

SHARP ELECTRONICS CORPORATION
REPORT ON THE ENVIRONMENTAL
ACTIVITIES AT OUR NORTH AMERICAN
FACILITIES

Updated May 4, 2001

Environmental, Health & Safety Report: Sharp Corporation North American Facilities

OVERVIEW

It has been a year of changes at Sharp and it has impacted our various environmental activities. Two of our North American sites, Sharp Manufacturing Company of America (SMCA) and the Sharp Companies at Camas, continue to operate under ISO 14000 certified Environmental Management Standards. Both sites received their certifications in 1996 and are among a handful of certified facilities in the U.S. However the activities at these sites has changed. The Camas site is now focused on R&D activities while the Memphis facility is undergoing a transformation as television assembly is relocated out of that facility to our new manufacturing site in Mexico.

As a result of these operational changes, there have been changes in personnel at all of our facilities. As a result, some of the programs planned for completion in 2000 have not been put in place. Our plans for obtaining ISO 14000 certification for our New Jersey Corporate Headquarters and our Canadian subsidiary SECL by the end of our 2000 fiscal year have been placed on hold, although we have in place many of the mechanisms required for the program. Implementation of the ISO 14000 program is underway in our Mexican manufacturing site and is expected to be completed by the end of the year. We are also changing the way we measure recycling and waste generation at our facilities, introducing a per person unit or measurement in order to more easily measure our progress, although we will continue to report the total amount of materials recycled and wastes generated.

Through Sharp Electronics Corporation, Sharp's North American Headquarters located in New Jersey, Sharp has taken a proactive role in environmental issues impacting the electronics industry and our customers. In 2000 we began work on 2 programs aimed at assisting our customer's efforts to improve their environmental performance. The first is to educate them regarding environmental issues. To that end we are making all of our Material Safety Data Sheets (MSDS) available on our Web site. ([Http://www.sharp_usa.com](http://www.sharp_usa.com)). Sharp was the first consumer electronics company to use recycling to divert the internally generated consumer products such as televisions from their waste stream through demanufacturing. Since we began documenting our recycling efforts in 1996, SEC facilities have recycled an average of 2.9 million pounds (1,447 tons) of materials at our non-manufacturing sites without generating any hazardous wastes at those sites.

In 1999 our recycling totals dropped to 2,777,049 lbs. (1388.5 tons). A further reduction to 2,301, 686 lbs. (1150.8 tons) was reported in 2000. Our manufacturing site in Memphis, TN also reported a decrease in recycling for 1999, as did the Camas Washington facility. All of these reductions are consistent with a decrease in the number of personnel (and the generation of waste) at all the facilities. As a result this year we have begun measuring our efforts as the amount of recycling and waste generated per person at each site. Sharp's Camas, WA facility was also able to again reduce its waste and waste water generation from 1995, although it did not

achieve the low volumes generated in 1997. Sharp's Canadian facility showed an increase in recycling although it also reported an increase in waste generated at the facility.

In order to determine whether any actual changes in recycling rates or waste reduction have occurred, SEC facilities will now include in their reporting rates the amount of materials recycled and waste generated on a per employee basis. By utilizing this metric we believe that we can better measure our performance in this area. However as a result we are providing only limited analysis of our numbers for this year.

Both the Camas and the Memphis sites have implemented programs to reduce waste generation and energy use over the next five years. SECL also initiated its participation in the Canadian Environmental Choice Program that focuses on energy efficient products.

SHARP ELECTRONICS CORPORATION

Sharp Electronics Corporation, or SEC, is the wholly owned US subsidiary of Sharp Corporation with its headquarters located in Mahwah, New Jersey, approximately 30 miles outside of New York City. The Mahwah facility contains the administration and US corporate offices for SEC as well as sales operations and a regional service operation for dealers and distributors of Sharp products. SEC also maintains large regional offices in Romeoville, IL, (in the Chicago area) and Huntington Beach, CA. There are also smaller offices located in Virginia, North Carolina, Georgia, Texas, and Washington, as well as a Latin American Sales office located in Miami, FL.

SEC has several environmental activities ongoing at its facilities. Internally we recycle. For our customers we provide the ability to recycle Ni-Cd batteries and toner cartridges at no cost. We also recycle television tubes, known as Cathode Ray Tubes or CRTs, from our authorized product service centers. We also participate in environmental activities in our community, such as our annual participation in the clean-up event on the Ramapo River, which runs past our New Jersey headquarters property. Other SEC facilities participate in similar events.

HAZARDOUS WASTE

SEC facilities do not generate any hazardous waste. Instead, hazardous materials such as batteries and scrap electronic products and parts are recycled or demanufactured. In 1999 the SEC facilities recycled and demanufactured 2.78 million pounds of materials from its non-manufacturing sites. A breakdown of the quantities by location is displayed in Table I. As demonstrated by the available data, there has been a decrease in the amount of recycling activity reported in 1999. All of our three major facilities reported decreases in recycling quantities last year. The reduction in recycling in New Jersey was due to a smaller amount of material being generated at the site. While the amount of material recycled at the Huntington Beach facility appeared to increase, this was due to the inclusion of the number of toner cartridges being recycled at the facility. It should also be noted that there was no data reported from Huntington Beach concerning their glass, aluminum, and scrap metal recycling efforts. This is due to a change in the operations that generated these streams. These operations have been transferred to the Romeoville facility.

