Crompton Corporation
OSi Group
Sistersville Plant
3500 South State Route 2
Friendly, WV 26146
(304) 652-8000

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7001 1940 0007 0595 4466, 4473, 4480

July 30, 2002

To: Distribution Below

PROJECT XL

FOURTH ANNUAL PROJECT REPORT

We are pleased to submit the enclosed Annual Project Report for the Crompton Corporation, OSi Specialties Group Sistersville Plant's XL Project. Per our agreement with the US Environmental Protection Agency and the WV Department of Environmental Protection, this report is due on July 31.

Sincerely,

Dennis R. Heintzman
Group Director of EH&S

p:\proj_xl\notices & reports\2002-july annual report\2002 annual report.doc

DISTRIBUTION

Report Recipients Under the Federal Rule

Mr. Tad Radzinski (3WC11)
U.S. EPA, Region III
Waste & Chemicals Management Division
3WC11
1650 Arch St.
Philadelphia PA 19103-2029

Ms. Kristina Heinemann
U.S. Environmental Protection Agency
Office of Environmental Policy Innovation
1200 Pennsylvania Avenue, NW
Mail Code 1807
Washington, D.C. 20460

Ms. Stephanie R. Timmermeyer
WV Division of Environmental Protection
Office of Air Quality
7012 MacCorkle Ave SE
Charleston WV 25304-2943

Copies To:

Mr. Anthony J. Vandenberg
Environmental Protection Department
Crompton Corporation, Sistersville Plant

Ms. Suganthi Simon
U.S. Environmental Protection Agency
Office of Environmental Policy Innovation
1200 Pennsylvania Avenue, NW
Mail Code 1807
Washington, D.C. 20460

Mr. Jonathan McClung
WV Division of Environmental Protection
Office of Air Quality
1558 Washington Street East
Charleston WV 25311-2599

Project XL Mailing List

Sistersville Public Library Project XL File

Project XL Agreements, Notices & Reports File

Federal Correspondence (letter only)

State Correspondence (letter only)

ANNUAL REPORT
FOR THE PERIOD JULY 1, 2001 to JUNE 30, 2002

FOR PROJECT XL AGREEMENT

Between
Crompton Corporation, OSi Specialties Group,

U.S. Environmental Protection Agency, and

West Virginia Division of Environmental Protection

STATUS OF THE XL PROJECT

On October 17, 1997, the Final Project Agreement (FPA) for the Crompton Corporation (formerly Witco Corporation), OSi Specialties Group, XL Project was signed by all parties. On March 30, 1998 Crompton and the WV Division of Environmental Protection (WVDEP) entered into a Consent Order to implement the provisions of the FPA. On September 15, 1998, the U.S. Environmental Protection Agency (EPA) published the final rule implementing the FPA from a federal perspective. That Federal Register notice (Volume 63, Number 178, Page 49384) includes a great deal of background on this XL project.

Methanol from the capper unit was first shipped for reuse on October 8, 1997. Methanol reuse under the XL agreement officially commenced on October 27, 1997.

The Waste Minimization / Pollution Prevention Study Team was formed December 16, 1997. The WM/PP Advisory Committee was formed on December 30, 1997. The study is complete and Crompton issued the Final Report on December 11, 1998. Since then, the plant has continued to implement opportunities and develop new ones.

The thermal oxidizer for the capper unit vents was started up on April 1, 1998. On July 15, 1998 the performance test for the oxidizer was completed. The oxidizer passed all of the performance requirements, and the results were reported to the EPA and WVDEP. The oxidizer is reducing total organics in the vent stream by 99.99%, versus the 98% minimum required by the Agreement.

ANNUAL REPORT REQUIREMENTS

This annual report must contain information as specified by the Federal Rule [40 CFR 264.1080(f)] implementing this project (as well as the Final Project Agreement, and the corresponding sections of the State Consent Order). Beginning in 1999, on July 31 of each year, the Sistersville Plant shall submit an Annual Project Report to the EPA and WVDEP contacts, with respect to the preceding twelve month period ending on June 30. The rule prescribes the

required content of this report. The following are listed in the order prescribed in paragraphs (f)(2)(viii)(B)(1) through (f)(2)(viii)(B)(8) of this rule.

