

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

by Sara P. Boroshok

**E**nvironmental excise taxes are imposed on petroleum and certain chemicals that threaten the environment (Chapter 38 of the Internal Revenue Code of 1986). Most of the revenues collected are dedicated to help fund efforts to prevent leakages and spills or to neutralize, through clean-up, the risks posed by hazardous waste sites. Businesses that are responsible for a contaminated site are held duly responsible for clean-up. However, in the event they are unable to cover the costs, funds are allocated from environmental excise tax revenues.

For Calendar Year 1993, about 2,500 businesses filed over 5,300 quarterly Forms 6627, *Environmental Taxes*, with the Internal Revenue Service, reporting a total tax liability of \$1.72 billion (after credits and refunds), including \$0.76 billion with respect to taxes on ozone-depleting chemicals (ODC's), reported here for the first time [1]. Environmental excise tax liability for 1992, exclusive of taxes on ODC's, was \$1.09 billion (after credits and refunds) [2,3]. Almost two-thirds of all environmental excise tax filers (over 1,600 businesses) reported tax on ozone-depleting chemicals (Figure A).

## Transfer of Funds

Most environmental excise taxes, initially deposited into the U.S. Treasury General Fund, are subsequently transferred to one of two Federal trust funds (Figure B) [4]. Petroleum taxes are transferred to both the Hazardous Substance Superfund (Superfund) and to the Oil Spill Liability Trust Fund. Amounts collected from the manufacturers, producers or importers of 42 different chemicals and from importers of certain chemical substances are also transferred to the Superfund. In general, the trust funds provide direct financing for administrative and operational costs of specific Federal programs, e.g., for hazardous site clean-up, funded by the Superfund; or for oil spill clean-up, funded by the Oil Spill Liability Trust Fund. Unlike the aforementioned tax revenues, ODC tax receipts are not devoted to a specific Federal trust fund. Instead, they remain in the U.S. Treasury General Fund and are available, along with other sources of revenue, to support Federal spending.

## Environmental Excise Taxation

For 1993, total environmental excise taxes, of \$1.7 billion (before credits and refunds), consisted mostly of ozone-depleting chemical taxes (43.8 percent) and petroleum

taxes (38.9 percent) (Figure C). About 56 percent were assigned to trust funds (48.4 percent to the Superfund and 7.7 percent to the Oil Spill Liability Trust Fund) and another 43.8 percent, associated with ozone-depleting chemicals, remained in the General Fund (Figure D).

Previous *Statistics of Income Bulletin* articles on environmental excise taxes focused only on Superfund and Oil Spill Liability Trust Fund taxes, which finance, in large part, the U.S. Environmental Protection Agency's (EPA) clean-up directives. They did not include the relatively new ozone-depleting chemical taxes, which are included here for the first time, for 1993 [5]. Consequently, this article only briefly covers Superfund and Oil Spill Liability Trust Fund taxes, and, instead, concentrates on reported ODC tax liabilities.

The Background section of this article presents legislative histories of categories of environmental excise taxes and trust funds (Superfund and the Oil Spill Liability Trust Fund), along with detailed explanations of all three types of ODC taxes. Empirical data follows in the Taxes Reported for 1993 section, with emphasis on ODC tax revenues.

## Background

### Superfund

In order to cleanup hazardous waste sites, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) imposed an excise tax on current owners and operators of such sites, owners and operators at the time of a chemical or substance release, and generators and transporters of hazardous substances. CERCLA also established the aforementioned Hazardous Substance Superfund, administered by the EPA in cooperation with State Governments. The Superfund was to be used for locating, investigating, and cleaning-up hazardous waste sites throughout the United States in situations where either (1) no financially viable responsible party could be identified, or (2) it was necessary to expedite site clean-ups (where costs could ultimately be recovered from identifiable responsible parties).

The rates for chemicals taxed for the Superfund were based, proportionately, on the concentration of contaminating chemicals present at hazardous waste sites, with higher rates assigned to those chemicals with the highest concentration levels.

Almost from the beginning, Superfund's resources have proven insufficient to meet the growing needs of hazardous waste site clean-ups, prompting Congress to revise CERCLA's original provisions through a series of amendments and extensions. CERCLA was replaced by

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# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure A**

## Environmental Excise Taxes, Before and After Credits and Refunds, 1992 and 1993

[Money amounts are in thousands of dollars]

Type of substance	1993				
	Number of filers <sup>1</sup>	Tax before credits and refunds	Number of returns claiming credits and refunds	Credits and refunds <sup>2</sup>	Tax after credits and refunds
	(1)	(2)	(3)	(4)	(5)
<b>Total.....</b>	<b>2,539</b>	<b>1,730,336</b>	<b>77</b>	<b>8,833</b>	<b>1,721,503</b>
<b>Total other than ozone-depleting chemicals.....</b>	<b>N/A</b>	<b>971,686</b>	<b>N/A</b>	<b>7,297</b>	<b>964,389</b>
Petroleum.....	326	672,763	n.a.	67	672,696
Chemical.....	452	285,524	33	2,734	282,790
Petrochemicals.....	n.a.	n.a.	n.a.	n.a.	233,102
Inorganic chemicals.....	n.a.	n.a.	n.a.	n.a.	49,688
Imported chemical substances.....	107	13,399	29	4,496	8,903
<b>Total ozone-depleting chemicals.....</b>	<b>1,605</b>	<b>758,649</b>	<b>15</b>	<b>1,536</b>	<b>757,113</b>
Ozone-depleting chemicals (sold or used).....	197	629,712	**	489	629,223
Imported products containing or manufactured using ozone-depleting chemicals.....	533	81,159	10	1,040	80,119
Floor stocks of ozone-depleting chemicals.....	1,032	47,778	**	7	47,771

Type of substance	1992				
	Number of filers <sup>1,3</sup>	Tax before credits and refunds	Number of returns claiming credits and refunds	Credits and refunds <sup>2</sup>	Tax after credits and refunds
	(1)	(2)	(3)	(4)	(5)
<b>Total.....</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
<b>Total other than ozone-depleting chemicals.....</b>	<b>764</b>	<b>1,122,550</b>	<b>n.a.</b>	<b>33,116</b>	<b>1,089,434</b>
Petroleum.....	517	832,311	n.a.	n.a.	n.a.
Chemical.....	449	278,233	n.a.	n.a.	n.a.
Petrochemicals.....	n.a.	225,861	n.a.	n.a.	n.a.
Inorganic chemicals.....	n.a.	52,373	n.a.	n.a.	n.a.
Imported chemical substances.....	102	12,019	n.a.	n.a.	n.a.
<b>Total ozone-depleting chemicals.....</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>580,200<sup>4</sup></b>

\*\* Not shown to avoid disclosure of information about specific businesses. However, the data are included in the appropriate totals.

N/A - Not applicable.

n.a. - Not available.

<sup>1</sup> Number of filers does not add to totals because some businesses report tax on more than one substance.

<sup>2</sup> Credits and refunds may be understated because of different taxpayer reporting methods (see text).

<sup>3</sup> Number of filers is understated for 1992, because it does not account for those taxpayers who reported ozone-depleting chemical taxes.

<sup>4</sup> Internal Revenue Report of Excise Taxes, Summary of Quarters ended March 1992 through December 1992.

NOTE: Detail may not add to totals because of rounding.

the Superfund Amendments and Reauthorization Act of 1986 (SARA), which re-established the Superfund, effective January 1, 1987, through December 31, 1991. In addition, SARA imposed new taxes on certain imported chemical substances and an environmental income tax of 0.12 percent on corporations whose "modified alternative minimum taxable income" exceeded \$2 million [6]. Concomitant with these changes, a new ceiling on Superfund revenue was set at \$6.7 billion, an increase of \$5.3 billion over CERCLA's original Superfund cap of \$1.4 billion.

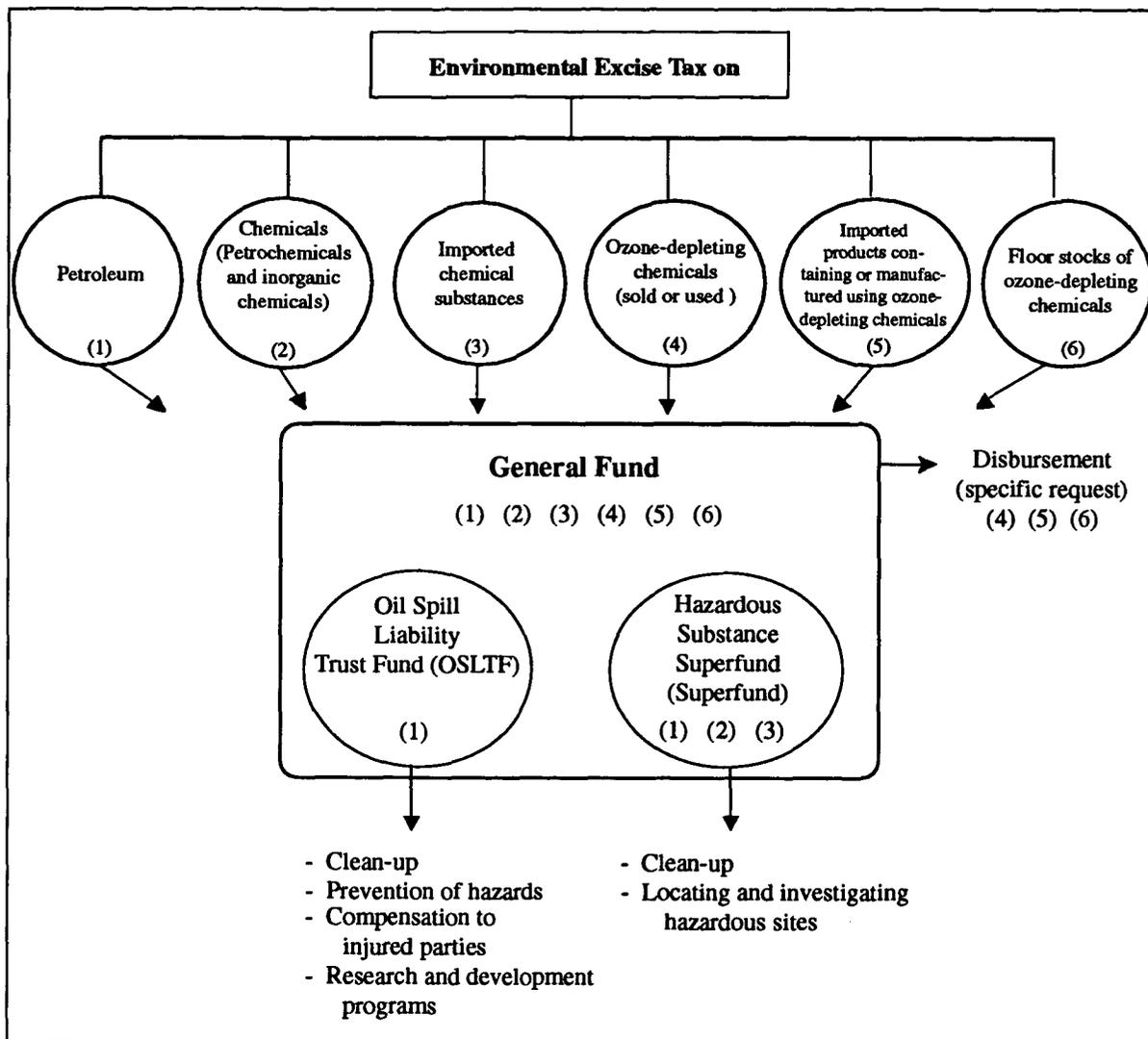
Then, in order to meet actual and projected obligations, the Superfund and its supporting taxes were again extended, by another 4 years, through December 31, 1995, by the Revenue Reconciliation Act of 1990. This Act again raised the ceiling on Superfund tax collections, from \$6.7 billion to \$12.0 billion.

### Oil Spill Liability Trust Fund

A \$.05 per barrel tax is imposed on both domestically produced and imported crude oil and on imported petroleum products. The Oil Spill Liability Trust Fund, into

Figure B

Transfer of Environmental Excise Tax Revenues



which these taxes are transferred, allocates money for the prevention and clean-up of oil spills (whenever a responsible party is unable to pay for the cost of containment and clean-up), as well as to compensate injured parties for damages caused by these spills. The Trust Fund, administered by the U.S. Coast Guard, was originally established by the Omnibus Budget Reconciliation Act of 1989, and later amended by the Oil Pollution Act of 1990.

