910	***	330,016
24	Lumber and wood products	***	***					(-0)	39,955	12,674	10,654	54,052	***	117,335
25	Furniture and fixtures		***						24,183	***	***	***	212,412	236,595
26	Paper and allied products	2,689						15,254	34,743	25,323	32,062	118,334	2,100,769	2,329,174
27	Printing and publishing	5,278					93,048	62,865	86,118	77,691	65,923	217,349	2,119,904	2,728,176
28	Chemicals and allied products	6,122					(-0)	46,839	91,434	115,983	195,566	610,209	10,746,770	11,812,923
29	Petroleum (incl. integrated) and coal product					810		3,512	8,251	15,178	7,284	30,444	11,075,989	11,141,468
30	Rubber and miscellaneous plastics products	1,267						31,012	79,882	61,530	44,045	55,442	287,211	560,389
31	Leather and leather products	***							14,913	***	25,183	***	54,357	94,453
32	Stone, clay and glass products	153,283						29,299	41,923	41,466	32,039	35,572	664,602	998,184
33	Primary metal industries	8,565	473						29,975	55,007	58,611	118,591	1,157,646	1,428,868
34	Fabricated metal products	9,014		31,581	16,477	56,095		92,540	164,032	140,317	161,639	169,167	966,714	1,807,576
35	Machinery, except electrical	45,880						93,202	118,960	126,897	154,087	252,543	5,551,652	6,343,221
36	Electrical and electronic equipment	67,380	6,873				88,596	103,465	165,162	145,916	213,701	406,290	4,238,599	5,435,982
37	Motor vehicles and equipment								23,463	29,624	26,023	46,060	2,954,739	3,079,909
37	Transportation equipment,exc motor vehicle						16,407	(-0)	38,723	14,239	33,740	52,840	2,604,143	2,760,092
38	Instruments and related products	2,346						28,576	79,665	707,127	116,458	183,001	1,066,890	2,184,063
39	Miscellaneous mfg and mfg not allocable	6,782					38,267	38,408	78,165	44,132	78,538	120,321	503,539	908,152
	TRANSPORTATION AND PUBLIC UTILITIES	33,456	16,803	0	0	0	181,409	119,937	246,861	160,860	171,860	462,781	15,166,716	16,560,683
40-47	Transportation	5,428	14,993				133,103	51,546	117,275	87,376	86,172	258,223	1,623,129	2,377,245
48	Communication	6,093	1,810				48,306	42,347	105,515	53,161	41,930	118,648	6,343,458	6,761,268
49	Electric, gas, and sanitary services	21,935						26,044	24,071	20,323	43,758	85,910	7,200,129	7,422,170
50-51	WHOLESALE TRADE	94,133					770,750	414,521	500,281	406,713	288,211	505,639	2,117,376	5,097,624

Exhibit B-3
(continued)

Corporate Income Tax ($000)

SIC	Description	Asset Groups ($ million)												Total
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	RETAIL TRADE	9,998	0	0	0	0	163,909	115,718	226,072	160,743	282,044	582,900	5,854,374	7,395,758
52	Bldg matls,garden supplies,mobile home dlr	192							33,720	***	***	18,653	138,621	191,186
53	Genl merch. stores(excl. nonstore retailers)								8,504	8,938	22,905	35,767	2,664,324	2,740,438
54	Grocery stores, other food stores	6,386					(-0)		33,287	***	***	108,535	1,239,656	1,387,864
55	Automotive dealers and service stations						94,444	59,991	58,727	17,210	24,205	35,514	34,063	324,154
56	Apparel and accessory stores								16,190	12,385	15,347	68,349	618,488	730,759
57	Furniture and home furnishings stores						48,236	14,010	10,291	744	17,482	***	***	90,763
58	Eating and drinking places	818					21,229	(-0)	13,566	23,339	33,621	126,331	593,229	812,133
59	Miscellaneous retail stores	2,602						41,717	51,787	53,526	57,800	***	***	207,432
NONE	Wholesale and retail trade not allocable									1,559	**	**		1,559
	FINANCE, INSURANCE, AND REAL ESTATE	789,302	(-0)	1,307	106,305	280,978	402,445	235,598	493,014	658,093	1,167,215	1,596,732	16,529,451	22,260,440
60	Banking	600,432	***	***		***	7,898	11,051	81,175	210,878	440,998	609,758	5,398,582	7,360,772
61	Credit agencies other than banks	32,471			16,424	3,342	20,135		39,871	94,608	215,968	***	***	422,819
62	Security, commodity brokers and services	8,004							30,230	19,931	61,253	37,927	646,275	803,620
63	Insurance	15,446		1,307	1,385		41,920	45,493	103,323	111,534	162,800	342,286	5,494,406	6,319,900
641	Insurance agents, brokers, and service	5,990	***	***		***	31,579		15,255	25,293	13,150	***	***	91,267
65	Real estate	77,900	(-0)		78,141	80,400	226,611	95,934	134,640	101,821	77,715	56,312	55,855	985,329
67	Holding and other investment companies	49,059			10,355		74,302	83,120	88,520	94,028	195,331	171,100	577,023	1,342,838
	SERVICES	99,543	0	0	51,701	0	487,821	214,150	290,455	332,826	321,444	509,908	2,382,880	4,690,728
70	Hotels and other lodging places						17,058		2,903	12,025	23,071	4,999	186,636	246,692
72	Personal services							11,286	10,432	***	***	27,730	174,885	224,333
73	Business services	27,881					224,260	104,453	127,495	134,780	128,643	275,879	742,857	1,766,248
75-76	Auto repair; miscellaneous repair services						49,490		12,508	***	***	24,858	99,029	185,885
781-79	Amusement and recreational services	6,950					47,864	15,246	23,978	40,129	19,186	69,647	412,851	635,851
80	Other services	64,712			51,701		149,149	83,165	113,139	112,877	123,695	106,795	766,622	1,571,855
NONE	NATURE OF BUSINESS NOT ALLOCABLE													0
													Overall:	123,017,583

