

US EPA ARCHIVE DOCUMENT



MPM Silicones, LLC
Sistersville Plant
3500 South State Route 2
Friendly, WV 26146
(304) 652-8000

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
7004 2890 0004 4790 8185, 8192, 8208

July 30, 2007

To: Distribution Below

PROJECT XL
NINTH ANNUAL PROJECT REPORT

We are pleased to submit the enclosed Annual Project Report for the MPM Silicones 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,

A handwritten signature in black ink, appearing to read "John Robison".

John Robison
Plant Manager

DISTRIBUTION**Report Recipients Under the Federal Rule**

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

Douglas Heimlich
National Center for Environmental Innovation
Office of Environmental Policy Innovation (1807T)
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Mr. John Benedict
WV Department of Environmental Protection
Division of Air Quality
601 57th Street S.E.
Charleston, WV 25304

Copies To:

Mr. Anthony J. Vandenberg
Environment, Health and Safety
MPM Silicones, Sistersville Plant

Mr. Jonathan McClung
WV Department of Environmental Protection
Division of Air Quality
601 57th Street S.E.
Charleston, WV 25304

Project XL Mailing List

Project XL Agreements, Notices & Reports File

Federal Correspondence (letter only)

State Correspondence (letter only)

ANNUAL REPORT
FOR THE PERIOD JULY 1, 2006 to JUNE 30, 2007

FOR PROJECT XL AGREEMENT

Between
MPM Silicones,

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 MPM Silicones (formerly GE Silicones) XL Project was signed by all parties. On March 30, 1998 MPM Silicones 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 MPM Silicones (then Witco Corporation) 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.

On December 4, 2006, GE Silicones, L.L.C. changed its name to MPM Silicones LLC (with Momentive Performance Materials as the a parent company). This XL Project was transferred to MPM Silicones on that date.

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, 2006	None
January 1 to June 30, 2007	None

- (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, 2006	37 hours
January 1 to June 30, 2007	77 hours
Total for 12-month period	114 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, 2006	37 hours
January 1 to June 30, 2007	77 hours
Total for 12-month period	114 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 2006	21,000
August	18,000
September	18,000
October	13,000
November	12,000
December	7,000
January 2007	27,000
February	15,000
March	18,000
April	19,000
May	20,000
June	22,000
Total for 12 months	210,000
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.

Month	Collected Methanol Destination, Measured lbs		
	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 – December 2001	278,040	0	0
January – December 2002	430,180	0	0
January – December 2003	389,051	0	0
January – December 2004	300,780	0	0
January – December 2005	258,220	0	0
January – June 2006	116,218	0	0
July 2006	0	0	0
August	0	0	0
September	69,714	0	0
October	30,895	0	0
November	0	0	0
December 2006	0	0	0
[July – December 2006	100,609]	0	0
[January – December 2006	216,827]	0	0
January 2007	40,000	0	0
February	37,222	0	0
March	32,531	0	0
April	0	0	0
May	0	0	0
June	0	0	0
[January – June 2007	109,753]	0	0
[Total for 12 Months July 2006 – June 2007]	210,362]	0	0
Total Since Commencement of Reuse	3,352,305	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 2006	53,000
August	44,000
September	45,000
October	33,000
November	30,000
December	17,000
January 2007	68,000
February	37,000
March	44,000
April	49,000
May	51,000
June	55,000
Total for 12 months	526,000

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 2006, summarized as:

Air Emissions Reductions	133,931lbs
Wastewater Treatment Sludge Reductions	342,520lbs
Methanol Reused	216,827lbs
TOTAL REDUCTIONS IN EMISSIONS AND WASTE	693,278lbs

Cumulative emissions and waste reductions since the inception of the XL Project are shown in Figure 1, totaling over 9,000,000 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 newly identified pollution prevention opportunities building on 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.

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 530 P2 opportunities have been identified.