This Fund also provides money for research into, and development of, oil spill clean-up technologies. Starting with 1990, annual appropriations from the Fund, ranging from \$25 million to \$30 million, have been distributed to:

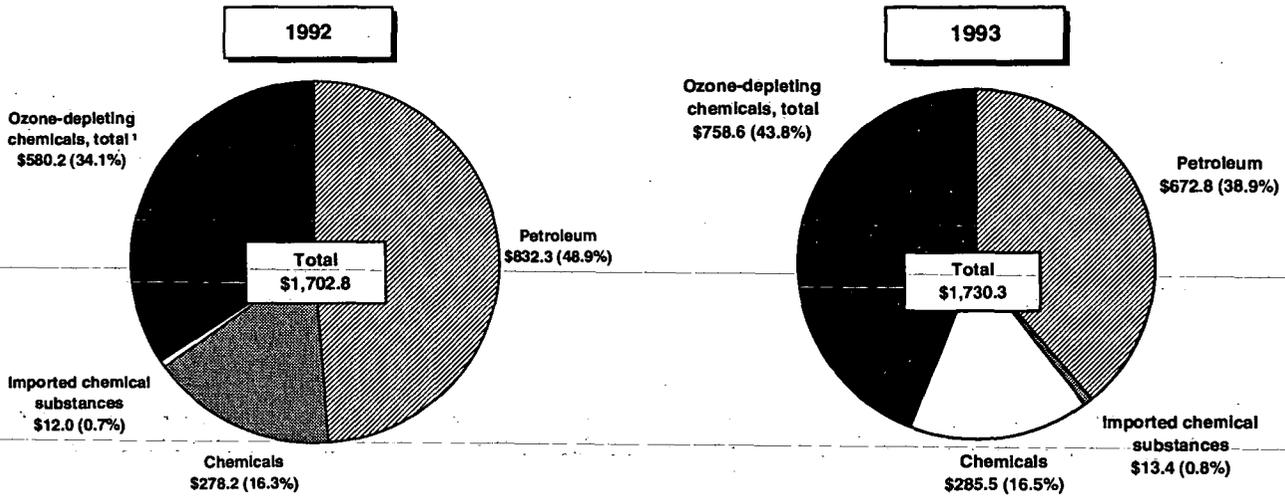
(1) the U.S. Coast Guard, for its operating expenses in connection with oil spill clean-up efforts; (2) the National Response System, a network of individuals and teams from local, State, and Federal agencies, which (until 1993) shared the expertise and resources to assure that oil spill control and clean-up activities were timely and efficient, and that threats to human health and the environment were minimized; and (3) research and development programs.

There was a one-year suspension of this tax from July 1, 1993, to June 30, 1994, because the unobligated balance in the Fund exceeded the statutory limit of \$1 billion. The tax expired effective January 1, 1995.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure C**

**Sources of Environmental Excise Taxes (Before Credits and Refunds), 1992 and 1993**  
(Money amounts are in millions of dollars)

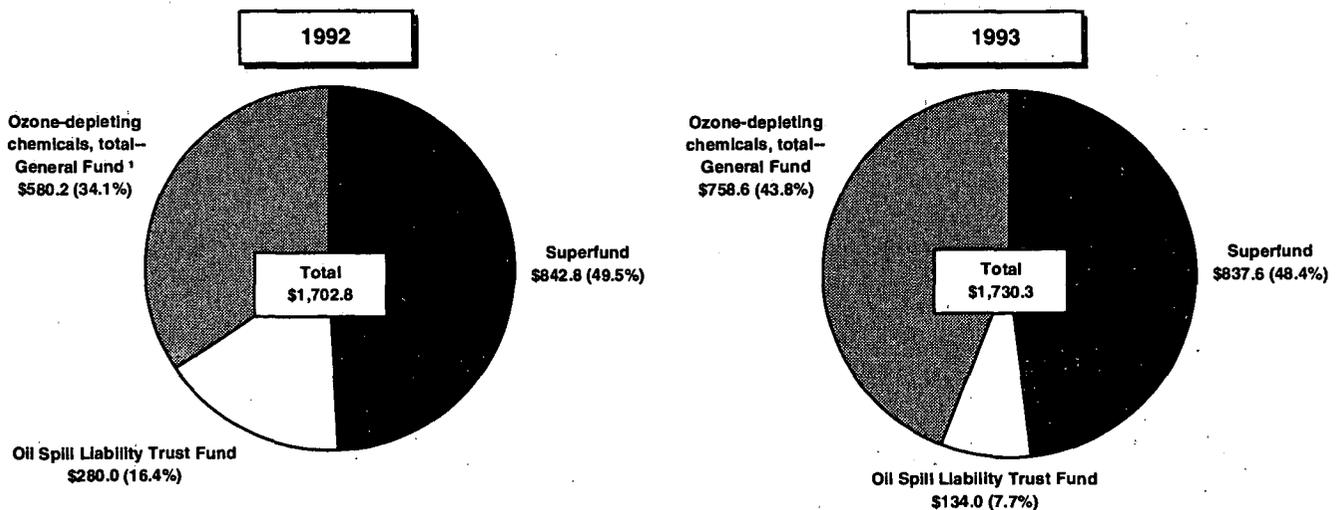


<sup>1</sup> Internal Revenue Report of Excise Taxes, Summary for Quarters ended March 1992 through December 1992.

NOTES: In general, Figure C presents tax amounts before credits and refunds for comparability of data for 1992 and 1993. However, Ozone-depleting chemicals, total<sup>1</sup> (1992) represents tax after credits and refunds. (See Data Sources and Limitations section of this article.) All other figures (except Figure D) present tax amounts after credits and refunds. Detail may not add to totals because of rounding.

**Figure D**

**Environmental Excise Taxes (Before Credits and Refunds), by Federal Fund, 1992 and 1993**  
(Money amounts are in millions of dollars)



<sup>1</sup> Internal Revenue Report of Excise Taxes, Summary for Quarters ended March 1992 through December 1992.

NOTES: In general, Figure D presents tax amounts before credits and refunds for comparability of data for 1992 and 1993. However, Ozone-depleting chemicals, total-General Fund<sup>1</sup> (1992) represents tax after credits and refunds. (See Data Sources and Limitations section of this article.) All other figures (except Figure C) present tax amounts after credits and refunds. Detail may not add to totals because of rounding.

## Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

### Protecting the Ozone Layer

Because there was, and continues to be, strong evidence indicating that certain emissions of chlorofluorocarbons (CFC's), halons, and certain other chemicals deplete the ozone layer, international treaties were entered into by the United States in order to phase-out these harmful substances. The Montreal Protocol on Substances that Deplete the Ozone Layer, signed on September 16, 1987, established a timetable for reducing production of specific ODC's, worldwide. As a signatory to the agreement, the United States adheres to the Protocol through Title VI of the Clean Air Act of 1990, which authorizes EPA to monitor levels of ODC's produced, imported, or exported through quarterly reporting requirements.

The Montreal Protocol, renegotiated on June 29, 1990,

in London, England, and on November 25, 1992, in Copenhagen, Denmark, specified separate classes of "controlled substances" which deplete the ozone layer and which are subject to the agreements. Figure E shows the most common "Class I" substances, as initially covered by the Protocol, with their primary uses, while Figure F presents a complete list of ODC's specified under the Protocol and its Amendments and summarizes their tax treatment as incorporated into U.S. law, initially through the Revenue Reconciliation Act of 1990 [7]. "Class I" substances, regulated under both the Montreal Protocol and the Clean Air Act of 1990, have phase-out schedules before the year 2000, while "Class II" substances, regulated under both the 1992 Copenhagen Amendment to the Protocol and the Clean Air Act of 1990, are to be phased-out after 2000.

**Figure E**

### Selected Ozone-Depleting Chemicals (ODC's) and Primary Uses <sup>1</sup>

Ozone-depleting chemical	Primary uses
<b>Class I, Groups I &amp; II substances<sup>2</sup>:</b>	
CFC-11	Blowing agent for closed-cell plastic insulating foams; refrigerant for low-pressure industrial air conditioners or chillers.
CFC-12	Auto air conditioning; industrial chiller, packaging or cushioning foam blowing agent; refrigerant in home appliances (refrigerators and freezers); medical aerosol for asthma patients; medical sterilant.
CFC-113	Cleaning solvent, usually electronic circuit boards; medical applications, include cleaning pacemakers and other implants to reduce body tissue rejection.
CFC-114	Refrigerant for industry (large chillers and air conditioners) or military (submarines and surface ships).
CFC-115	Seldom used alone; when combined with HCFC-22, becomes a refrigerant blend for low-temperature refrigeration typically found in supermarket frozen food cases.
Halon-1211	Streaming agent used mostly in hand-held or portable fire extinguishers.
Halon-1301	Highly reliable flooding agent, used primarily to extinguish fire in military vehicles, aircraft, and offshore drilling platforms.
Halon-2402	Streaming agent with no significant commercial use in the United States because of unfavorable toxicology properties. However, it is used in military installations in the former Soviet Union.
Carbon tetrachloride	Feedstock for making CFC-11 and CFC-12 (known as a human carcinogen); applications in the United States are minimal; used significantly in former Eastern Bloc countries as a grain fumigant and fire-fighting agent; limited solvent applications.
Methyl chloroform	Vapor degreasing and cold cleaning of fabricated metal parts; solvent in adhesive and aerosols, (coatings and inks); dry cleaning leather and suede garments; all-purpose solvent; powerful cleansing properties, low flammability, and low relative toxicity.

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<sup>2</sup> Class I, Groups I and II substances are to be phased-out by the year 2000.

NOTE: Abbreviations are as follows: CFC - Chlorofluorocarbon, HFC - Hydrofluorocarbon and HCFC - Hydrochlorofluorocarbon.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure F**

## Ozone-Depleting Chemicals, Chemical Nomenclature, Ozone-Depletion Factor, and Tax Rates

Ozone-depleting chemical	Chemical nomenclature	Base tax rate (dollars per pound)		Ozone- depletion factor	1993 Tax rate (dollars per pound) <sup>1</sup>	
		1992	1993		ODC's, other than floor stocks	Floor stocks
		(1)	(2)		(3)	(4)
<b>CLASS I</b>						
<b>Group I</b>						
CFC-11	trichlorofluoromethane; freon 11, R-11	1.67	3.35	1.00	3.35	1.68
CFC-12	dichlorodifluoromethane; freon 12, R-12 (CFC-12 is also a component of R-500)	1.67	3.35	1.00	3.35	1.68
CFC-113	trichlorotrifluoroethane; 1,1,2 trichloro-1,2,2 trifluoroethane, freon 113, freon TF, freon PCA, genetron 113	1.336	3.35	0.80	2.68	1.344
CFC-114	1,2-dichloro-1,1,2,2-tetrafluoroethane, R-114, freon 114	1.67	3.35	1.00	3.35	1.68
CFC-115	chloropentafluoroethane, R-115 (CFC-115 is also a component of R-502)	1.002	3.35	0.60	2.01	1.008
ODC used in rigid foam insulation	N/A	N/A	N/A	N/A	N/A	0.2499
ODC used to sterilize medical instruments	N/A	N/A	N/A	N/A	N/A	1.6700
ODC used as propellant in metered-dose inhaler	N/A	N/A	N/A	N/A	N/A	1.6700
<b>Group II</b>						
Halon-1211	bromochlorodifluoromethane	0.2505	3.35	3.00	0.2502	--
Halon-1301	bromotrifluoromethane	0.2505	3.35	10.00	0.2512	--
Halon-2402	dibromotetrafluoroethane	0.2505	3.35	6.00	0.2492	--
<b>Group III</b>						
CFC-13	chlorotrifluoroethane, R-13 (CFC-13 is also a component of R-503); CF3C1	1.37	3.35	1.00	3.35	1.98
CFC-111	pentachlorofluoroethane; C2FC15	1.37	3.35	1.00	3.35	1.98
CFC-112	tetrachlorodifluoroethane; C2F2C14	1.37	3.35	1.00	3.35	1.98
CFC-211	heptachlorofluoropropane; C3FC17	1.37	3.35	1.00	3.35	1.98
CFC-212	hexachlorodifluoropropane; C3F2C16	1.37	3.35	1.00	3.35	1.98
CFC-213	pentachlorotrifluoropropane; C3F3C15	1.37	3.35	1.00	3.35	1.98
CFC-214	tetrachlorotetrafluoropropane; C3F4C14	1.37	3.35	1.00	3.35	1.98
CFC-215	trichloropentafluoropropane; C3F5C13	1.37	3.35	1.00	3.35	1.98
CFC-216	dichlorohexafluoropropane; C3F6C12	1.37	3.35	1.00	3.35	1.98
CFC-217	chloroheptafluoropropane; C3F7C1	1.37	3.35	1.00	3.35	1.98
<b>Group IV</b>						
Carbon tetrachloride	tetrachloromethane	1.37	3.35	1.10	3.6850	2.178
<b>Group V</b>						
Methyl chloroform	1,1,1-trichloroethane, TCA	1.37	3.35	0.10	0.2111	0.0741