(1) Instances of operating below the minimum operating temperature established for the thermal incinerator under paragraph (f)(2)(ii)(A)(1) of this section which were not corrected within 24 hours of onset.

July 1 to December 31, 2001	6 hours
January 1 to June 30, 2002	36 hours

(2) Any periods during which the capper unit was being operated to manufacture product while the flow indicator for the vent streams to the thermal incinerator showed no flow.

July 1 to December 31, 2001	6 hours
January 1 to June 30, 2002	36 hours
Total for 12-month period	42 hours
Maximum Allowed per Calendar Year by Rule During Maintenance or Malfunction	240 hours

(3) Any periods during which the capper unit was being operated to manufacture product while the flow indicator for any bypass device on the closed vent system to the thermal incinerator showed flow.

July 1 to December 31, 2001	6 hours
January 1 to June 30, 2002	36 hours
Total for 12-month period	42 hours
Maximum Allowed by Rule per Calendar Year During Maintenance or Malfunction	240 hours

(4) Information required to be reported during that six month period under the preconstruction permit issued under the state permitting program approved under subpart XX of 40 CFR Part 52 Approval and Promulgation of Implementation Plans for West Virginia. [WV Office of Air Quality Regulation 13 Permit]

There is no such information to be reported under the permit.

(5) Any periods during which the capper unit was being operated to manufacture product while the condenser associated with the methanol recovery operation was not in operation.

None.

(6) The amount (in pounds and by month) of methanol collected by the methanol recovery operation.

Month	**Methanol Collected by the Methanol Recovery Operation, Calculated lbs**
July 2001	11,000
August	21,000
September	30,000
October	18,000
November	9,000
December	19,000
January 2002	31,000
February	53,000
March	40,000
April	58,000
May	31,000
June	31,000
Total for 12 months	**352,000**
The above values are calculated from the total methanol collected for the year times the portion of methanol generated (see Item 8, below) in each given month. The numbers for the first six months differ somewhat from those calculated and reported previously, because they have been calculated and apportioned over the twelve month period.	

(7) The amount (in pounds and by month) of collected methanol utilized for reuse, recovery, thermal recovery/treatment, or bio treatment, respectively, during the six month period.

	Collected Methanol Destination, Measured lbs		
Month	**Reuse**	**Thermal Recovery / Treatment**	**Bio-treatment**
October – December 1997	76,620	0	0
January – December 1998	424,254	0	0
January – December 1999	428,520	0	0
January – December 2000	440,060	0	0
January – June 2001	122,180	0	0
July 2001	37,040	0	0
August	0	0	0
September	38,620	0	0
October	40,060	0	0
November	40,140	0	0
December 2000	0	0	0
[July – December 2001	155,860]	0	0
[January – December 2001	278,040]	0	0
January 2002	40,460	0	0
February	40,340	0	0
March	39,080	0	0
April	40,220	0	0
May	36,520	0	0
June	0	0	0
[January – June 2002	196,620]	0	0
[Total for 12 Months July 2001 – June 2002	**352,480]**	**0**	**0**
Total Since Commencement of Reuse	**1,844,114**	**0**	**0**

We have thus met the Performance Standard that, "on an annual basis, the Sistersville Plant shall ensure that a minimum of 95% by weight of the methanol collected by the methanol recovery operation (also referred to as the "collected methanol") is utilized for reuse, recovery, or thermal recovery/treatment." [40 CFR 264.1080(f)(2)(v)(A)] In fact, 100% has been reused.

(8) The calculated amount (in pounds and by month) of methanol generated by operating the capper unit.

Month	Methanol Generated by the Capper Unit, Calculated lbs
July 2001	14,000
August	26,000
September	37,000
October	22,000
November	11,000
December	23,000
January 2002	39,000
February	66,000
March	49,000
April	72,000
May	39,000
June	38,000
Total for 12 months	**436,000**

As discussed in the Final Project Agreement, a portion of the methanol generated in the capper unit cannot be economically collected, but rather goes to the onsite wastewater treatment unit via a steam ejector, or to the thermal oxidizer. This is the difference between the methanol generated [Item (B)(8)] and collected [Item (B)(6)].