A reason for the lower recycling effort in the Romeoville facility was a change of management at the facility that resulted in the hiring of new staff who were not well versed in the data collection

process. As a result there is no or incomplete data regarding several key recycling streams in the facility. Since the end of the year new staff are now in place and a new recycler is being selected who will provide record keeping assistance for the recycling efforts.

TABLE I
TOTAL AMOUNT OF MATERIALS DIVERTED FROM THE WASTE STREAM BY LOCATION

LOCATION	TOTAL (lbs.)			
	1997	1998	1999	2000
SEC New Jersey	663,050	858,800	740,000	659,484
SEC Chicago, IL	2,430,000	2,533,672	1,904,636	1,528,680
SEC Huntington Beach, CA	87,000	74,081	129,253	107,953
SEC Atlanta, GA	100	1,660	No data	N/A
SEC Washington DC	No data	No data	No data	3,909
SEC Raleigh, NC	300	No data	No data	N/A
SEC Seattle, WA	-----	-----	3,160	1,660
SEC Dallas, TX	30,000	No data	No data	N/A

*Increase is due to inclusion of data from the toner cartridge-recycling program.

The materials recycled at the Atlanta, Raleigh, Seattle, Washington DC, and Dallas facilities consisted of paper, toner cartridges, cardboard glass, and aluminum, mostly from soft drink cans. The materials from the other facilities are shown in the following table. Our goal for 2000 is to get back on track regarding recordkeeping of the recycling efforts at all of our facilities in order to make a full accounting of our efforts.

TABLE II
BREAKDON OF DIVERTED WASTE MATERIALS AT EACH LOCATION

LOCATION	MATERIAL	QUANTITY RECYCLED 1999 (LBS)	QUANTITY RECYCLED 2000 (LBS)	QUANTITY RECYCLED PER EMPLOYEE
SEC NEW JERSEY				1,099 LBS.
	PAPER	450,000	250,000	
	CARDBOARD	48,000	32,000	
	WOOD	150,000	150,000	
	PLASTIC, GLASS, ALUMINUM, TIN	24,000	24,000	
	ASSORTED METAL	8,000	30,000	
	STYROFOAM	15,000	16,800	
	ELECTRONIC PRODUCTS	38,400	136,000	

	TONER CARTRIDGES*	No data	1,775	
	COPIER DRUMS	0	0	
	BATTERIES	5,800	15,909	
	FLUORESCENT LAMPS	1,000	3,000	
	RECHARGEABLE BATTERIES*			
SEC CHICAGO				2,691 LBS.
	PAPER	No data	No data	
	CARDBOARD	726,000	436,000	
	GLASS	No data	No data	
	ASSORTED METAL	No data	No data	
	STYROFOAM	No data		
	ELECTRONIC PRODUCTS	1,178,636	1,092,680	
	PLASTIC	No data	No data	
SEC HUNTINGON BEACH				
	PAPER	12,442	13,490	
	MIXED (GLASS CARDBOARD, ALUMINUM, METALS)	314*	938,000*	
	TONER CARTRIDGES	113,676	No data	

*Data is for cardboard only.

DESIGN FOR THE ENVIRONMENT ACTIVITIES

ENERGY EFFICIENT PRODUCTS

Sharp has taken efforts to incorporate environmental attributes into many of the products it sells. One of our main focuses is to improve the energy efficiency of our products. By minimizing the use of energy Sharp can offer to our customers a product that requires less electricity to operate, thus saving the customer money while reducing the emission of greenhouse gases from the generation of electricity. It is the technology of performing the same or additional task using fewer resources.

One area of energy savings is from the stand-by mode. The stand-by mode of a product is when the product appears to be in the “off” mode, but in actuality is simply seeking a signal to start operation. A classic example of this situation is the television with a remote. When the television is in the “off” mode, (but still plugged into the electrical outlet), it is using energy while it waits for the signal from the remote. Sharp products incorporate technology that allows our products to perform this task more efficiently. The US Environmental Protection Agency (EPA) has established a voluntary program to recognize such products. This program known as the EPA ENERGY STAR™ program has established criteria for product energy use in the stand-by mode. Sharp participates in the ENERGY STAR™ program and has over 300 models of energy efficient products registered in the following product categories:

Room Air Conditioner	Television	VCR	DVD
Copier	Facsimile Machine	Printer	Multi-function
Computer	Monitor	Audio Products	

60 models were added in 2000. SEC displayed several ENERGY STAR™ products at the 2000 Consumer Electronics Show held in Las Vegas. In the past SEC has displayed ENERGY STAR™ products at the Earth Technologies Forum in Washington DC. Information can also be found on the Sharp Website (<http://www.sharp-usa.com>) and in the product literature.

In addition to energy savings during the stand-by mode, some models of Sharp televisions now include an “Energy Save” mode that can reduce energy use by 10% while the television is operating. These products were introduced to the market in 1999 and can result in additional energy and cost savings to the consumer.

RECYCLED CONTENT & TONER CARTRIDGE REFILL PROGRAM

Sharp has also incorporated recycled plastic into the toner bottles sold for Sharp brand copiers and printers. These bottles are manufactured from 25% post consumer plastic and have been available since 1995. Sharp also has launched a toner cartridge recycling program for our Z line of home office copiers. Under this program the customer can return the cartridge to Sharp using a prepaid mailing label and receive a small rebate. Sharp cleans, repairs, and refills the cartridges for resale. We have been averaging a monthly return rate of 5,000 cartridges each month.