Table 2, attached, lists all 11 WM/PP opportunities that are currently at some stage of study or implementation, plus 16 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 XL 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, lbs/yr	Recurring Cost Savings*, \$/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 2003	2	693,278	\$8,000
1997	9	248,000	\$143,000
1998	10	111,000	\$25,000
1999	34	2,572,000	\$2,313,000
2000	21	681,000	\$1,428,000
2001	17	5,420,000	\$912,000
2002	24	8,263,000	\$3,155,000
2003	12	254,000	\$265,000
2004	13	1,616,000	\$1,139,000
2005	14	1,555,000	\$875,000
2006	16	309,000	\$1,107,000
2007 Jan – June	9	1,410,000	784,000
Total	171	23,132,000	\$12,154,000
* 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.			

During 2007, the savings in costs and wastes generated from several opportunities implemented in previous years have continued to grow, as we have been able to take greater advantage of previously implemented improvements. Opportunities implemented during 2006 and 2007 have as well contributed to continued growth in cumulative savings. A few opportunities that were implemented in the past have run their course; in those cases the savings no longer recur, and they have been removed from the tabulation. 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 over 150,000,000 gallons per year, and green house gas emissions from natural gas savings by over 26,000,000 lbs of CO₂ equivalents per year.

In June 2007, for Community Service Day, Momentive sponsored an e-Cycling collection event, collecting electronic equipment that was then sent to a local resource facility. We advertised the open-to-the-public collection day in local newspapers, radio, TV, and email. We also collected electronics from within the Sistersville facility. A total

of 10,169 lbs of electronic materials were collected. Momentive paid \$1500 for the recovery and recycling operation.

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. All 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.

MPM Silicones has 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 sending a copy of the most recent semi-annual and annual reports to everyone on the Sistersville Project XL mailing list. See also the discussion of the e-Cycling project in Section (12).

(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 \$12,000,000 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 MPM Silicones 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 MPM Silicones 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

MPM Silicones' 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 MPM Silicones Sistersville Plant (304-652-8812) for further information.

TABLE 1 EMISSIONS SUMMARY

MPM Silicones Sistersville Project XL Emissions Summary 2006

		1995 Baseline (lb/yr)	2006 Actual (lb/yr)	2006 If XL Project had not been implemented	Reductions in 2006 Due to Project XL
Copper Air Emissions					
	Methyl Chloride (see note 2)	220,000	1,978	69,453	67,475
	Methanol	57,000	1,104	40,478	39,374
	Dimethyl Ether (see note 1)	-	710	24,469	23,759
	Subtotal Copper	277,000	3,792	134,400	130,608
Wastewater Treatment Unit (WWTU) Air Emissions					
Surface Impoundments (SI)	Methyl Chloride	590	9,430	9,430	-
	Methanol	8,420	11,904	14,878	2,974
	Dimethyl Ether (see note 1)	9,950	-	-	-
	Ethyl Chloride	2,990	20,463	20,463	-
	Toluene	17,890	56,761	56,761	-
	Other VOC's	7,530	6,708	6,708	-
	Total SI	47,370	105,266	108,240	2,974
Collection system and tanks	Methyl Chloride	1,430	12,626	12,626	-
	Methanol	3,150	1,395	1,744	349
	Dimethyl Ether (see note 1)	28,340	-	-	-
	Ethyl Chloride	12,070	44,928	44,928	-
	Toluene	44,840	47,549	47,549	-
	Other VOC's	3,100	305	305	-
	Total Other WWTU	92,930	106,803	107,152	349
	Subtotal WWTU	140,300	212,069	215,392	3,323
	Total Air Emissions	417,300	215,861	349,792	133,931
Copper Discharges to WWTU (lb/yr)					
	Methyl Chloride	1,000	-	-	-
	Methanol (from scrubber)	380,000	175,696	175,696	-
	Methanol (from condenser)	350,000	-	216,827	216,827
	Dimethyl Ether (see note 1)	51,000	-	-	-
	Acetic Acid	8,000	18,250	18,250	-
	Total Organic	790,000	193,946	410,773	216,827
Waste reuse (lb/yr)	Methanol	-	216,827	-	216,827
Sludge Generation due to Copper Operation		1,177,300	298,745	641,265	342,520
Total Reductions due to Project = Air Emissions Reduction + Sludge Reductions + Methanol Reuse					693,278

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 copper 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

<i>Copper Air Emissions</i>	WV Air Emissions Inventory reported values calculated from known production rates and raw material balance.
<i>WWTU Air Emissions</i>	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.
<i>Copper discharges to WWTU</i>	Raw material balance and stoichiometric ratios used to calculate amount generated by copper
<i>Waste Reuse(Methanol)</i>	Raw material balance and stoichiometric ratios used to calculate amount generated by copper and actual collected amounts.
<i>Sludge Generation</i>	Calculated using WWTU loading, loss to air and biodegradability factors.