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure F**

**Ozone-Depleting Chemicals, Chemical Nomenclature, Ozone-Depletion Factor, and Tax Rates--Continued**

Ozone-depleting chemical	Chemical nomenclature	Base tax rate (dollars per pound)		Ozone- depletion factor	1993 Tax rate (dollars per pound) <sup>1</sup>	
		1992	1993		ODC's, other than floor stocks	Floor stocks
		(1)	(2)		(3)	(4)
<b>CLASS II</b>						
HCFC-21	dichlorofluoromethane	N/A	N/A	N/A	N/A	N/A
HCFC-22	chlorodifluoromethane	N/A	N/A	0.05	N/A	N/A
HCFC-31	chlorofluoromethane	N/A	N/A	N/A	N/A	N/A
HCFC-121	C2HFCI4	N/A	N/A	N/A	N/A	N/A
HCFC-122	C2HF2CI3	N/A	N/A	N/A	N/A	N/A
HCFC-123	C2HF3CI2	N/A	N/A	0.02	N/A	N/A
HCFC-124	C2HF4CI	N/A	N/A	0.02	N/A	N/A
HCFC-131	C2H2FCI3	N/A	N/A	N/A	N/A	N/A
HCFC-132b	C2H2F2CI2	N/A	N/A	N/A	N/A	N/A
HCFC-133a	C2H2F2CI	N/A	N/A	N/A	N/A	N/A
HCFC-141b	C2H3FCI2	N/A	N/A	0.12	N/A	N/A
HCFC-142b	C2H3F2CI	N/A	N/A	0.06	N/A	N/A
HCFC-221	C3HFCI6	N/A	N/A	N/A	N/A	N/A
HCFC-222	C3HF2CI5	N/A	N/A	N/A	N/A	N/A
HCFC-223	C3HF3CI4	N/A	N/A	N/A	N/A	N/A
HCFC-224	C3HF4CI3	N/A	N/A	N/A	N/A	N/A
HCFC-225ca	C2HF5CI2	N/A	N/A	N/A	N/A	N/A
HCFC-225cb	C3HF6CI	N/A	N/A	N/A	N/A	N/A
HCFC-226	C3H2FCI5	N/A	N/A	N/A	N/A	N/A
HCFC-231	C3H2F2CI5	N/A	N/A	N/A	N/A	N/A
HCFC-232	C3H2F2CI4	N/A	N/A	N/A	N/A	N/A
HCFC-233	C3H2F2CI3	N/A	N/A	N/A	N/A	N/A
HCFC-234	C3H2F4CI2	N/A	N/A	N/A	N/A	N/A
HCFC-235	C3H2F5CI	N/A	N/A	N/A	N/A	N/A
HCFC-241	C3H3FCI4	N/A	N/A	N/A	N/A	N/A
HCFC-242	C3H3F2CI3	N/A	N/A	N/A	N/A	N/A
HCFC-243	C3H3F3CI2	N/A	N/A	N/A	N/A	N/A
HCFC-251	C3H4FCI3	N/A	N/A	N/A	N/A	N/A
HCFC-252	C3H4F2CI2	N/A	N/A	N/A	N/A	N/A
HCFC-253	C3H4F3CI	N/A	N/A	N/A	N/A	N/A
HCFC-261	C3H5FCI2	N/A	N/A	N/A	N/A	N/A
HCFC-262	C3H5F2CI	N/A	N/A	N/A	N/A	N/A
HCFC-271	C3H6FCI	N/A	N/A	N/A	N/A	N/A

N/A - Not applicable.

<sup>1</sup> In general, the ozone-depleting chemical tax rate is figured by multiplying the (annual) base-tax amount by the ozone-depletion factor, except as explained in footnote [9] at the end of the article.

NOTE: CFC represents chlorofluorocarbon(s) while HCFC represents hydrochlorofluorocarbon(s). Only Class I substances are taxable.

## Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

In February 1992, President George Bush announced that the United States would unilaterally accelerate the phase-outs set forth in the Montreal Protocol and its Amendments to further encourage the development of substitutes for ODC's, as well as to reduce their production and importation.

In addition to establishing a list of ODC's to be "controlled", these treaties identified an "ozone-depleting potential" (ODP), which is the relative rate at which each chemical depletes the ozone layer. The ODP is equivalent to the "ozone-depletion factor" used in calculating applicable tax rates. A "base tax rate" is multiplied by the "ozone-depletion factor" in specifying tax rates. Liabilities are determined by multiplying these rates by the weight (expressed in pounds) of the ODC (used, sold, or contained in imported products) for most "Class I" substances (Figure F) [8,9]. The determination of tax rates for floor stocks of ODC's is explained in The Floor Stocks Tax section of this article.

### Ozone-Depleting Chemical Taxation

There are three separate types of taxes relating to ODC's: (1) taxes on the sale or use of ODC's manufactured in, produced in, or imported into the United States; (2) taxes on any imported product if any ODC was used in its manufacture or production; and (3) taxes on floor stocks (inventories held on January 1 of each year) of taxable ODC's held for sale or use in further manufacturing. These three taxes were initially enacted as part of the Budget Reconciliation Act of 1989 and applied to the CFC's and halons categorized in groups I and II of the Class I chemicals listed in the Protocol, effective January 1, 1990. See Figure F and Appendix. As part of the Budget Reconciliation Act of 1990, these taxes were extended to the ODC's added to the coverage of the Protocol by the London Amendments: the 10 forms of CFC's categorized in Group III of Class I as well as carbon tetrachloride and methyl chloroform that make up groups IV and V, respectively. The 33 forms of hydrochlorofluorocarbons (Class II ODC's) to be phased out after 2000 are not subject to tax.

These ODC-related taxes were designed to complement the regulatory regime used to implement the Protocol. One view of the taxes is that they effectively reduced ODC use beyond the reductions called for by the Protocol by significantly increasing their prices [10]. Another view is that they are in the nature of windfall profit taxes that capture, as public revenues, amounts which would otherwise inure to producers. Since quantities produced were to be drastically reduced by regulation, prices would be expected to rise to clear the markets for ODC's, thus

creating windfall profits for producers in the absence of the tax [11].

*The Tax on ODC's Sold or Used.* The tax rates on ODC's sold or used by their manufacturer, producer, or importer are generally determined each year by a statutory formula that multiplies base tax rates by the ozone-depletion factors identified in the Protocol (Figure F). The initial base tax rate was set at \$1.37 per pound for 1990 (or for 1991 with respect to those chemicals added to the list of taxable ODC's by the Omnibus Budget Reconciliation Act of 1990) with increases in the base tax rate scheduled for subsequent years. The base tax rate was increased to \$3.35 per pound for 1993, as part of the Comprehensive National Energy Policy Act of 1992, with increases of \$1.00 per pound scheduled for the next two years, and of \$.45 per pound for each year after 1995 [12]. These increased rates complemented the speed-up in the regulatory phase-out of ODC's announced by President Bush in 1992 [13]. In general, this tax is imposed upon initial use or sale of the ODC. However, an ODC contained in a mixture can be taxed either upon creation of the mixture (its first "use"), or at the seller's option, upon the sale of the mixture.

Some exceptions to this general rule for setting the tax rates were legislated. No tax is imposed on ODC's diverted or recovered in the United States as a part of a recycling process, to avoid taxing the same ODC's over and over again. Use in further manufacturing is not taxed if the ODC is completely consumed in the process, and thus cannot damage the ozone layer. Limited amounts of exports are not subject to tax, in part, to induce non-signatories to the Protocol to join the agreement, by continuing to supply those countries with relatively low-cost ODC's. Otherwise it was thought that such countries might be induced to establish their own ODC-producing capacity [14]. In addition, ODC's sold or used as feedstock were exempt from the ODC tax. Tax rates were phased in for halons, methyl chloroform, and for ODC's used: (1) in the manufacture of rigid foam insulation; and (2) to sterilize medical instruments. ODC's used as propellants in metered-dose inhalers are permanently taxed at a rate of \$1.67 per pound [15].

*The Tax on Imported Products.* The tax on imported products containing or manufactured using ODC's is the most complicated of the ODC-related taxes. It is based on the per unit weight of ODC's contained in the imported product (such as freon in the air conditioning unit of an imported automobile) or used in its production. The "Imported Products Reference Table" indicates weight and type of ODC, based on the "predominant method of production in the United States," for each taxable im-

## Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

ported product (Appendix) [16]. Imported taxable products not specifically listed in the IRS table are subject to a 1 percent of value tax, unless the importer can establish a lower rate based on actual ODC use by the foreign supplier.

The taxable event is the use or sale of the imported product by the importer; however, the importer can elect to treat importation as the taxable event [17]. The regulations also permit the importer to elect to have the sale of a finished product treated as the taxable event with respect to imported, taxable component parts [18]. The regulations permit an importer to assert (so long as the importer can "support this determination") that the foreign supplier does not use ODC's, or uses lesser amounts than reflected in the IRS table and, thus, avoid or minimize the tax. Under the regulations, "use" excludes the loss or destruction of imported products containing or manufactured using ODC's, as well as packaging, warehousing, and repair [19].

In addition, a de minimis rule permits a product to be imported tax-free so long as the otherwise applicable tax on the ODC's contained in the product or used in manufacturing the product does not account for more than 0.1 percent of the cost of the product to the importer [20]. By statute, this de minimis rule does not apply, however, to any product with respect to which any ODC (other than the less damaging methyl chloroform) is used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components.

**The Floor Stocks Tax.** The tax on floor stocks of ozone-depleting chemicals is imposed on those (other than the manufacturer, producer, or importer), who, as of January 1 of a given year, hold inventories of ODC's for either: (1) future sale or (2) use in further manufacture. Floor stocks taxes are typically used when excise taxes are first imposed or when rates are increased. This tax policy prevents tax avoidance through the artificial accumulation of inventories just before the new tax goes into effect.

Inventories held on January 1 are taxed at a rate equal to the difference between the current and previous year rates. For 1993, the base tax rate for floor stocks of most ODC's was \$1.68 per pound -- the difference between the 1993 (\$3.35) and 1992 (\$1.67) base tax rates. (Refer back to Figure F for rates applicable to all ozone-depleting chemicals.)

Each year's floor stocks tax is due on June 30th. In 1993, inventories of less than 400 pounds were exempt from the tax. The floor stocks tax did not apply in 1993 to inventories held for use in the manufacture of rigid foam insulation, medical sterilants or metered-dose inhalers, or to halons, because there was little or no increase in these tax rates between 1992 and 1993 [21].

### Taxes Reported for 1993

While there are several different types of environmental excise taxes, all are reported on Form 6627; in practice, many of the taxes are often referred to by their association with either the Superfund or the Oil Spill Liability Trust Fund. Therefore, discussions of environmental excise taxes presented here include references to both the tax and the associated fund. Figure G categorizes aggregate environmental excise taxes by fund. The taxes on ozone-depleting chemicals sold or used, on imported products containing or manufactured using ODC's, and on floor stocks of ODC's are grouped under the U.S. Treasury General Fund. Table 1 presents detailed information on taxes and number of filers by type of tax with respect to each substance.

#### Superfund Taxes

A petroleum excise tax at \$.097 cents per barrel, and the taxes on chemicals (petrochemicals and inorganic chemicals), and imported chemical substances comprise the excise taxes "transferred" to the Superfund [22]. The Superfund petroleum tax is incurred by operators of U.S. refineries which receive crude oil; businesses importing petroleum products for consumption, use, or warehousing; and businesses using or exporting crude oil on which tax has not already been paid. For 1993, petroleum taxes of \$538.7 million represented the majority of the total Superfund excise taxes (64 percent).

Inorganic chemical, petrochemical, and imported chemical substance taxes are paid by those manufacturers or importers that sell or use the specified chemicals or substances. Petrochemical taxes, alone, comprised 28 percent (\$233.1 million) of the total excise Superfund taxes; inorganic chemical taxes totaled 6 percent (\$49.7 million), while imported chemical substances accounted for less than 1 percent (\$8.9 million).

#### Oil Spill Liability Trust Fund Taxes

The oil spill tax on petroleum is imposed on the same businesses liable for the Superfund petroleum tax. The oil spill tax rate is \$.05 per barrel. For 1993, Oil Spill Liability Trust Fund taxes totaled \$134.0 million, 53 percent less than 1992, reflecting the suspension of this tax from July 1, 1993, to June 30, 1994. Tax revenues were almost equally divided between imports and domestic production.

#### Ozone-Depleting Chemical Taxes

Total tax reported for all ODC's was \$757.1 million for 1993. Figure H presents the total amount of tax for each category of ozone-depleting chemical, highlighting the fact that the highest concentration of tax was associated

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure G**

## Environmental Excise Taxes After Credits and Refunds, by Federal (Trust) Fund and Substance, 1993

[Money amounts are in thousands of dollars]

Fund and substance	Total tax after credits and refunds	Percentage of--	
		Fund	Total environmental excise tax
	(1)	(2)	(3)
<b>Total</b> .....	<b>1,721,503</b>	<b>N/A</b>	<b>100</b>
<b>Superfund</b>			
<b>Total</b> .....	<b>830,375</b>	<b>100</b>	<b>48</b>
<b>Petroleum, total</b> .....	<b>538,682</b>	<b>64</b>	<b>31</b>
Domestic.....	264,560	32	15
Imported.....	274,122	33	16
<b>Chemicals, total</b> .....	<b>282,790</b>	<b>34</b>	<b>16</b>
Petrochemicals.....	233,102	28	14
Inorganic.....	49,688	6	3
Imported chemical substances.....	8,903	1	1
<b>Oil Spill Liability Trust Fund</b>			
<b>Petroleum, total</b> .....	<b>134,014</b>	<b>100</b>	<b>8</b>
Domestic.....	66,249	49	4
Imported.....	67,765	51	4
<b>General Fund</b>			
<b>Ozone-Depleting Chemicals (ODC's), total</b> .....	<b>757,113</b>	<b>100</b>	<b>44</b>
Ozone-depleting chemicals (sold or used).....	629,223	83	37
Imported products containing or manufactured using ozone-depleting chemicals.....	80,119	11	5
Floor stocks of ozone-depleting chemicals.....	47,771	6	3

N/A - Not applicable.