Key: ** Data combined with data in lower asset class to avoid disclosure. *** Data deleted to avoid disclosure, and not included in industry sub-category totals. (-0) Less than $500 of environmental tax per return.

Assumptions:

If all data are available by industry sub-category and asset group, the industry division total per asset group is calculated by summing these data.

If all data are not available by industry sub-category and asset group but the industry division environmental tax from the Source Book is equal to the sum of the environmental tax sub-category data, the industry division income total per asset group is calculated by summing the sub-category data.

If all data are not available by industry sub-category and asset group and the industry division environmental tax is not equal to the sum of the environmental tax sub-category data, the industry division income total per asset group from the Source Book is used.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-4

Weighted Averages of Ratios of (Environmental Tax)/(Adjusted Income Tax)*

SIC	Description	Asset Groups ($ million)												Weighted Average
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	AGRICULTURE, FORESTRY, AND FISHING	0.0221					0.0003	0.0365	0.0640	0.0951	0.1028	0.1329	0.1279	0.0090
01/02	Agricultural production	0.0221	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0694	0.0642	0.1044	0.1273	0.1279	0.0077
07/08/09	Agricultural svcs,forestry,fishing,hunting	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0365	0.0511	0.3198	0.0962	0.1432	0.0000	0.0581
	MINING	0.1199	0.0000	0.0000	0.0000	0.0528	0.0116	0.0478	0.0968	0.1258	0.1424	0.1680	0.1557	0.0474
10	Metal mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1774	0.1432	0.1374	0.2659	0.1491	0.1656
11/12	Coal mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0457	0.0000	0.0000	0.0000	0.0000	0.0457
13	Oil and gas extraction	0.1152	0.0000	0.0000	0.0000	0.0000	0.0138	0.0478	0.0771	0.1255	0.1529	0.1543	0.1530	0.0420
14	Nonmetallic minerals (except fuels)	0.0000	0.0000	0.0000	0.0000	0.0528	0.0000	0.0000	0.0656	0.0000	0.0000	0.0000	0.0000	0.0556
	CONSTRUCTION	0.0431	0.0317	0.0000	0.0000	0.0000	0.0004	0.0033	0.0231	0.0448	0.0950	0.1115	0.1241	0.0303
15	Genl bldg contractors and operative builders	0.0463	0.0317	0.0000	0.0000	0.0000	0.0000	0.0047	0.0000	0.0208	0.0818	0.1012	0.0000	0.0318
16	Heavy construction contractors	0.0523	0.0000	0.0000	0.0000	0.0000	0.0004	0.0037	0.0000	0.0572	0.0988	0.1436	0.0000	0.0064
17	Special trade contractors	0.0342	0.0000	0.0000	0.0000	0.0000	0.0000	0.0018	0.0196	0.0575	0.1007	0.1050	0.0000	0.0280
	MANUFACTURING	0.0780	0.0670	0.0302	0.0019	0.0022	0.0059	0.0106	0.0377	0.0939	0.0920	0.1070	0.1346	0.0277
20	Food and kindred products	0.1332	0.0000	0.0000	0.0000	0.0000	0.0022	0.0128	0.0327	0.0611	0.0968	0.1178	0.1228	0.0212
21	Tobacco manufacturers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0335	0.0000	0.1324	0.1027
