



EPA's 33/50 Program Company Profile

Dexter Shoe Company



THE 33/50 PROGRAM

This Company Profile is part of a series of reports being developed by EPA to highlight the accomplishments of companies participating in the 33/50 Program. The 33/50 Program is an EPA voluntary pollution reduction initiative that promotes reductions in direct environmental releases and offsite transfers of 17 high-priority toxic chemicals. The program derives its name from its overall goals -- an interim goal of a 33% reduction by 1992 and an ultimate goal of a 50% reduction by 1995. The program uses 1988 Toxics Release Inventory (TRI) reporting as a baseline. In February, 1991, EPA began contacting the parent companies of TRI facilities that reported using 33/50 Program chemicals since 1988 to request their participation in the 33/50 Program. As of April, 1994, a total of 1,216 companies had elected to participate in the Program, pledging to reduce emissions of the 17 target chemicals by more than 355 million pounds by 1995. Companies are encouraged to set their own reduction targets, which may vary from the Program's national 33% and 50% reduction goals. Company commitments and reduction pledges continue to be received by EPA on a daily basis.

The 1992 TRI data revealed that releases and transfers of 33/50 Program chemicals declined by 40% between 1988 and 1992, surpassing the Program's 1992 interim reduction goal by more than 100 million pounds. This accomplishment, together with evidence from analysis of facilities' projected releases and transfers of the 17 priority chemicals, reported to TRI under the Pollution Prevention Act, offers strong encouragement that the 33/50 Program's ultimate goal of a 50% reduction by 1995 will be achieved.

EPA is committed to recognizing companies for their participation in the 33/50 Program and for the emissions reductions they achieve. The Program issues periodic Progress Reports, in which participating companies are listed and highlighted. In addition, Company Profiles, such as this one, are being prepared to provide more detailed information about companies that have written to EPA describing significant emissions reduction initiatives. Information presented in these profiles is drawn primarily from the company's written 33/50 Program communications and the annual TRI reports submitted by their facilities (including Pollution Prevention Act data reported to TRI in Section 8 of Form R). All company communications to EPA regarding the 33/50 Program are available to the public upon request.

EPA does not endorse the performance, worker safety, or environmental acceptability of any of the technical options discussed in this Profile. Mention of any product or procedure in this document is for informational purposes only, and does not constitute a recommendation of any such product or procedure, either express or implied, by EPA.

17 PRIORITY CHEMICALS TARGETED BY THE 33/50 PROGRAM

BENZENE
CADMIUM & COMPOUNDS
CARBON TETRACHLORIDE
CHLOROFORM
CHROMIUM & COMPOUNDS
CYANIDES
DICHLOROMETHANE*
LEAD & COMPOUNDS
MERCURY & COMPOUNDS
METHYL ETHYL KETONE
METHYL ISOBUTYL KETONE
NICKEL & COMPOUNDS
TETRACHLOROETHYLENE
TOLUENE
1,1,1-TRICHLOROETHANE
TRICHLOROETHYLENE
XYLENES

* Also referred to as methylene chloride

For information on the 33/50 Program, contact the TSCA Hotline at (202) 554-1404 or contact 33/50 Program staff directly by phone at (202) 260-6907 or by mail at Mail Code 7408, Office of Pollution Prevention and Toxics, U.S. EPA, 401 M Street, SW, Washington, D.C. 20460.

Dexter Shoe Company

Dexter Shoe Company reduced emissions of TRI chemicals by 47% from 1988 to 1992 at its facilities participating in the 33/50 Program by eliminating 209,471 pounds of solvent emissions. The company has pledged total reductions of 88% at these facilities by 1995.

I. CORPORATE BACKGROUND

Dexter Shoe Company is a manufacturer of shoes for men, women, and children. The company is headquartered in Dexter, Maine and has four facilities in Maine reporting to TRI: two in Dexter, one in Skowhegan, and one in Milo.

The company purchases pre-dyed leather stock that is then cleaned, primed, and treated for water-proofing and desired forming and wearing properties such as stiffness or flexibility. Assembling the shoes requires aqueous and solvent-based adhesives in addition to nails and stitching. Following construction, the finished shoes may be cleaned and treated again with solvent-based products. Solvents are also used for cleaning machine parts.

Dexter Shoe Company's pledged emissions reductions under the 33/50 Program far exceed those that would have been achieved if the company had planned merely to meet its regulatory requirements for the State of Maine.

