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EPA

EPA's 33/50 Program Company Profile

EATON

EPA's 33/50 Program
Company Profiles

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 November, 1995, nearly 1,300 companies had elected to participate in the Program, pledging to reduce emissions of the 17 target chemicals by more than 380 million pounds by 1995. Companies set their own reduction targets, which may vary from the Program's national 33% and 50% reduction goals.

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

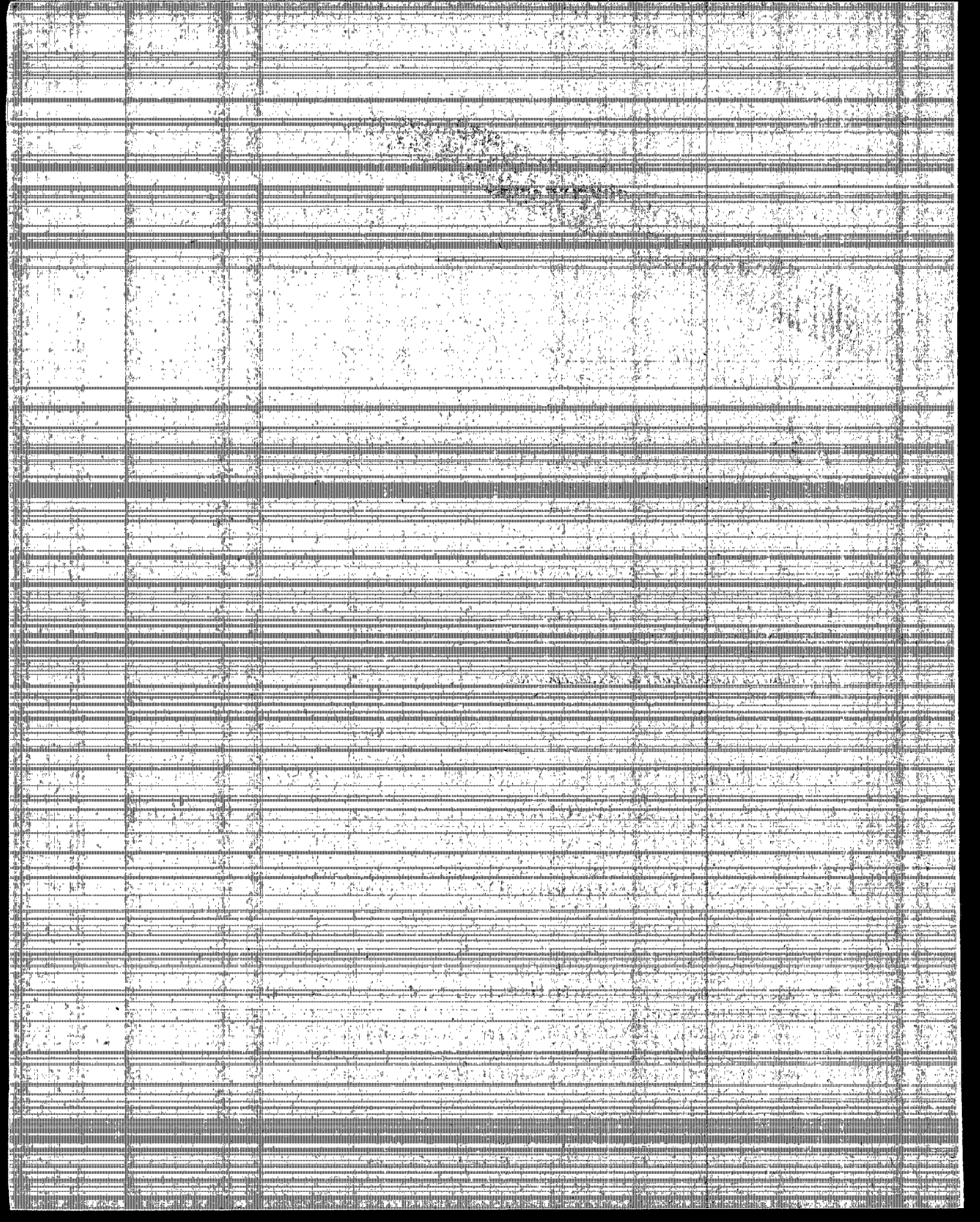
* Also referred to as methylene chloride

Industry exceeded the 33/50 Program's interim 33% reduction goal by more than 100 million pounds in 1992. National emissions of Program chemicals were reduced by an additional 100 million pounds in 1993, bringing total reductions since 1988 to more than 685 million pounds (46%). Facilities' TRI projections suggest that the Program's ultimate 50% reduction goal will be observed to have been achieved or exceeded in the 1994 TRI data, a full year ahead of schedule. The 1,300 companies enrolled in the 33/50 Program have accounted for most of the Program's pollution reductions. Representing just 15% of eligible companies and owning only a third of the facilities reporting Program chemicals to TRI, participants are responsible for 78% of the reductions since 1988 and 98% of the 100 million pounds reduced in 1993.

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 how companies have achieved their emissions reductions. Information presented in these profiles is drawn from a number of sources, including the company's written communications to the 33/50 Program, extensive interviews with company representatives, the annual TRI reports submitted by the company's facilities (including Pollution Prevention Act data reported to TRI in Section 8 of Form R), and, in many cases, site visits to one or more of the company's facilities. Mention of trade names, products, or services in this document does not convey, and should not be interpreted to convey, official EPA approval, endorsement, or recommendation.

Copies of other 33/50 Program Company Profiles, as well as Reductions Highlights documents summarizing all of these Profiles, may be obtained by contacting the Program as specified in the box below. In addition, all written company communications to EPA regarding the 33/50 Program are available to the public upon request.

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.



EATON CORPORATION

SUMMARY

Between 1988 and 1993, Eaton Corporation reduced releases and transfers of 33/50 Program chemicals by 1,791,000 pounds, an 80 percent reduction from the 1988 level of 2,242,121 pounds. These reductions included the complete elimination of releases and transfers of methyl ethyl ketone, tetrachloroethylene, and xylene (mixed isomers). Data provided by the Company detailing 1994 releases and transfers includes an additional reduction of approximately 49,000 pounds, bringing the 1994 total for the company to 401,000 pounds.

Of the many projects implemented at Eaton facilities throughout the U.S., four are presented in this company profile:

- *Metals reduction from grinding swarf*
- *Elimination of the use of chlorinated degreasing solvents*
- *Establishment of a chromium waste exchange program*
- *Substitution of powder coatings for solvent based paints.*

These four projects have resulted in significant reductions in releases and transfers of chromium, nickel, 1,1,1-trichloroethane, and trichloroethylene.

COMPANY BACKGROUND

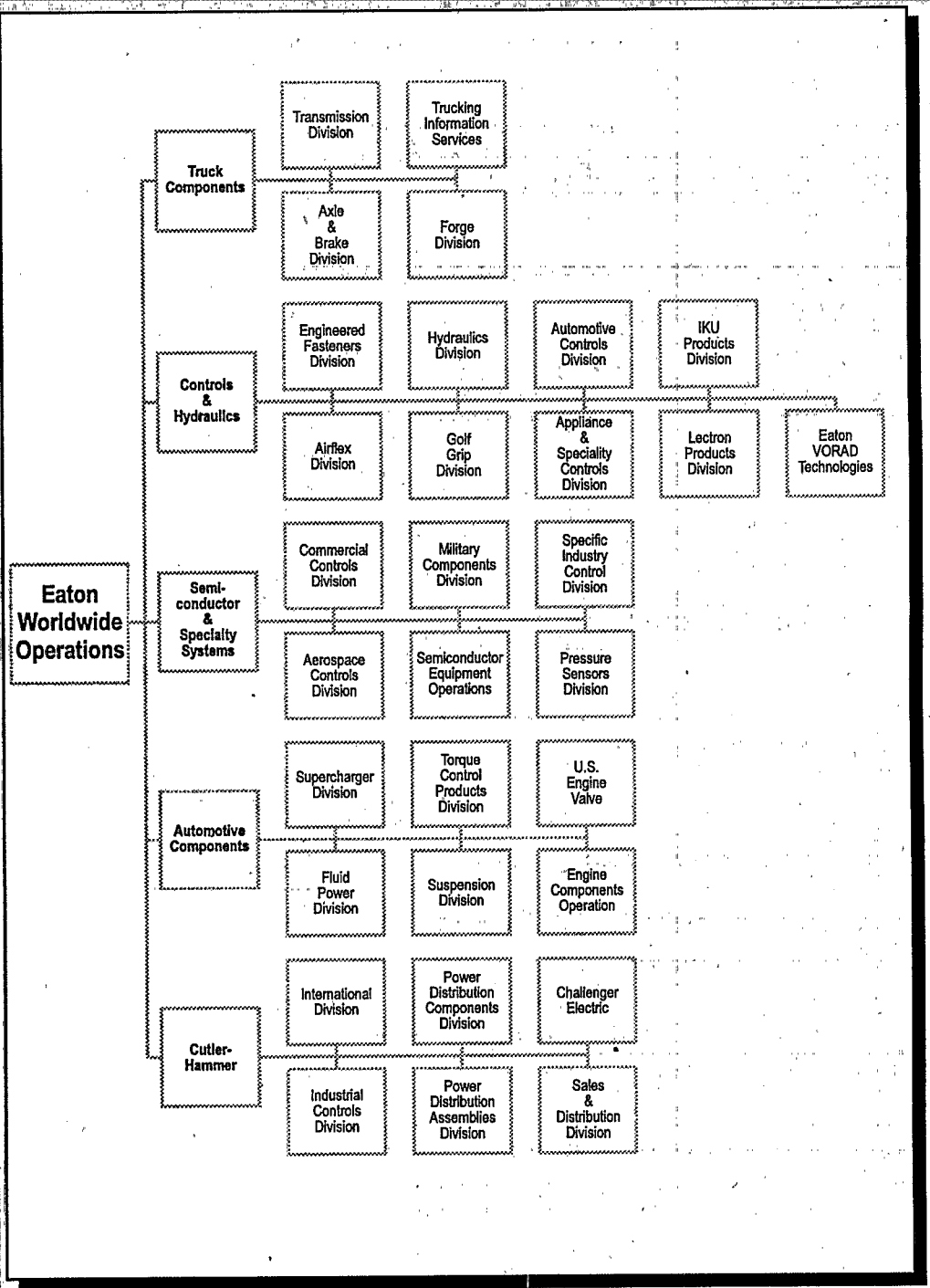
EATON

Eaton Corporation is an original equipment manufacturer of engineered products for the automotive, industrial, commercial, and military industries. The company is divided into five business groups, each manufacturing and marketing a number of products:

- Cutler Hammer: AC Drives, torque brakes and press drives, motor control centers, safety switches and panel boards;
- Automotive Components: viscous fan drives, hydraulic lifters, air control products and engine valves;
- Semiconductor Specialty Systems: military and commercial aircraft, aircraft components, relays, switches, high performance switches and keyboards, pressure and temperature transducers, navy and marine motor controls;

Exhibit 1

Eaton Corporation Organization Chart



- Controls & Hydraulics: industrial clutches, golf club grips, molded rubber products, electrochemical controls, thermostatic controls, load cells, hydraulic motors, and air conditioning control components;
- Truck Components: medium and heavy truck axles, medium to large steel forgings, medium and heavy truck transmissions.