ENVIRONMENTAL COMPLIANCE

SEC has established environmental standards to ensure compliance with US environmental laws. The Corporate Environmental Affairs office conducts periodic reviews and training sessions to ensure compliance with the standards. In addition SEC manufacturing sites in Memphis, TN and Camas, WA have their own internal programs, standards, and environmental staff.

In 1998 Sharp was identified by the EPA as one of 40 participants in the W&R Drum Superfund site in Memphis, TN. Sharp has reached an agreement with the EPA to reimburse the EPA \$1,300 in clean-up costs for the site. Sharp has taken this opportunity to improve its procedures and work instructions for handling the waste stream involved in the incident. There has been no further action required by Sharp at this site. Sharp has not been involved in any other Superfund activity and we do not anticipate any such activity in the future.

ADDITIONAL ACTIVITIES

Sharp has been working to improve our customer's access to environmental information about our products, both in their use and regarding their end of life. To this end we have begun development of a section of our web site which will provide on-line access to the Material Safety Data Sheets (MSDS). MSDS are available for Sharp chemical products such as toners and inks. This section of our site should be available by the end of May 2001.

We are also participating in an industry initiative to provide customers with information regarding their options for end of life electronics. Starting in January 2001, information will be

included in applicable product operation manuals directing the customer to an industry website [Http//www.eiae.org](http://www.eiae.org). This site contains information on reuse, recycling, and disposal options for electronics products throughout the United States. In addition, Sharp has been working with several states to develop a recycling infrastructure for electronic products. We expect to expand these efforts in 2001 and are planning to provide support for long-term pilot projects in as many as 4 states in conjunction to other members of our industry. We will include details on our efforts in our 2002 report.

SHARP MANUFACTURING COMPANY OF AMERICA

Sharp Manufacturing Company of America (SMCA) is the manufacturing division of Sharp Electronics Corporation. SMCA, located in Memphis, TN, manufactures televisions, microwave ovens, and toner products for the US market. There are four buildings on site plus a warehouse located nearby. SMCA has written its own environmental policy statement and operates its environmental program under an ISO 14000 certified Environmental Management System. In 1997 SMCA became one of the first companies in the United States to receive this certification.

ENVIRONMENTAL POLICY

Sharp Manufacturing Company of America is committed to preserving our environment. We will strive to utilize good management practices, proper training and discipline to achieve this goal. We will establish an active environmental management system that will facilitate continual improvement and pollution prevention. We will conduct our operations in a manner that complies with relevant environmental legislation and regulations.

In order to fulfill our commitment to continuous improvement in environmental performance, the following objectives and targets will be addressed and reviewed by our environmental management system.

- * Control air emissions
- * Conserve natural resources
- * Maintain an active waste reduction plan

The SMCA Environmental Policy focuses on three targets:

1. **RE-USE** material whenever possible
2. **REDUCE** the volume of material used
1. **RECYCLE** whenever feasible

The implementation of this Policy is a primary management objective and is the responsibility of all employees.

RECYCLING

SMCA has had a recycling program in place for many years and has been tracking their progress. The table summarizes their recycling efforts. Note that all weights are in US tons. Totals are rounded to nearest ton per 100 employees.

**TABLE III
SMCA RECYCLING DATA**

MATERIAL	1996	1997	1998	1999	2000
SCRAP METAL/ALUMINUM	3,727	5,225	5,376	4,047	306.64
CARDBOARD	1,237	1,718	1,843	1,574	110.08

SOLDER	6.4	9.6	5.4	4.6	.425
COPPER	6.2	14.3	18.6	16.8	1.09
POLYSTYRENE		52	63	42	0
MISCELLEANOUS METALS		19.5	0	0	0
TOTAL	4,977	7,038	7,057	5,684	428.36

WASTE DISPOSAL

SMCA waste disposal is handled in accordance with state laws and US federal. SMCA divides its waste stream into three main categories: Nonhazardous (general rubbish), hazardous, and special waste. Disposal of hazardous waste is regulated under the Federal Resource Conservation and Recovery Act (RCRA) as well as laws of the state of Tennessee. In 1998 slightly over 7,155 pounds of hazardous waste were generated by SMCA. In 1997, slightly over 7,200 pounds of hazardous waste were generated by SMCA. This is a decrease of less than 1% over the 1997 totals of 7,200 pounds, part of the decrease is due to better maintenance of solder wave equipment. SMCA is now a small quantity generator of hazardous waste. In 1999 slightly over 6,130 pounds of hazardous waste were generated. This is a decrease 14.25% over the 1998 totals of 7,155 pounds. SMCA installed a powder coat paint system in 1999 and this is the reason for the decrease in hazardous waste in 1999. SMCA maintained the Small Quantity Generator Status for 1999. In 2000, Chassis Production in the TV Building moved to SEMEX. In 2000, SMCA generated 2,804 pounds of hazardous waste. This is a decrease of approximately 46% due to the closing of the Chassis Area. SMCA currently has one Hazardous Waste Stream still active at this time. We are looking at becoming a Conditionally Exempt Small Quantity Generator in the year 2001.

Special Waste is waste that is not hazardous but requires a permit to dispose of at the Landfill.

Type of Waste	1997	1998	1999	2000
Nonhazardous waste (General Rubbish) (ton)	1360	1321	1370	112.08
Special Wastes (ton)	624	387	237	22.83
Hazardous Wastes (kg.)				115.90 kg.