Dexter currently uses two 33/50 Program chemicals: methyl ethyl ketone and toluene. The company reported using trichloroethane and methylene chloride in previous years, but has stopped using both chemicals. Acetone is the only non-33/50 Program TRI chemical used by the company. Table I, at the end of this profile, presents the company's TRI data on releases and transfers for the whole company, while Table II provides these data for each facility.

Dexter reported a total of 514,057 pounds of TRI releases in 1988. Because of the company's reliance on volatile solvents, all of its reported releases are air emissions. The company also reported an additional 5,084 pounds of TRI chemicals transferred offsite for treatment or disposal.

Releases of TRI Chemicals Reported by Dexter Shoe Company (1000 lbs)

	1988	1992
<i>33/50 Chemicals</i>		
Dichloromethane	9	0
Methyl ethyl ketone	184	60
Toluene	46	42
1,1,1-Trichloroethane	28	0
33/50 Subtotal*	267	103
<i>Other TRI Chemicals</i>		
Acetone	247	151
Total*	514	254

* Columns do not sum to totals due to rounding.

II. CORPORATE ENVIRONMENTAL STRATEGY

Dexter Shoe Company has been actively seeking opportunities for recycling and reducing hazardous waste and toxic chemical use since 1989. In 1990, the State of Maine passed the Toxics and Hazardous Waste Reduction Law which mandates a 30% reduction in total releases of toxic substances by 1998 from a baseline of the average of 1990 and 1991 levels. Because Dexter anticipated passage of the Maine law before it became effective, the company was able to commence its search for alternatives prior to passage of the law. The emissions reductions proposed by the company through its 1995 33/50 Program goals far exceed those that would be achieved if the company had planned merely to meet its 1998 regulatory requirements.

III. 33/50 PROGRAM GOALS

The company is focusing most of its 33/50 reduction efforts on its two largest operations – the Headquarters plant in Dexter and the plant in Skowhegan. In 1988, the Dexter Shoe Company reported overall releases of 514,057 pounds for all TRI chemicals at all facilities (see Table I). Of this amount, 449,449 pounds – 87% of the total – were released from the two facilities participating in the 33/50 Program (see Table II). Although Dexter's two other facilities

reported releases in 1988, these plants have significantly reduced releases of 33/50 Program chemicals.

Dexter is projecting an 88% reduction in TRI releases from 1995 to 1988 at its two largest facilities.

The Headquarters facility pledged to reduce total releases of all reported TRI chemicals 83% by 1995 from 1988 levels, while the plant in Skowhegan has committed to a reduction of 97% in total releases of TRI chemicals by 1995 from 1988 levels. The company has also made interim goals for 1992 of a 36% reduction at the Headquarters plant and an 80% reduction at the Skowhegan plant.

33/50 Program Goals for Dexter Shoe Co.
Reductions in releases of all TRI chemicals from 1988 levels

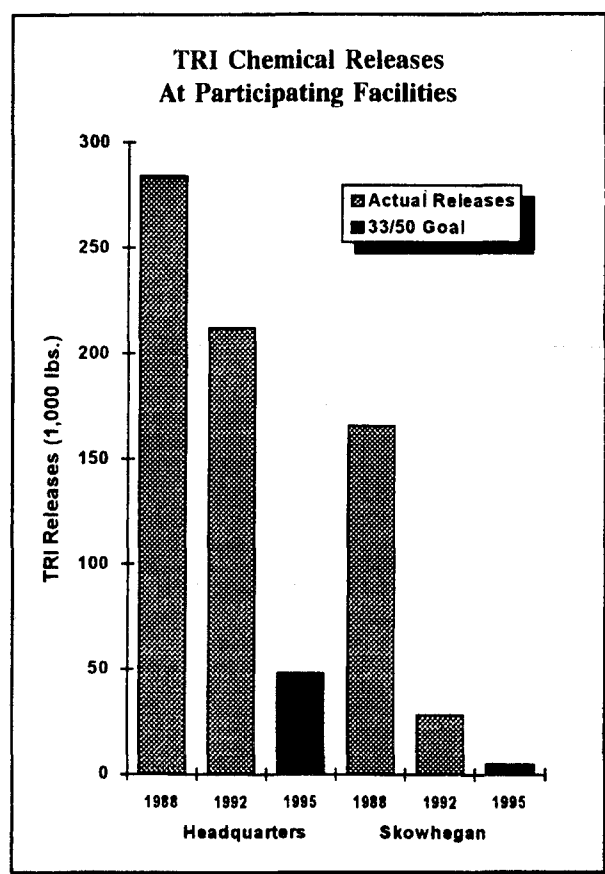
Plant	1992	1995
Headquarters	36%	83%
Skowhegan	80%	97%

The combined goal for the two participating facilities is an 88% reduction in total emissions of TRI chemicals by 1995, with a combined interim goal of 48% by 1992. These goals far exceed both the total quantity of reductions and the timing of reductions required under Maine's Toxics and Hazardous Waste Reduction Law.