Exhibit 1 shows the Company's five business groups, including the major classes of products manufactured, but is however, not a comprehensive list of Eaton's products or divisions.

Established in 1911, Eaton employs 50,000 individuals in 17 countries. The company is headquartered in Cleveland, Ohio and has approximately 80 manufacturing facilities across the United States, Canada, and Mexico. In addition to these manufacturing facilities, Eaton has one manufacturing center and three research centers which are involved in technical research for the company including building prototypes and providing manufacturing consulting. The research centers are: Greentree, PA, which is engaged in heavy-duty electrical switch research; Milwaukee, WI, which is involved in medium-duty electrical controls research; and Southfield, MI, which conducts automotive research. The manufacturing technology center in Willoughby, OH performs hands-on engineering technology research. The Willoughby, OH facility also has an on-site training center where company-wide training programs are conducted.

Eaton Corporation is an original equipment manufacturer of engineered products for the automotive, industrial, commercial, and military industries.

Eaton's revenues for 1994 were $6.1 billion and are expected to increase beyond $6.5 billion in 1995. Eaton's acquisition of Westinghouse Electric Corporation's $1.1 billion Distribution and Control Business Unit in January 1994 resulted in an increase in Eaton's revenues of about 25 percent.

Environmental Strategy

In addition to participation in the 33/50 Program, Eaton Corporation is involved in numerous other activities aimed at protecting the environment. The Eaton Environmental Strategic Initiative (EESI), officially begun in 1993, is a waste minimization program designed to identify technological alternatives to reduce or eliminate releases of hazardous chemicals to the environment. By reviewing regulatory requirements and examining the large quantity of chemicals released at its facilities, Eaton has identified specific processes which may be altered to reduce or eliminate releases of certain chemicals. As part of this program, Eaton is funding in-house as well as external environmental research to develop alternatives for selected chemical processes. The budget for this program was $700,000 in 1994, and is projected to be $745,000 in 1996.

In 1993, Eaton adopted Worldwide Environmental, Health, and Safety Guidelines which are designed to provide environmental guidance for Eaton's facilities. The guidelines contain a list of recommendations for improving environment, health, and safety in and around Eaton facilities. The recommendations include: methods for improving materials and industrial waste management handling, design of a strategic plan demonstrating a proactive approach to waste minimization, and guidelines for conducting industrial hygiene surveys on a regular basis. To encourage facilities to comply with the guidelines, Eaton conducts audits of its facilities to ensure they are in compliance with environmental regulations. Each facility is audited every three years; the first audits began in 1990. These initial audits were conducted by outside consultants hired by Eaton, but the Company is now training plant environmental managers to conduct future audits. The facilities that did not meet compliance requirements, were required to come into compliance as rapidly as possible. Eaton is now beginning its second round of audits, focusing initially on those facilities with significant releases and transfers of 33/50 Program chemicals. This second round of audits is designed to identify means by which companies can reduce or eliminate their use of 33/50 and other potentially hazardous chemicals.

The Eaton Environmental Strategic Initiative (EESI) is a waste minimization program designed to identify technological alternatives to reduce or eliminate releases of hazardous chemicals to the environment.

As part of its effort to meet its 33/50 Program goals, Eaton adopted a policy of denying approval for the introduction of any new processes or process changes into their facilities that would increase releases or transfers of 33/50 chemicals.

In addition to the EESI and the Worldwide Environmental, Health, and Safety Guidelines, Eaton is involved with many other environmental activities. The company holds an environmental conference every 18 months where environmental managers from Eaton's facilities convene to obtain training and to share their ideas concerning environmental issues affecting the company and new technologies. Eaton staff have also developed several patented processes for eliminating solvent usage in the cleaning of metal parts using water in place of traditional solvents.

Because of the Company's commitment to environmental protection, Eaton and its facilities have received numerous awards for their efforts in pollution prevention. Recognition that the Company has received include, Governor Awards for Pollution Prevention in Ohio, Tennessee, North Carolina, Illinois, Nebraska, and Oklahoma, as well as the Presidential Environmental and Conservation Award in 1991.

As part of its effort to meet its 33/50 Program goals, Eaton has adopted a policy of denying approval for the introduction of any new processes or process changes into their facilities that would increase releases or transfers of 33/50 chemicals. This policy was originally established to prevent processes that generate hazardous waste from being approved, but has since been extended to include 33/50 Program chemical releases and transfers as well. The policy is enforced through financial controls, as a corporate environmental manager must approve all appropriations for new equipment or other acquisitions. The policy has been strictly enforced not only in the U.S., but also at Eaton facilities abroad.

The company has used this policy on several occasions to prevent increases in releases and transfers of 33/50 chemicals. For example, an Eaton facility in Mexico was refused financial backing for the installation of a new painting line that would utilize solvent based paints containing 33/50 chemicals. The facility was informed that it would not receive funding for this project until it developed a process that did not involve the use of paints containing 33/50 chemicals. In another instance, one of Eaton's competitors, Rockwell, began selling painted truck transmissions. Eaton, which until this time sold unpainted truck transmissions, decided that it was imperative to start painting its truck transmissions to remain competitive. Because of the Company's policy of not introducing 33/50 chemicals into new processes, Eaton chose to develop a durable water-based paint with a salt spray in excess of 500 hours. Researchers at Eaton worked on this problem for many months and eventually developed a water-based paint that would withstand severe conditions. As a result of these efforts, truck transmissions are now being coated using a water-based paint at Eaton's Shenandoah, Iowa; Kings Mountain, North Carolina; and Shelby, Tennessee facilities.

Eaton has created a database containing material safety data sheets (MSDS) that will allow the company to track chemical use at each of its facilities.

Eaton has created a database containing material safety data sheets (MSDS) that will allow the company to track chemical use at each of its facilities. Eaton feels that the creation of the database will ease recordkeeping and reporting, help managers to anticipate potential compliance problems, and facilitate prompt and effective responses to emergencies. Eaton intends to expand this database to include chemical purchases as well.

Eaton's Releases And Transfers Of TRI Chemicals

33/50 Chemicals (1,000 lbs.)	1988	1993	1994*
Chromium & Compounds	536	183	212
Dichloromethane	76	32	NR
Lead & Compounds	1	8	22
Methyl ethyl ketone**	NR	NR	NR
Nickel & Compounds	239	68	49
Tetrachloroethylene	106	NR	NR
Toluene	159	20	13
1,1,1-Trichloroethane	669	99	69
Trichloroethylene	402	28	20
Xylene	54	11	16
33/50 Subtotal***	2,242	450	401
Other TRI Chemicals	1,117	232	NA
Total***	3,359	682	NA

NR = Not reported
NA = Not Available
** 1994 Data was supplied by the company and is considered unofficial.*
*** Approximately 59,000 lbs. & 14,000 lbs. of methyl ethyl ketone were reported as "Air Emissions" in 1989 and 1991, respectively.*
**** Columns may not sum to total due to rounding.*

Exhibit 2

Releases and Transfers of TRI Chemicals (1,000 Pounds)

Overview Of 33/50 And TRI Chemical Releases And Transfers

Since 1988, Eaton has reported releases and transfers of 10 of the 17 33/50 chemicals. Exhibit 2 presents company data on releases and transfers of TRI chemicals for 1988, 1993, and 1994. Exhibits 3 and 4 provide a breakdown of the company's 1988 TRI data by release media and by chemical. Additional data are provided in Appendices A through D at the end of this Profile.

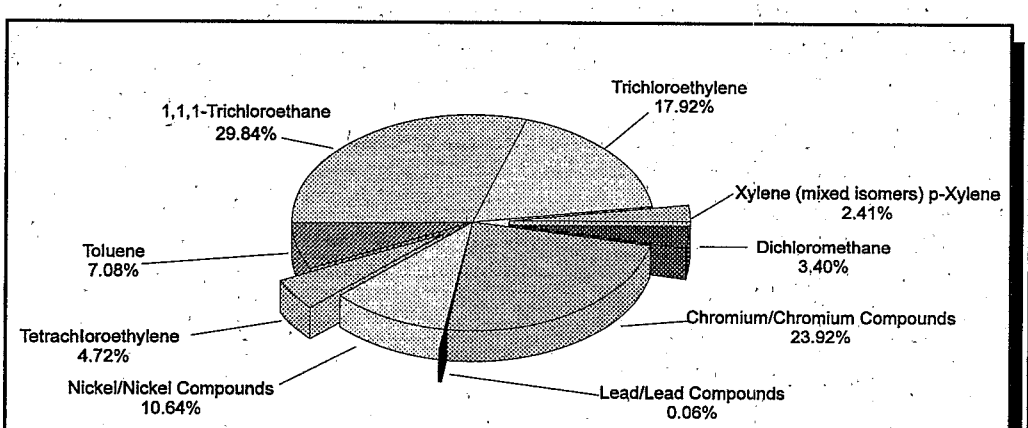
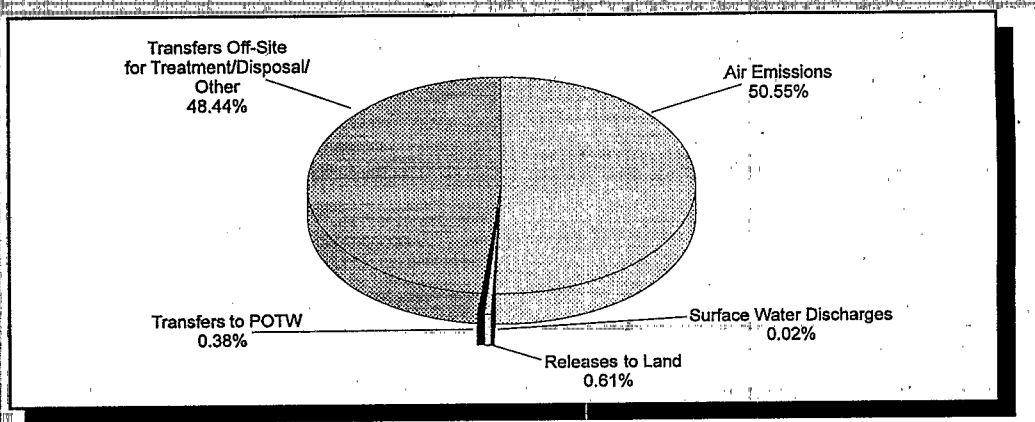


Exhibit 3

Percentage Breakdown of 33/50 Program Chemical Releases and Transfers for 1988 (by Chemical)

Exhibit 4

Percentage Breakdown of 33/50 Program Chemicals Releases and Transfers for 1988 (by Media)



The following is a listing of the 33/50 chemicals for which Eaton reported releases and transfers, their primary use, and their primary mode of release or transfer:

Chromium and compounds are used for manufacturing parts (including truck transmissions and wheel axles), in engine valves, and in chromium electroplating, and are primarily transferred off-site for treatment, disposal, or other processing.