The following annual report requirements are listed in the order prescribed in paragraphs (f)(2)(viii)(C)(2) through (f)(2)(viii)(C)(8) of the final rule.

(9) An updated Emissions Analysis for January through December of the preceding year.

Table 1, attached, shows the details of emissions and waste reductions achieved by Project XL for calendar year 2001, summarized as:

Air Emissions Reductions	187,748 lbs
Wastewater Treatment Sludge Reductions	439,218 lbs
Methanol Reused	278,040 lbs
TOTAL REDUCTIONS IN EMSSIONS AND WASTE	**905,006 lbs**

Cumulative emissions and waste reductions since the inception of the XL Project are shown in Figure 1, totaling over 4,700,000 lbs.

(10) Discussion of the Sistersville Plant's performance in meeting the requirements of the final federal rule (as well as the XL agreement, and state consent order), specifically identifying any areas in which the Sistersville Plant either exceeded or failed to achieve any such standard.

The Sistersville Plant is required to, by specified deadlines:

- **install a thermal oxidizer and route the process vents from its polyether methyl capper ("capper") unit to that oxidizer for control of organic air emissions; conduct a performance test of the oxidizer, and verify that the oxidizer reduces the total organic compounds ("TOC") from the process vent streams by at least 98%; comply with specific monitoring and recordkeeping requirements;**

- **implement a methanol recovery operation; ensure that a minimum of 95% by weight of the methanol collected by the methanol recovery operation (also referred to as the "collected methanol") is utilized for reuse, recovery, or thermal recovery/treatment, as defined in the rule; comply with specific monitoring and recordkeeping requirements; and**

- **implement a waste minimization/pollution prevention ("WM/PP") project, including establish an Advisory Committee and Study Team, conduct a WM/PP Study, issue a Final WM/PP Study Report, and make reasonable efforts to implement all feasible (as defined in the rule) WM/PP opportunities in accordance with the priorities identified in the implementation schedule.**

All of these requirements have been met, by the deadlines specified.

- The 98% oxidizer control efficiency requirement has been exceeded, as the performance test showed a 99.99% control.
- The 95% methanol reuse, recovery, or thermal recovery/treatment has been exceeded, as 100% of the methanol collected has been reused.
- The WM/PP efforts are discussed below.

(11) A description of any unanticipated problems in implementing the XL Project and any steps taken to resolve them.

No unanticipated problems have occurred in the past 12 months.

(12) A WM/PP Implementation Report that contains the following information:

(i) A summary of the WM/PP opportunities selected for implementation;

(ii) A description of the WM/PP opportunities initiated and/or completed;

(iii) Reductions in volume of waste generated and amounts of each constituent reduced in wastes including any constituents identified in paragraph (f)(8) of the final rule [this is a list of particular hazardous constituents which might be found at the Sistersville Plant];
(iv) An economic benefits analysis;
(v) A summary of the results of the Advisory Committee's review of implemented WM/PP opportunities;
(vi) A reevaluation of WM/PP opportunities previously determined to be infeasible by the Sistersville Plant but which had potential for future feasibility.

In the past 12 months, work has continued to implement many of the recommendations of the WM/PP Study that were documented in the Final Report, issued in December 1998. A group of Pollution Prevention ("P2") representatives from the various plant departments has served to communicate results and report new P2 ideas.

Crompton is utilizing the Six Sigma process throughout the Corporation. At Sistersville, we have identified several Six Sigma projects that are minimizing wastes, preventing pollution, and saving money. These projects are listed in Table 2, noted by "Six Sigma."

An Energy Awareness and Conservation Team was formed in Spring 2001, to identify and implement ideas and methods that will reduce the plant's overall energy use and expenses. The Team has remained very active since then, focusing on use of electricity, natural gas, nitrogen, and water. Employees throughout the plant are maintaining increased awareness of the costs of unnecessary usage and leaks. The team evaluated and prioritized the most promising of over 200 ideas for energy conservation developed in June 2001. The team and many others throughout the plant have begun implementing the most promising ideas. Several are listed in Table 2, noted by "EACT." We have been very successful, in reducing costs and utility use.