IV. FACILITY AND PROCESS LEVEL POLLUTION REDUCTION ACTIVITIES

Both the Headquarters and Skowhegan facilities are using a three-tiered approach to meet its 33/50 Program goals: reduction in chemical use, substitution with less hazardous chemicals, and solvent recovery.

The Skowhegan facility has had particular success in substitution and solvent recovery. The facility reports the following activities:



- Replacing two solvent-based waterproofing agents with aqueous-based products. These new products are more expensive than their solvent predecessors, but provide better coverage using less product.
- Replacing methyl ethyl ketone as a cleaning solvent with heptane. Because heptane still poses some risk, however, the company is continuing to investigate other alternatives.

Dexter is employing a three-tiered approach for achieving reductions: reduce chemical use; substitute with less hazardous chemicals; and solvent recovery.

- Employing solvent recovery for cleaning solvents, such as methyl ethyl ketone and heptane. Dexter uses solvent recovery both for reuse of individual solvents and for generalized recovery of mixed cleaning solvents. Some of the solvent recovery is done within the process for which the chemi-

cals are used and, thus, can be considered source reduction.

A similar progress report from Dexter's Headquarters facility describes the following individual reduction accomplishments:

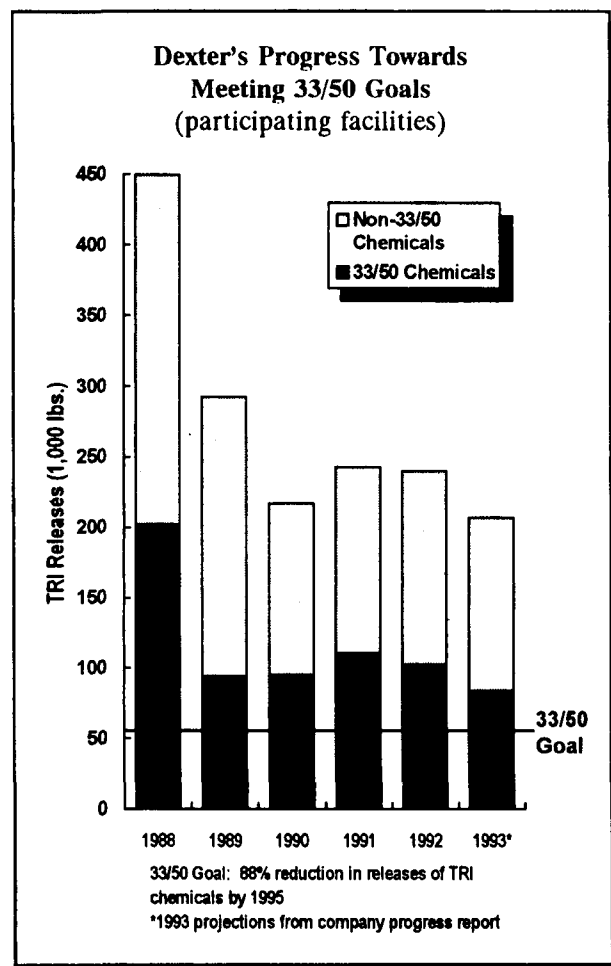
- Substituting solvents and cleaners containing methyl ethyl ketone, methylene chloride, and toluene with water-based products.
- Replacing a filler product containing 40% acetone with a cut insert material bonded to the upper part of the shoe with a hot melt adhesive.
- Installing a solvent recovery system for reuse of cleaning solvents.

While these measures have significantly decreased Dexter's total use of TRI chemicals, the company's overall use of solvent-based adhesives has increased due to expanding production. However, Dexter has substantially reduced the amount of solvent used per pair of shoes manufactured since 1990, from 0.044 pounds per pair in 1990 to 0.034 pounds per pair in 1993 (a reduction of approximately 23%). The company also continues to explore the use of water-based and low-VOC adhesives as replacements for existing solvent-based applications. Limited productions of certain shoe styles manufactured with water-based urethanes was initiated in 1993.