Dichloromethane, 1,1,1-trichloroethane **(TCA)**, ***and trichloroethylene*** **(TCE)** are used for parts degreasing and are released primarily as air emissions, with smaller quantities transferred off-site for treatment, disposal, or other processing.

The Company no longer reports any releases or transfers of dichloromethane, methyl ethyl ketone, or tetrachloroethylene.

Lead and compounds are used as alloying agents in steel and brass components and are primarily transferred off-site for treatment, disposal, or other processing, with smaller amounts transferred to a POTW and released as air emissions.

Methyl ethyl ketone **(MEK)** was used as a thinning agent in paint formulations. It was released entirely as air emissions.

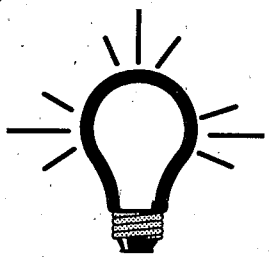
Nickel and compounds are used in electroplating, as alloying agents in steel, and as prime elements in engine valve components, and are primarily transferred off-site for treatment, disposal, or other processing.

Tetrachloroethylene was used for parts degreasing and was released as air emissions and transferred off-site for treatment, disposal, or other processing.

Toluene and xylene are used as thinning agents in painting and in paint formulations. Toluene is released entirely as air emissions, while xylene is released as air emissions and transferred off-site for treatment, disposal, or other processing.

In the 33/50 Program's base year of 1988, Eaton reported total releases and transfers of 3,358,852 pounds of TRI chemicals. Of this total, 2,242,121 pounds, or 67%, were comprised of 33/50 chemicals. Between 1988 and 1994, a total of 41 Eaton facilities reported releases and transfers of 33/50 chemicals. As of 1994, Eaton reported releases and transfers of seven 33/50 chemicals. The Company no longer reports any releases or transfers of dichloromethane, methyl ethyl ketone, or tetrachloroethylene.

33/50 Program Goals And Reduction Projects



When Eaton Corporation joined the 33/50 Program in May 1991, the Company established a goal of a 50% reduction in releases and transfers of 33/50 chemicals by 1995 using 1988 levels as the baseline. This translates to a reduction of 1,121,060 pounds. The Company stated an intention to rely on source reduction measures rather than treatment methods to the maximum extent possible to achieve these reductions. Implementation of the 33/50 Program at Eaton is conducted in a decentralized manner. The Manager of Corporate Environmental Engineering works with the environmental managers of each facility to assist in making decisions regarding target chemicals and the means by which reductions in releases and transfers should be achieved.

The remainder of this section describes four projects that resulted in significant decreases in releases and transfers of 33/50 chemicals at Eaton facilities. The first two projects focus on implementation of new technologies at Eaton's facilities in Kearney, Nebraska, and Spencer, Iowa, respectively. The remaining two projects describe smaller changes made at several Eaton facilities. Specifically, the projects discussed in this case study are:

- Metals reduction from grinding swarf
- Elimination of the use of chlorinated degreasing solvents
- Other reduction projects.

Project #1: Metals reduction from grinding swarf

In early 1993, as a result of both the 33/50 Program and Eaton's Environmental Strategic Initiative, the Company identified the need to develop a means of reducing off-site transfers of metal–containing waste generated from the grinding of intake and exhaust valves at its facility in Kearney, Nebraska. At the time, 10,000 pounds of grinding swarf (metallic waste) were being shipped to a landfill each day from this facility. The grinding swarf was comprised of metal, filter aid paper (on which the swarf collected), oil, and water. The metal, composed of fine particles ranging from less than 200 micrometers to approximately 300 micrometers in diameter, made up 30 percent of the total waste stream. Of the metal in the waste, between one and seven percent was nickel and less than one percent was chromium. Because of the valuable metals contained in the waste, and in an effort to reduce transfers of these 33/50 chemicals to landfills, Eaton began an investigation of methods to remove the metal from the grinding swarf prior to disposal. The company investigated several different alternatives for processing the grinding swarf, including: washing the swarf to remove the metal from the filter aid paper, using vacuum distillation to remove the oil and water from the swarf, and incinerating the waste to burn the oil and filter aid paper. Each of these alternatives had drawbacks that prevented them from being adopted: washing the swarf produced additional wastewater treatment needs, vacuum distillation failed to sufficiently separate the metal and the filter aid paper, and incineration produced hazardous air emissions. As a result, Eaton ruled out each of these techniques as options for removing metal from the grinding swarf.

The major environmental benefit associated with Eaton's guiding swarf metals reduction project is the avoidance of landfilling large quantities of toxic metals, thereby reducing releases and transfers of 33/50 chemicals.

Eaton next began investigating compression technologies to reduce the volume of the waste sent to the landfill. Specifically, the company considered an ultra-high-compression device to compact the grinding swarf into briquettes approximately two inches in diameter. During the investigation of this technology, Eaton learned, through discussions with other

individuals in the industry, of a smelter that was interested in purchasing the grinding swarf generated by Eaton. The smelter planned to process the swarf into low grade stainless steel "pigs" that would be sold to premium stainless steel smelters for use as raw material.

Before purchasing the grinding swarf from Eaton, the smelter required that the grinding swarf be formed into seven-inch cubes using low-pressure briquetting. Producing the briquettes was relatively simple for Eaton, since the Kearney facility already had low-pressure briquetting equipment on-site. In addition, briquetting the grinding swarf eliminated the need to separate the metal materials from the filter paper, since the smelter accepts the material as a mixture.

While the grinding swarf recycling project increased Eaton's costs for managing the waste stream by $150,000 per year, Eaton believes that, in the long run, it will be less expensive to send the grinding swarf to the smelter than to landfill the waste.

To test the process, the smelter asked that Eaton ship 100 tons of the grinding swarf by rail car in August 1994 to be processed. The test proved successful and Eaton continued to send the briquettes to the smelter. Following this successful trial at the Kearney facility, two of Eaton's other plants (those in Belmond, Iowa and Westminster, South Carolina) began shipping their grinding swarf to the smelter as well. As a result, in April 1995, the smelter was receiving more than 15,000 pounds of briquettes per day from the three Eaton facilities. Due to these efforts, approximately 450 pounds of nickel and 150 pounds of chromium per day from the three facilities combined are now productively used as product inputs rather than being landfilled.

According to Eaton, there are no significant environmental, health, or safety concerns associated with the implementation of this metal recycling program. Because the grinding swarf is formed into briquettes using a wet process that is fully automated, worker exposure is minimized. The major environmental benefit associated with the project is the avoidance of landfilling these large quantities of toxic metals, thereby reducing releases and transfers of 33/50 chemicals, which the company states was their primary reason for briquetting the grinding swarf.

Briquetting the grinding swarf and sending it to the smelter increased Eaton's costs for managing the waste stream by $150,000 per year. This increase resulted primarily from transportation costs to the smelter, which is located much farther from the facilities than the landfills used by each facility. The company is willing to incur this expense, however, because it foresees a trend in landfill closures and a refusal by other landfills to continue to accept grinding swarf. Such closures will result in increased transportation and dumping costs. Thus, Eaton believes that, in the long run, it will be less expensive to send the grinding swarf to the smelter than to landfill the waste.

Project #2: Elimination of the use of chlorinated degreasing solvents

Eaton's Spencer, Iowa facility, which manufactures light and heavy duty hydrostatic transmissions, has traditionally used 1,1,1-trichloroethane in dip tanks and in vapor degreasing to remove residual lapping grit (oil and silica carbide/silica oxide) from metal surfaces prior to transmission assembly. The lapping compound is used to grind the surface of the swash plates, end covers, valve plates, bearing plates, and bronze seals to produce a perfectly flat surface, so that the two metal surfaces can be fit together precisely during final assembly of the transmissions. Failure to achieve a precise fit would require that both parts be discarded, resulting in significant costs to the company. Use of 1,1,1-trichloroethane in this application at the facility resulted in approximately 14,760 pounds of air emissions in 1988.

In the late 1980's, an accidental release of trichloroethylene occurred at the Kearney, Nebraska facility. Because of the awareness of the risks of solvent releases raised by this accident, the plant manager and environmental, health, and safety managers at the Spencer, Iowa facility decided to pursue the elimination of the use of 1,1,1-trichloroethane at their facility.

Eaton began testing a number of different detergents that might clean the transmission parts in an aqueous (water-based) process. The facility sent the transmission parts to the Manufacturing Technology Center in Willoughby, Ohio where researchers tested 30 to 35 detergents to clean the metal parts. After extensive testing however, it was evident that none of the detergents were successful in adequately removing the lapping compound from the transmission parts.

During this testing the researchers concluded that the time delay in sending the parts from Spencer, Iowa to Willoughby, Ohio may be contributing to the difficulty in removing the lapping compound from the parts, believing that the longer the parts sat before cleaning, the harder they were to clean. To address this problem, Eaton began transporting the transmission parts by overnight air from Spencer, Iowa to Willoughby, Ohio to reduce the time that the lapping compound remained on the parts. The water-based cleaning system cleaned more effectively under these circumstances, but the researchers felt that the cleaning still was not adequate.

In 1988, after numerous failures with the water-based detergents, the researchers at the Manufacturing Technology Center experimented with adding the detergent to the lapping compound prior to lapping.

