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OSi Group
Sistersville Plant
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July 31, 2001

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PROJECT XL

THIRD 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,

Fred E. Dailey

Plant Manager

DISTRIBUTION

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Federal Correspondence (letter only)

State Correspondence (letter only)

ANNUAL REPORT
FOR THE PERIOD JULY 1, 2000 to JUNE 30, 2001

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, 2000	26 hours
January 1 to June 30, 2001	0 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, 2000	26 hours
January 1 to June 30, 2001	38 hours
Total for 12-month period	64 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, 1999	26 hours
January 1 to June 30, 2001	38 hours
Total for 12-month period	64 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 2000	33,000
August	28,000
September	35,000
October	24,000
November	35,000
December	12,000
January 2001	26,000
February	36,000
March	42,000
April	6,000
May	34,000
June	10,000
Total for 12 months	**321,000**

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 – June 2000	241,620	0	0
July 2000	40,000	0	0
August	37,740	0	0
September	40,780	0	0
October	0	0	0
November	41,360	0	0
December 2000	38,560	0	0
[July – December 2000	198,440]	0	0
[January – December 2000	440,060]	0	0
January 2001	0	0	0
February	82,060	0	0
March	0	0	0
April	40,120	0	0
May	0	0	0
June	0	0	0
[January – June 2001	122,180]	0	0
[Total for 12 Months July 2000 – June 2001	**320,620]**	**0**	**0**
Total Since Commencement of Reuse	**1,491,634**	**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 2000	61,000
August	52,000
September	66,000
October	46,000
November	66,000
December	23,000
January 2001	48,000
February	68,000

March	78,000
April	11,000
May	64,000
June	19,000
Total for 12 months	**602,000**

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 2000, summarized as:

Air Emissions Reductions	244,917 lbs
Wastewater Treatment Sludge Reductions	695,160 lbs
Methanol Reused	440,060 lbs
TOTAL REDUCTIONS IN EMSSIONS AND WASTE	**1,380,137 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, a group of Pollution Prevention ("P2") representatives from the various plant departments has served to communicate results and report new P2 ideas. Work has proceeded to implement many of the recommendations of the WM/PP Study, that were documented in the Final Report, issued in December 1998.

In addition, the Sistersville plant has recently undertaken two major efforts to

develop P2 opportunities. First, an Energy 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 is focusing on use of electricity, natural gas, nitrogen, and water. With posters throughout the plant, the Team has increased awareness of the costs of unnecessary usage and leaks. Several focus groups gathered to discuss and brainstorm ideas to reduce energy use. Plant employees met and identified over 200 ideas for energy conservation in 4 areas:

- Conservation
- Waste Recovery
- Process Energy Reduction & Improvements
- Operating Efficiency Improvements.

The Energy Conservation Team will now review all of these ideas, categorize and prioritize them, implement what we can, and send others on to those who can more adequately address them.

Secondly, the plant convened an Innovation Workshop in July 2001 to help us to think "outside of the box" and gather ideas for improving our business. Participants were organized into four subject areas, one of which was dedicated to waste minimization, management, and treatment. Over 50 ideas from that group alone were identified, and prioritized. We have begun pursuing the most attractive ideas.

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. Once the Energy Conservation and Innovation Workshop ideas have been further evaluated, they will be included and tracked in our P2 opportunities list. To date, nearly 400 P2 opportunities have been identified.

Table 2, attached, lists all 22 WM/PP opportunities that are currently at some stage of study or implementation, plus 18 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 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 Calendar Year 2000	2	1,380,137	$17,000
1997	9	376,000	$228,000
1998	10	111,000	$25,000
1999	34	1,698,000	$1,179,000
2000	21	529,000	$1,262,000
2001 Jan. – June	11	1,138,000	$940,000
Total	**87**	**5,232,137**	**$3,651,900**

* 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.

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. Three options concern nickel-containing materials. Nickel is the only chemical among the list of Persistent, Bioaccumulative, and Toxic materials that EPA published on November 9, 1998, that is also involved in any of our P2 options. 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, as had been the case in the year previous, Sistersville personnel have participated in several efforts to discuss experiences with the XL process. Sistersville personnel have also helped comment on draft EPA Project XL reports. These activities included:

- Participating in "Waste Minimization for the 21st Century: A Dialogue with West Virginia Business and Industry Leaders," a workshop sponsored by USEPA, WVDEP, and the West Virginia Manufacturers' Association. The workshop was held on December 7, 2000 at the National Institute for Chemical Studies, in Charleston WV. Crompton presented a paper on "A

Specialty Chemicals Plant, Project XL, and Pollution Prevention ("P2")" and contributed to the roundtable discussion that followed.
- Commenting on EPA's draft 2001 Project XL Comprehensive Report.
- Contributing to a survey on the costs of implementing XL Projects by the University of California at Santa Barbara.