NOTE: Detail may not add to totals because of rounding.

with a single chemical, CFC-12 (dichlorodifluoromethane), which accounted for almost two thirds (\$493.4 million) of the total tax reported for all ODC's exchanged or held in inventories. Ozone-depleting chemical taxes apply to 20 different substances.

### *Tax on Ozone-Depleting Chemicals Sold or Used in Production*

Of the total tax on ODC's (\$757.1 million), the majority (83 percent) of the revenues were generated by the sale or use of ODC's, almost 75 percent of which was associated with the production or use of CFC-12.

CFC-12 is used primarily for auto air conditioners, although it has other applications (e.g., as an industrial chiller; as a packaging or cushioning foam-blowing agent; and as a refrigerant in home appliances, such as refrigerators and freezers). This chemical also has a limited use as a medical aerosol for asthma patients and as a carrier of ethylene oxide, used to sterilize medical equipment [23].

### *Tax on Imported Products Containing or Manufactured Using Ozone-Depleting Chemicals*

Of the total tax on ODC's (\$757.1 million), only 11 percent of the revenues (\$80.1 million) were generated

through taxes on the importation of products. Almost 50 percent (\$39.5 million) of the tax on imported products containing or manufactured using ozone-depleting chemicals was attributed to electronic goods manufactured using CFC-113 (trichlorotrifluoromethane).

CFC-113 is a solvent used primarily to clean electronic equipment. Products which use CFC-113 in their manufacturing process include: typewriters, calculators, microwave ovens, and computers (along with all associated components, i.e., keyboards, displays, printers, and storage units, as well as disk drives). Virtually all electronic goods appear on the "Imported Products Reference Table" because ODC's have commonly been used as cleaning agents in their manufacture.

### *Tax on Floor Stocks of Ozone-Depleting Chemicals*

Total tax on floor stocks of ODC's for 1993 was \$47.8 million. Nearly three-fourths (\$33.7 million) of this tax was associated with CFC-12, a refrigerant (discussed above), with another \$5.7 million (12 percent) of the total tax attributed to CFC-11 (trichlorofluoromethane). CFC-11 is used as a blowing agent for closed-cell plastic insulating foams. Its secondary use is as a refrigerant for low-pressure industrial air conditioners or chillers.

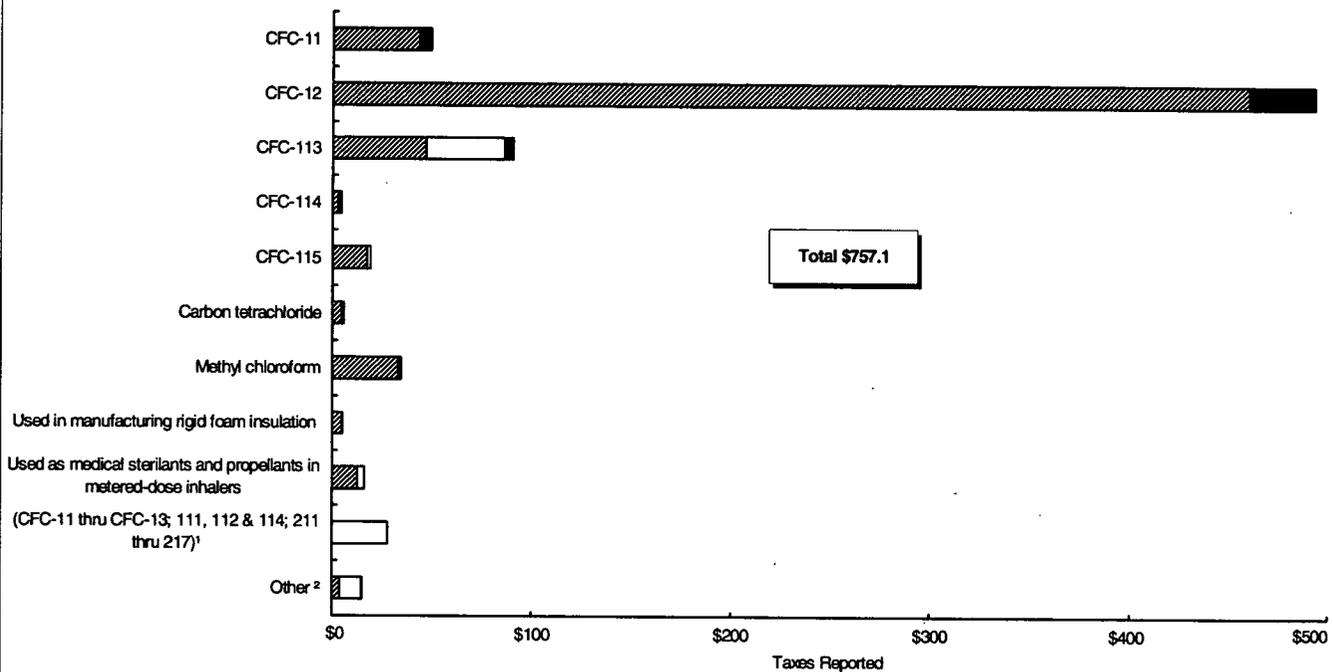
# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

**Figure H**

## Taxes on Ozone-Depleting Chemicals (ODC's), by Category, 1993

(Money amounts are in millions of dollars)

Ozone-depleting chemical (ODC)



<sup>1</sup> CFCs are grouped together, based on tax rate, rather than by type of substance, for imported products containing ODC's only.

<sup>2</sup> In this figure, "Other" includes: (1) Halon-1211; (2) Halon-1301; (3) Halon-2402; (4) CFC-13; (5) CFC-111; and (6) CFC-112, as well as unidentified substances.

▨ ODC's (sold or used), \$629.2    □ Imported products containing or manufactured using ODC's, \$80.1    ■ Floor stocks of ODC's, \$47.8

Refrigerants CFC-11 and CFC-12 represented 82 percent of the reported floor stocks tax, while ODC's that are related to electrical products (non-refrigerants) represented only 9 percent of the total tax on floor stocks of ODC's for 1993.

### Top Filers

For 1993, the 20 companies reporting the largest amounts of environmental excise tax were responsible for \$1.0 billion in tax (after credits and refunds), or 61 percent of the total. These companies reported 81 percent of total ozone-depleting chemical taxes (\$514.1 million) and 46 percent of total (Superfund and Oil Spill Liability Trust Fund, combined) petroleum taxes (\$311.9 million), the two largest categories of environmental excise taxes. The top five companies, alone, reported \$593.0 million, over one-third of the total environmental excise tax.

### Credits and Refunds

Under a variety of circumstances, taxpayers may be eligible for credits or refunds with respect to environmental excise taxes previously paid, or against current liability. A business could claim a credit on either its quarterly Form 720, *Federal Excise Taxes* (Schedule C), or on its attached Form 6627, *Environmental Taxes*. Refunds could be claimed on Form 843, *Claim for Refund* [24]. In general, taxpayers usually claim credits to offset their current tax liability [25].

For all chemicals (inorganic, petrochemical, imported, and ODC's), when one (taxable) chemical is used to produce another (taxable) chemical, credits or refunds are allowed to prevent double taxation, but are limited to the tax that the newly-produced chemical would have generated (if the source and "new" chemical are taxed at different rates). Furthermore, if environmental excise taxes

## Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

were paid in a previous quarter on a qualifying substance, and the terms of any of the following exceptions are met, then a credit or refund is allowed (without interest) [16].

### Petroleum

Credits are allowed against (1) petroleum taxes for taxes previously paid on crude oil removed from a pipeline and subsequently returned to the same pipeline; (2) Oil Spill Liability Trust Fund taxes for amounts previously paid to the Deepwater Port Liability Trust Fund and to the Offshore Oil Pollution Compensation Fund prior to 1987; and (3) Oil Spill Liability Trust Fund taxes for amounts previously paid into the Trans-Alaska Pipeline Fund when balances from that fund were "transferred" to the Oil Spill Liability Trust Fund.

### Chemicals

There is no environmental excise tax liability imposed on chemicals used in the following capacity: (1) nitric acid, sulfuric acid, ammonia, or methane used to produce ammonia sold or used as a fertilizer; (2) sulfuric acid produced solely as a by-product of, and on the same site as, air pollution control equipment; (3) any otherwise taxable chemical derived from coal; (4) acetylene, benzene, butylene, butadiene, ethylene, naphthalene, propylene, toluene, and xylene used, sold for use, or for resale for ultimate use, as any motor fuel, diesel fuel, aviation fuel or jet fuel, or in the manufacture or production of such a fuel; (5) barium sulfide, cupric sulfate, cupric oxide, cuprous oxide, lead oxide, zinc chloride, zinc sulfate, and any mixture or solution containing these chemicals because of their transitory presence during any process of smelting, refining, or other-wise extracting any substance not subject to the tax; (6) chromium, cobalt, or nickel diverted or recovered in the United States from any solid waste as part of a recycling process; (7) taxable chemicals sold for export or sold for resale to a second purchaser for export; (8) inventory exchanges of taxable chemicals, provided that certain registration requirements are met; and (9) any organic taxable chemical while the chemical is part of an intermediate hydrocarbon stream containing one or more organic taxable chemical(s), provided certain registration requirements are met.

For *Imported Chemicals*, credits are allowed for cases (1) and (4) above. In addition, any taxable chemical (substance) that was exported qualifies for an environmental excise tax credit.

### ODC's

If a previously taxed ODC is consumed entirely when used to manufacture or produce another chemical, a credit or refund may be claimed by the producer of the new

chemical. Also, if an ODC is produced domestically, and subsequently exported, a credit may be allowed.

Total credits for 1993 were \$8.8 million, over half of which (52 percent) was claimed primarily with respect to exports of substances on the list of imported chemical substances. Another 31 percent was attributed to chemical (non-ODC) taxes. Realizing credits, total environmental excise tax liability for 1993 was reduced by less than 1 percent, from \$1.73 billion to \$1.72 billion.

### Summary

Environmental excise tax liabilities of \$1.7 billion (after credits and refunds) were reported by 2,539 businesses for the Calendar Year 1993. Forty-eight percent of the tax was reported as Superfund tax (\$830.4 million), made up of petroleum taxes (\$538.7 million), chemical taxes (\$282.8 million), and imported chemical substances taxes (\$8.9 million). Ozone-depleting chemical (ODC) taxes generated another 44 percent (\$757.1 million), while the remaining 8 percent (\$134.0 million) was associated with the Oil Spill Liability Trust Fund. For 1993, twenty companies accounted for nearly two-thirds of the total environmental excise tax, including ODC taxes.

### Data Sources and Limitations

The *Quarterly Federal Excise Tax Return*, Form 720, is the form on which environmental excise taxes are reported. Form 6627, *Environmental Taxes*, is the supporting schedule to Form 720 on which taxes on petroleum and chemicals are computed. The entire population of unaudited Form 6627 returns are the source of data used for these statistics. When pertinent data were available during statistical processing, on either Form 720 or Form 843, *Claim for Refund*, these data were also included in the statistics. However, not all Forms 720 and Forms 843 are represented in these statistics. As a result, credits and refunds presented in this article may be understated.

Excise tax returns are generally due to be filed with the Internal Revenue Service within one month after the end of the quarter for which the business is liable for the tax. Data in this article reflect information reported on returns filed for the four quarters ending March 31, 1993, through December 31, 1993.

Since the data were compiled from the entire population of Forms 6627, the statistics presented are not subject to sampling error, but they may be subject to nonsampling error. For example, even though efforts were made to secure all returns, because of time and resource constraints, if the actual quarterly return for a business was unavailable for statistical processing, then information

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from prior quarterly returns for that same business was used as the basis for estimating 1993 quarterly data. Data for quarterly returns of five companies were estimated for 1993 using this method.

Another type of nonsampling error is taxpayer error. Every effort was made to correct such errors during statistical processing. For example, if a taxpayer reported tax on an ozone-depleting chemical for 1993, but based the tax on a 1992 tax rate, the tax was corrected to reflect the true liability. Most corrections were made to returns reporting one or more of the three ODC taxes, although the largest dollar corrections to tax were to the tax on chemicals. These corrections amounted to \$23.3 million (89 percent), but affected only 64 returns. On the other hand, corrections to the tax on imported products containing ODC's affected 391 returns, about one-sixth of all returns filed, but, in comparison, these corrections totaled only \$1.9 million.