V. PROGRESS TOWARDS 33/50 REDUCTION GOALS

As a result of these efforts, Dexter seems to be well on its way to meeting its 33/50 Program goals. Emissions of all TRI chemicals at the company's two participating facilities have already decreased 47% from 1988 to 1992 through elimination of 209,471 pounds of emissions:

- At the Skowhegan facility, releases of TRI chemicals decreased by 83% from 1988 to 1992, indicating that the facility has surpassed its 33/50 Program interim goals.
- At the Headquarters facility, releases of TRI chemicals decreased by 25% from 1988 to 1992. The facility's Pollution Prevention Act (PPA) data for 1992 indicates that emissions will continue to decrease, with 1994 releases projected to be 58% lower than 1988 releases.



Dexter projects further reductions of 105,978 pounds by 1994, for an overall reduction of 70% at participating facilities, indicating that the company is well its way to meeting its goal of an 88% reduction of TRI chemicals by 1995.

VI. SUMMARY OF DEXTER'S EXPERIENCE

Overall, Dexter Shoe Company's participation in the 33/50 Program has been positive. Dexter pledged to significantly reduce its emissions of five TRI chemicals by 1995 from 1988 levels - commitments that far exceed the reductions necessary to meet its regulatory requirements under Maine State law. Indeed, by 1992 Dexter had already reduced total emissions by 47% at its two participating facilities. Not only is the company reducing emissions of TRI chemicals, it is employing pollution prevention techniques in achieving these results, rather than relying on end-of-the-pipe waste management approaches.

Table I
Dexter Shoe Company
Releases and Transfers of TRI Chemicals, 1988-1992
(all data from TRI unless otherwise noted)

Chemical	Year	Total Air Emissions (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (1) (pounds)	Percent Change 1988-1992 Total Releases and Transfers
Dichloromethane	1988	9,185 (2)	0	9,185 (2)	
	1990	21,882	0	21,882	
	1991	19,900	0	19,900	-100%
Methyl ethyl ketone	1988	183,808	500	184,308	
	1989	42,421	8,200	50,621	
	1990	43,895	0	43,895	
	1991	51,300	0	51,300	
	1992	60,200	0	60,200	-67%
Toluene	1988	45,945 (2)	1,834	47,779 (2)	
	1989	51,684	2,773	54,457	
	1990	29,265	0	29,265	
	1991	39,400	0	39,400	
	1992	42,405	0	42,405	-11%
1,1,1-Trichloroethane	1988	28,050	2,250	30,300	-100%
<u>33/50 Program Chemicals</u>	1988	266,988 (2)	4,584	271,572 (2)	
	1989	94,105	10,973	105,078	
	1990	95,042	0	95,042	
	1991	110,600	0	110,600	
	1992	102,605	0	102,605	-62%
Acetone	1988	247,069	500	247,569	
	1989	198,286	250	198,536	
	1990	122,309	0	122,309	
	1991	132,400	0	132,400	
	1992	150,925	0	150,925	-39%
All TRI Chemicals	1988	514,057 (2)	5,084	519,141 (2)	
	1989	292,391	11,223	303,614	
	1990	217,351	0	217,351	
	1991	243,000	0	243,000	
	1992	253,530	0	253,530	-51%
<u>Percent Change, 1988-92</u>					
33/50 Program Chemicals		-62%	-100%	-62%	
Non-33/50 Program TRI Chemicals		-39%	-100%	-39%	
All TRI Chemicals		-51%	-100%	-51%	

Notes: (1) 1991 Total Releases and Transfers do not include on- or off-site recycle or energy recovery.

(2) Includes 1988 data from company progress reports to the 33/50 Program where chemical use was below TRI reporting threshold.