In 1988, after numerous failures with the water-based detergents, the researchers at the Manufacturing Technology Center experimented with adding the detergent to the lapping compound prior to lapping. When the researchers blended a detergent mixture consisting of petroleum sulfonate and deodorized kerosene with the lapping compound, it was discovered that the lapping compound could be easily removed using an aqueous process. The addition of the detergent to the lapping compound also improved the quality of the lapping since the petroleum sulfonate in the detergent acted as a rust inhibitor to protect the metal surfaces.

In late 1989, the Spencer, Iowa facility installed two large aqueous washers to clean transmission parts following application of the detergent/lapping compound mixture. These in-line conveyorized washers operate on a five-stage cycle — two washes, two rinses, and hot air drying. The process uses DuBois Chemical's ISW 29 at a 3% concentration in the wash baths, and DuBois 200 in the rinse baths. The active ingredient in ISW 29 is potassium hydroxide (<25 percent) and DuBois 200 is a rust preventative based on borate complex salts (<20 percent). The rinse leaves a slight amine residue on the parts following the cleaning process that facilitates painting as the amine residue binds with the paint as a compatible material, thereby increasing paint adhesion to the metal surface.

In late 1989, the Spencer, Iowa facility installed two large aqueous washers to clean transmission parts following application of the detergent/lapping compound mixture.

The major environmental issue associated with the change from 1,1,1-trichloroethane cleaning to aqueous cleaning was the impact on the facility's wastewater stream and resulting wastewater treatment needs. While many facilities had on-site wastewater treatment capabilities, the nature of the treatment associated with aqueous cleaning required that a number of facilities upgrade their treatment processes from chemical treatment to ultrafiltration. Making this switch in treatment methods where needed has ensured that Eaton's change to aqueous cleaning has not resulted in additional water pollution.

Although the impetus for eliminating 1,1,1-trichloroethane at the Spencer, Iowa facility was reducing the risk of exposure to the chemical, implementation of the detergent

cleaning system resulted in a cost savings for the facility as well. In addition, the elimination of 1,1,1-trichloroethane allowed the facility to be reclassified from a large quantity generator of 1,1,1-trichloroethane to a conditionally exempt generator (CESQG), thereby making the facility exempt from RCRA filing requirements.

Project #3: Other Reduction Projects

This section includes a discussion of two projects implemented by Eaton that, together, substantially reduced the company's releases and transfers of 33/50 Program chemicals, most importantly chromium, 1,1,1-trichloroethane, and trichloroethylene. The two projects presented are: establishment of a chromium waste exchange program and substitution of solvent-based paints with powder coatings at Eaton's Lincoln, IL facility.

Establishment of a Chromium Waste Exchange Program

The Eaton facility in Kearney, Nebraska uses large amounts of chromic acid annually for chrome electroplating of parts. In 1988, the use of chromic acid in this application resulted in off-site transfers of 333,264 pounds of chromium compounds from the facility. The quantity of off-site transfers at Kearney is very high because the facility requires an extremely clean plating bath to achieve the necessary adhesion, appearance, and thickness criteria required by the Company. Traditionally, the Kearney facility treated its waste chromic acid bath in its on-site wastewater treatment system prior to shipping the material to a recycler in Texas.

The elimination of 1,1,1-trichloroethane allowed the Spencer, Iowa facility to be reclassified from large quantity generator of 1,1,1-trichloroethane to a conditionally exempt generator (CESQG), thereby making the facility exempt from RCRA filing requirements.

In January 1992, Mr. Dan Saathoff, the Environmental, Health, and Safety Manager for Eaton's Kearney plant, developed the idea of a waste exchange with a nearby manufacturing plant owned and operated by Monroe Shock Absorbers. Through discussions with employees at the Monroe plant, it was discovered that Eaton's waste chromium was a more valuable solution, having more usable chromium than the chromium used at Monroe as raw materials. A program was devised that would allow Eaton to ship its waste chromium to Monroe, thereby eliminating both waste disposal costs for Eaton and chromium purchases for Monroe.

The transfer of chromium takes place four times each year, with each transfer consisting of approximately 14,000 gallons of chromic acid solution. Prior to each transfer, Eaton sends a letter to the EPA informing them of the impending transfer. A dedicated truck is used to transfer the chromium 45 miles from Eaton to the Monroe facility, and a member of Eaton's Kearney environmental staff follows the truck until the waste is deposited on the loading dock at Monroe. In total, the chromium waste exchange program eliminates approximately $25,000 per year in waste disposal costs for Eaton.

Substitution of Solvent-Based Paints with Powder Coatings at Eaton's Lincoln, IL Facility

The Eaton facility in Lincoln, Illinois is a manufacturer of electrical breakers and enclosures for residential and industrial use. In its traditional painting operations, the facility used a high-solids solvent-based paint in a liquid dip system. Due to the relatively low surface protection capabilities of the liquid paint used in the dip system, a chrome seal and zinc phosphate pretreat stage had to be used during the painting process. This pretreat stage resulted in the generation of significant quantities of haz-

Comparison Of Waste From Liquid Painting And Powder Coating

	Liquid Dip	Powder Coating
Hazardous		
	35 drums flammable liquids	None
	2 drums 1,1,1-trichloroethane waste	
	4 drums chrome sludge	
	4 drums wet spray booth water waste	
Non-Hazardous		
	20 sacks paint cleaning waste	18 drums waste powder
	85 drums paint drip papers	6 drums oven ash
	3 drums oven ash	

Exhibit 5

Comparison of Waste from Liquid Painting and Powder Coating

ardous waste, although chromium and zinc quantities were below TRI reporting thresholds. In the liquid dip process, the part to be painted was dipped into the liquid using an overhead hoist, after which it was removed and transported to a cure oven. During this transport, excess paint would drip off the part and gather on paint drip papers placed on the floor beneath the overhead conveyor. These papers were also a significant source of painting-related waste.

To reduce hazardous waste containing chromium and zinc, the Lincoln facility converted in late 1991 to electrostatic powder coating. Electrostatic powder coating applies a dry powder film to the product through a spray process, with overspray being collected and recycled through the powder booth system for reuse. Use of the powder coating system results in no waste paint and the elimination of paint drip papers. Perhaps most important, however, is the fact that the powder paint provides a much better protective coating than the liquid paint. As a result, the chrome seal and zinc phosphate pretreat stages are no longer needed. Instead, an iron phosphate and non-chrome seal with a deionized water rinse is used, but the new phosphate and non-chrome seal are both classified as nonhazardous wastes. Furthermore, as use of the solvent-based paint resulted in significant emissions of solvent, the switch to powder coatings virtually eliminated these emissions.

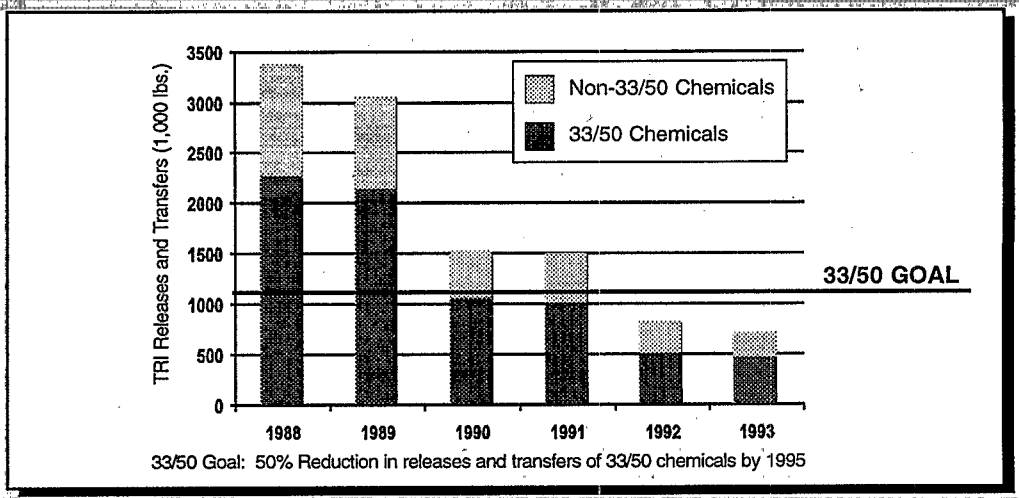
While the switch to the powder coating system has generally reduced waste generation, there have been increases in certain types of waste. For example, with continuous recycling of the powder, the material will eventually break down to a level where the powder particles are too small for proper operation in the system. When this occurs, the booth must be cleaned and the excess fine powder disposed of. In addition, the hooks and hangers used to transport the parts being painted are themselves coated with powder each time they pass through the spray booth, thereby reducing the effectiveness of the electrostatic system. Therefore, they must be cleaned much more frequently than in the liquid dip system. The old system was cleaned quarterly, while the powder coating system requires daily cleaning. One option has been a "burn-off" process that generated ash residue that is collected, placed in drums, and disposed of. Both the excess powder and the oven ash are classified as nonhazardous materials. A comparison of the waste generated by the liquid dip and the powder coating processes is shown in Exhibit 5.

Due to the success of the powder coating process at the Lincoln, Illinois facility, Eaton elected to switch to the same technology at a number of its other facilities.

Due to the success of the powder coating process at the Lincoln, Illinois facility, Eaton elected to switch to the same technology at a number of its other facilities. Currently, the other major Eaton facilities using this type of powder coating system are located in Grand Prairie, TX, Fayetteville, NC, Arden, NC, and Greenwood, SC.