The Internal Revenue Service also releases quarterly environmental excise tax statistics in a separate report (*Internal Revenue Report of Excise Taxes*) [5]. Data for that report are taken from the Form 720, rather than the attached Form 6627, and show tax liabilities after credits and refunds, for returns as recorded in the Internal Revenue Service Business Master File (BMF) as part of routine processing for tax administration. The data, however, are not classified by type of chemical, and, as explained below, are not directly comparable to the data presented in this article. Notwithstanding these limitations, this report was used as the source of data for 1992 on ozone-depleting chemical taxes, inasmuch as Statistics of Income data on this tax were not compiled before Tax Year 1993.

The aforementioned report represents tax amounts reported on Form 720 returns processed in a given quarter, regardless of when the tax liability was incurred. Conversely, for this article, taxes for a given quarter represent the amount reported on Form 6627 for the quarter in which the tax liability was incurred, regardless of when the return was processed. Tax amounts presented in this paper also include liabilities reported on returns filed after the original due date because of routine filing extensions and for other reasons.

### Notes and References

[1] The number of filers (2,539) represents distinct organizations that filed Form 6627 to report tax liabilities incurred during one or more quarters of 1993 and therefore differs from the total number of quarterly returns filed for the year (5,305 returns). Although some businesses file Form 6627 for all four

quarters, many filed only for the second quarter, reporting the floor stocks tax on ozone-depleting chemicals held as inventories. Other businesses may not have had environmental excise tax liabilities for all four quarters of the year.

[2] For Calendar Year 1993, the statistics focus on the tax *after* credits and refunds. Previous articles emphasized the tax *before* credits and refunds. This shift in emphasis is the result of systemic changes to statistical procedures affecting the capture of tax data and the reports produced from the statistical database. For comparison, Figures C and D of this article present comparable data "before credits and refunds" for 1992 and 1993 [25].

For 1990 through 1992, total environmental excise taxes (*before credits and refunds*) hovered around \$1.12 billion, while *credits and refunds* reduced the tax liability to approximately \$1.08 billion for each of the 3 years. (See the Credits and Refunds section of this article for more detail.)

[3] There have been annual Statistics of Income studies on environmental excise taxes starting with Tax Year 1981, except for 1986. The 1993 study is the first year for which ozone-depleting chemical taxes have been compiled. For the most recent prior years, see Mahler, Susan J., "Environmental Excise Taxes, 1988," *Statistics of Income Bulletin*, Fall 1990, Volume 10, Number 2; "Environmental Excise Taxes, 1989," *Statistics of Income Bulletin*, Winter 1991-1992, Volume 11, Number 3; "Environmental Excise Taxes, 1990," *Statistics of Income Bulletin*, Winter 1992-1993, Volume 12, Number 3; and Boroshok, Sara P., "Environmental Excise Taxes, 1991," *Statistics of Income Bulletin*, Summer 1993, Volume 13, Number 1; and "Environmental Excise Taxes, 1992," *Statistics of Income Bulletin*, Winter 1994-1995, Volume 14, Number 3. For a discussion of Federal excise taxes generally, see Davie, Bruce F., "Excise Taxes, Fiscal Year 1992," *Statistics of Income Bulletin*, Fall 1993, Volume 13, Number 2.

[4] In addition to the Hazardous Substance Superfund and the Oil Spill Liability Trust Fund, the other Federal (excise tax) trust funds are: Airport and Airway Trust Fund (AATF); Aquatic Resources Trust Fund (ARTF); Black Lung Disability Trust Fund (BLDTF); Harbor Maintenance Trust Fund (HMTF); Highway Trust Fund (HTF); Inland Waterways Trust

## Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

Fund (IWTF); Leaking Underground Storage Tank Trust Fund (LUST); National Recreational Trails Trust Fund (NRTTF); and Vaccine Injury Compensation Trust Fund (VICTF). Credits can be claimed against obsolete trust funds: (1) Deepwater Port Liability Trust Fund; (2) Offshore Oil Pollution Compensation Fund; and the (3) Trans-Alaska Pipeline Fund.

- [5] U.S. Department of the Treasury, Internal Revenue Service, *Internal Revenue Report of Excise Taxes*, issued quarterly, includes total ozone-depleting taxes, from the inception of the tax (1990).
- [6] For tax years beginning after December 31, 1986, and before January 1, 1996, in addition to the environmental excise taxes, corporations were also liable for an environmental income tax equal to 0.12 percent of the amount in excess of \$2 million of "modified alternative minimum taxable income" for the year. Members of a controlled group of corporations were entitled to one \$2 million exemption. This tax, which is deposited in the Superfund, is reported on a corporate income tax return in the Form 1120 series, and is not included in these statistics. The corporate environmental income tax averaged approximately \$0.5 billion for each year between 1990 and 1993 (see "Selected Historical and Other Data," Table 13, *Statistics of Income Bulletin*, Winter 1995 - 1996, Volume 15, Number 3).
- [7] The Montreal Protocol on Substances that Deplete the Ozone Layer was an extension of the agreements by the original parties to the Vienna Convention for the Protection of the Ozone Layer, 1985. Sponsored by the United Nations Environmental Program, the Protocol, obligated under the Convention to protect human health and the environment against adverse effects resulting from human activities which modify the ozone layer, recognized that emissions of certain substances, worldwide, could significantly deplete and otherwise modify the ozone layer. The ultimate objective of parties to the Protocol was to eliminate emissions of substances that deplete the ozone layer. The treaty established consumption levels of substances to be "controlled," with 1986 consumption levels serving as a benchmark.

The specifics of the Montreal Protocol, and the Clean Air Act of 1990 established reduced production and consumption levels of CFC's and halons annually,

with their phase-out, called for under the Protocol, by January 1, 2000. In 1993, this phase-out was accelerated by the U.S. Environmental Protection Agency to January 1, 1996.

In 1990, the London Amendment to the Montreal Protocol increased the number of controlled substances from 8 to 20. In addition, it accelerated the timetable to curb CFC production and consumption with total phase-out of CFC's and halons required by the year 2000. A freeze was placed on the production and consumption of halons at 1986 levels. For 5 years, beginning with 1996, the sale, use, or manufacture of halons was to be further reduced to 50 percent of the 1986 levels, with a total phase-out by the year 2000. For carbon tetrachloride, the timetable was identical to that of halons, except that reductions to 15 percent, rather than 50 percent, were set after the fifth year.

The 1992 Copenhagen Amendment to the Montreal Protocol added "Class II" ODC's, i.e., hydrochlorofluorocarbons, to the phase-out list and further accelerated the overall phase-out timetable. "Class I" halons were to be phased-out by the end of 1994, followed by CFC's by the end of 1995. Carbon tetrachloride production and consumption was to be reduced to 85 percent by 1995, with complete phase-out by January 1, 1996.

- [8] In determining tax liability on imported products containing or manufactured using ozone-depleting chemicals, the weight of the product can be calculated in two different ways. The *exact method* allows the importer to determine the weight of each ODC used as a material in the manufacture of the product. Appropriate records must support this determination. With the *table method*, the importer must employ the "Imported Products Reference Table" (Appendix) to determine ODC weight.
- [9] For 1993, there were four exceptions to the general rule that the ODC tax rate is figured by multiplying the annual "base tax rate" by the "ozone-depletion factor". As amended by Public Law 102-486, these include the ODC tax on: (1) halon-1211, (2) halon-1301, (3) halon-2402, taxed at 2.49 percent, 0.75 percent, and 1.24 percent, respectively, of the "base tax rate" multiplied by the "ozone-depletion factor". In addition, methyl chloroform is taxed at 63.02 percent of the "base tax rate" multiplied by the "ozone-depletion factor".

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- [10] See Thomas A. Barthold, "Issues in the Design of Environmental Excise Taxes," *Journal of Economic Perspectives*, Vol. 8, No. 1, Winter 1994, pp. 133-151.
- [11] See Peter R. Merrill and Ada S. Rousso, "Environmental Taxation," *Proceedings of the Eighty-Third Annual Conference - 1990*, National Tax Association -- Tax Institute of America, pp. 191-198.
- [12] See Barthold, *op. cit.*
- [13] Comprehensive National Energy Policy Act of 1992, 102D Congress, 2d Session, House of Representatives, p. 45.
- [14] Barthold, pp. 141-142.
- [15] For 1993, the following reduced tax rates were assigned: (1) halon-1211, \$.2502; (2) halon-1301, \$.2512; (3) halon-2402, \$.2492; (4) methyl-chloroform, \$.2111; and (5) ODC's used in rigid foam insulation, \$.2499. ODC's used as medical sterilants and propellants for metered-dose inhalers were both assigned the reduced tax rate of \$1.67 per pound.
- [16] See Internal Revenue Service regulations, section 52.4682-3(f)(6).
- [17] See Internal Revenue Service regulations, section 52.4682-3(c)(2). This election would be advantageous to the importer with a large inventory of imported taxable products on the initial effective date of the tax, because sale or use of imported products after the effective date would otherwise have been taxable. If the importer opts for this election, it applies to all products brought into the United States by the importer after the effective date of the election. The election may not be revoked without the consent of the Internal Revenue Service.
- [18] See Internal Revenue Service regulations, section 52.4682-3(c)(3).
- [19] See Internal Revenue Service regulations, section 52.4681-1(c)(7)(ii).
- [20] The de minimis amount of tax is calculated using an artificial tax rate of \$1.00 per pound of ODC contained in or used in the manufacture of the product. By comparison, the 1993 tax rate for the most common ODC's was \$3.35 per pound.
- [21] See Bruce F. Davie, "Border Adjustments for Environmental Excise Taxes: The U.S. Experience," a paper prepared for the Allied Social Science Associations, January 8, 1995, Washington, D.C., for an analysis of the practical aspects of taxes on imported chemical substances and imported products containing or manufactured using ozone-depleting chemicals.
- [22] Chemical taxes devoted to the Superfund include taxes on 42 chemicals: 11 petrochemicals and 31 inorganic chemicals. The Internal Revenue Service provides reports to the U.S. Environmental Protection Agency (EPA) on Superfund tax information, and classifies chemical amounts into these two categories, for EPA's use.
- [23] Reprinted with permission from Air Pollution Control, Bureau of National Affairs, Inc., 1993, pp. 100:609-610.
- [24] Credits presented here reflect credits claimed by Form 6627 filers. When pertinent data were available during statistical processing on either: Form 720, *Quarterly Federal Excise Tax Return*; or Form 843, *Claim for Refund*, these data were also included. However, not all Forms 720 and Forms 843 are represented in these statistics.
- [25] The line item for reporting credits on Form 720 reads "Adjustments and Claims," and has been referred to in this article as "Credits and Refunds" whereas in previous articles it was referred to as "Adjustments and Credits."

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## Appendix

### Imported Products Reference Table (Both Taxable and Non-taxable), Including: Mixtures Containing Ozone-Depleting Chemicals, and Imported Products Used for Refrigeration and Electronics, by Imported Product <sup>1</sup>

Product names	Harmonized tariff schedule heading <sup>2</sup>	Ozone-depleting chemical(s)	ODC weight (pounds per product)
	(1)	(2)	(3)
<b>Part I - Products that are mixtures containing ODC's <sup>3</sup></b>			
Anti-static sprays	N/A	CFC11, CFC12, CFC113	N/A
Automotive products: (carburetor cleaner, 'Stop leak' and oil charge)	N/A	CFC11, CFC12, CFC113	N/A
Cleaning solvents	N/A	CFC113, CFC11, Methyl Chloroform, CFC12	N/A
Contact cleaners	N/A	CFC11, CFC12, CFC113	N/A
Degreasers	N/A	CFC113	N/A
Dusting sprays	N/A	CFC11, CFC12, CFC113	N/A
Electronic circuit board coolants	N/A	CFC113	N/A
Electronic solvents	N/A	CFC11, CFC12, CFC113	N/A
Ethylene oxide	N/A	CFC12	N/A
Fire extinguisher preparations and charges	N/A	Halon 1211, Halon 1301	N/A
Flux removers for electronics	N/A	CFC11, CFC12, CFC113	N/A
Insect and wasp sprays	N/A	CFC11, CFC12, CFC113	N/A
Mixtures of ODC's	N/A	N/A	N/A
Propellants	N/A	CFC11, CFC12, CFC113	N/A
Refrigerants	N/A	CFC114, CFC11, CFC12	N/A
<b>Part II - Products in which ODC's are used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components</b>			
Rigid foam insulation defined in 52.4682-1(c)(3)	N/A	Varies	N/A
Foams made with ODC's (other than above)	N/A	Varies	N/A
Scrap flexible foam with ODC's	N/A	Varies	N/A
Surgical staplers	N/A	Varies	N/A
Cryogenic medical instruments	N/A	Varies	N/A
Drug delivery systems	N/A	Varies	N/A
Inhalants	N/A	Varies	N/A
Dehumidifiers (household)	8415.82.00.50	CFC12	0.3440
Chillers charged with CFC12	8415.82.00.65	CFC12	1,600.0000
Chillers charged with CFC114	8415.82.00.65	CFC114	1,250.0000
Chillers charged with R-500	8415.82.00.65	CFC12	1,920.0000
Refrigerator-freezers (household) not greater than 184 liters	8418.10.00.10	CFC11	1.0800
Refrigerator-freezers (household) not greater than 184 liters	8418.10.00.10	CFC12	0.1300
Refrigerator-freezers (household) greater than 184 liters less than or equal to 269 liters	8418.10.00.20	CFC11	1.3200
Refrigerator-freezers (household) greater than 184 liters less than or equal to 269 liters	8418.10.00.20	CFC12	0.2600
Refrigerator-freezers (household) greater than 269 liters less than 382 liters	8418.10.00.30	CFC11	1.5400
Refrigerator-freezers (household) greater than 269 liters less than 382 liters	8418.10.00.30	CFC12	0.3500
Refrigerator-freezers (household) greater than 382 liters	8418.10.00.40	CFC11	1.8700
Refrigerator-freezers (household) greater than 382 liters	8418.10.00.40	CFC12	0.3500
Refrigerators (household) not greater than 184 liters	8418.10.00.10	CFC11	1.0800
Refrigerators (household) not greater than 184 liters	8418.10.00.10	CFC12	0.1300
Refrigerators (household) greater than 184 liters less than or equal to 269 liters	8418.10.00.20	CFC11	1.3200
Refrigerators (household) greater than 184 liters less than or equal to 269 liters	8418.10.00.20	CFC12	0.2600