The plant Project XL coordinator maintains an "evergreen" list of ideas, which are reviewed periodically, to report progress and foster cooperation among the various functions of the plant. Natural teams have surfaced to pursue and develop opportunities. In the past year, some opportunities have been implemented, others we continue to work on, new ideas have surfaced, and some inactive ones have been revived. To date, over 430 P2 opportunities have been identified.

Table 2, attached, lists all 14 WM/PP opportunities that are currently at some stage of study or implementation, plus 20 more that have been put in place during the preceding twelve month period ending June 30. For each opportunity, Table 2 gives the particular Waste & Emission, the opportunity itself, its implementation stage, status details, and the potential cost savings and waste/emission quantity savings.

The cost savings and waste reductions for all P2 opportunities implemented since the XP project's inception are summarized below. These are the latest figures, updated as

needed. Consequently, figures for each year may vary from those in previous reports. Many of the opportunities show no dollar or waste quantity reductions, generally because it is difficult or impossible to determine them, even though such reductions clearly do exist.

Year Opportunity was Implemented	Number of New P2 Opportunities Implemented	Recurring Wastes Prevented, Latest Estimates, lbs/yr	Recurring Cost Savings*, Latest Estimates, $/yr
1997-98 Capper Operations (discussed above) Air Emissions and Sludge Reduction plus Methanol Recycle (Excludes capital savings from XL project) Actual for Previous Calendar Year	2	905,006	$11,000
1997	9	376,000	$228,000
1998	10	111,000	$25,000
1999	34	1,643,000	$1,151,000
2000	21	492,000	$1,215,000
2001	17	2,524,000	$1,780,000
2002 Jan. – June	14	3,223,000	$1,534,000
Total	**107**	**9,274,006**	**$5,944,000**

* Note that these savings do not consider the expense of implementing them. Hence net savings will be less. It is often difficult to assign that expense. For example, a totally new process unit may cost millions of dollars to construct. If that new process produces less waste, how much of the design and construction expense ought to be assigned to the P2 benefits? In the case of a process change being done explicitly for P2 reasons, the expense is more easily determined.

The wastes prevented and savings reported in each Semi-Annual and Annual Report since the inception of this XL Project are shown in Figure 2.

In addition to the figures above, implemented opportunities have reduced waste water by 151,000,000 gallons per year, and air emissions from natural gas savings by 14,700,000 lbs per year.

Table 2 also indicates whether the various P2 options have an impact on the Sistersville Plant's generation of hazardous constituents listed in the Sistersville XL final federal rule. No chemical among the list of Persistent, Bioaccumulative, and Toxic materials that EPA published on November 9, 1998, is also involved in any of our current P2 options. One P2 option is for a process that uses the hazardous constituent acrylonitrile. All other P2 options listed in Table 2 as dealing with hazardous constituents relate to reducing the plant's use of solvents, specifically toluene, methanol, ethylbenzene or xylene.

(13) An assessment of the nature of, and the successes or problems associated with, the Sistersville Plant's interaction with the federal and state agencies under the Project.

Over the past year, Sistersville personnel have continued efforts to discuss and publicize our experiences with the XL process. Crompton received one of the inaugural West Virginia Business Environmental Leadership Awards, in the area of Pollution Prevention, for the work done with our WM/PP opportunities. Thus, West Virginia business leaders heard about our project and Project XL in general. EPA Administrator Christine Todd Whitman attended the August 2001 West Virginia Business Summit where the awards were presented.

Crompton has also provided information as requested for EPA's periodic reports on the XL program.

The Sistersville project has experienced no problems in the past 12 months in federal and state agency interactions.

(14) An update on stakeholder involvement efforts

Stakeholder involvement efforts in the past 12 months include:

- A copy of the semi-annual report was sent to everyone on the Sistersville Project XL mailing list in January 2002.
- Crompton helped to publicize Project XL through the West Virginia Business Environmental Leadership Award discussed above.

(15) An evaluation of the Project as implemented against the Project XL Criteria and the baseline scenario.

The baseline scenario evaluation is demonstrated with Table 1. Following is an evaluation against Project XL criteria.

1. Environmental Results

   The Project has provided superior environmental benefit through reduced air emissions, reduced sludge generation and recycling of a beneficial byproduct (see Table 1). In addition, there have been several other WM/PP projects implemented which are providing additional environmental benefits (see Table 2).