Table II
Dexter Shoe Company
Releases and Transfers of TRI Chemicals by Facility, 1988-1992
(all data from TRI unless otherwise noted)

Chemical	Year	Total Air Emissions (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (1) (pounds)
<u>Headquarters Plant, Dexter, ME</u>				
Dichloromethane	1988 (2)	9,185	0	9,185
	1990	21,882	0	21,882
	1991	19,900	0	19,900
Methyl ethyl ketone	1988	115,488	250	115,738
	1989	42,421	8,200	50,621
	1990	43,895	0	43,895
	1991	36,200	1,700	37,900
	1992	48,224	0	48,224
Toluene	1988 (2)	9,387	0	9,387
	1989	51,684	2,773	54,457
	1990	29,265	0	29,265
	1991	39,400	0	39,400
	1992	42,405	0	42,405
<u>33/50 Chemical Total</u>	1988 (2)	134,060	250	134,310
	1989	94,105	10,973	105,078
	1990	95,042	0	95,042
	1991	95,500	1,700	97,200
	1992	90,629	0	90,629
Acetone	1988	149,584	250	149,834
	1989	198,286	250	198,536
	1990	100,374	0	100,374
	1991	114,600	0	114,600
	1992	121,236	0	121,236
Facility Total	1988	274,459	500	274,959
	1989	292,391	11,223	303,614
	1990	195,416	0	195,416
	1991	210,100	1,700	211,800
	1992	211,865	0	211,865
<u>Skowhegan, ME</u>				
<u>Methyl ethyl ketone</u>	1988	68,320	250	68,570
	1991	15,100	0	15,100
	1992	11,976	0	11,976

Table II
Dexter Shoe Company
Releases and Transfers of TRI Chemicals by Facility, 1988-1992
(all data from TRI unless otherwise noted)

Chemical	Year	Total Air Emissions (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (1) (pounds)
Acetone	1988	97,485	250	97,735
	1990	21,935	0	21,935
	1991	17,800	0	17,800
	1992	16,137	0	16,137
Facility Total	1988	165,805	500	166,305
	1990	21,935	0	21,935
	1991	32,900	0	32,900
	1992	28,113	0	28,113
<u>Subtotal for 33/50 Facilities</u>				
<u>33/50 Chemicals</u>	1988	202,380	500	202,880
	1989	94,105	10,973	105,078
	1990	95,042	0	95,042
	1991	110,600	1,700	112,300
	1992	102,605	0	102,605
Acetone	1988	149,584	250	149,834
	1989	198,286	250	198,536
	1990	118,174	0	118,174
	1991	130,737	0	130,737
	1992	121,236	0	121,236
All TRI Chemicals	1988	449,449	1,000	450,449
	1989	292,391	11,223	303,614
	1990	217,351	0	217,351
	1991	243,000	1,700	244,700
	1992	239,978	0	239,978
<u>Dexter, ME</u>				
1,1,1-Trichloroethane	1988	18,163	2,000	20,163
Toluene	1988	36,558	1,834	38,392
<u>Milo, ME</u>				
1,1,1-Trichloroethane	1988	9,887	250	10,137
Acetone	1992	13,552	0	13,552

Notes: (1) 1991 Total Releases and Transfers do not include on- or off-site recycle or energy recovery.
(2) 1988 data from company progress reports to the 33/50 Program.

Table III
Dexter Shoe Company
Pollution Prevention Act Reporting (1)
(All data from TRI unless otherwise noted)

Chemical	Year	Recycled On-site (pounds)	Energy Recovery Off-site (pounds)	Treated Off-site (pounds)	Quantity Released (pounds)	Percent Change 1991-1994 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1994 Production Related Wastes
Dichloromethane	1991	150	150	0	19,900		20,200	
	1993	0	0	0	0	-100%	0	-100%
Methyl ethyl ketone	1991	9,000	740	1,700	51,300		62,740	
	1992	10,606	1,083	0	60,200		71,889	
	1993	7,600	400	1,000	44,000 (2)		53,000 (2)	
	1994	6,100	1,000	0	24,000	-53%	31,100	-50%
Toluene	1991	2,500	400	0	39,400		42,300	
	1992	1,300	1,000	0	42,405		44,705	
	1993	500	0	0	40,000 (2)		40,500 (2)	
	1994	250	200	0	25,000	-37%	25,450	-40%
<u>33/50 Program Chemicals</u>	1991	11,650	1,290	1,700	110,600		125,240	
	1992	11,906	2,083	0	102,605		116,594	
	1993	8,100	400	1,000	84,000 (2)		93,500 (2)	
	1994	6,350	1,200	0	49,000	-56%	56,550	-55%
Acetone	1991	50	425	0	132,400		132,875	
	1992	1,300	640	0	150,925		152,865	
	1993	0	200	0	122,700 (2)		122,900 (2)	
	1994	500	215	0	93,000	-30%	93,715	-29%
All TRI Chemicals	1991	11,700	1,715	1,700	243,000		258,115	
	1992	13,206	2,723	0	253,530		269,459	
	1993	8,100	600	1,000	206,700 (2)		216,400 (2)	
	1994	6,850	1,415	0	142,000	-42%	150,265	-42%
<u>Projected Percent Change, 1991-1994</u>								
33/50 Program Chemicals		-45%	-7%		-56%		-55%	
Non-33/50 Program Chemicals		900%	-49%		-30%		-29%	
All TRI Chemicals		-41%	-17%		-42%		-42%	

(1) Actual data for 1991 and 1992, projections for 1993 and 1994.