Footnotes at end of Appendix.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

## Appendix

### Imported Products Reference Table (Both Taxable and Non-taxable), Including: Mixtures Containing Ozone-Depleting Chemicals, and Imported Products Used for Refrigeration and Electronics, by Imported Product 1--Continued

Product names	Harmonized tariff schedule heading <sup>2</sup>	Ozone-depleting chemical(s)	ODC weight (pounds per product)
	(1)	(2)	(3)
<b>Part II--Products in which ODC's are used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components--continued</b>			
Refrigerators (household) greater than 269 liters less than 382 liters	8418.10.00.40	CFC11	1.5400
Refrigerators (household) greater than 269 liters less than 382 liters	8418.10.00.40	CFC12	0.3500
Refrigerators (household) greater than 382 liters	8418.10.00.40	CFC11	1.8700
Refrigerators (household) greater than 382 liters	8418.10.00.40	CFC12	0.3500
Freezers (household)	8418.30;8418.40	CFC11	2.0000
Freezers (household)	8418.30;8418.40	CFC12	0.4000
Refrigerating display counters not greater than 227	8418.50	CFC11, CFC12	260.0000
Icemaking machines charged with CFC12	8418.69	CFC12	1.4000
Icemaking machines charged with R-502	8418.69	CFC115	3.3900
Drinking water coolers charged with CFC12	8418.69	CFC12	0.2100
Drinking water coolers charged with R-500	8418.69	CFC12	0.2200
Centrifugal chiller, hermetic charged with CFC12	8418.69	CFC12	1,250.0000
Centrifugal chiller, hermetic charged with CFC114	8418.69	CFC114	1,920.0000
Centrifugal chiller, hermetic charged with R-500	8418.69	CFC12, CFC114	1,600.0000
Reciprocating chiller charged with CFC12	8418.69	CFC12	1,250.0000
Mobil refrigeration containers	8418.99	CFC12	15.0000
Mobile refrigeration trucks	8418.99	CFC12	11.0000
Mobile refrigeration trailers	8418.99	CFC12	20.0000
Refrigeration condensing units not greater than 746w	8418.99.00.05	CFC12	0.3000
Refrigeration condensing units greater than 746w and less than or equal to 2.2 kilowatts	8418.99.00.10	CFC12	1.0000
Refrigeration condensing units greater than 2.2 kilowatts less than or equal to 7.5 kilowatts	8418.99.00.15	CFC12	3.0000
Refrigeration condensing units greater than 7.5 kilowatts less than or equal to 22.3 kilowatts	8418.99.00.20	CFC12	8.5000
Refrigeration condensing units greater than 22.3 kilowatts	8418.99.00.25	CFC12	17.0000
Fire extinguishers, charged with ODC's	8424.00	N/A	N/A
Electronic typewriters and word processors	8469.00	CFC113	0.2049
Electronic calculators	8470.10	CFC113	0.0035
Electronic calculators with printing device	8470.21	CFC113	0.0057
Electronic calculators	8470.10	CFC113	0.0035
Account machines	8470.40	CFC113	0.1913
Cash registers	8470.50	CFC113	0.1913
Digital automatic data processing machine with cathode ray tube, not included in subheading 8471.70.00.90	8471.20	CFC113	0.3663
Laptops, notebooks and pocket computers	8471.20.00.90	CFC113	0.0357
Digital processing unit with entry value not greater than 100k	8471.91	CFC113	0.4980
Digital processing unit with entry value greater than 100k	8471.91	CFC113	27.6670
Combined input/output units (terminal)	8471.92	CFC113	0.3600
Keyboards	8471.92	CFC113	0.0742
Display units	8471.92	CFC113	0.0386
Printer units	8471.92	CFC113	0.1558
Input or output units	8471.92	CFC113	0.1370

Footnotes at end of Appendix.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

## Appendix

### Imported Products Reference Table (Both Taxable and Non-taxable), Including: Mixtures Containing Ozone-Depleting Chemicals, and Imported Products Used for Refrigeration and Electronics, by Imported Product <sup>1</sup>--Continued

Product names	Harmonized tariff schedule heading <sup>2</sup>	Ozone-depleting chemical(s)	ODC weight (pounds per product)
	(1)	(2)	(3)
<b>Part II--Products in which ODC's are used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components--continued</b>			
Hard magnetic disk drive units for a disk of a diameter greater than 9cm but not greater than 21 cm (not included in subheading 8471.93.10)	8471.93	CFC113	0.2829
Hard magnetic disk drive units for a disk of a diameter not greater than 9cm (not included in subheading 8471.93.10)	8471.93	CFC113	1.1671
Nonmagnetic storage unit with entry value greater than \$1,000	8471.93	CFC113	2.7758
Magnetic disk drive units for a disk of a diameter over 21 cm (8.1/4 inches)	8471.93.10	CFC113	4.0067
Power supplies	8471.99.30	CFC113	0.0655
Electronic office machines	8472.00	CFC113	0.0010
Populated card for digital processing unit in subheading 8471.91 valued \$100k and under	8473.30	CFC113	0.1408
Populated card for digital processing unit in subheading 8471.91 valued over \$100k	8473.30	CFC113	4.8200
Automatic goods-vending machines with refrigerating device	8476.11	CFC112	0.4500
Microwave ovens with electronic controls capacity: .99 cubic feet or less	8516.50	CFC113	0.0300
Microwave ovens with electronic controls capacity: 1.0 -1.3 cubic feet	8516.50	CFC113	0.0441
Microwave ovens with electronic controls capacity: 1.3 cubic feet or greater	8516.50	CFC113	0.0485
Microwave oven consumption with electronic controls	8516.80.40.80	CFC113	0.0595
Telephone sets with entry value not greater than \$11.00	8517.10	CFC113	0.0225
Telephone sets with entry value greater than \$11.00	8517.10	CFC113	0.1000
Teleprinters and teletypewriters	8517.20	CFC113	0.1000
Switching equipment not included in subheading 8517.30.20	8517.30	CFC113	0.1267
Private branch exchange switching equipment	8517.30.20	CFC113	0.0753
Modems	8517.40	CFC113	0.0225
Intercoms	8517.81	CFC113	0.0225
Facsimile machines	8517.82	CFC113	0.0225
Loudspeakers, microphones, headphones, & electric sound amplifier sets, not included in subheading 8518.30.10	8518.00	CFC113	0.0022
Telephone handsets	8518.30.10	CFC113	0.0420
Turntables, record players, cassette players, and other sound reproducing apparatus	8519.00	CFC113	0.0022
Magnetic tape recorders & other sound recording apparatus, not included in subheading 8520.20	8520.00	CFC113	0.0022
Telephone answering machines	8520.20	CFC113	0.1000
Color video recording/reproducing apparatus	8510.00.20	CFC113	0.0586
Videodisc players	8521.90	CFC113	0.1060
Cordless handset telephones	8525.20.50	CFC113	0.1000
Cellular communication equipment	8525.20.60	CFC113	0.4446
TV cameras	8525.30	CFC113	1.4230
Camcorders	8525.30	CFC113	0.0586
Radio combinations	8527.11	CFC113	0.0022
Radios	8527.19	CFC113	0.0014
Motor vehicle radios with or without tape player	8527.21	CFC113	0.0021
Radio combinations	8527.31	CFC113	0.0022
Radios	8527.32	CFC113	0.0014

Footnotes at end of Appendix.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

## Appendix

### Imported Products Reference Table (Both Taxable and Non-taxable), Including: Mixtures Containing Ozone-Depleting Chemicals, and Imported Products Used for Refrigeration and Electronics, by Imported Product <sup>1</sup>--Continued

Product names	Harmonized tariff schedule heading <sup>2</sup>	Ozone-depleting chemical(s)	ODC weight (pounds per product)
	(1)	(2)	(3)
<b>Part II--Products in which ODC's are used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components--continued</b>			
Tuner without speaker	8527.39.00.20	CFC113	0.0022
Television receivers	8528.00	CFC113	0.0386
VCRs	8528.10.40	CFC113	0.0586
Home satellite earth stations	8528.10.80.55	CFC113	0.0106
Electronic assemblies for HTS headings 8525, 8527, & 8528	8529.90	CFC113	0.0816
Indicator panels incorporating liquid crystal devices or light emitting diodes	8531.20	CFC113	0.0146
Printed circuits	8534.00	CFC113	0.0010
Computerized numerical controls	8537.10.00.30	CFC113	0.1306
Electronic integrated circuits and microassemblies	8542.00	CFC113	0.0002
Signal generators	8543.20	CFC113	0.6518
Diodes, crystals, transistors and other similar discrete semiconductor devices	8541.00	CFC113	0.0001
Avionics	8543.90.40	CFC113	0.9150
Signal generators subassemblies	8543.90.80	CFC113	0.1265
Insulated or refrigerated railway freight cars	9606.00	CFC11	100.0000
Passenger automobiles: foams (interior)	8703.00	CFC11	0.8000
Passenger automobiles: foams (exterior)	8703.00	CFC11	0.7000
Passenger automobiles with charged a/c	8703.00	CFC12	2.0000
Passenger automobiles without charged a/c	8703.00	CFC12	0.2000
Passenger automobiles: electronics	8703.00	CFC113	0.5000
Light trucks: foams (interior)	8704.00	CFC11	0.6000
Light trucks: foams (exterior)	8704.00	CFC11	0.1000
Light trucks with charged a/c	8740.00	CFC12	2.0000
Light trucks without charged a/c	8740.00	CFC12	0.2000
Light trucks: electronics	8740.00	CFC13	0.4000
Heavy trucks or heavy trucks and tractors with GVW 33,001 lbs. or more foams (interior)	8704.00	CFC11	0.6000
Heavy trucks or heavy trucks and tractors with GVW 33,001 lbs. or more foams (exterior)	8704.00	CFC11	0.1000
Heavy trucks or heavy trucks and tractors with GVW 33,001 lbs. or more with fully charged a/c	8704.00	CFC12	2.0000
Heavy trucks or heavy trucks and tractors with GVW 33,001 lbs. or greater than without fully charged a/c	8704.00	CFC12	0.2000
Motorcycles with seat foamed with ODC's	8711.00	CFC11	0.0400
Bicycles with seat foamed with ODC's	8712.00	CFC11	0.0400
Seats foamed with ODC's	8714.95	CFC11	0.0400
Aircraft	8802.00	CFC12	0.25 lb/1K lbs.
Aircraft	8802.00	CFC113	30.0 lbs/1K lbs.
Optical fibers	9001.00	CFC12	0.005 lb/1K feet
Electronic cameras	9006.00	CFC113	0.0100
Photocopiers	9009.00	CFC113	0.0426
Avionics	9014.20	CFC113	0.9150
Electronic drafting machines	9017.00	CFC113	0.1200

Footnotes at end of Appendix.

# Environmental Excise Taxes, Focusing on Ozone-Depleting Chemicals, 1993

## Appendix

### Imported Products Reference Table (Both Taxable and Non-taxable), Including: Mixtures Containing Ozone-Depleting Chemicals, and Imported Products Used for Refrigeration and Electronics, by Imported Product <sup>1</sup>--Continued

Product names	Harmonized tariff schedule heading <sup>2</sup>	Ozone-depleting chemical(s)	ODC weight (pounds per product)
	(1)	(2)	(3)
<b>Part II--Products in which ODC's are used for purposes of refrigeration or air conditioning, creating an aerosol or foam, or manufacturing electronic components--continued</b>			
Complete patient monitoring systems	9018.19.80	CFC12	0.9400
Complete patient monitoring systems	9018.19.80	CFC113	3.4163
Complete patient monitoring systems; subassemblies thereof	9018.19.80.60	CFC113	1.9320
Physical or chemical analysis instruments	9027.00	CFC12	0.0003
Physical or chemical analysis instruments	9027.00	CFC113	0.0271
Oscilloscopes	9030.00	CFC11	0.4900
Oscilloscopes	9030.00	CFC12	0.5943
Oscilloscopes	9030.00	CFC113	0.2613
Foam chairs	9401.00	CFC11	0.3000
Foam sofas	9401.00	CFC11	0.7500
Foam mattresses	9404.21	CFC11	1.6000
Electronic games and electronic component thereof	9504.00	CFC113	0.004 lb./\$1 of entry value
Electronic items not otherwise listed	9504.00	CFC113	0.004 lb./\$1 of entry value

### Part III - Products that are not Imported Taxable Products

Room air conditioners	8415.10.00.60	N/A	N/A
Dishwashers	8422.11	N/A	N/A
Clothes washers	8450.11	N/A	N/A
Clothes dryers	8451.21	N/A	N/A
Floppy disk drive units	8471.93	N/A	N/A
Transformers and inductors	8504.00	N/A	N/A
Toasters	8516.72	N/A	N/A
Unrecorded media	8523.00	N/A	N/A
Recorded media	8524.00	N/A	N/A
Capacitors	8532.00	N/A	N/A
Resistors	8533.00	N/A	N/A
Switching apparatus	8536.00	N/A	N/A
Cathode tubes	8540.00	N/A	N/A

N/A - not applicable.