Exhibit 6

Eaton's Progress Towards Meeting 33/50 Program Goals



33/50 Progress

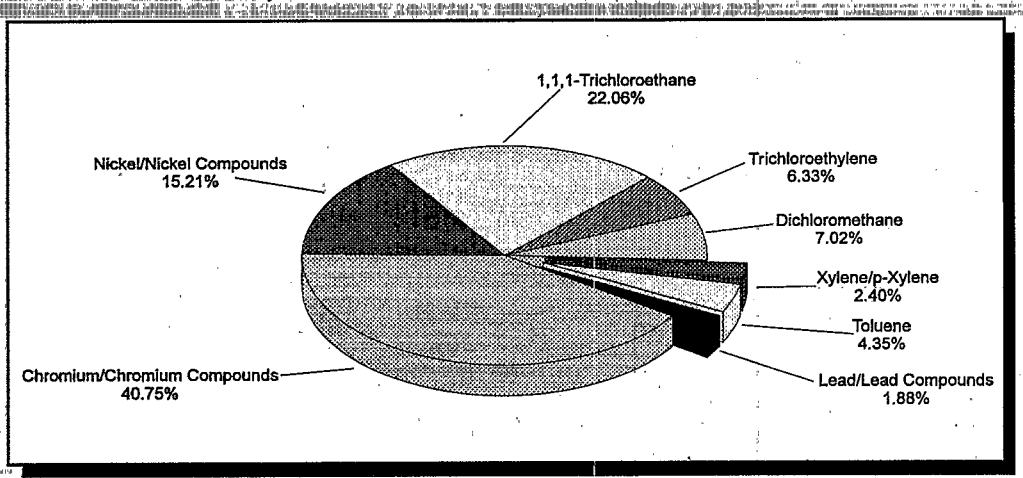
Eaton has been successful in reducing releases and transfers of 33/50 chemicals by over 1,791,000 pounds between 1988 and 1993 - an 80% reduction from 2,242,121 pounds to 450,211 pounds. As shown in Exhibit 6, the company has surpassed its 33/50 goal of a 50% reduction in releases and transfers of 33/50 chemicals. This reduction included a complete elimination of releases and transfers of methyl ethyl ketone, tetrachloroethylene, and xylene (mixed isomers only). Other major reductions in releases and transfers of 33/50 chemicals through 1993 included the following:

Eaton has been successful in reducing releases and transfers of 33/50 chemicals by over 1,791,000 pounds - an 80% reduction from 1988 to 1993.

Chromium & chromium compounds	-	352,969 pounds (66 percent reduction)
Dichloromethane	-	44,650 pounds (59 percent reduction)
Nickel & nickel compounds	-	170,053 pounds (71 percent reduction)
Toluene	-	139,250 pounds (88 percent reduction)
1,1,1-Trichloroethane	-	569,783 pounds (85 percent reduction)
Trichloroethylene	-	373,375 pounds (93 percent reduction)

Exhibit 7

Percentage Breakdown of 33/50 Program Chemical Releases and Transfers for 1993 (by Chemical)



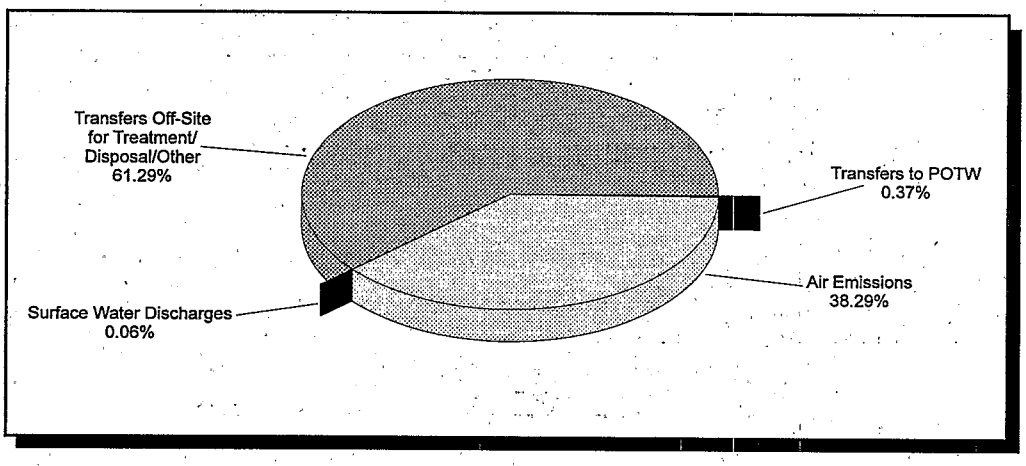


Exhibit 8

Percentage Breakdown of 33/50 Program Chemical Releases and Transfers for 1993 (by Media)

Exhibits 7 and 8 show the percentage breakdown of 1994 releases and transfers of 33/50 chemicals by chemical and by release media, respectively. In addition, Exhibits 9 and 10 illustrate the Company's 33/50 Chemical reductions from 1988-1993, by chemical and release media, respectively. According to data provided by the company, Eaton achieved nearly 50,000 pounds of additional reductions in 1994, primarily due to the complete elimination of dichloromethane and further reductions in 1,1,1-trichloroethane releases and transfers.

Despite Eaton's success in reducing the use of 33/50 chemicals, the Company continues to investigate other means of reducing its use of TRI chemicals.

Although not part of the 33/50 Program, Eaton has also made progress in reducing releases and transfers of TRI chemicals not targeted by the 33/50 Program. Releases and transfers of non-33/50 TRI chemicals have decreased 79% from 1,116,731 pounds in 1988 to 232,015 pounds in 1993. The largest reductions in releases and transfers at Eaton occurred for acetone, copper, nitric acid, Freon-113, hydrochloric acid, and propylene, each of which decreased by more than 85%.

Future Efforts

Despite Eaton's success in reducing the use of 33/50 chemicals, the Company continues to investigate other means of reducing its use of TRI chemicals. Eaton believes that since it has been successful in virtually eliminating the use of solvents in vapor degreasing and in paints, a remaining obstacle is the recovery of waste oil. Recently, Eaton established a closed loop oil recovery system at its Glascow, Kentucky facility which removes the water from the waste oil and purifies the oil. Additional projects in which the company is involved include:

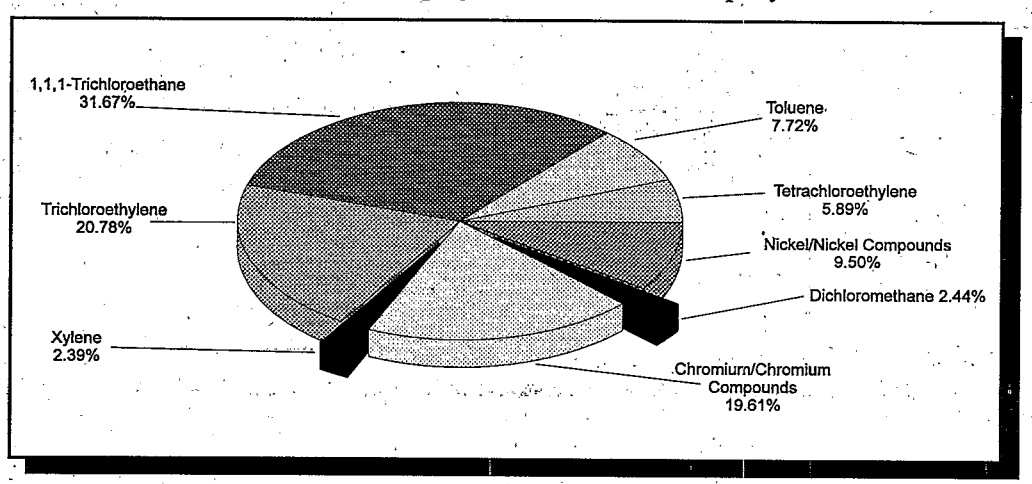
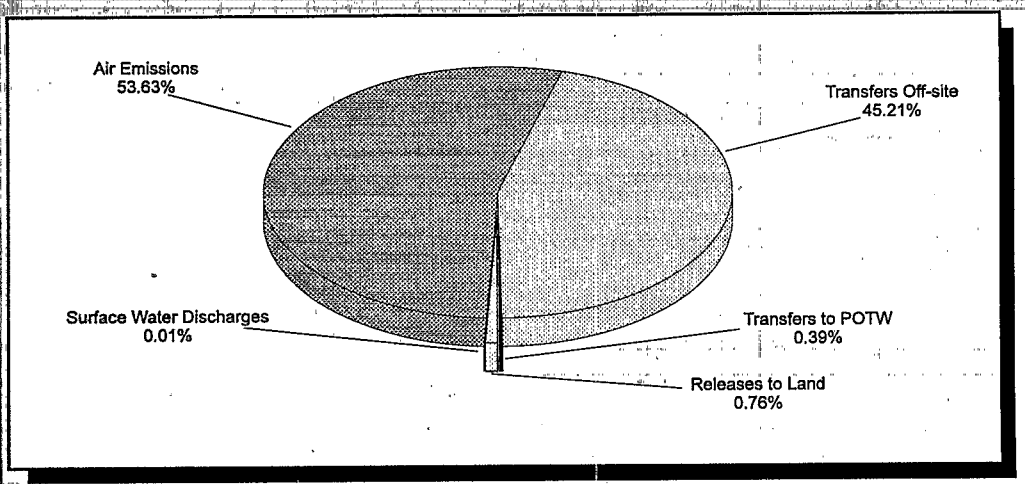


Exhibit 9

Contribution of Reductions of each Chemical to Total Reductions

Exhibit 10

Contribution of Reductions from each Release Media to Total Reductions



- Total industrial water (non sanitary) reuse through reverse osmosis.
- Development of advanced oxidative techniques for the reduction of biological oxygen demand (BOD) and chemical oxygen demand (COD) in waste water. For example, at the company's Henderson, Kentucky facility, a nanofiltration system (with a 250 molecular weight cutoff) to purify the water will be operational by July 1995.
- Emulsion failure study to investigate the emulsion degradation by contact by zinc dialkyl dithiophosphate (ZDDP). (ZDDP is a common ingredient in hydraulic oils, used in industrial manufacturing operations.)
- Elimination of lead in brass compounds through the use of different alloying compounds.