22	Textile mill products	0.0120	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0238	0.0000	0.0000	0.1157	0.1423	0.0430
23	Apparel and other textile products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0036	0.0023	0.0219	0.0645	0.1372	0.1040	0.0000	0.0105
24	Lumber and wood products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0408	0.0461	0.0981	0.1792	0.0000	0.0555
25	Furniture and fixtures	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0254	0.0000	0.0000	0.0000	0.1244	0.0345
26	Paper and allied products	0.0572	0.0000	0.0000	0.0000	0.0000	0.0000	0.0181	0.0381	0.0753	0.1151	0.1331	0.1418	0.0532
27	Printing and publishing	0.0583	0.0000	0.0000	0.0000	0.0000	0.0099	0.0078	0.0243	0.0574	0.1087	0.1207	0.1287	0.0174
28	Chemicals and allied products	0.1607	0.0000	0.0000	0.0000	0.0000	0.0000	0.0223	0.0390	0.0501	0.0668	0.0631	0.1243	0.0888
29	Petroleum (incl. integrated) and coal product	0.0000	0.0000	0.0000	0.0000	0.0380	0.0000	0.0175	0.1752	0.0689	0.1224	0.1131	0.1483	0.0668
30	Rubber and miscellaneous plastics products	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0040	0.0443	0.0765	0.1082	0.1326	0.1240	0.0358
31	Leather and leather products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0309	0.0000	0.0952	0.0000	0.1895	0.0529
32	Stone, clay and glass products	0.1105	0.0000	0.0000	0.0000	0.0000	0.0000	0.0126	0.0403	0.0779	0.1229	0.1461	0.1382	0.0508
33	Primary metal industries	0.1041	0.0650	0.0000	0.0000	0.0000	0.0000	0.0000	0.0308	0.0788	0.1144	0.1328	0.1702	0.0751
34	Fabricated metal products	0.0102	0.0000	0.0302	0.0019	0.0016	0.0000	0.0093	0.0392	0.0734	0.1058	0.1245	0.1255	0.0155
35	Machinery, except electrical	0.0067	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0434	0.0666	0.0990	0.1179	0.1175	0.0289
36	Electrical and electronic equipment	0.0671	0.0671	0.0000	0.0000	0.0000	0.0024	0.0199	0.0378	0.0790	0.0908	0.1038	0.1383	0.0363
37	Motor vehicles and equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0459	0.0664	0.0922	0.1275	0.1499	0.0733
37	Transportation equipment,exc motor vehicle	0.0000	0.0000	0.0000	0.0000	0.0000	0.0112	0.0000	0.0373	0.1015	0.1531	0.1211	0.1442	0.0333
38	Instruments and related products	0.0262	0.0000	0.0000	0.0000	0.0000	0.0000	0.0086	0.0332	0.1336	0.0486	0.1081	0.1084	0.0489
39	Miscellaneous mfg and mfg not allocable	0.0453	0.0000	0.0000	0.0000	0.0000	0.0088	0.0016	0.0452	0.0787	0.0697	0.1102	0.1441	0.0207
	TRANSPORTATION AND PUBLIC UTILITIES	0.0278	0.0183				0.0022	0.0172	0.0454	0.0782	0.1167	0.1230	0.1670	0.0192
40-47	Transportation	0.0113	0.0123	0.0000	0.0000	0.0000	0.0012	0.0209	0.0543	0.0897	0.1135	0.1269	0.1735	0.0123
48	Communication	0.0908	0.0680	0.0000	0.0000	0.0000	0.0064	0.0131	0.0318	0.0631	0.1386	0.1254	0.1702	0.0544
49	Electric, gas, and sanitary services	0.1346	0.0000	0.0000	0.0000	0.0000	0.0000	0.0083	0.0358	0.0696	0.1033	0.1156	0.1640	0.1035
50-51	WHOLESALE TRADE	0.0889	0.0000	0.0000	0.0000	0.0000	0.0015	0.0108	0.0272	0.0634	0.0872	0.1087	0.1372	0.0150

Exhibit B-4
(continued)