Nonhazardous waste disposal also referred to as general rubbish, totaled 1,360 tons in 1997. This represents a 7% increase from 1996 and represents a slight increase when increased production is taken into account. SMCA generated 1,321 tons of general rubbish in 1998, a 1% decrease in spite of an estimated 6% increase in production over the same time period. In 1999, SMCA generated 1,370 tons of general rubbish this is an increase of 3.6% over 1998. The increase is due in part to not being able to recycle cardboard out of the Toner Plant. In 2000, SMCA generated 1345 tons of general rubbish this is a decrease of 1.8% over 1999. SMCA has also established as a target a 5% waste reduction for 2001 based on the 1998 numbers and a 10% reduction for the year 2000 using the 1998 baseline.

AIR EMISSIONS

SMCA has been exempted from a Title V permitted facility and is currently listed as one of the top 10 companies for improvement in reducing air emissions. Total emissions for 1997 were slightly over 77 tons. SMCA air emissions for 1998 were slightly over 86 tons due in large part

to an increase in VOC emissions in the television assembly facility. SMCA air emissions for 1999 were slightly over 59 Tons. It is expected that these emissions will be reduced by approximately 25 tons in 2000 as a result of chassis area being moved to Mexico and in 2000 there should be no VOC emissions from the TV Building. Table V provides a breakdown of the air emissions from the various emission points at SMCA from 1996 through 2000.

Table V – AIR EMISSIONS

Area	TSP	SO2	VOC	NOX	CO	Total	
1995 Press Plant & Toner Plant	.41	.04	11.42	11.4	2.85	26.12	Tons
1995 CTV Chassis			15.29			15.29	Tons
1996 Press Plant & Toner Plant	.12	.01	24.09	3.56	.89	28.66	Tons
1996 CTV Chassis			17.09			17.09	Tons
1997 Press Plant & Toner Plant	.13	.02	47.51	3.73	.93	52.32	Tons
1997 CTV Chassis			24.70			24.70	Tons
1998 Press Plant & Toner Plant	.21	.01	52.08	6.3	1.57	60.17	Tons
1998 CTV Chassis			26.17			26.17	Tons
1999 Press Plant & Toner Plant	.21	.01	8.27	6.01	1.50	16.0	Tons
1999 CTV Chassis			43.19				Tons
2000 Press Plant & Toner Plant	.21	.01	4.96	5.81	1.44	12.55	Tons
2000 CTV Chassis			17.60			17.60	Tons

WATER USAGE AND DISCHARGE

SMCA has a wastewater treatment system for the microwave cavity paint line. The treatment system discharges into the public sewer system under a permit issued by the City of Memphis in accordance with the laws and regulations established by the city, Tennessee, and the federal government. The discharge from the treatment system is electronically monitored 24 hours a day to ensure compliance with discharge limits established by the permit. In addition there is an employee on duty during each shift to physically monitor the system and make adjustments as required. Finally the City also takes samples of the treatment system discharge on a regular basis and has it analyzed.

SMCA also has a storm water discharge permit covering discharges of rainwater collected from the paved areas at the facility. The permit requires quarterly storm water testing during the first year.

During the 1st quarter of 1999 SMCA exceeded the permissible limits for its storm water discharge for aluminum at outfall (001). Under the requirements of the permit, SMCA is required to perform a site audit to determine the possible source of the high levels whenever the monitoring data from two consecutive monitoring events indicates a problem. SMCA has conducted a facility inspection and the storm water pollution control plan has been re-evaluated to identify any sources of aluminum contamination. It is possible that the contaminant is associated with non-industrial activities. After reducing the impact of off-site sources, the contamination of aluminum diminished.

SMCA annual water usage for the facility over the last four years is shown in Table VI. The significant increase in the water usage from 1996 to 1998 correlates with a 100 % increase in production in the microwave line. Actual water usage per unit of production in that facility has remained constant and water usage is expected to drop slightly in 1998. Water usage in the Press plant decreased by approximately 30% in 1999 due to the installation of the powder coat system.

TABLE VI
WATER USAGE AT SMCA

SMCA Building	1995	1996	1997	1998	1999	2000
Bldg. A & B (TV & MO Assembly)	14,162	10,172	12,494	10,970	13,068	19,907
Bldg. C & D Paint Line & Toner Factory	32,223	38,395	70,726	58,832	40,876	68,577

Yearly Water usage in CCF

ENERGY USAGE

SMCA utilizes both natural gas and electricity to provide energy to the facility. Tables VII and VIII show the usage over the past four years. The reduction in gas usage in 1997 was due to shutdown of the thermal oxidizer. It was determined that since the oxidizer was only converting 2 tons of VOCs per month (while releasing significant amounts of CO₂ to the atmosphere when no VOCs were being converted, it made both environmental and economic sense to shut down the burner. SMCA has set a target to reduce overall energy consumption by 25% from 1995 levels by the year 2000. In 1999, SMCA reduced gas consumption by 6.1% in the Press Plant. This reduction was the result of the installation of the Powder Coat Paint System and removal of the Top Coat Spray Booths.

TABLE VII
NATURAL GAS USAGE AT SMCA

	1995	1996	1997	1998	1999	2000	2001
GAS USAGE	814,809	501,402	533,307	496,308	464,356	410,231	

EMPLOYEE HEALTH AND SAFETY

SMCA provides employee safety training upon hire and holds review sessions on a regular basis. Nevertheless it is believed that 1998 figures will show an increasing number of reportable injury incidents at the SMCA facility. SMCA credits this to two factors: increasing employee turnover and increasing number of employees. SMCA is making efforts to improve worker training and awareness in order to reverse this trend.