<sup>1</sup> Reprinted from Publication 510, Excise Taxes for 1993, by the Internal Revenue Service, catalogue number 150141, pp. 34-38.

<sup>2</sup> The Harmonized Tariff Schedule Heading is a numeric assignment used by the International Trade Commission to identify imported goods.

<sup>3</sup> Imported mixtures containing ODC's are treated as imported ODC's sold or used rather than imported products.

**Table 1.--Environmental Excise Taxes After Credits and Refunds, by Type of Substance, 1993**

[Money amounts are in thousands of dollars, except where noted]

Type of substance	Number of filers <sup>1</sup>	Number of quarterly returns filed	Number of barrels, tons, or pounds (thousands)	Tax rate per barrel, ton, or pound (dollars)	Tax before credits and refunds	Tax after credits and refunds					Yearly average per filer
						1993 quarter ended-					
						Yearly total	March	June	September	December	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
<b>Total .....</b>	<b>2,539</b>	<b>5,305</b>	<b>N/A</b>	<b>N/A</b>	<b>1,730,336</b>	<b>1,721,503</b>	<b>470,667</b>	<b>536,245</b>	<b>366,615</b>	<b>348,009</b>	<b>678</b>
			Barrels								
<b>Petroleum, total.....</b>	<b>326</b>	<b>943</b>	<b>9,870,269</b>	<b>N/A</b>	<b>672,763</b>	<b>672,696</b>	<b>200,313</b>	<b>194,336</b>	<b>138,954</b>	<b>139,094</b>	<b>2,063</b>
Domestic petroleum, Superfund.....	127	437	2,727,424	0.097	n.a.	264,560	66,356	62,167	68,728	67,309	2,083
Domestic petroleum, Oil Spill Liability Trust Fund*.....	125	303	2,961,537	0.050	n.a.	66,249	34,204	32,045	--	--	529
Imported crude oil and petroleum products, Superfund .....	227	468	2,825,999	0.097	n.a.	274,122	66,042	66,069	70,226	71,785	1,207
Imported crude oil and petroleum products, Oil Spill Liability Trust Fund*.....	221	305	1,355,309	0.050	n.a.	67,765	33,710	34,055	--	--	306
			Tons								
<b>Petrochemicals and inorganic chemicals, total.....</b>	<b>452</b>	<b>3,032</b>	<b>82,330</b>	<b>N/A</b>	<b>262,193</b>	<b>282,790</b>	<b>68,912</b>	<b>69,379</b>	<b>73,899</b>	<b>70,604</b>	<b>625</b>
<b>Petrochemicals, total .....</b>	<b>203</b>	<b>607</b>	<b>48,545</b>	<b>N/A</b>	<b>n.a.</b>	<b>233,102</b>	<b>57,371</b>	<b>56,275</b>	<b>61,495</b>	<b>57,961</b>	<b>1,148</b>
Acetylene.....	54	149	156	4.870	n.a.	760	201	163	185	210	14
Benzene.....	49	139	6,810	4.870	n.a.	33,163	8,384	7,881	8,538	8,360	676
Butadiene .....	24	74	1,845	4.870	n.a.	8,983	2,325	2,099	2,209	2,349	374
Butane.....	35	107	523	4.870	n.a.	2,549	645	644	632	628	72
Butylene .....	5	17	711	4.870	n.a.	3,464	1,028	611	642	1,183	692
Ethylene.....	34	122	20,744	4.870	n.a.	101,022	24,723	25,405	25,671	25,224	2,971
Methane.....	32	105	2,318	3.440	n.a.	7,973	2,205	1,823	1,986	1,960	249
Naphthalene .....	5	13	12	4.870	n.a.	58	30	16	6	5	11
Propylene .....	48	167	10,658	4.870	n.a.	51,907	12,132	11,993	15,554	12,229	1,081
Toluene .....	56	156	1,494	4.870	n.a.	7,275	1,917	1,705	1,726	1,927	129
Xylene.....	57	163	3,275	10.130	n.a.	15,949	3,782	3,934	4,347	3,886	279
<b>Inorganic chemicals, total .....</b>	<b>312</b>	<b>922</b>	<b>33,785</b>	<b>N/A</b>	<b>n.a.</b>	<b>49,688</b>	<b>11,595</b>	<b>13,104</b>	<b>12,404</b>	<b>12,636</b>	<b>159</b>
Ammonia .....	78	217	3,387	2.640	n.a.	8,942	2,281	2,247	2,185	2,230	114
Antimony .....	10	23	1	4.450	n.a.	3	1	1	-1	2	--
Antimony trioxide .....	13	28	270	3.750	n.a.	101	28	19	27	27	7
Arsenic .....	3	10	( <sup>2</sup> )	4.450	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--
Arsenic trioxide .....	7	25	22	3.410	n.a.	74	22	22	18	13	10
Barium sulfide .....	**	6	( <sup>2</sup> )	2.300	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--
Bromine .....	6	24	186	4.450	n.a.	828	195	208	204	221	73
Cadmium .....	14	35	2	4.450	n.a.	7	2	2	1	1	--
Chlorine .....	42	122	11,222	2.700	n.a.	30,300	7,468	8,004	7,581	7,248	721
Chromite .....	3	11	179	1.520	n.a.	273	75	72	44	81	91
Chromium .....	15	36	18	4.450	n.a.	78	1	30	28	19	5
Cobalt .....	10	32	4	4.450	n.a.	19	5	5	5	4	1
Cupric oxide.....	310	34	15	3.590	n.a.	53	13	13	16	12	--

Footnotes at end of table.

Table 1.--Environmental Excise Taxes After Credits and Refunds, by Type of Substance, 1993--Continued

[Money amounts are in thousands of dollars, except where noted]

Type of substance	Number of filers <sup>1</sup>	Number of quarterly returns filed	Number of barrels, tons, or pounds (thousands)	Tax rate per barrel, ton, or pound (dollars)	Tax before credits and refunds	Tax after credits and refunds					Yearly average per filer
						Yearly total	1993 quarter ended-				
							March	June	September	December	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
<b>Inorganic chemicals--continued</b>											
Cupric sulfate .....	16	36	35	1.870	n.a.	66	19	6	22	18	4
Cuprous oxide .....	4	13	7	3.970	n.a.	27	7	9	5	5	6
Hydrochloric acid .....	59	178	843	0.290	n.a.	244	51	72	63	58	4
Hydrogen fluoride .....	15	43	236	4.230	n.a.	998	261	288	246	203	66
Lead oxide .....	25	78	444	4.140	n.a.	1,840	464	486	414	477	73
Mercury .....	5	9	( <sup>2</sup> )	4.450	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--
Nickel .....	20	56	99	4.450	n.a.	439	113	111	96	118	21
Nitric acid .....	36	105	1,495	0.240	n.a.	359	79	137	76	66	9
Phosphorus .....	8	21	231	4.450	n.a.	1,026	267	263	253	244	128
Potassium dichromate .....	3	4	( <sup>2</sup> )	1.690	n.a.	( <sup>2</sup> )	--	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--
Potassium hydroxide .....	30	80	627	0.220	n.a.	138	25	45	24	44	4
Sodium dichromate .....	7	13	5	1.870	n.a.	10	1	1	5	3	1
Sodium hydroxide .....	78	222	9,182	0.280	n.a.	2,571	641	675	625	630	32
Stannic chloride .....	5	13	12	2.120	n.a.	26	6	6	7	7	5
Stannous chloride .....	4	8	1	2.850	n.a.	3	1	1	1	1	--
Sulfuric acid .....	82	233	5,476	0.260	n.a.	1,424	391	331	355	347	17
Zinc chloride .....	15	40	18	2.220	n.a.	39	11	12	9	7	2
Zinc sulfate .....	14	34	12	1.900	n.a.	23	4	10	5	4	1
Other .....	17	19	N/A	N/A	n.a.	-224	-893	31	90	549	-13
			Tons								
<b>Imported chemical substances, total.....</b>	<b>107</b>	<b>303</b>	<b>5,011</b>	<b>(<sup>3</sup>)</b>	<b>13,339</b>	<b>8,903</b>	<b>2,529</b>	<b>1,750</b>	<b>2,259</b>	<b>2,364</b>	<b>83</b>
2-ethyl hexanol.....	**	4	-17	( <sup>3</sup> )	n.a.	-65	2	2	2	-70	( <sup>2</sup> )
2-ethylhexyl acrylate.....	**	**	168	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	--	--	( <sup>2</sup> )	( <sup>2</sup> )
Acetone .....	**	5	6	4.58	n.a.	25	31	--	20	-26	( <sup>2</sup> )
Acrylic and methacrylic acid resins.....	--	--	--	6.11	n.a.	--	--	--	--	--	--
Acrylonitrile .....	4	7	( <sup>2</sup> )	7.05	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--
Alpha-methylstyrene.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Ammonium nitrate .....	5	14	152	1.66	n.a.	225	93	10	108	14	45
Bisphenol.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Butyl acrylate.....	**	5	1,290	( <sup>3</sup> )	n.a.	13	3	4	4	2	( <sup>2</sup> )
Carbon tetrachloride .....	3	6	32	3.00	n.a.	74	29	7	15	23	24
Chloroform .....	**	5	22	3.95	n.a.	44	11	22	6	5	( <sup>2</sup> )
Chromic acid .....	4	9	2	2.72	n.a.	9	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	9	2
Cumene .....	4	6	148	5.26	n.a.	865	332	--	292	241	216
Cyclohexane .....	**	3	12	5.01	n.a.	27	--	33	-1	-5	( <sup>2</sup> )
Decabromodiphenyl oxide.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Ethyl acrylate.....	**	**	( <sup>2</sup> )	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	--	( <sup>2</sup> )	( <sup>2</sup> )	--	( <sup>2</sup> )
Ethyl alcohol for nonbeverage use.....	5	12	532	3.07	n.a.	1,634	470	472	319	373	326
Ethyl dibromide.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--

Footnotes at end of table.

**Table 1.--Environmental Excise Taxes After Credits and Refunds, by Type of Substance, 1993--Continued**

[Money amounts are in thousands of dollars, except where noted]