Weighted Averages of Ratios of
(Environmental Tax)/(Adjusted Income Tax)*

SIC	Description	Asset Groups ($ million)												Weighted Average
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	RETAIL TRADE	0.1046	0.0000	0.0000	0.0000	0.0000	0.0024	0.0021	0.0175	0.0761	0.1019	0.1170	0.1347	0.0341
52	Bldg matls,garden supplies,mobile home dlr	0.8008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0155	0.0000	0.0000	0.1088	0.1247	0.8148
53	Genl merch. stores(excl. nonstore retailers)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0217	0.1067	0.0873	0.1066	0.1389	0.0774
54	Grocery stores, other food stores	0.1011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0148	0.0000	0.0000	0.1224	0.1381	0.0850
55	Automotive dealers and service stations	0.0000	0.0000	0.0000	0.0000	0.0000	0.0007	0.0021	0.0120	0.0393	0.0966	0.1377	0.1219	0.0022
56	Apparel and accessory stores	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0133	0.0720	0.0962	0.1134	0.1286	0.0512
57	Furniture and home furnishings stores	0.0000	0.0000	0.0000	0.0000	0.0000	0.0026	0.0044	0.0149	0.3720	0.0809	0.0000	0.0000	0.0067
58	Eating and drinking places	0.0376	0.0000	0.0000	0.0000	0.0000	0.0101	0.0000	0.0113	0.0791	0.1308	0.1234	0.1281	0.0256
59	Miscellaneous retail stores	0.0827	0.0000	0.0000	0.0000	0.0000	0.0000	0.0015	0.0297	0.0931	0.0995	0.0000	0.0000	0.0692
NONE	Wholesale and retail trade not allocable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1184	0.0000	0.0000	0.0000	0.0000
	FINANCE, INSURANCE, AND REAL ESTATE	0.1057	0.0000	0.0471	0.0139	0.0050	0.0217	0.0288	0.0464	0.0744	0.0578	0.0736	0.1522	0.0370
60	Banking	0.1099	0.0000	0.0000	0.0000	0.0000	0.0701	0.0195	0.0080	0.0036	0.0046	0.0244	0.1473	0.0262
61	Credit agencies other than banks	0.2595	0.0000	0.0000	0.0412	0.0184	0.2276	0.0000	0.1211	0.1138	0.0750	0.0000	0.0000	0.1162
62	Security, commodity brokers and services	0.0653	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0702	0.1018	0.0934	0.1168	0.1470	0.0733
63	Insurance	0.0916	0.0000	0.0471	0.1332	0.0000	0.0183	0.0101	0.0315	0.1505	0.0927	0.1414	0.1793	0.0685
641	Insurance agents, brokers, and service	0.0462	0.0000	0.0000	0.0000	0.0000	0.0097	0.0000	0.0081	0.0742	0.0748	0.0000	0.0000	0.0233
65	Real estate	0.0450	0.0000	0.0000	0.0028	0.0103	0.0052	0.0240	0.0468	0.0915	0.1191	0.1485	0.2329	0.0132
67	Holding and other investment companies	0.0677	0.0000	0.0000	0.0386	0.0000	0.0182	0.0459	0.0632	0.0788	0.0929	0.1242	0.1163	0.0550
	SERVICES	0.0918	0.0000	0.0000	0.0071	0.0000	0.0100	0.0149	0.0445	0.0873	0.1101	0.1201	0.1445	0.0366
70	Hotels and other lodging places	0.0000	0.0000	0.0000	0.0000	0.0000	0.0451	0.0000	0.0106	0.1253	0.1266	0.1599	0.1648	0.0484
72	Personal services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0082	0.0649	0.0000	0.0000	0.1242	0.1201	0.0316
73	Business services	0.0585	0.0000	0.0000	0.0000	0.0000	0.0093	0.0188	0.0446	0.0874	0.1233	0.1149	0.1306	0.0348
75-76	Auto repair; miscellaneous repair services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0292	0.0000	0.0320	0.0000	0.0000	0.1163	0.2034	0.0306
781-79	Amusement and recreational services	0.1106	0.0000	0.0000	0.0000	0.0000	0.0064	0.0161	0.0295	0.0759	0.0946	0.1174	0.1759	0.0475
80	Other services	0.1041	0.0000	0.0000	0.0071	0.0000	0.0016	0.0107	0.0478	0.0907	0.1019	0.1333	0.1340	0.0309
NONE	NATURE OF BUSINESS NOT ALLOCABLE													
													Overall:	0.0293

Key:

* Income tax by asset group is adjusted by the ratio of total number of returns that actually paid environmental tax (12,199) divided by the estimated total number of returns in the asset groups paying the environmental tax (375,140). Also note that each group ratio weighted average is calculated by weighting the sub-group weighted averages by their corresponding adjusted number of returns.