YEAR	ACCIDENT RATE/100 EMPLOYEES	TOTAL ACCIDENTS
1996	11	196
1997	17	203
1998	19	227
1999	18	214
2000	14	159

TABLE VIII
ELECTRICAL USAGE AT SMCA

ELECTRICAL USAGE – KILOWATT HOURS BY BUILDING							
	1995	1996	1997	1998	1999	2000	2001
Bldg. A	8,566,000	8,534,000	8,601,000	8,817,000	8,303,000	6,692,000	
Bldg. B	8,534,000	8,986,000	9,763,000	10,939,000	8,709,000	9,276,000	
Bldg. C	7,474,000	7,684,500	8,629,500	8,088,000	8,574,000	7,885,500	
Bldg. D	4,549,800	4,741,800	5,089,000	4,381,200	3,400,200	3,611,400	
TOTAL	29,124,300	29,946,300	32,082,500	32,225,200	28,986,200	27,464,900	

SHARP COMPANIES AT CAMAS

The Sharp Camas site consists of two companies, Sharp Laboratories of America (SLA) and Sharp Microelectronics of the Americas (SMA), operating in Camas, WA. Operations at the site include research and development in LCD-TFT, integrated circuits, and multimedia technologies, design of integrated circuits, and sales of microelectronics for the North, South, and Central American market. The information presented includes data through the calendar year 2000.

The companies at Sharp Camas share an environmental management system and were one of the first sites to receive a “joint certification” to the ISO14001 standard in 1997. Our environmental policy is as follows:

ENVIRONMENTAL POLICY

“The employees of the SHARP Companies at Camas, Washington recognize our responsibility to conduct ourselves and our business in a manner to preserve and protect people and the environment.”

“We are committed to meeting or exceeding applicable regulations and requirements, prevention of pollution, enhanced environmental awareness, and continuous improvement.”

“This is achieved through our Environmental Management System (EMS), which is used to establish and review objectives and targets and provide communication, discipline and guidance toward accomplishing these goals.”

This policy is communicated to all employees and made available to interested parties.

ENERGY USE

Natural gas, electricity and water are used at the Sharp Camas site. Usage has fluctuated over the last few years due to the addition of a new building and laboratories as well as the closing of LCD production in 1999. This trend has stabilized in year 2000 as expected.

TABLE VIII

Energy Type	1996	1997	1998	1999	2000
Water (MMgal)	9.6	9.0	11.5	8.1	8.6
Electricity (kWh)	17,149,680	18,232,970	18,821,110	16,213,900	16,022,090
Natural Gas (MMBtu)	13,381	15,796	16,586	17,798	17,228

WASTE DISPOSAL AND RECYCLING

Sharp Camas generates both hazardous and non-hazardous wastes. These wastes are managed in accordance with Federal and Washington State laws and regulations. Due to the nature of R&D, most wastes generated are non-routine, however Sharp Camas recycles or reuses wastes such as

scrap metal, fluorescent lamps, paper, cardboard, wood, computer chips (ICs), oil, antifreeze, batteries, electronic equipment and printed wafer boards as they occur. Amounts and quantities of materials recycled are shown in the chart below. In addition Sharp Camas routinely donates aluminum can, bottles, obsolete computers, monitors, and similar electronics equipment to local schools and charitable organizations. Miscellaneous items such as tyvek suits and Styrofoam peanuts are donated to other businesses that can reuse them. Exact quantities of the donated items are not recorded.

The amounts of cardboard and paper have remained stable as expected. Quantities of integrated circuits and printed wafer boards have decreased as expected due to shut down of the IC test and LCD repair operations in 2000. In year 2000 fluorescent bulbs became regulated and the rate of recycling increased due to improved awareness.

TABLE IX

Recycled Materials	1996	1997	1998	1999	2000
Paper & Cardboard (lbs.)	50,400	135,600	138,000	75,000	70900
Scrap Metal (lbs.)	-	-	4837	600	414
Wood (lbs.)	18,000	24,000	30,000	18,000	Not available
Computer Equipment (lbs.)	560	910	400	2800	Not available
Fluorescent Lamps (lbs.)	-	313	683	336	863
Integrated Circuits (lbs.)	1271	-	713	520	283
Printed Wafer Boards (lbs.)	560	3291	507	413	230
Oil (lbs.)	16	16	205	4	95
Antifreeze (lbs.)	188	413	1238	780	1175
Batteries (lbs.)	-	-	-	119	200

Data for waste disposal for 1996 through 2000 is shown in the table below. Amounts of non-hazardous wastes have decreased steadily due to improved efforts in recycling. As expected there was an overall substantial decrease in 1999 due to reduced activity at the facility, such as the shut down of LCD production.

TABLE X

Type of Waste	1996	1997	1998	1999	2000
Non-hazardous Wastes (ton)	108.6	84.8	80.5	49.28	35.45
Hazardous Wastes(ton)	14.5	13.3	8.4*	4.11	8.43

* Note in 1998 this number decreased by about 4-6 tons partly due to a change in reporting requirements. Previously wastewater treated onsite had to be counted as hazardous waste.

In 1995, the addition of a second lab led to an increase in the amount of hazardous waste generated. In 1997 an existing lab was expanded to double the previous capacity, however, waste levels actually decreased as a result of several waste reduction efforts. Hazardous waste generation significantly increased in 2000 due to two major issues. A maintenance issue that led to increased fluoride wastewater and the addition of several more researchers performing work in the labs. This number is again expected to increase in 2001.