Type of substance	Number of filers <sup>1</sup>	Number of quarterly returns filed	Number of barrels, tons, or pounds (thousands)	Tax rate per barrel, ton, or pound (dollars)	Tax before credits and refunds	Tax after credits and refunds					Yearly average per filer
						Yearly total	1993 quarter ended-				
							March	June	September	December	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
<b>Imported chemical substances--continued</b>											
Ethyl methyl ketone .....	4	5	-14	5.11	n.a.	-60	6	--	--	-65	-15
Ethylbenzene .....	**	3	24	5.01	n.a.	117	3	--	112	2	( <sup>2</sup> )
Ethylene dichloride .....	3	5	85	3.51	n.a.	214	32	--	90	93	71
Ethylene glycol .....	7	17	91	3.26	n.a.	292	7	103	119	63	41
Ethylene oxide .....	3	8	34	4.33	n.a.	141	42	22	61	16	47
Ferrochrome ov 3 pct. carbon.....	3	4	25	0.71	n.a.	18	8	--	1	9	6
Ferrocromium nov 3 pct .....	**	3	2	3.65	n.a.	6	2	--	2	3	( <sup>2</sup> )
Ferronickel .....	3	7	7	( <sup>3</sup> )	n.a.	31	10	9	1	10	10
Formaldehyde .....	--	--	--	2.27	n.a.	--	--	--	--	--	--
Hydrogen peroxide .....	3	7	69	0.45	n.a.	231	5	3	111	112	77
Isobutyl acetate.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Isophthalic acid .....	**	4	9	7.19	n.a.	37	8	7	8	14	( <sup>2</sup> )
Isopropyl acetate.....	**	**	( <sup>2</sup> )	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	--	( <sup>2</sup> )	( <sup>2</sup> )	--	( <sup>2</sup> )
Isopropyl alcohol .....	4	8	-6	4.14	n.a.	-39	14	17	8	-78	-9
Linear alpha olefins .....	3	10	-13	( <sup>3</sup> )	n.a.	-65	38	-14	-25	-64	-21
Maleic anhydride .....	**	5	1	5.84	n.a.	9	1	3	3	2	( <sup>2</sup> )
Melamine .....	--	--	--	2.30	n.a.	--	--	--	--	--	--
Methanol .....	9	23	848	1.86	n.a.	1,713	301	434	462	516	190
Methyl acrylate.....	**	**	48	( <sup>3</sup> )	n.a.	83	83	--	--	--	--
Methyl chloroform.....	**	**	N/A	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	--	--	( <sup>2</sup> )	( <sup>2</sup> )
Methyl isobutyl ketone.....	**	**	-1	( <sup>3</sup> )	n.a.	-4	--	1	--	-6	( <sup>2</sup> )
Methylene chloride .....	--	--	--	3.16	n.a.	--	--	--	--	--	--
Nickel oxide .....	**	8	( <sup>2</sup> )	( <sup>3</sup> )	n.a.	1	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Nickel powders .....	**	**	( <sup>2</sup> )	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	--	--	--
Nickel waste and scrap .....	**	**	( <sup>2</sup> )	( <sup>3</sup> )	n.a.	( <sup>2</sup> )	( <sup>2</sup> )	--	--	--	--
Normal butyl acetate.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Normal propyl acetate.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Perchloroethylene.....	**	3	9	( <sup>3</sup> )	n.a.	29	3	--	22	3	( <sup>2</sup> )
Phenolic resins .....	5	16	29	7.27	n.a.	34	7	15	9	3	6
Phthalic anhydride .....	4	10	11	9.83	n.a.	50	16	22	4	7	12
Polyalphaolefins .....	3	8	-13	( <sup>3</sup> )	n.a.	-65	--	-27	-13	-24	-21
Polybutadiene .....	7	15	14	5.36	n.a.	68	23	16	9	19	9
Polyethylene resins (total).....	11	32	262	5.06	n.a.	1,298	438	217	306	337	118
Polyethylene terephthalate pellets.....	3	9	5	( <sup>3</sup> )	n.a.	8	5	5	4	-6	2
Polypropylene .....	6	12	-3	5.11	n.a.	-13	( <sup>2</sup> )	3	-13	-3	-2
Polypropylene resins .....	6	12	76	5.11	n.a.	375	38	103	136	98	62
Polystyrene homopolymer resins.....	6	13	19	5.94	n.a.	103	38	5	24	36	17
Polystyrene resins and copolymers.....	5	11	9	( <sup>3</sup> )	n.a.	65	35	21	24	-16	13
Polyvinylchloride resins.....	8	18	36	5.99	n.a.	69	10	44	6	9	8

Footnotes at end of table.

Table 1.--Environmental Excise Taxes After Credits and Refunds, by Type of Substance, 1993--Continued

[Money amounts are in thousands of dollars, except where noted]

Type of substance	Number of filers <sup>1</sup>	Number of quarterly returns filed	Number of barrels, tons, or pounds (thousands)	Tax rate per barrel, ton, or pound (dollars)	Tax before credits and refunds	Tax after credits and refunds					Yearly average per filer
						Yearly total	1993 quarter ended-				
							March	June	September	December	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
<b>Imported chemical substances-continued</b>											
Propylene glycol .....	4	8	17	7.35	n.a.	76	2	13	60	1	19
Propylene oxide .....	**	**	14	7.74	n.a.	108	60	--	--	48	( <sup>2</sup> )
Styrene .....	8	18	250	5.75	n.a.	794	415	-152	141	390	99
Styrene-butadiene (latex) .....	6	15	14	5.80	n.a.	37	10	6	12	9	6
Styrene-butadiene (nspf) .....	4	4	-183	( <sup>3</sup> )	n.a.	-487	1	--	--	-488	-121
Synthetic rubber .....	8	23	55	5.06	n.a.	214	44	110	51	8	26
Tetrabromobisphenol-A.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Trichloroethylene.....	**	4	2	( <sup>3</sup> )	n.a.	3	( <sup>2</sup> )	2	1	( <sup>2</sup> )	( <sup>2</sup> )
Unwrought nickel .....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Urea .....	7	19	15	1.53	n.a.	21	8	10	2	2	3
Vinyl acetate.....	**	4	143	( <sup>3</sup> )	n.a.	24	--	--	7	17	( <sup>2</sup> )
Vinyl chloride .....	3	6	295	5.82	n.a.	260	137	13	13	98	86
Vinyl resins.....	**	4	-40	3.47	n.a.	-232	( <sup>2</sup> )	-232	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Vinyl resins (nspf).....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Wrought nickel rods and wire.....	--	--	--	( <sup>3</sup> )	n.a.	--	--	--	--	--	--
Other chemical substances .....	47	97	417	( <sup>3</sup> )	n.a.	488	-290	422	-268	624	( <sup>2</sup> )
			Pounds								
<b>Ozone-depleting chemical (ODC) taxes, total..</b>	<b>1,605</b>	<b>2,780</b>	<b>467,109</b>	<b>(<sup>3</sup>)</b>	<b>758,649</b>	<b>757,113</b>	<b>198,858</b>	<b>270,781</b>	<b>151,502</b>	<b>135,954</b>	<b>472</b>
<b>ODC's (sold or used), total.....</b>	<b>197</b>	<b>378</b>	<b>374,954</b>	<b>N/A</b>	<b>629,712</b>	<b>629,223</b>	<b>168,248</b>	<b>208,339</b>	<b>135,458</b>	<b>117,178</b>	<b>3,194</b>
CFC-11.....	21	39	12,961	3.35	n.a.	43,418	10,578	14,399	15,177	3,264	2,067
CFC-12.....	65	122	137,209	3.35	n.a.	459,651	120,777	160,962	94,155	83,757	7,071
CFC-113.....	106	205	17,373	2.68	n.a.	46,561	17,653	11,402	10,154	7,353	439
CFC-114.....	6	13	853	3.3500	n.a.	2,858	800	1,138	825	95	476
CFC-115.....	15	28	8,614	2.0100	n.a.	17,314	1,993	5,876	5,506	3,939	1,154
Halon-1211.....	10	19	1,267	0.2502	n.a.	317	--	132	69	116	31
Halon-1301.....	9	16	3,878	0.2512	n.a.	974	93	145	193	544	108
Halon-2402.....	**	4	166	0.2492	n.a.	4	--	1	--	3	2
Carbon tetrachloride.....	13	29	1,305	3.6850	n.a.	4,808	1,750	1,158	260	1,640	369
Methyl chloroform.....	39	80	156,618	0.2111	n.a.	33,062	10,912	9,687	4,910	7,554	847
CFC-13.....	2	6	69	3.3500	n.a.	231	53	84	83	10	115
CFC-111.....	--	--	--	3.3500	n.a.	--	--	--	--	--	--
CFC-112.....	7	12	17	3.3500	n.a.	56	52	3	--	1	8
CFC-213.....	--	--	--	3.3500	n.a.	--	--	--	--	--	--
CFC-214.....	--	--	--	3.3500	n.a.	--	--	--	--	--	--
CFC-215.....	--	--	--	3.3500	n.a.	--	--	--	--	--	--
CFC-216.....	--	--	--	3.3500	n.a.	--	--	--	--	--	--
CFC-217.....	--	--	--	3.3000	n.a.	--	--	--	--	--	--
ODC used in rigid foam insulation .....	**	7	19,940	0.2499	n.a.	4,983	1,570	1,226	773	1,414	2,491
ODC used to sterilize medical instruments .....	**	5	7,555	1.6700	n.a.	12,616	1,981	2,102	2,148	6,383	6,308
ODC used as propellant in metered-dose inhaler .....	--	--	--	1.6700	n.a.	--	--	--	--	--	--
Other .....	24	37	7,278	N/A	n.a.	2,368	36	25	1,206	1,101	98

Footnotes at end of table.

**Table 1.--Environmental Excise Taxes After Credits and Refunds, by Type of Substance, 1993--Continued**

[Money amounts are in thousands of dollars, except where noted]

Type of substance	Number of filers <sup>1</sup>	Number of quarterly returns filed	Number of barrels, tons, or pounds (thousands)	Tax rate per barrel, ton, or pound (dollars)	Tax before credits and refunds	Tax after credits and refunds					Yearly average per filer
						Yearly total	1993 quarter ended-				
							March	June	September	December	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>ODC's contained in or used to manufacture taxable imported products, total.....</b>	<b>533</b>	<b>1,420</b>	<b>49,145</b>	<b>N/A</b>	<b>81,159</b>	<b>80,119</b>	<b>18,143</b>	<b>27,837</b>	<b>15,955</b>	<b>18,187</b>	<b>150</b>
CFC: 11-13; 111-112; 114; & 211-217 <sup>4</sup> .....	139	308	8,245	3.3500	n.a.	27,619	7,214	13,820	4,048	2,538	198
CFC-113.....	468	1,209	14,724	2.6800	n.a.	39,460	10,434	10,097	10,212	8,733	84
CFC-115.....	16	32	831	2.0100	n.a.	1,670	104	1,492	41	34	104
Halon-1211.....	**	4	121	0.2502	n.a.	30	--	30	--	--	--
Halon-1301.....	**	--	7	0.2512	n.a.	2	--	--	--	--	2
Halon-2402.....	--	--	--	0.2492	n.a.	--	--	--	--	--	--
Carbon tetrachloride.....	9	13	--	3.6850	n.a.	--	--	--	--	--	--
Methyl chloroform.....	32	57	582	0.2111	n.a.	123	--	36	39	47	3
ODC used in rigid foam insulation.....	8	17	590	0.2499	n.a.	148	35	69	11	32	18
ODC used to sterilize medical instruments											
ODC's used as propellant in metered-dose inhaler..... <sup>5</sup>	--	3	212	1.6700	n.a.	355	--	10	162	183	--
Other..... <sup>6</sup>	128	169	23,833	N/A	n.a.	11,713	355	2,292	1,443	6,620	91
<b>Floor stock of ODC, total.....<sup>6</sup></b>	<b>1,032</b>	<b>1,066</b>	<b>43,010</b>	<b>N/A</b>	<b>47,778</b>	<b>47,771</b>	<b>12,467</b>	<b>34,605</b>	<b>89</b>	<b>589</b>	<b>46</b>
CFC-11.....	277	284	3,376	1.6800	n.a.	5,672	2,095	24,059	--	--	20
CFC-12.....	655	669	20,088	1.6800	n.a.	33,748	9,220	3,531	50	417	51
CFC-113.....	364	374	3,260	1.3440	n.a.	4,382	747	1,405	24	68	12
CFC-114.....	62	62	928	1.6800	n.a.	1,559	154	114	24	-2	25
CFC-115.....	85	86	156	1.0080	n.a.	157	15	788	-2	29	1
Carbon tetrachloride.....	45	45	363	2.1780	n.a.	790	2	897	--	-2	17
Methyl chloroform.....	356	367	14,289	0.0740	n.a.	1,059	136	195	--	16	2
CFC-13.....	86	86	117	1.9800	n.a.	233	35	-2	8	2	2
CFC-111.....	4	4	13	1.9800	n.a.	26	25	-2	--	--	6
CFC-112.....	4	4	7	1.9800	n.a.	13	13	--	--	--	3
CFC-113.....	--	--	--	1.9800	n.a.	--	--	--	--	--	--
CFC-114.....	--	--	--	1.9800	n.a.	--	--	--	--	--	--
CFC-115.....	--	--	--	1.9800	n.a.	--	--	--	--	--	--
CFC-116.....	--	--	--	1.9800	n.a.	--	--	--	--	--	--
CFC-117.....	--	--	--	1.9800	n.a.	--	--	--	--	--	--
Other.....	39	39	412	N/A	n.a.	133	24	94	3	2	3

<sup>1</sup> Oil Spill Liability Tax suspended effective July 1, 1993 - June 30, 1994.

\*\* Not shown to avoid disclosure of information about specific businesses. However, the data are included in the appropriate totals.

N/A-Not applicable; n.a.-Not available.

<sup>1</sup> Number of filers does not add to totals because some businesses report a tax on more than one substance.

<sup>2</sup> Less than \$500; or less than 500 barrels, tons or pounds.

<sup>3</sup> No single tax rate was used. Instead, taxpayers had several methods of reporting tax on imported chemical substances: (1) conversion factor -- calculated by determining the number of tons of each taxable chemical used in the manufacture of 1 ton of the substance, (2) percentage of metal -- calculated by determining the percentage of metal contained in the chemical substance; or (3) percentage of the entry value of the chemical substance.

However, these reporting methods do not apply to those chemicals added through petition, allowed under Notice 89-61, 1989-1 CB 717.

<sup>4</sup> ODC's are grouped together, based on ODC tax rate, because taxpayers report tax on imported products, rather than individual ODC's.

<sup>5</sup> In cases where reported tax rates do not correspond with any (IRS) established rates, and imported product descriptions are unrecognizable, amounts are categorized as 'Other'.

<sup>6</sup> Floor stock tax is due by June 30th, the end of the second quarter.

NOTE: Detail may not add to totals because of rounding.