Assumptions:
If data is incomplete for industry sub-categories, we used industry division data per asset group to find the weighted average for the division. See Exhibits B-1, B-2, and B-3 for additional assumptions.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-5
(continued)

Corporate Business Receipts ($000)

SIC	Description	Asset Groups ($ million)												Total
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	RETAIL TRADE	3,272,328	0	0	0	0	103,695,590	62,251,445	69,010,308	35,409,808	37,721,113	58,915,444	442,917,742	813,193,573
52	Bldg matls,garden supplies,mobile home dlrs	306,917							4,726,417	***	***	1,577,367	10,067,657	16,678,358
53	Genl merch. stores(excl. nonstore retailers)								1,773,045	1,078,768	3,309,215	4,541,619	198,369,224	209,071,871
54	Grocery stores, other food stores	1,242,422					(-0)		11,804,852	***	***	22,247,332	143,249,867	178,544,473
55	Automotive dealers and service stations						83,348,569	51,413,099	31,066,364	8,507,323	7,060,116	5,348,181	2,263,298	189,007,930
56	Apparel and accessory stores								2,945,451	1,887,579	2,416,506	4,037,245	30,445,444	41,732,225
57	Furniture and home furnishings stores						9,397,951	2,207,626	2,961,694	1,353,348	1,502,641	***	***	17,423,258
58	Eating and drinking places	560,061					10,948,070	(-0)	3,228,791	2,240,454	2,702,822	4,643,753	17,249,900	41,573,851
59	Miscellaneous retail stores	1,162,925						8,630,720	10,503,694	7,060,875	7,045,902	***	***	34,403,916
NONE	Wholesale and retail trade not allocable									173,216	**	**		173,216
	FINANCE, INSURANCE, AND REAL ESTATE	6,342,748	(-0)	72,517	9,807,656	9,807,656	15,711,578	6,176,513	11,196,161	21,388,651	18,058,949	31,152,939	513,212,832	642,928,198
60	Banking	4,087,701	***	***		***	160,917	22,093	237,275	588,194	962,456	1,734,671	32,690,202	40,483,511
61	Credit agencies other than banks	382,685			228,098	338,823	934,329		404,240	936,278	396,518	***	***	3,600,971
62	Security, commodity brokers and services	46,419							833,662	9,112,565	3,219,729	2,311,943	19,203,392	34,727,710
63	Insurance	321,282		72,517	60,821		1,541,673	1,247,189	3,255,211	5,223,779	6,440,710	18,661,012	382,279,342	419,103,536
641	Insurance agents, brokers, and service	394,390	***	***		***	3,610,399		961,000	995,666	522,334	***	***	6,483,789
65	Real estate	883,925	(-0)		4,543,522	5,487,168	8,776,789	4,140,892	3,916,482	2,675,421	1,628,056	2,603,814	5,431,070	40,087,119
67	Holding and other investment companies	236,346			414,141		687,469	766,339	1,588,311	1,856,748	4,889,144	4,650,166	2,351,104	17,439,768
	SERVICES	4,578,432	0	0	13,243,620	0	68,801,364	26,639,481	24,691,643	22,944,494	18,783,440	31,337,422	90,855,933	301,855,809
70	Hotels and other lodging places						2,157,660		228,166	532,062	683,099	456,333	11,503,341	15,560,661
72	Personal services							1,749,168	602,417	***	***	2,157,453	4,935,185	9,444,223
73	Business services	1,135,628					35,995,507	13,625,910	11,058,543	10,054,561	7,840,176	15,539,594	24,150,648	119,500,567
75-76	Auto repair; miscellaneous repair services						5,041,019		1,346,548	***	***	1,159,921	10,229,716	17,777,204
781-79	Amusement and recreational services	904,322					4,855,871	2,640,717	2,018,375	2,359,281	1,637,313	2,504,807	12,175,285	29,295,971
80	Other services	2,536,482			13,243,620		20,751,307	8,423,666	9,437,594	8,164,697	6,580,459	9,519,314	27,881,758	106,501,097
NONE	NATURE OF BUSINESS NOT ALLOCABLE													0
													Total:	6,323,099,627

Key: ** Data combined with data in lower asset class to avoid disclosure. *** Data deleted to avoid disclosure, and not included in industry sub-category totals. (-0) Less than $500 of environmental tax per return.

Assumptions:

If all data are available by industry sub-category and asset group, the industry division total per asset group is calculated by summing these data.

If all data are not available by industry sub-category and asset group but the industry division environmental tax from the Source Book is equal to the sum of the environmental tax sub-category data, the industry division receipts total per asset group is calculated by summing the sub-category data.

If all data are not available by industry sub-category and asset group and the industry division environmental tax is not equal to the sum of the environmental tax sub-category data, the industry division receipts total per asset group from the Source Book is used.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-5

Corporate Business Receipts ($000)