2. Cost Savings and Paperwork Reduction

   It is estimated the capital deferral from this project will result in capital savings of approximately $700,000 over the life of the project. It is estimated that there are

additional cost savings of over $3,500,000 per year from implementation of other WM/PP projects.

Paperwork reductions can only be claimed for deferral of any permitting or reporting requirements that may have been associated with closure of the surface impoundments and replacement with tanks. There has likely been a net increase in paperwork requirements when one takes into consideration the amount of paperwork required to obtain the Project and reporting requirements as a result of the project.

3. Stakeholder Support

   Local communities and local agencies have fully supported the project.

4. Innovation/Multimedia Pollution Prevention

   The project results in multimedia pollution prevention through air emission, solid waste and water pollutant reductions (see Table 1). Several innovative ideas are being explored as part of the WM/PP study (see Table 2).

5. Transferability

   EPA's 2000 Project XL Comprehensive Report lists a number of lessons learned during development of our project. It appears that a number of these lessons have helped to improve the XL process itself, embodied in various XL documents issued by EPA since the Crompton project was implemented. The report also catalogs the innovations of all projects, to help foster the transfer of ideas. We are not aware that the basis of our project (voluntary control of emissions in exchange for regulatory relief) has been "transferred" to other projects or facilities. However, it is our understanding that the idea of site wide WM/PP study has been incorporated into other Project XL FPA's. It is also our understanding that the OSi FPA has been used as a model for other FPA's.

6. Feasibility

   All requirements of the FPA have been met; therefore the feasibility has been proven.

7. Monitoring, Reporting and Evaluation

   The FPA and site specific rule clearly spell out the monitoring, reporting and evaluations associated with the Project.

8. Shifting of Risk Burden

Both prior and subsequent to the Project, emissions from the wastewater system, hazardous waste tanks and process units are not considered to have an adverse impact on employee health as substantiated by industrial hygiene testing. There has been no shifting of risk burden. This is further substantiated through the overall decrease in air emissions.

CONCLUSION

Crompton's XL Project has been very successful thus far. We have met all of our requirements, produced the intended superior environmental performance, and have received the temporary deferral from certain regulations. The Project is demonstrating an alternative to previously existing regulations and yielding cost savings to the company.

Please contact Tony Vandenberg of the Crompton Corporation Sistersville Plant (304-652-8812) for further information.

TABLE 1 EMISSIONS SUMMARY

Crompton OSi Specialties Sistersville Project XL Emissions Summary 2001

	Constituent	1995 Baseline (lb/yr)	2001 Actual (lb/yr)	2001 If XL Project had not been implemented	Reductions in 2001 Due to Project XL
Capper Air Emissions	Methyl Chloride (see note 2)	220,000	1,107	95,380	94,273
	Methanol	57,000	619	56,019	55,400
	Dimethyl Ether (see note 1)	-	397	34,258	33,861
	Subtotal Capper	***277,000***	***2,123***	***185,657***	***183,534***
Wastewater Treatment Unit (WWTU) Air Emissions					
Surface Impoundments (SI)	Methyl Chloride	590	4,771	4,771	-
	Methanol	8,420	5,513	9,297	3,784
	Dimethyl Ether (see note 1)	9,950	-	-	-
	Ethyl Chloride	2,990	14,335	14,335	-
	Toluene	17,890	24,511	24,511	-
	Other VOC's	7,530	3,119	3,119	-
	Total SI	47,370	52,249	56,033	3,784
Collection system and tanks	Methyl Chloride	1,430	7,388	7,388	-
	Methanol	3,150	626	1,056	430
	Dimethyl Ether (see note 1)	28,340	-	-	-
	Ethyl Chloride	12,070	34,944	34,944	-
	Toluene	44,840	40,842	40,842	-
	Other VOC's	3,100	348	348	-
	Total Other WWTU	92,930	84,148	84,578	430
	Subtotal WWTU	***140,300***	***136,397***	***140,611***	***4,214***
	Total Air Emissions	***417,300***	***138,520***	***326,268***	***187,748***
Capper Discharges to WWTU (lb/yr)	Methyl Chloride	1,000	-	-	
	Methanol (from scrubber)	380,000	87,328	87,328	-
	Methanol (from condenser)	350,000	-	278,040	278,040
	Dimethyl Ether (see note 1)	51,000	-	-	-
	Acetic Acid	8,000	20,252	20,252	-
	Total Organic	***790,000***	***107,580***	***385,620***	***278,040***
Waste reuse (lb/yr)	Methanol	**-**	**278,040**	**-**	**278,040**
Sludge Generation due to Capper Operation		***1,177,300***	***161,476***	***600,694***	***439,218***
Total Reductions due to Project = Air Emissions Reduction + Sludge Reductions + Methanol Reuse					***905,006***