(2) Includes projections from the Company's August 1993 progress reports.

Table IV
Dexter Shoe Company
Pollution Prevention Act Data by Facility (1)
(All data from TRI unless otherwise noted)

Chemical	Year	Recycled On-site (pounds)	Energy Recovery Off-site (pounds)	Treated Off-site (pounds)	Quantity Released (pounds)	Total Production Related Wastes (pounds)	Production/ Activity Index
<u>Headquarters, Dexter, ME</u>							
Dichloromethane	1991	150	150	0	19,900	20,200	
	1993	0	0	0	0	0	0.90
Methyl ethyl ketone	1991	9,000	700	1,700	36,200	47,600	
	1992	10,566	1,068	0	48,224	59,858	
	1993	7,500	400	1,000	38,000 (2)	46,900	1.12
	1994	6,000	1,000	0	20,000	27,000	0.90
Toluene	1991	2,500	400	0	39,400	42,300	
	1992	1,300	1,000	0	42,405	44,705	
	1993	500	0	0	40,000 (2)	40,500	1.12
	1994	250	200	0	25,000	25,450	0.90
<u>33/50 Program Chemicals</u>							
	1991	11,650	1,250	1,700	95,500	110,100	
	1992	11,866	2,068	0	90,629	104,563	
	1993	8,000	400	1,000	78,000 (2)	87,400	
	1994	6,250	1,200	0	45,000	52,450	
Acetone	1991	50	400	0	114,600	115,050	
	1993	0	200	0	110,000 (2)	110,200	
	1992	1,300	600	0	121,236	123,136	1.12
	1994	500	200	0	75,000	75,700	0.90
Facility Total	1991	11,700	1,650	1,700	210,100	225,150	
	1992	13,166	2,268	0	211,865	227,699	
	1993	8,000	600	1,000	188,000 (2)	197,600	
	1994	6,750	1,400	0	120,000	128,150	
<u>Skowhegan, ME</u>							
<u>Methyl ethyl ketone</u>	1991	0	40	0	15,100	15,140	
	1992	40	15	0	11,976	12,031	
	1993	100	0	0	6,000 (2)	6,100	1.01
	1994	100	0	0	4,000	4,100	0.90
Acetone	1991	0	25	0	17,800	17,825	
	1992	0	25	0	16,137	16,162	
	1993	0	0	0	12,700 (2)	12,700	1.01
	1994	0	10	0	10,000	10,010	0.90

Table IV
Dexter Shoe Company
Pollution Prevention Act Data by Facility (1)
(All data from TRI unless otherwise noted)

Chemical	Year	Recycled On-site (pounds)	Energy Recovery Off-site (pounds)	Treated Off-site (pounds)	Quantity Released (pounds)	Total Production Related Wastes (pounds)	Production/ Activity Index
Facility Total	1991	0	65	0	32,900	32,965	
	1992	40	40	0	28,113	28,193	
	1993	100	0	0	18,700 (2)	18,800	
	1994	100	10	0	14,000	14,110	
<u>Subtotal for 33/50 Facilities</u>							
<u>33/50 Program Chemicals</u>	1991	11,650	1,290	1,700	110,600	125,240	
	1992	11,906	2,083	0	102,605	116,594	
	1993	8,100	400	1,000	84,000 (2)	93,500	
	1994	6,350	1,200	0	49,000	56,550	
All TRI Chemicals	1991	11,700	1,715	1,700	243,000	258,115	
	1992	13,206	2,708	0	239,978	255,892	
	1993	8,100	600	1,000	206,700 (2)	216,400	
	1994	6,850	1,410	0	134,000	142,260	
<u>Milo, ME</u>							
Acetone	1992	0	15	0	13,552	13,567	
	1994	0	5	0	8,000	8,005	

(1) Actual data for 1991 and 1992, projections for 1993 and 1994.

(2) Projections from the Company's August 1993 progress reports.