SIC	Description	Asset Groups ($ million)												Total
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	AGRICULTURE, FORESTRY, AND FISHING	231,957	0	0	0	0	8,266,398	881,272	3,870,171	4,013,736	2,980,013	2,826,466	5,020,484	28,090,497
01/02	Agricultural production	231,957					8,266,398		2,640,459	3,683,739	2,543,221	1,741,307	5,020,484	24,147,563
07/08/09	Agricultural svcs,forestry,fishing,hunting							881,272	1,229,712	329,999	416,792	1,085,159	**	3,942,934
	MINING	1,452,876	0	0	0	304,866	4,055,515	1,148,855	4,448,251	3,821,398	3,982,147	4,626,449	47,238,572	71,080,729
10	Metal mining	***					***		474,074	288,383	1,039,569	315,091	6,069,222	8,186,349
11/12	Coal mining	***	***				***		786,456	***	***	***	***	786,456
13	Oil and gas extraction	1,048,171					2,272,658	1,148,855	2,389,408	1,952,456	1,659,867	1,915,228	29,216,898	41,583,339
14	Nonmetallic minerals (except fuels)	***	***			304,866			818,313	***	***	***	***	1,123,179
	CONSTRUCTION	2,562,501	11,065,491	0	0	0	12,196,168	38,769,098	37,418,089	18,706,160	16,004,265	13,157,281	36,488,448	184,369,501
15	Genl bldg contractors and operative builders	659,010	11,065,491					19,051,277	***	9,451,886	6,801,215	9,173,610	***	56,002,489
16	Heavy construction contractors	101,464					12,196,168	6,063,781	***	3,839,308	3,706,492	2,908,334	***	28,817,547
17	Special trade contractors	1,802,027						13,654,040	12,085,780	3,414,966	5,896,558	1,075,337	**	37,728,688
	MANUFACTURING	9,564,171	649,094	3,968,037	4,774,788	9,201,059	62,611,661	67,467,672	122,796,185	98,147,265	89,149,424	130,734,245	2,027,802,426	2,627,886,007
20	Food and kindred products	712,548					12,739,287	9,700,496	24,023,743	13,379,912	14,715,313	18,157,999	195,603,887	289,033,185
21	Tobacco manufacturers										523,677	**	63,576,795	64,100,472
22	Textile mill products	539,903						(-0)	4,870,216	***	***	7,527,927	11,572,909	24,510,955
23	Apparel and other textile products	***					8,722,400	5,747,517	8,188,407	3,651,537	4,485,301	6,055,091	***	36,830,253
24	Lumber and wood products	***	***					(-0)	4,062,284	1,538,318	824,501	3,644,512	***	10,069,615
25	Furniture and fixtures		***						3,256,988	***	***	***	7,006,887	10,265,855
26	Paper and allied products	163,976						2,889,623	3,439,189	2,593,271	3,308,586	4,655,630	74,923,925	91,974,180
27	Printing and publishing	498,009					13,665,663	6,370,263	8,870,296	4,328,227	3,053,427	9,115,760	60,097,572	105,999,217
28	Chemicals and allied products	518,097					(-0)	3,077,707	5,673,759	5,807,768	5,351,824	11,943,935	272,598,939	305,069,829
29	Petroleum (incl. integrated) and coal products					329,613		808,135	1,839,798	767,500	893,647	2,338,062	492,133,162	498,909,935
30	Rubber and miscellaneous plastics products	241,923						4,320,879	5,476,079	4,562,588	3,115,108	3,771,648	10,971,596	32,459,799
31	Leather and leather products	***							1,277,509	***	1,228,066	***	7,573,370	10,078,947
32	Stone, clay and glass products	810,702						1,768,615	1,977,807	2,352,761	2,139,981	2,506,486	19,308,302	30,864,654
33	Primary metal industries	2,006,136	236,762						3,925,298	3,068,923	4,745,142	7,536,174	70,657,506	92,177,941
34	Fabricated metal products	377,806		3,968,037	4,774,788	8,871,446		12,248,420	13,200,793	9,888,303	9,813,250	10,991,060	28,192,428	102,326,351
35	Machinery, except electrical	1,072,664						8,016,216	8,499,035	6,584,532	8,061,456	10,698,035	130,456,667	173,388,607
36	Electrical and electronic equipment	1,071,762	412,332				11,753,344	6,523,172	9,478,665	7,747,751	10,152,275	13,132,427	181,943,142	222,214,870
37	Motor vehicles and equipment								2,936,319	1,599,729	2,747,054	3,472,286	186,511,741	197,267,129
37	Transportation equipment,exc motor vehicles						1,899,387	(-0)	2,226,050	673,600	3,288,252	1,531,717	139,591,853	149,213,039
38	Instruments and related products	171,650						1,966,351	3,788,197	21,698,789	3,283,167	5,744,253	33,341,588	69,993,995
39	Miscellaneous mfg and mfg not allocable	507,354					13,831,600	4,030,278	5,801,775	3,782,282	2,983,973	4,579,210	21,672,740	57,189,222
	TRANSPORTATION AND PUBLIC UTILITIES	2,411,542	8,834,935	0	0	0	25,729,163	13,374,742	14,360,635	7,817,735	8,483,207	13,790,686	536,087,050	630,899,695
40-47	Transportation	1,171,348	8,291,206				23,271,481	10,729,920	11,081,853	5,743,989	5,538,501	7,989,293	105,961,579	179,739,150
48	Communication	152,314	543,729				2,457,682	1,189,820	1,341,966	1,271,268	1,135,100	2,398,557	193,291,314	203,781,750
49	Electric, gas, and sanitary services	1,087,880						1,455,002	1,956,816	802,498	1,819,606	3,422,836	236,834,157	247,378,795
50-51	WHOLESALE TRADE	19,017,473					233,587,108	110,951,236	116,459,727	78,335,806	53,995,705	68,138,480	342,310,085	1,022,795,618