1 - Since 1995 the dimethyl ether has been diverted from the wastewater system to a direct emission point, or since 1998 the oxidizer.

2 - During the XL Project development, considerable technical work was done with the capper unit, to reduce excess methyl chloride feed volumes. This work was successful, yielding a reduction in air emissions before the thermal oxidizer was installed. This work was reported as a Pollution Prevention Source Reduction activity in the 1996 SARA 313 report. These reductions, plus year to year variations in products made and total production volumes, account for the difference between the 1995 baseline and last year's emissions if Project XL was not implemented.

TABLE 1 EMISSIONS SUMMARY

Emission Calculations Basis (all data are engineering estimates)
 # Volume reused for biomass feed in on-site wastewater treatment unit -- this is reuse per the XL Agreement

Capper Air Emissions	WV Air Emissions Inventory reported values calculated from known production rates and raw material balance.
WWTU Air Emissions	EPA's Water 8 model used to estimate loss from collection system and WWTU (inground tanks and surface impoundments). Influent concentrations calculated from known discharges to process sewer.
Capper discharges to WWTU	Raw material balance and stoichiometric ratios used to calculate amount generated by capper
Waste Reuse(Methanol)	Raw material balance and stoichiometric ratios used to calculate amount generated by capper and actual collected amounts.
Sludge Generation	Calculated using WWTU loading, loss to air and biodegradability factors.

Figure 1
Project XL Emissions and Wastes Reduction, Cumulative Since Project Inception, Pounds

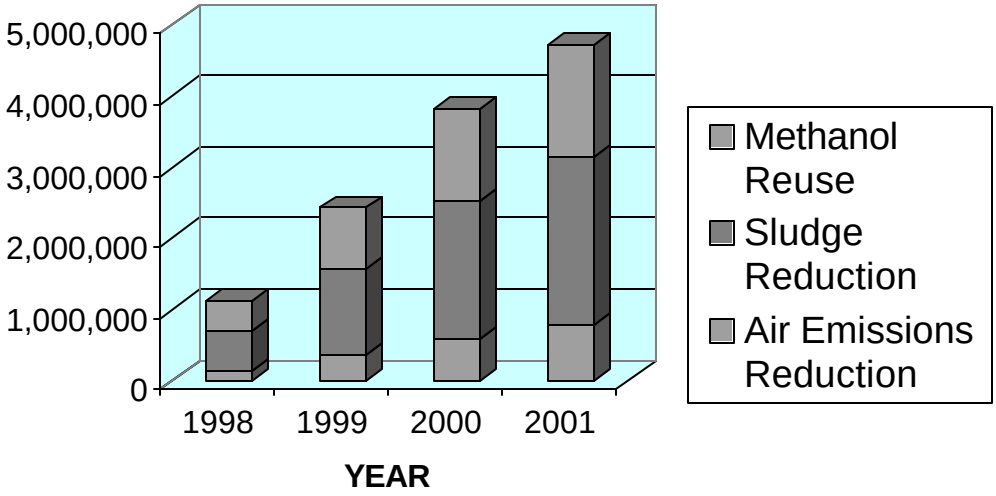

Figure 2
Waste Minimization / Pollution Prevention Opportunities Implemented by Reporting Date