AIR EMISSIONS

While Sharp Camas does not create enough air emissions to require a Title V permit; it operates under an Order of Authorization from the local air agency. The facility tracks air emissions and

have installed air treatment equipment, on required or significant processes, to remove hazardous air pollutants from the exhaust. Emissions data is shown in Table IV. In spite of increasing its level of R&D activities and laboratory work Sharp Camas has steadily reduced overall emissions each year since 1995. This trend is expected to stabilize or increase in 2001 due to the addition of equipment and researchers in the labs.

TABLE XI

EMISSIONS	1996	1997	1998	1999	2000
Particulate Matter (ton)	0.03	0.04	0.04	0.04	0.04
SO₂(ton)	0.00	0.00	0.00	0.00	0.00
NO_x(ton)	0.67	0.79	0.83	.89	0.86
VOC's(ton)	2.36	1.8	1.3	.99	0.14
CO(ton)	0.07	0.08	0.08	.09	0.41
Toxic Air Pollutants(ton)	1.33	1.62	1.15	.83	0.26
Total Emissions(ton)	4.46	4.33	3.40	2.84	1.71

WASTEWATER DISCHARGE

Sharp Camas has a wastewater permit and operates a wastewater treatment system. Discharge from the system goes directly to the municipal sewage system. The system is continuously monitored electronically, and monthly sampling is performed to assure proper treatment.

TABLE XII

Type/Year	1996	1997	1998	1999	2000
Annual Flow rate (gal)	7,292,301	5,421,853	7,340,422	6,487,675	5,195,171
Daily Avg. Flow rate (gal)	19,968	14,849	20,103	17,774	14,233

Water usage includes domestic and process water. Usage increased in 1996 due to the addition of a new building and laboratory. Usage decreased in 1997 due to a water scrubber upgrade as part of a water reduction project, and has increased in 1998 again due to the addition of new employees and research projects. Process wastewater has followed the same trend. In 1999 the numbers decreased as a result of water reduction efforts and improved maintenance of treatment systems. In 2000 there was a slight decrease and in 2001 the amount is expected to decrease further due to an equipment upgrade and improvement project.

EMPLOYEE HEALTH AND SAFETY

Sharp Camas has a Safety Administrator on staff at the site as part of the Facilities Department. This person is responsible for ensuring that every employee receives required safety training before starting employment. The Safety Administrator also functions as the Emergency Response Coordinator and is responsible for on-site training of emergency personnel as well as development of the Emergency Response Plan (ERP). A fully staffed Emergency Response Team (ERT) is maintained as part of the ISO 14000 Environmental Management System.

Sharp's accident rates for 1995-2000 are shown in Table XII. During this period, the site experienced an overall reduction in the accident rate. A significant reduction in the frequency and number of ergonomic illnesses and injuries was also experienced during this time frame, although 1999 & 2000 data shows a percentage increase due to a major decrease in the number of overall accidents.

TABLE XII
SAFETY PERFORMANCE DATA

SMA	ACCIDENT RATE/ 100 EMPLOYEES	TOTAL ACCIDENTS	ERGONOMICS	
			Total	% of Total
1995	4.67	25	20	80
1996	2.47	11	8	73
1997	4.98	19	12	63
1998	3.27	10	5	50
1999	<1.50	3	3	100
2000	<1.00	2	1	50

SLA	ACCIDENT RATE/ 100 EMPLOYEES	TOTAL ACCIDENTS	ERGONOMICS	
			Total	% of Total
1997	<1.00	0	Data Unavailable	Data Unavailable
1998	1.92	2	Data Unavailable	Data Unavailable
1999	<1.00	0	Data Unavailable	Data Unavailable
2000	2.33	4	3	75

Sharp credits this improvement to the Ergonomic Action Plan initiated in 1996. This plan was created to address the high frequency of ergonomically related, OSHA recordable injuries and illnesses. Tools and methods were developed to identify causes and generate actions for correcting deficiencies and preventing recurrence of contributing factors.

Sharp-Camas continues to be involved in the Washington State RETRO (Retrospective premium) program, resulting in substantial annual refunds of industrial insurance premiums from the state Worker's Compensation Program. The refund is distributed to employers showing improvement in accident rates and Lost Workday/ Back to Work cases. As a result of its continuously improving safety performance, Sharp is also experiencing a decrease in Industrial Insurance premiums, which are based on a triennial performance rating.

AWARDS

In 1996 the Association of Washington Business presented the companies at Sharp Camas with their Environmental Excellence Award for Employee Education for the implementation of its ISO14001 Environmental Management System. Sharp Camas also competed for the 1996 Governor's Award for Pollution Prevention based on its achievements in eliminating CFC usage, reducing the use of paper and other natural resources, and increasing its recycling efforts. Sharp Camas, along with all of the Sharp facilities in North America, was recognized in by the US EPA with the 1995 Environmental Protection Award for eliminating the use of CFC's.

SHARP ELECTRONICS OF CANADA LTD.

Sharp Electronics of Canada Ltd. (referred to as SECL) operates its facility in Mississauga, near Toronto, in the Canadian province of Ontario. This non-manufacturing site generates no hazardous waste and recycles some of its waste streams. SECL is a participant in the RBRC Nickel-Cadmium and Lithium Battery collection programs and operates a toner cartridge recycling program in Canada.