Exhibit B-6
(continued)

Weighted Averages of Ratios of
(Environmental Tax)/(Adjusted Business Receipts)*

SIC	Description	Asset Groups ($ million)												Weighted
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	Average
	RETAIL TRADE	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003	0.0008	0.0012	0.0018	0.0001
52	Bldg matls,garden supplies,mobile home dlr	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0013	0.0017	0.0004
53	Genl merch. stores(excl. nonstore retailers)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0009	0.0006	0.0008	0.0019	0.0007
54	Grocery stores, other food stores	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0012	0.0005
55	Automotive dealers and service stations	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003	0.0009	0.0018	0.0000
56	Apparel and accessory stores	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0005	0.0006	0.0019	0.0026	0.0006
57	Furniture and home furnishings stores	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0009	0.0000	0.0000	0.0000
58	Eating and drinking places	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0016	0.0034	0.0044	0.0001
59	Miscellaneous retail stores	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0007	0.0008	0.0000	0.0000	0.0002
NONE	Wholesale and retail trade not allocable	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000
	FINANCE, INSURANCE, AND REAL ESTATE	0.0132	0.0000	0.0008	0.0002	0.0001	0.0006	0.0011	0.0020	0.0023	0.0037	0.0038	0.0049	0.0025
60	Banking	0.0161	0.0000	0.0000	0.0000	0.0000	0.0034	0.0097	0.0027	0.0013	0.0021	0.0086	0.0243	0.0058
61	Credit agencies other than banks	0.0232	0.0000	0.0000	0.0030	0.0002	0.0049	0.0000	0.0119	0.0115	0.0409	0.0000	0.0000	0.0100
62	Security, commodity brokers and services	0.0113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0025	0.0002	0.0018	0.0019	0.0049	0.0093
63	Insurance	0.0044	0.0000	0.0008	0.0030	0.0000	0.0005	0.0004	0.0010	0.0032	0.0023	0.0026	0.0026	0.0015
641	Insurance agents, brokers, and service	0.0007	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0019	0.0019	0.0000	0.0000	0.0003
65	Real estate	0.0039	0.0000	0.0000	0.0000	0.0002	0.0001	0.0006	0.0016	0.0035	0.0057	0.0032	0.0024	0.0007
67	Holding and other investment companies	0.0141	0.0000	0.0000	0.0010	0.0000	0.0020	0.0050	0.0035	0.0040	0.0037	0.0046	0.0286	0.0061
	SERVICES	0.0020	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0005	0.0013	0.0019	0.0020	0.0038	0.0007
70	Hotels and other lodging places	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0001	0.0028	0.0043	0.0018	0.0027	0.0005
72	Personal services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0011	0.0000	0.0000	0.0016	0.0043	0.0006
73	Business services	0.0014	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0005	0.0012	0.0020	0.0020	0.0040	0.0007
75-76	Auto repair; miscellaneous repair services	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0003	0.0000	0.0000	0.0025	0.0020	0.0003
781-79	Amusement and recreational services	0.0009	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0004	0.0013	0.0011	0.0033	0.0060	0.0004
80	Other services	0.0027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0006	0.0013	0.0019	0.0015	0.0037	0.0007
NONE	NATURE OF BUSINESS NOT ALLOCABLE													
													Overall:	0.0009

Key:

* Business receipts by asset group are adjusted by the ratio of total number of returns that actually paid environmental tax (12,199) divided by the estimated total number of returns in the asset groups paying the environmental tax (375,140). Also note that each group ratio weighted average is calculated by weighting the sub-group weighted averages by their corresponding adjusted number of returns.

Assumptions:
If data is incomplete for industry sub-categories, we used industry division data per asset group to find the weighted average for the division. See Exhibits B-1, B-2, and B-4 for additional assumptions.

Source: U.S. Treasury Department, Statistics of Income Division, Source Book 1990, Corporation Income Tax Returns. The data used are for the group of returns with net income.