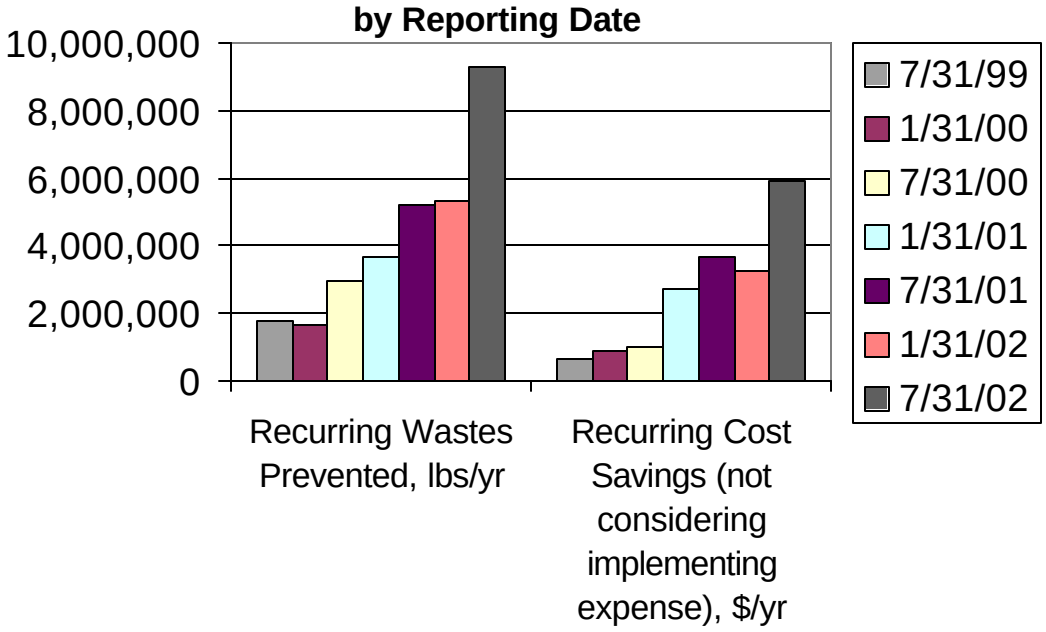

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

ID	Wastes & Emissions -- XL	P2 Options -- XL	Implementation Stage	Status Details -- XL	Potential Cost Savings Neglecting Expense of Implementing Option -- XL $/year	Potential Waste/Emission Quantity Reductions -- XL lbs/year	Hazardous Constituents per XL Rule?
401	CFC Emissions	Replace CFC refrigerant with HCFC	6-In-place & On-going	Implemented 12/2001	N/Av	N/Av	N
424	Drums #1 Product	Product DC drums #1 recover	6-In-place & On-going	Implemented 1/2002	$12,000	3,300	N
425	Drums #1 Product	Product DD drums #1 recover	6-In-place & On-going	Implemented 1/2002	$50,000	290,000	N
417	Electricity	Lights - outside lights turn off during day (EACT)	3-Implementing	Some photocells repaired.	$1,000	---	N
395	Filtercakes	Plate / frame filters - improve operations (Six Sigma project)	2-Planning	Investigating opportunities.	---	---	N
384	Flushes, Process and Samples	Install dedicated transfer piping for Product DE to reduce need for flushing lines and reduce likelihood of contamination.	6-In-place & On-going	Implemented 11/2001.	$65,000	50,000	N
423	Flushes, Process and Samples	Product DF dedicated drumming line	6-In-place & On-going	Implemented November 2001	$3,500	11,000	Y
402	Flushes, Process and Samples	Unit D1 flush system improvement	6-In-place & On-going	Installed better system -- eliminate kettle cleanups, recover more product. Implemented June 2002	$320,000	460,000	N
374	Kiln	Improve incinerator operations with added instruments to allow more waste to be treated on-site and reduce off-site transfers (Six Sigma project)	3-Implementing	Some instruments have been installed.	---	---	N
410	Kiln	Increase pollution cotrols capacity, increase throughput, reduce off-site transfers	6-In-place & On-going	Implemented 9/2001	---	---	Y
347	Process T	By-product recover and sell	1-Scoping	Have sent samples of material to potential buyers. Some are showing interest.	---	---	N