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 2001.
- The EPA/DEP/WVMA Waste Minimization workshop discussed above.
- Sistersville personnel have commented on EPA reports discussing XL progress and plans, especially efforts to help encourage and speed-up development of new XL projects.

(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).

1. 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.

2. Stakeholder Support

Local communities and local agencies have fully supported the project.

3. 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).

4. 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.

5. Feasibility

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

6. Monitoring, Reporting and Evaluation

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

7. 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 2000

	Constituent	1995 Baseline (lb/yr)	2000 Actual (lb/yr)	2000 If XL Project had not been implemented	Reductions in 2000 Due to Project XL
Capper Air Emissions	Methyl Chloride (see note 2)	220,000	986	124,482	123,496
	Methanol	57,000	550	71,304	70,754
	Dimethyl Ether (see note 1)	-	354	44,168	43,814
	Subtotal Capper	***277,000***	***1,890***	***239,954***	***238,064***
Wastewater Treatment Unit (WWTU) Air Emissions					
Surface Impoundments (SI)	Methyl Chloride	590	2,717	2,717	-
	Methanol	8,420	10,531	16,586	6,055
	Dimethyl Ether (see note 1)	9,950	-	-	-
	Ethyl Chloride	2,990	12,435	12,435	-
	Toluene	17,890	12,302	12,302	-
	Other VOC's	7,530	4,205	4,205	-
	Total SI	47,370	42,190	48,245	6,055
Collection system and tanks	Methyl Chloride	1,430	3,364	3,364	-
	Methanol	3,150	1,388	2,186	798
	Dimethyl Ether (see note 1)	28,340	-	-	-
	Ethyl Chloride	12,070	31,384	31,384	-
	Toluene	44,840	21,960	21,960	-
	Other VOC's	3,100	70	70	-
	Total Other WWTU	92,930	58,166	58,964	798
	Subtotal WWTU	***140,300***	***100,356***	***107,209***	***6,853***
	Total Air Emissions	***417,300***	***102,246***	***347,163***	***244,917***
Capper Discharges to WWTU (lb/yr)	Methyl Chloride	1,000	-	-	
	Methanol (from scrubber)	380,000	188,291	188,291	-
	Methanol (from condenser)	350,000	-	440,060	440,060
	Dimethyl Ether (see note 1)	51,000	-	-	-
	Acetic Acid	8,000	18,897	18,897	
	Total Organic	***790,000***	***207,188***	***647,248***	***440,060***
Waste reuse (lb/yr)	Methanol	**-**	**440,060**	**-**	**440,060**
Sludge Generation due to Capper Operation		***1,177,300***	***319,393***	***1,014,553***	***695,160***
Total Reductions due to Project = Air Emissions Reduction + Sludge Reductions + Methanol Reuse					***1,380,137***

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.

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.

TABLE 1 EMISSIONS SUMMARY

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.

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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?
387	Boilers	Feedwater pump -- use electric pump instead of steam turbines	6-In-place & On-going	Implemented 3/2001.	$75,000	---	N
366	Buckets & Lab Samples	Control Process AE to reduce sampling and analysis	6-In-place & On-going	Reduced many samples by monitoring process parameters and mass balance.	---	---	N
358	Drums	Buy solvent in bulk for Product AH	1-Scoping	Investigating.	---	---	N
110	Equipment removals	Obsolete equipment removed and sold for reuse and recycling	5-Complete	Equipment removals complete 8/2000.	---	---	N
114	Filtercakes	Filtering: Investigate plant-wide current methods and cake volume generation	8-On-Hold	Awaiting resources to study in a pilot unit.	---	---	N
395	Filtercakes	Plate / frame filters - improve operations	1-Scoping	Investigating opportunities.	---	---	N
384	Flushes, Process and Samples	Install dedicated transfer piping to reduce need for flushing lines and reduce likelihood of contamination.	3-Implementing	Project being engineered.	---	---	N
124	Flushes, Process and Samples	Sampling setups / procedures - improve e.g. in-line samplers	6-In-place & On-going	Installed sampling valves to minimize wastes. Implemented 2/2001.	---	---	N
374	Kiln	Improve incinerator operations with added instruments to allow more waste to be treated on-site	2-Planning	Planning for changes.	---	---	N
377	Kiln	Install different flow meters less likely to plug, preventing downtime, and allowing incinerator to treat more waste on-site.	6-In-place & On-going	Implemented 10/2000.	---	---	N
393	Kiln	Revise hydrolysis treatment unit	1-Scoping	Investigating alternative ways of treating wastes by hydrolysis	---	---	N