EMPLOYEE HEALTH AND SAFETY

A First Aid and CPR Emergency training was held at SECL in 1999 and continued in on 2000. This training is a one-day course. Many employees have participated and successfully completed this certified programmed certificates were issued by Workplace Safety and Insurance Board of Ontario and the Heart and Stroke Foundation of Ontario, Canada’s Emergency Cardiac Care Program.

CANADIAN ENVIRONMENTAL CHOICE PROGRAM

Sharp Canada is one of the few companies that participated in the start up of the Canadian Environmental Choice Program for Copiers and facsimiles. This program is similar to the Energy Star program in US. In addition to Environmental Choice Program, Canada also has the “Ecologo” program which is similar to that of Energy Star program for consumer electronics. Sharp Canada distributes the same Energy Star Television and VCR Models in Canada as are sold in the US.

RECYCLED TONER CARTRIDGE PROGRAM

Sharp Canada has incorporated recycled Toner Cartridge Recycling Program for the Z and AL line of home office copiers. Under this program the customer can return the cartridge to Sharp using a prepaid mailing label and receive a small rebate or return the cartridge to dealer for new replacement with a small discount.

WASTE DISPOSAL AND RECYCLING

In 2000, SECL with 110 employees, generated approximately 139,610 lbs. (70 tons) of waste, a reduction from 1999. However with a reduced workforce it is difficult to measure this change. The 2000 numbers represents approximately 1,269 pounds of waste per employee. At the same time, over 38,450 lbs. of materials were recycled at SECL, representing more than a 27.5% increase over the previous year. This is a recycling rate of approximately 350 pounds per employee. SECL will continue to work to increase its recycling rates.

**TABLE XIII
SECL RECYCLING DATA**

MATERIAL	1998	1999	2000
Toner Cartridges		1,200 pcs.	888 pcs.
Styrofoam	4,400 lbs.	3,200 lbs.	2,700 lbs.
Cardboard	6,000 lbs.	6,700lbs.	8,200 lbs.

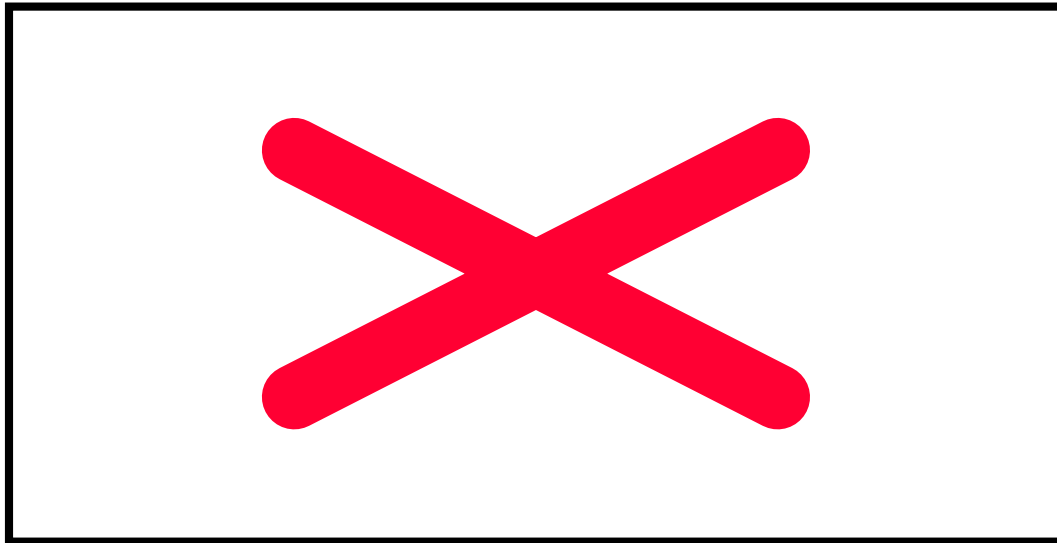
Paper	4,000 lbs.	5,400 lbs.	6,200 lbs.
Wooden crates	6,000 lbs.	7,000 lbs.	11,000 lbs.
Glass	1,400 lbs.	1,100 lbs.	900 lbs.
Aluminum	500 lbs.	500 lbs.	450 lbs.
Total Weight	22,300 lbs.	23,900 lbs.	38, 450

ENERGY USE

In 1999 SECL began to track the electricity usage at the facility. In 1999, the facility utilized 1,635,840 kWh of electricity. In 2000 the usage increased to 2,157,840 kWh. We will continue to monitor our usage and look for ways for reductions.

SHARP ELECTRONICS CORPORATION MEXICAN OPERATIONS (SEMEX)