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Appendix A
Eaton Corporation
Releases and Trnasfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)	Percent Change 1988-1993 Total Releases and Transfers
Chromium	1988	1,250	250	0	0	3,487	196,500	201,487	
	1989	80	0	0	0	6,137	162,891	169,108	
	1990	232	0	0	0	356	87,161	87,749	
	1991	263	0	0	0	512	48,371	49,146	
	1992	278	250	0	0	511	53,140	54,179	
	1993	324	250	0	0	510	53,895	54,979	-73%
Chromium compounds	1988	0	0	0	0	10	334,924	334,934	
	1989	0	0	0	0	51	109,102	109,153	
	1990	0	0	0	0	33	216,924	216,957	
	1991	5	0	0	0	255	222,960	223,220	
	1992	1	0	0	250	271	174,600	175,122	
	1993	5	0	0	0	255	128,213	128,473	-62%
Dichloromethane	1988	68,200	0	0	0	0	8,050	76,250	
	1989	59,455	0	0	0	0	13,900	73,355	
	1990	21,528	0	0	0	0	9,129	30,657	
	1991	17,000	0	0	0	0	6,700	23,700	
	1992	11,000	0	0	0	0	5,100	16,100	
	1993	23,700	0	0	0	0	7,900	31,600	-59%
Lead	1988	0	0	0	0	250	1,011	1,261	
	1989	0	0	0	0	38	3,937	3,975	
	1990	0	0	0	0	51	2,752	2,803	
	1991	326	46	0	0	45	336,510	336,927	
	1992	250	0	0	0	37	1,136	1,423	
	1993	250	0	0	0	74	1,522	1,846	46%
Lead compounds	1991	0	0	0	0	0	1,560	1,560	
	1993	0	0	0	0	0	6,630	6,630	
Methyl ethyl ketone	1989	59,140	0	0	0	0	0	59,140	
	1990	14,008	0	0	0	0	0	14,008	

Appendix A
Eaton Corporation
Releases and Trnasfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)	Percent Change 1988-1993 Total Releases and Transfers
Nickel	1988	1,250	250	0	0	550	236,491	238,541	
	1989	31	0	0	0	341	173,528	173,900	
	1990	503	0	0	0	287	41,056	41,846	
	1991	286	0	0	0	771	82,709	83,766	
	1992	25	5	0	0	266	45,662	45,958	
	1993	311	0	0	0	770	61,294	62,375	-74%
Nickel compounds	1989	0	0	0	0	14	33,000	33,014	
	1990	0	0	0	0	17	33,750	33,767	
	1991	0	0	0	0	0	21,238	21,238	
	1992	0	0	0	250	250	23,750	24,250	
	1993	0	0	0	0	35	6,078	6,113	
Tetrachloroethylene	1988	500	0	0	0	0	105,247	105,747	
	1989	304	0	0	0	0	0	304	
	1990	500	0	0	0	0	0	500	
Toluene	1988	144,515	0	0	13,000	0	1,307	158,822	
	1989	103,592	0	0	0	0	0	103,592	
	1990	66,212	0	0	0	0	0	66,212	
	1991	13,899	0	0	0	0	0	13,899	
	1992	12,799	0	0	0	0	0	12,799	
	1993	19,572	0	0	0	0	0	19,572	-88%
1,1,1-Trichloroethane	1988	571,438	0	0	0	4,333	93,345	669,116	
	1989	476,492	0	0	0	0	62,069	538,561	
	1990	274,324	0	0	0	9	55,047	329,380	
	1991	122,324	0	0	0	0	13,000	135,324	
	1992	91,372	0	0	0	0	8,800	100,172	
	1993	99,333	0	0	0	0	0	99,333	-85%
Trichloroethylene	1988	300,262	0	0	684	2	100,907	401,855	
	1989	799,036	0	0	0	0	24,319	823,355	
	1990	181,167	0	0	0	0	16,349	197,516	
	1991	92,878	0	0	0	0	11,505	104,383	
	1992	55,243	0	0	0	0	0	55,243	
	1993	28,480	0	0	0	0	0	28,480	-93%

Appendix A
Eaton Corporation
Releases and Trnasfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)	Percent Change 1988-1993 Total Releases and Transfers
Xylene (mixed isomers)	1988	45,908	0	0	0	0	8,200	54,108	
	1989	48,888	0	0	0	0	0	48,888	
	1990	26,624	0	0	0	0	0	26,624	
	1992	1,200	0	0	0	0	0	1,200	
p-Xylene	1991	270	0	0	0	0	7,400	7,670	
	1993	430	0	0	0	0	10,380	10,810	
33/50 Program Chemicals	**1988**	**1,133,323**	**500**	**0**	**13,684**	**8,632**	**1,085,982**	**2,242,121**	
	1989	**1,547,018**	**0**	**0**	**0**	**6,581**	**582,746**	**2,136,345**	
	1990	**585,098**	**0**	**0**	**0**	**753**	**462,168**	**1,048,019**	
	1991	**247,251**	**46**	**0**	**0**	**1,583**	**751,953**	**1,000,833**	
	1992	**172,168**	**255**	**0**	**500**	**1,335**	**312,188**	**486,446**	
	1993	**172,405**	**250**	**0**	**0**	**1,644**	**275,912**	**450,211**	**-80%**
All Non 33/50 TRI Chemicals	1988	515,604	250	0	750	104,505	495,622	1,116,731	
	1989	435,930	750	0	0	130,459	323,929	891,068	
	1990	364,994	10	0	0	27,384	35,756	428,144	
	1991	390,012	0	0	0	20,122	63,870	474,004	
	1992	175,209	250	0	250	61,161	74,635	311,505	
	1993	89,259	250	0	250	53,417	88,839	232,015	-79%
All TRI Chemicals	1988	1,648,927	750	0	14,434	113,137	1,581,604	3,358,852	
	1989	1,982,948	750	0	0	137,040	906,675	3,027,413	
	1990	950,092	10	0	0	28,137	497,924	1,476,163	
	1991	637,263	46	0	0	21,705	815,823	1,474,837	
	1992	347,377	505	0	750	62,496	386,823	797,951	
	1993	261,664	500	0	250	55,061	364,751	682,226	-76%
Percent Change, 1988-1993									
33/50 Program Chemicals		-85%	-50%	0%	-100%	-81%	-75%	-80%	
All Non 33/50 TRI Chemicals		-83%	0%	0%	-67%	-49%	-82%	-79%	
All TRI Chemicals		-84%	-33%	0%	-98%	-51%	-77%	-80%	

(1) 1991, 1992, and 1993 Total Releases and Transfers do not include on or off-site recycling or energy recovery.

Appendix B
Eaton Corporation, Selected Facilities
Releases and Transfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)
EATON CORP. - BELMOND, IA								
Chromium	1988	500	0	0	0	250	58,000	58,750
	1989	79	0	0	0	22	42,000	42,101
	1990	150	0	0	0	0	35,000	35,150
	1991	12	0	0	0	0	3,855	3,867
	1992	17	0	0	0	0	4,100	4,117
	1993	63	0	0	0	0	9,900	9,963
Nickel	1988	500	0	0	0	250	21,000	21,750
	1989	30	0	0	0	0	15,500	15,530
	1990	413	0	0	0	0	12,892	13,305
	1991	35	0	0	0	0	1,052	1,087
	1992	14	0	0	0	0	1,100	1,114
	1993	59	0	0	0	0	13,000	13,059
1,1,1-Trichloroethane	1988	200,000	0	0	0	0	0	200,000
	1989	171,000	0	0	0	0	0	171,000
	1990	31,150	0	0	0	0	0	31,150
33/50 Program Chemicals	**1988**	**201,000**	**0**	**0**	**0**	**500**	**79,000**	**280,500**
	1989	**171,109**	**0**	**0**	**0**	**22**	**57,500**	**228,631**
	1990	**31,713**	**0**	**0**	**0**	**0**	**47,892**	**79,605**
	1991	**47**	**0**	**0**	**0**	**0**	**4,907**	**4,954**
	1992	**31**	**0**	**0**	**0**	**0**	**5,200**	**5,231**
	1993	**122**	**0**	**0**	**0**	**0**	**22,900**	**23,022**
All Non 33/50 TRI Chemicals	1988	2,000	0	0	0	250	12,000	14,250
	1989	1,216	0	0	0	0	8,500	9,716
	1990	610	0	0	0	0	7,032	7,642
	1991	346	0	0	0	0	10,493	10,839
	1992	98	0	0	0	0	11,091	11,189
	1993	230	0	0	0	0	4,400	4,630
All TRI Chemicals	1988	203,000	0	0	0	750	91,000	294,750
	1989	172,325	0	0	0	22	66,000	238,347
	1990	32,323	0	0	0	0	54,924	87,247
	1991	393	0	0	0	0	15,400	15,793
	1992	129	0	0	0	0	16,291	16,420
	1993	352	0	0	0	0	27,300	27,652

Appendix B
Eaton Corporation, Selected Facilities
Releases and Transfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)
EATON CORP. - KEARNEY, NE								
Chromium compounds	1988	0	0	0	0	10	333,254	333,264
	1989	0	0	0	0	51	109,102	109,153
	1990	0	0	0	0	16	194,406	194,422
	1991	5	0	0	0	5	193,000	193,010
	1992	1	0	0	0	21	169,600	169,622
	1993	5	0	0	0	5	123,993	124,003
Nickel compounds	1989	0	0	0	0	14	33,000	33,014
	1990	0	0	0	0	0	33,000	33,000
	1991	0	0	0	0	0	21,000	21,000
	1992	0	0	0	0	0	23,000	23,000
	1993	0	0	0	0	5	4,601	4,606
Trichloroethylene	1988	78,216	0	0	0	2	34,524	112,742
33/50 Program Chemicals	**1988**	**78,216**	**0**	**0**	**0**	**12**	**367,778**	**446,006**
	1989	**0**	**0**	**0**	**0**	**65**	**142,102**	**142,167**
	1990	**0**	**0**	**0**	**0**	**16**	**227,406**	**227,422**
	1991	**5**	**0**	**0**	**0**	**5**	**214,000**	**214,010**
	1992	**1**	**0**	**0**	**0**	**21**	**192,600**	**192,622**
	1993	**5**	**0**	**0**	**0**	**10**	**128,594**	**128,609**
All Non 33/50 TRI Chemicals	1988	500	0	0	0	0	23,300	23,800
	1989	0	0	0	0	0	0	0
	1990	0	0	0	0	0	0	0
	1991	0	0	0	0	0	0	0
	1992	0	0	0	0	0	0	0
	1993	0	0	0	0	0	0	0
All TRI Chemicals	1988	78,716	0	0	0	12	391,078	469,806
	1989	0	0	0	0	65	142,102	142,167
	1990	0	0	0	0	16	227,406	227,422
	1991	5	0	0	0	5	214,000	214,010
	1992	1	0	0	0	21	192,600	192,622
	1993	5	0	0	0	10	128,594	128,609