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

ID	Wastes & Emissions -- XL	P2 Options -- XL	Implementation Stage	Status Details -- XL	Potential Cost Savings Neglecting Expense of Implementing Option -- XL $/year	Potential Waste/Emission Quantity Reductions -- XL lbs/year	Hazardous Constituents per XL Rule?
355	Process Water Use	Water supply – divert clean water streams from process sewer to clean sewer.	6-In-place & On-going	Large user of clean water now discharges to clean sewer, which water is reused in-plant, avoiding unnecessary treatment, and reducing need for water supplied to plant. Implemented 5/2002	$78,000	150,000,000 gallons of water	N
426	Product DA	New process	6-In-place & On-going	Implemented 1/2002	$34,000	44,000	N
427	Product DB	Increase efficiency (Six Sigma project)	2-Planning	Conducting designed experiments.	---	---	Y
302	Product DH	By product uses as products	1-Scoping	Ongoing research to develop uses of by-product.	---	---	N
433	Product DL	Improve product recovery	3-Implementing	Trials begun in June 2002.	---	---	N
301	Product O	New process	6-In-place & On-going	Implemented 1/2002	$260,000	904,000	Y
399	Reject Products	Lab Test Precision -- reject reduction (Six Sigma project)	1-Scoping	Investigating opportunities.	---	---	N
398	Reject Products	Product CH -- reject reduction (Six Sigma project)	6-In-place & On-going	Reject product was recovered in 2001. All product made in 2002 has been approved for the customer.	$78,000	19,000	N
392	Reject Products	Products CF reject reduction (Six Sigma project).	6-In-place & On-going	Improved procedures, added automation, equipment changes to avoid cross-contamination. Implemented 11/2001.	$495,000	300,000	N
397	Reject Products	Products CG -- reject reduction (Six Sigma project)	2-Planning	Investigating opportunities.	---	---	N
375	System 2	Project to improve reliability and reduce emissions.	3-Implementing	Planning for implementation in 2003.	---	---	N
420	Utility Use	Energy users running needlessly - shut off (EACT)	6-In-place & On-going	Internal periodic audits have helped. Notable improvement in energy savings and awareness has been observed throughout the plant. Implemented 6/2002.	NAv	NAv	N
416	Utility Use	Nitrogen - put usage readings in area control rooms to help manage use. (EACT)	6-In-place & On-going	Implemented 6/2002	NAv	N/Av	N

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

ID	Wastes & Emissions -- XL	P2 Options -- XL	Implementation Stage	Status Details -- XL	Potential Cost Savings Neglecting Expense of Implementing Option -- XL $/year	Potential Waste/Emission Quantity Reductions -- XL lbs/year	Hazardous Constituents per XL Rule?
414	Utility Use	Steam tracing - Lower pressure (EACT)	2-Planning	Evaluating where lower steam tracing pressure would be feasible.	---	---	N
413	Utility Use	Steam tracing - Turn off when not In use (EACT)	1-Scoping	Evaluating where steam tracing could be shutoff in warm months.	---	---	N
411	Utility Use	Steam trap survey, repair, maintenance (EACT)	6-In-place & On-going	Steam trap repairs reduce steam and natural gas use. Continuing work to repair traps. Evaluating methods to maintain the gains. Status as of 6/2002.	$475,000	7,200,000 lb natural gas combustion emissions	N
428	Waste Solvents	Product Change-over Improvement (Six Sigma project)	2-Planning	Investigating better, faster, more efficient cleanups	---	---	Y
431	Waste Solvents	Product DK process change	1-Scoping	Investigating reducing solvent use	---	---	N
432	Waste Solvents	Product DL process change	1-Scoping	Investigating use of another solvent	---	---	Y
260	Waste Solvents	Reuse of solvents -- last pass clean-up used for first pass on next batch / campaign for solvent AL	6-In-place & On-going	Implemented 2/2002	$39,000	132,000	N
429	Waste Solvents	Reuse Solvent DI on-site	6-In-place & On-going	Implemented 1/2002	$20,000	77,000	N
430	Waste Solvents	Reuse Solvent DJ on-site	6-In-place & On-going	Implemented 1/2002	$20,000	53,000	N
394	WWTU	Acid/base addition to sewer -- material efficiency (Six Sigma project)	6-In-place & On-going	Changes to control of pH in process sewer. Implemented 1/2002.	$225,000	1,260,000 plus 390,000 gallons of water	N