Exhibit B-6

Weighted Averages of Ratios of (Environmental Tax)/(Adjusted Business Receipts)*

SIC	Description	Asset Groups ($ million)												Weighted Average
		ZERO	.001 - .1	.1-.25	.25-.5	.5-1	1-5	5-10	10-25	25-50	50-100	100-250	250+	
	AGRICULTURE, FORESTRY, AND FISHING	0.0011					0.0000	0.0008	0.0005	0.0007	0.0014	0.0031	0.0027	0.0003
01/02	Agricultural production	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0007	0.0014	0.0018	0.0027	0.0003
07/08/09	Agricultural svcs,forestry,fishing,hunting	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0008	0.0005	0.0011	0.0013	0.0055	0.0000	0.0009
	MINING	0.0059	0.0000	0.0000	0.0000	0.0007	0.0002	0.0016	0.0019	0.0030	0.0034	0.0058	0.0051	0.0014
10	Metal mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0078	0.0035	0.0043	0.0082	0.0084	0.0065
11/12	Coal mining	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0000	0.0000	0.0000	0.0004
13	Oil and gas extraction	0.0075	0.0000	0.0000	0.0000	0.0000	0.0003	0.0016	0.0016	0.0028	0.0044	0.0089	0.0054	0.0014
14	Nonmetallic minerals (except fuels)	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0000	0.0009	0.0000	0.0000	0.0000	0.0000	0.0007
	CONSTRUCTION	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0003	0.0008	0.0008	0.0012	0.0001
15	Genl bldg contractors and operative builders	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0006	0.0000	0.0000
16	Heavy construction contractors	0.0042	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0015	0.0010	0.0000	0.0003
17	Special trade contractors	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0004	0.0007	0.0015	0.0000	0.0002
	MANUFACTURING	0.0027	0.0008	0.0002	0.0000	0.0000	0.0000	0.0001	0.0004	0.0017	0.0016	0.0025	0.0036	0.0005
20	Food and kindred products	0.0016	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0005	0.0010	0.0017	0.0026	0.0002
21	Tobacco manufacturers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0014	0.0000	0.0056	0.0043
22	Textile mill products	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000	0.0021	0.0018	0.0005
23	Apparel and other textile products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0006	0.0012	0.0029	0.0000	0.0001
24	Lumber and wood products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0004	0.0013	0.0027	0.0000	0.0006
25	Furniture and fixtures	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0038	0.0005
26	Paper and allied products	0.0009	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0007	0.0011	0.0034	0.0040	0.0008
27	Printing and publishing	0.0006	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	0.0002	0.0010	0.0023	0.0029	0.0045	0.0002
28	Chemicals and allied products	0.0019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0006	0.0010	0.0024	0.0032	0.0049	0.0017
29	Petroleum (incl. integrated) and coal product	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0008	0.0014	0.0013	0.0015	0.0033	0.0007
30	Rubber and miscellaneous plastics products	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0010	0.0015	0.0019	0.0032	0.0005
31	Leather and leather products	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0000	0.0020	0.0000	0.0014	0.0007
32	Stone, clay and glass products	0.0209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0009	0.0014	0.0018	0.0021	0.0048	0.0015
33	Primary metal industries	0.0004	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0014	0.0014	0.0021	0.0028	0.0007
34	Fabricated metal products	0.0002	0.0000	0.0002	0.0000	0.0000	0.0000	0.0001	0.0005	0.0010	0.0017	0.0019	0.0043	0.0001
35	Machinery, except electrical	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0013	0.0019	0.0028	0.0050	0.0007
36	Electrical and electronic equipment	0.0042	0.0011	0.0000	0.0000	0.0000	0.0000	0.0003	0.0007	0.0015	0.0019	0.0032	0.0036	0.0008
37	Motor vehicles and equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0004	0.0012	0.0009	0.0017	0.0024	0.0009
37	Transportation equipment,exc motor vehicle	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0006	0.0021	0.0016	0.0042	0.0027	0.0005
38	Instruments and related products	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0007	0.0044	0.0017	0.0034	0.0035	0.0014
39	Miscellaneous mfg and mfg not allocable	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0009	0.0018	0.0029	0.0033	0.0003
	TRANSPORTATION AND PUBLIC UTILITIES	0.0006	0.0000				0.0000	0.0002	0.0011	0.0018	0.0027	0.0043	0.0046	0.0002
40-47	Transportation	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0006	0.0014	0.0018	0.0041	0.0027	0.0000
48	Communication	0.0036	0.0002	0.0000	0.0000	0.0000	0.0001	0.0005	0.0025	0.0026	0.0051	0.0062	0.0056	0.0006
49	Electric, gas, and sanitary services	0.0027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0004	0.0018	0.0025	0.0029	0.0050	0.0024
50-51	WHOLESALE TRADE	0.0004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003	0.0005	0.0008	0.0008	0.0001