Appendix B
Eaton Corporation, Selected Facilities
Releases and Transfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)
EATON CORP. - LINCOLN, IL								
1,1,1-Trichloroethane	1989	10,635	0	0	0	0	0	10,635
	1990	19,640	0	0	0	0	0	19,640
Trichloroethylene	1988	42,871	0	0	0	0	0	42,871
	1989	15,376	0	0	0	0	0	15,376
33/50 Program Chemicals	**1988**	**42,871**	**0**	**0**	**0**	**0**	**0**	**42,871**
	1989	**26,011**	**0**	**0**	**0**	**0**	**0**	**26,011**
	1990	**19,640**	**0**	**0**	**0**	**0**	**0**	**19,640**
All Non 33/50 TRI Chemicals	1988	1,000	0	0	0	35,485	0	36,485
	1989	1,000	750	0	0	31,362	0	33,112
	1990	1,000	10	0	0	1,625	0	2,635
	1991	1,000	0	0	0	0	0	1,000
	1992	1,000	0	0	250	0	250	1,500
	1993	1,000	0	0	250	0	250	1,500
All TRI Chemicals	1988	43,871	0	0	0	35,485	0	79,356
	1989	27,011	750	0	0	31,362	0	59,123
	1990	20,640	10	0	0	1,625	0	22,275
	1991	1,000	0	0	0	0	0	1,000
	1992	1,000	0	0	250	0	250	1,500
	1993	1,000	0	0	250	0	250	1,500
EATON CORP. - SPENCER, IA								
Chromium	1988	0	0	0	0	0	750	750
	1989	0	0	0	0	0	750	750
	1990	0	0	0	0	5	750	755
	1991	0	0	0	0	5	613	618
	1992	0	0	0	0	5	461	466
	1993	0	0	0	0	5	573	578
Nickel	1988	0	0	0	0	3	1,700	1,703
	1989	0	0	0	0	3	1,700	1,703
	1990	0	0	0	0	0	1,692	1,692
	1991	0	0	0	0	5	1,526	1,531
	1992	0	0	0	0	5	1,019	1,024
	1993	0	0	0	0	5	1,383	1,388

Appendix B
Eaton Corporation, Selected Facilities
Releases and Transfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)
1,1,1-Trichloroethane	1988	14,761	0	0	0	0	0	14,761
	1989	11,597	0	0	0	0	0	11,597
33/50 Program Chemicals	**1988**	**14,761**	**0**	**0**	**0**	**3**	**2,450**	**17,214**
	1989	**11,597**	**0**	**0**	**0**	**3**	**2,450**	**14,050**
	1990	**0**	**0**	**0**	**0**	**5**	**2,442**	**2,447**
	1991	**0**	**0**	**0**	**0**	**10**	**2,139**	**2,149**
	1992	**0**	**0**	**0**	**0**	**10**	**1,480**	**1,490**
	1993	**0**	**0**	**0**	**0**	**10**	**1,956**	**1,966**
All Non 33/50 TRI Chemicals	1988	0	0	0	0	10	3,650	3,660
	1989	0	0	0	0	10	3,650	3,660
	1990	0	0	0	0	1	4,083	4,084
	1991	0	0	0	0	5	3,855	3,860
	1992	0	0	0	0	5	2,585	2,590
	1993	0	0	0	0	5	3,554	3,559
All TRI Chemicals	1988	14,761	0	0	0	13	6,100	20,874
	1989	11,597	0	0	0	13	6,100	17,710
	1990	0	0	0	0	6	6,525	6,531
	1991	0	0	0	0	15	5,994	6,009
	1992	0	0	0	0	15	4,065	4,080
	1993	0	0	0	0	15	5,510	5,525
U S ENGINE VALVE CORP - WESTMINSTER, SC								
Chromium compounds	1990	0	0	0	0	17	750	767
	1991	0	0	0	0	250	28,800	29,050
	1992	0	0	0	250	250	5,000	5,500
	1993	0	0	0	0	250	4,220	4,470
Nickel	1991	0	0	0	0	5	57,600	57,605
Nickel compounds	1990	0	0	0	0	17	750	767
	1992	0	0	0	250	250	750	1,250
	1993	0	0	0	0	30	1,477	1,507

Appendix B
Eaton Corporation, Selected Facilities
Releases and Transfers of TRI Chemicals, 1988-1993

Chemical	Year	Total Air Emissions (pounds)	Surface Water Discharges (pounds)	Underground Injection (pounds)	Releases to Land (pounds)	Transfers to POTW (pounds)	Transfers Off-site for Treatment/ Disposal/Other (pounds)	Total Releases and Transfers (pounds) (1)
33/50 Program Chemicals	**1990**	**0**	**0**	**0**	**0**	**34**	**1,500**	**1,534**
	1991	**0**	**0**	**0**	**0**	**255**	**86,400**	**86,655**
	1992	**0**	**0**	**0**	**500**	**500**	**5,750**	**6,750**
	1993	**0**	**0**	**0**	**0**	**280**	**5,697**	**5,977**
All Non 33/50 TRI Chemicals	1990	0	0	0	0	0	0	0
	1991	0	0	0	0	0	0	0
	1992	0	0	0	0	24,000	0	24,000
	1993	0	0	0	0	27,600	0	27,600
All TRI Chemicals	1990	0	0	0	0	34	1,500	1,534
	1991	0	0	0	0	255	86,400	86,655
	1992	0	0	0	500	24,500	5,750	30,750
	1993	0	0	0	0	27,880	5,697	33,577

(1) 1991, 1992, and 1993 Total Releases and Transfers do not include off-site recycling or recovery.

Appendix C
Eaton Corporation
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projection

Chemical	Year	Recycled On-Site (pounds)	Recycled Off-Site (pounds)	Energy Recovery On-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Percent Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
Chromium	1991	0	414,734	0	0	5,000	1,202	47,338		468,274	
	1992	0	420,958	0	0	5,200	1,101	53,518		480,777	
	1993	0	595,865	0	0	5,200	2,014	53,858		656,937	
	1994	0	684,660	0	0	0	8	57,018		741,686	
	1995	0	707,004	0	0	0	9	50,957	8%	757,970	62%
Chromium compounds	1991	0	750,000	0	0	0	0	219,460		969,460	
	1992	0	204,000	0	0	0	31,000	140,300		375,300	
	1993	0	300,615	0	0	0	4,230	120,000		424,845	
	1994	0	370,000	0	0	0	2,012	150,000		522,012	
	1995	0	395,000	0	0	0	13	160,000	-27%	555,013	-43%
Dichloromethane	1991	0	6,700	0	0	0	6,700	17,000		30,400	
	1992	0	3,300	0	0	0	5,100	11,000		19,400	
	1993	0	0	0	0	0	7,900	23,700		31,600	
	1994	0	0	0	0	0	0	0		0	
	1995	0	0	0	0	0	0	0	-100%	0	-100%
Lead	1991	0	21,670	0	0	0	280	492		22,442	
	1992	0	26,211	0	0	0	410	797		27,418	
	1993	0	27,353	0	0	0	703	1,099		29,155	
	1994	0	23,870	0	0	0	500	1,035		25,405	
	1995	0	15,190	0	0	0	500	985	100%	16,675	-26%
Lead compounds	1991	0	0	0	0	0	0	1,560		1,560	
	1992	0	0	0	0	0	0	2,000		2,000	
	1993	0	0	0	0	0	0	6,600		6,600	
	1994	0	0	0	0	0	0	0		0	
	1995	0	0	0	0	0	0	0	-100%	0	-100%
Nickel	1991	0	419,605	0	0	15	4	77,130		496,754	
	1992	0	499,190	0	0	13	4	51,148		550,355	
	1993	0	619,498	0	0	0	554	43,477		663,529	
	1994	0	645,612	0	0	0	17	36,968		682,597	
	1995	0	649,959	0	0	0	18	35,274	-54%	685,251	38%

Appendix C
Eaton Corporation
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projection

Chemical	Year	Recycled On-Site (pounds)	Recycled Off-Site (pounds)	Energy Recovery On-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Percent Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
Nickel compounds	1991	0	78,000	0	0	0	0	78,838		156,838	
	1992	0	88,000	0	0	0	1,000	23,000		112,000	
	1993	0	53,900	0	0	0	1,501	20,000		75,401	
	1994	0	65,800	0	0	0	701	24,000		90,501	
	1995	0	80,000	0	0	0	1	26,000	-67%	106,001	-32%
Toluene	1991	0	0	0	500	0	0	22,899		23,399	
	1992	0	0	0	1,063	0	0	20,799		21,862	
	1993	0	0	0	1,634	0	0	23,572		25,206	
	1994	0	0	0	2,000	0	0	18,000		20,000	
	1995	0	0	0	1,000	0	0	10,000	-56%	11,000	-53%
1,1,1-Trichloroethane	1991	11,000	37,000	0	0	0	0	121,584		169,584	
	1992	10,000	43,850	0	0	0	0	101,270		155,120	
	1993	9,000	23,480	0	0	0	0	114,041		146,521	
	1994	9,000	12,100	0	0	0	0	78,900		100,000	
	1995	0	1,500	0	0	0	0	15,000	-88%	16,500	-90%
Trichloroethylene	1991	3,420	37,569	0	0	0	0	84,760		125,749	
	1992	4,000	26,598	0	0	0	0	54,943		85,541	
	1993	0	28,374	0	0	0	0	33,495		61,869	
	1994	0	17,880	0	0	0	0	18,860		36,740	
	1995	0	5,000	0	0	0	0	4,000	-95%	9,000	-93%
Xylene (mixed isomers)	1991	0	0	0	0	0	0	9,000		9,000	
	1992	0	0	0	0	9,600	0	1,200		10,800	
	1993	0	0	0	0	11,000	0	1,100		12,100	
	1994	0	0	0	0	11,600	0	500		12,100	
	1995	0	0	0	0	0	0	0	-100%	0	-100%
p-Xylene	1991	0	0	0	0	0	0	7,400		7,400	
	1992	0	0	0	0	0	0	5,000		5,000	
	1993	0	0	0	0	0	880	10,380		11,260	
	1994	0	0	0	0	0	0	0		0	
	1995	0	0	0	0	0	0	0	-100%	0	-100%

Appendix C
Eaton Corporation
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projection