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

347	Process T	By-product recover and sell	1-Scoping	Have sent samples of material to potential buyers. Some are showing interest.	---	---	N
391	Process Water Use	Drum Flusher -- use recycled treated water	6-In-place & On-going	Installed lines to use wastewater treatment unit effluent in the used-drum flusher. Previously used a recycled but untreated water. Flusher works better with higher pressure and cleaner water. Implemented 6/2001.	---	---	N
385	Process Water Use	Water treatment chemicals more efficient use	6-In-place & On-going	New water treatment chemicals in use, 1/2001. Improvements in operations, and in pollution prevention evident, though not yet quantified.	---	---	N
309	Product A	New catalysts	1-Scoping	Continuing R&D efforts. Current catalyst is nickel based.	---	---	Y
4	Product A	Nickel Catalyst recovery	8-On-Hold	Pilot unit has been purchased. Awaiting resources to continue the work.	---	---	Y
386	Product AD	Product AD process improvements	6-In-place & On-going	Implemented 1/2001. Includes reduction of nickel containing filtercakes.	$280,000	38,000	Y
380	Product CB	Process operation change to avoid having to distill	6-In-place & On-going	Implemented in 11/2000	$550,000	14,000	N
381	Product CC	Process operation change to avoid having to distill	6-In-place & On-going	Implemented in 11/2000	$99,000	400	N
383	Product CD	Product CD wastes treat more onsite	6-In-place & On-going	By blending the wastes with toluene, the incinerator can burn the stream faster. Thus we can treat more wastes on-site rather than shipping to off-site locations. On-site is a preferred treatment method to off-site (less risk in transportation, greater accountability by doing on-site). Implemented 3/2001.	$375,000	(400,000)	Y
382	Product CE	Continuous process	1-Scoping	R&D work continuing.	---	---	N
400	Product CI	Product CI -- material efficiency	1-Scoping	Investigating opportunities.	---	---	N
282	Product G	Product G crude process change	6-In-place & On-going	Implemented 8/2000	$90,000	11,000	N
301	Product O	New process	3-Implementing	Construction of new more efficient process underway.	---	---	N
399	Reject Products	Lab Test Precision -- reject reduction	1-Scoping	Investigating opportunities.	---	---	N

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

398	Reject Products	Product CH -- reject reduction	1-Scoping	Investigating opportunities.	---	---	N
392	Reject Products	Products CF reject reduction	3-Implementing	Team studying how to reduce reject products.	---	---	N
397	Reject Products	Products CG -- reject reduction	1-Scoping	Investigating opportunities.	---	---	N
375	System 2	Project to improve reliability and reduce emissions.	2-Planning	Planning for implementation in 2001-2002.	---	---	N
390	Utility Use	Energy Conservation Team	6-In-place & On-going	Energy conservation team formed to provide on-going leadership in pollution prevention in energy use, in 5/2001.	---	---	N
389	Utility Use	Energy Conservation Team -- fix leaks	6-In-place & On-going	An initial list of steam leaks were identified and repaired in 6/2001.	$210,000	---	N
388	Utility Use	Energy Focus Group Meetings	1-Scoping	Plant employees met and identified over 200 ideas for energy conservation in 4 areas: (1) Conservation; (2) Waste Recovery; (3) Process Energy Reduction & Improvements; (4) Operating Efficiency Improvements. Energy Conservation Team will now review all of these ideas, categorize and prioritize them, implement what we can, and send others on to those who can more adequately address them.	---	---	N
234	Utility Use	Steam trap program -- improve?	3-Implementing	New type of steam trap identified. Promises less maintenance cost, less steam loss. Tests on-going.	---	---	N
378	Waste Accounting	Environmental Cost Accounting -- assign wastes costs to products to encourage waste minimization	2-Planning	Have demonstrated that our accounting system can manage waste accounting data.	---	---	N
379	Waste Solvents	Product CA process change in use of solvents	6-In-place & On-going	Implemented 7/1/01	$1,000	4,500	Y
260	Waste Solvents	Reuse of solvents -- last pass clean-up used for first pass on next batch / campaign for solvent AL	3-Implementing	Have made piping arrangement improvements to allow reuse of solvent. Finishing procedure changes.	---	---	N

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

396	Waste Solvents	Ship solvents for recycle	6-In-place & On-going	Safety-Kleen calls this their Scrap Wash Continued Use Program. Our relatively high purity waste solvents are used to wash scrap metal generated by their drum shredder. The drums are generated from their fuels blending program. The resulting shredded drum scrap needs to be washed prior to sending it to an off-site smelter. Cost is about the same as sending to waste treatment. Implemented 5/2001.	$0	1,000,000	Y
376	Waste Solvents	Spray nozzles for System 3 overhead -- use instead of boil-up	3-Implementing	Some nozzles are in-place and successful. Others yet to be installed.	---	---	Y
316	Waste Solvents	Toluene for unit AM -- use from railcar delivery system, instead of trailers	6-In-place & On-going	Implemented 9/2000.	---	---	Y
394	WWTU	HCl addition to sewer -- material efficiency -- Six Sigma project	1-Scoping	Examining acid / base balance of water and sewer systems, to reduce adding materials.	---	---	N