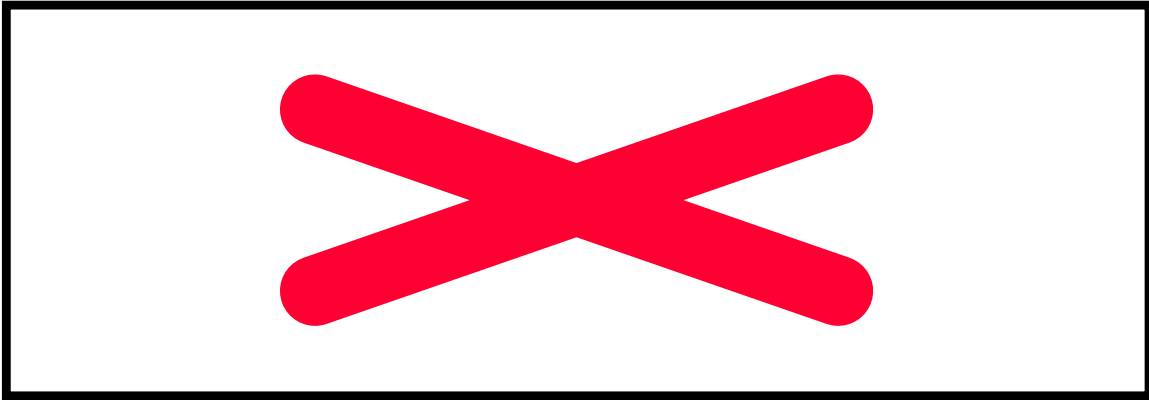
This is the first report submitted on behalf of Sharp Manufacturing operations in Mexico. The manufacturing facility, located in the town of Rosarito Beach, south of the US border in California, manufactures televisions, and vacuums. The Quality and Reliability Center (QRC Center) is 100% responsible for all of the environmental activity that takes place within the SEMEX facility.



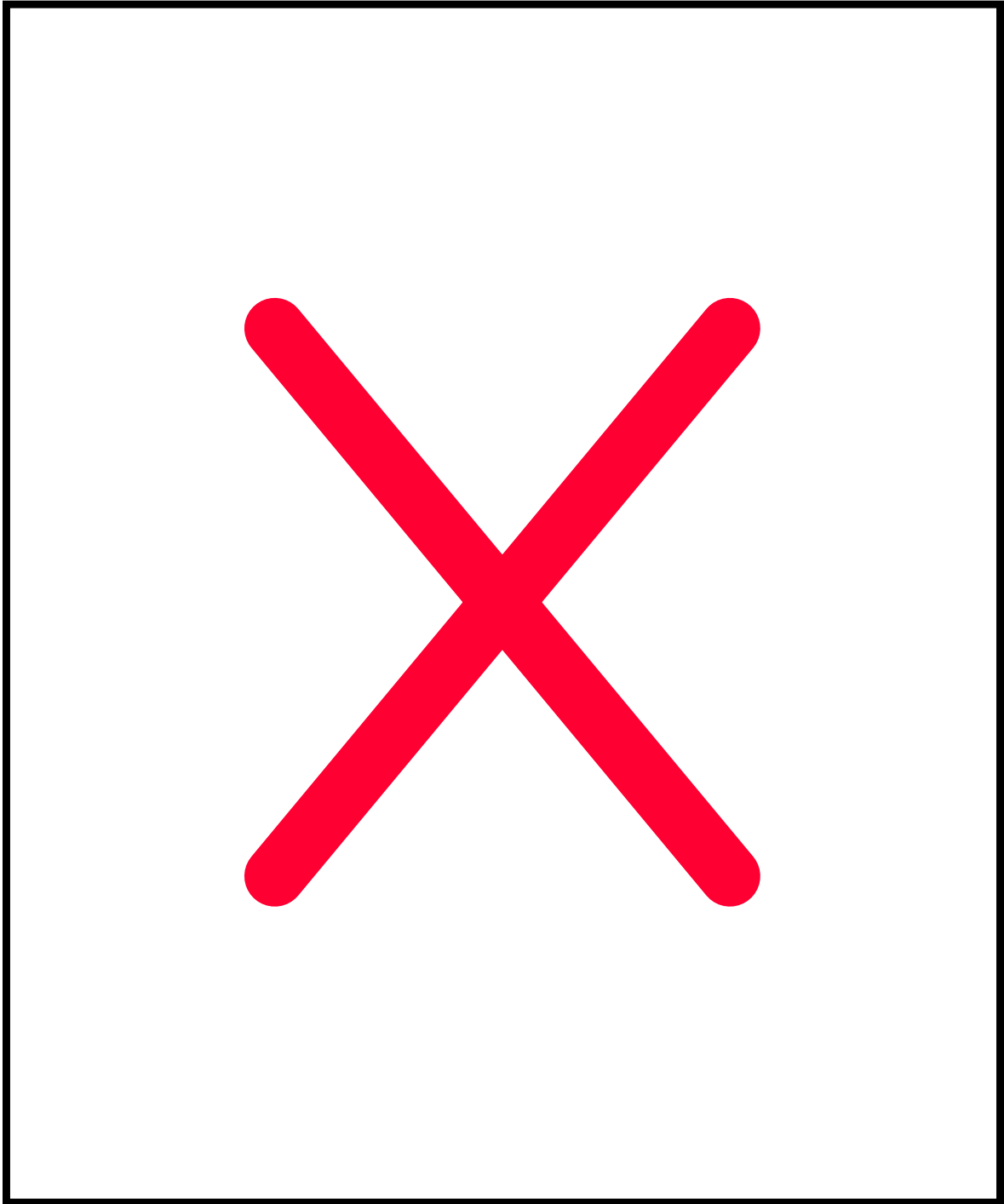
A brief summary of our 2000 activities and our plans for 2001 appear below.

1. Our goal is to achieve certification for our ISO 14001 Environmental Management System (EMS) in September of 2001. Although, this is a very tight schedule, we believe that is can be achieved.
2. The QRC Center has hired an environmental technician to support current activities.

3. A training seminar has been scheduled for April 2001. The training will focus on the handling of hazardous wastes”.
4. Environmental Reports have been submitted to the appropriate Mexican agencies.



5. Hazardous Waste Disposal and Recycling:
 - A) Hazardous Waste



B) Recycling Activity