Chemical	Year	Recycled On-Site (pounds)	Recycled Off-Site (pounds)	Energy Recovery On-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Percent Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
33/50 Program Chemicals	**1991**	**14,420**	**1,765,278**	**0**	**500**	**5,015**	**8,186**	**687,461**		**2,480,860**	
	1992	**14,000**	**1,312,107**	**0**	**1,063**	**14,813**	**38,615**	**464,975**		**1,845,573**	
	1993	**9,000**	**1,649,085**	**0**	**1,634**	**16,200**	**17,782**	**451,322**		**2,145,023**	
	1994	**9,000**	**1,819,922**	**0**	**2,000**	**11,600**	**3,238**	**385,281**		**2,231,041**	
	1995	**0**	**1,853,653**	**0**	**1,000**	**0**	**541**	**302,216**	**-56%**	**2,157,410**	**-13%**
All Non 33/50 TRI Chemicals	1991	26,000	602,076	0	22,209	465,114	24,180	444,721		1,584,300	
	1992	15,400	709,696	0	15,700	641,549	23,846	246,567		1,652,758	
	1993	1,400	687,780	0	24,500	476,330	27,207	164,532		1,381,749	
	1994	0	699,258	0	28,200	443,800	12,242	115,298		1,298,798	
	1995	0	687,979	0	14,000	429,500	12,202	82,177	-82%	1,225,858	-23%
All TRI Chemicals	1991	40,420	2,367,354	0	22,709	470,129	32,366	1,132,182		4,065,160	
	1992	29,400	2,021,803	0	16,763	656,362	62,461	711,542		3,498,331	
	1993	10,400	2,336,865	0	26,134	492,530	44,989	615,854		3,526,772	
	1994	9,000	2,519,180	0	30,200	455,400	15,480	500,579		3,529,839	
	1995	0	2,541,632	0	15,000	429,500	12,743	384,393	-66%	3,383,268	-17%
Percent Changes, 1991-1995											
33/50 Program chemicals		-100%	5%	--	100%	-100%	-93%	-56%		-13%	
Non 33/50 Program chemicals		-100%	14%	--	-37%	-8%	-50%	-82%		-23%	
All TRI Chemicals		-100%	7%	--	-34%	-9%	-61%	-66%		-17%	

Appendix D
Eaton Corporation, Selected Facilities
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projections

Chemical	Year	Recycled Off-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
EATON CORP. - BELMOND, IA									
Chromium	1991	164,000	0	0	0	3,900		167,900	
	1992	100,000	0	0	0	4,100		104,100	
	1993	190,000	0	0	0	9,900		199,900	
	1994	270,000	0	0	0	14,000		284,000	
	1995	290,000	0	0	0	15,000	285%	305,000	82%
Nickel	1991	151,000	0	0	0	1,000		152,000	
	1992	140,000	0	0	0	1,100		141,100	
	1993	150,000	0	0	0	13,000		163,000	
	1994	210,000	0	0	0	18,000		228,000	
	1995	230,000	0	0	0	20,000	1900%	250,000	64%
33/50 Program Chemicals	**1991**	**315,000**	**0**	**0**	**0**	**4,900**		**319,900**	
	1992	**240,000**	**0**	**0**	**0**	**5,200**		**245,200**	
	1993	**340,000**	**0**	**0**	**0**	**22,900**		**362,900**	
	1994	**480,000**	**0**	**0**	**0**	**32,000**		**512,000**	
	1995	**520,000**	**0**	**0**	**0**	**35,000**	**614%**	**555,000**	**73%**
All Non 33/50 TRI Chemicals	1991	36,000	0	13,700	0	10,840		60,540	
	1992	57,000	0	17,000	0	11,188		85,188	
	1993	44,000	0	25,000	0	4,600		73,600	
	1994	63,000	0	30,000	0	6,440		99,440	
	1995	70,000	0	32,000	0	7,060	-35%	109,060	80%
All TRI Chemicals	1991	351,000	0	13,700	0	15,740		380,440	
	1992	297,000	0	17,000	0	16,388		330,388	
	1993	384,000	0	25,000	0	27,500		436,500	
	1994	543,000	0	30,000	0	38,440		611,440	
	1995	590,000	0	32,000	0	42,060	167%	664,060	75%

Appendix D
Eaton Corporation, Selected Facilities
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projections

Chemical	Year	Recycled Off-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
EATON CORP. - KEARNEY, NE									
Chromium compounds	1991	750,000	0	0	0	190,000		940,000	
	1992	180,000	0	0	26,000	140,000		346,000	
	1993	290,000	0	0	10	120,000		410,010	
	1994	350,000	0	0	12	150,000		500,012	
	1995	370,000	0	0	13	160,000	-16%	530,013	-44%
Nickel compounds	1991	78,000	0	0	0	21,000		99,000	
	1992	80,000	0	0	0	23,000		103,000	
	1993	47,000	0	0	1	20,000		67,001	
	1994	56,000	0	0	1	24,000		80,001	
	1995	60,000	0	0	1	26,000	24%	86,001	-13%
33/50 Program Chemicals	**1991**	**828,000**	**0**	**0**	**0**	**211,000**		**1,039,000**	
	1992	**260,000**	**0**	**0**	**26,000**	**163,000**		**449,000**	
	1993	**337,000**	**0**	**0**	**11**	**140,000**		**477,011**	
	1994	**406,000**	**0**	**0**	**13**	**174,000**		**580,013**	
	1995	**430,000**	**0**	**0**	**14**	**186,000**	**-12%**	**616,014**	**-41%**
All Non 33/50 TRI Chemicals	1991	0	0	0	0	0		0	
	1992	0	0	0	0	0		0	
	1993	0	0	0	0	0		0	
	1994	0	0	0	0	0		0	
	1995	0	0	0	0	0		0	
All TRI Chemicals	1991	828,000	0	0	0	211,000		1,039,000	
	1992	260,000	0	0	26,000	163,000		449,000	
	1993	337,000	0	0	11	140,000		477,011	
	1994	406,000	0	0	13	174,000		580,013	
	1995	430,000	0	0	14	186,000	-12%	616,014	-41%

Appendix D
Eaton Corporation, Selected Facilities
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projections

Chemical	Year	Recycled Off-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
EATON CORP. - LINCOLN, IL									
Hydrochloric acid	1991	0	0	0	0	100		100	
	1992	0	0	0	0	145		145	
	1993	0	0	0	0	145		145	
	1994	0	0	0	0	145		145	
	1995	0	0	0	0	145	45%	145	45%
Sulfuric acid	1991	0	0	0	0	145		145	
	1992	0	0	0	500	145		645	
	1993	0	0	0	100	145		245	
	1994	0	0	0	0	145		145	
	1995	0	0	0	0	145	0%	145	0%
All Non 33/50 TRI Chemicals	1991	0	0	0	0	245		245	
	1992	0	0	0	500	290		790	
	1993	0	0	0	100	290		390	
	1994	0	0	0	0	290		290	
	1995	0	0	0	0	290	18%	290	18%
All TRI Chemicals	1991	0	0	0	0	245		245	
	1992	0	0	0	500	290		790	
	1993	0	0	0	100	290		390	
	1994	0	0	0	0	290		290	
	1995	0	0	0	0	290	18%	290	18%
EATON CORP. - SPENCER, IA									
Chromium	1991	32,000	0	0	0	610		32,610	
	1992	32,000	0	0	0	600		32,600	
	1993	30,000	0	0	0	600		30,600	
	1994	32,000	0	0	0	700		32,700	
	1995	30,000	0	0	0	600	-2%	30,600	-6%

Appendix D
Eaton Corporation, Selected Facilities
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projections

Chemical	Year	Recycled Off-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
Nickel	1991	16,000	0	0	0	1,500		17,500	
	1992	16,000	0	0	0	1,500		17,500	
	1993	14,000	0	0	0	1,400		15,400	
	1994	16,000	0	0	0	1,500		17,500	
	1995	14,000	0	0	0	1,400	-7%	15,400	-12%
33/50 Program Chemicals	**1991**	**48,000**	**0**	**0**	**0**	**2,110**		**50,110**	
	1992	**48,000**	**0**	**0**	**0**	**2,100**		**50,100**	
	1993	**44,000**	**0**	**0**	**0**	**2,000**		**46,000**	
	1994	**48,000**	**0**	**0**	**0**	**2,200**		**50,200**	
	1995	**44,000**	**0**	**0**	**0**	**2,000**	**-5%**	**46,000**	**-8%**
All Non 33/50 TRI Chemicals	1991	51,000	0	0	0	3,900		54,900	
	1992	50,000	0	0	0	3,700		53,700	
	1993	47,000	0	0	0	3,500		50,500	
	1994	50,000	0	0	0	3,700		53,700	
	1995	47,000	0	0	0	3,500	-10%	50,500	-8%
All TRI Chemicals	1991	99,000	0	0	0	6,010		105,010	
	1992	98,000	0	0	0	5,800		103,800	
	1993	91,000	0	0	0	5,500		96,500	
	1994	98,000	0	0	0	5,900		103,900	
	1995	91,000	0	0	0	5,500	-8%	96,500	-8%
U S ENGINE VALVE CORP - WESTMINSTER, SC									
Chromium compounds	1991	0	0	0	0	28,800		28,800	
	1992	24,000	0	0	5,000	0		29,000	
	1993	10,615	0	0	4,220	0		14,835	
	1994	20,000	0	0	2,000	0		22,000	
	1995	25,000	0	0	0	0	-100%	25,000	-13%

Appendix D
Eaton Corporation, Selected Facilities
Pollution Prevention Act Reporting, 1991-1994 Data and 1995 Projections

Chemical	Year	Recycled Off-Site (pounds)	Energy Recovery Off-Site (pounds)	Treated On-Site (pounds)	Treated Off-Site (pounds)	Quantity Released (pounds)	Change 1991-1995 Quantity Released	Total Production Related Wastes (pounds)	Percent Change 1991-1995 Production Related Wastes
Nickel	1991	0	0	0	0	57,600		57,600	
	1992	30,000	0	0	0	30,000		60,000	
	1993	50,000	0	0	0	10,000		60,000	
Nickel compounds	1991	0	0	0	0	57,600		57,600	
	1992	8,000	0	0	1,000	0		9,000	
	1993	6,900	0	0	1,500	0		8,400	
	1994	9,800	0	0	700	0		10,500	
	1995	20,000	0	0	0	0	-100%	20,000	-65%
33/50 Program Chemicals	**1991**	**0**	**0**	**0**	**0**	**144,000**		**144,000**	
	1992	**62,000**	**0**	**0**	**6,000**	**30,000**		**98,000**	
	1993	**67,515**	**0**	**0**	**5,720**	**10,000**		**83,235**	
	1994	**29,800**	**0**	**0**	**2,700**	**0**		**32,500**	
	1995	**45,000**	**0**	**0**	**0**	**0**	**-100%**	**45,000**	**-69%**
All Non 33/50 TRI Chemicals	1991	0	0	0	0	0		0	
	1992	0	0	24,000	0	0		24,000	
	1993	0	0	27,600	0	0		27,600	
	1994	0	0	28,000	0	0		28,000	
	1995	0	0	28,000	0	0		28,000	
All TRI Chemicals	1991	0	0	0	0	144,000		144,000	
	1992	62,000	0	24,000	6,000	30,000		122,000	
	1993	67,515	0	27,600	5,720	10,000		110,835	
	1994	29,800	0	28,000	2,700	0		60,500	
	1995	45,000	0	28,000	0	0	-100%	73,000	-49%