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

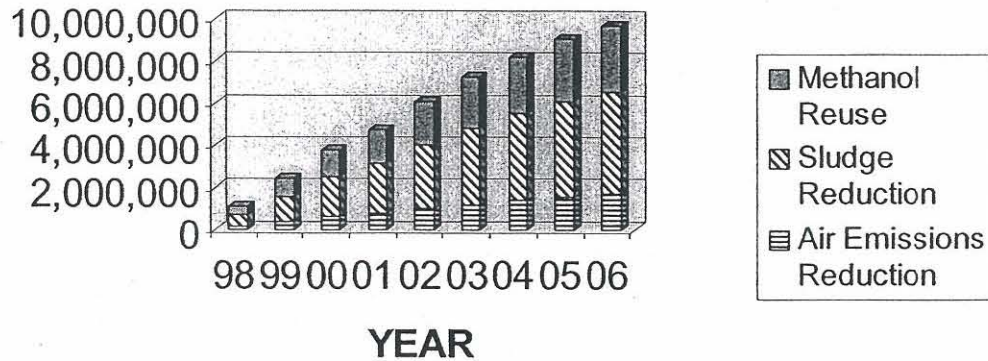
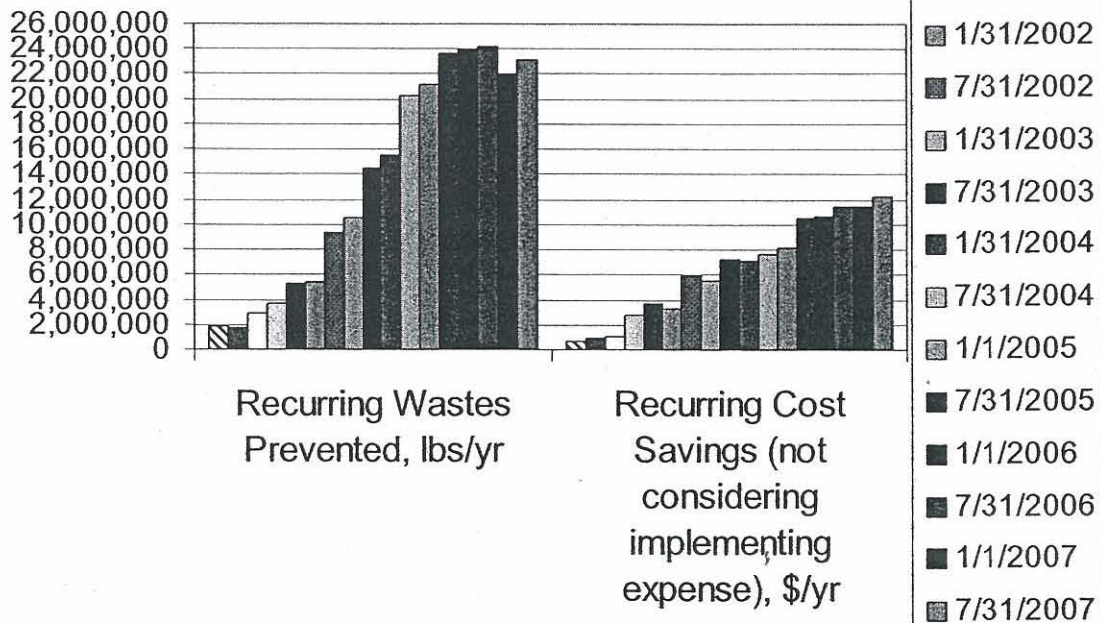


Figure 2
Waste Minimization / Pollution Prevention Opportunities Implemented by Reporting Date



MPM Silicones Sistersville Plant Project XL Annual Report, July 2007

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

ID	Wastes & Emissions -- XL	P2 Options -- XL	Implementati on 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?
510	Boilers	Boiler efficiencies -- improve to allow less operation of back up boilers	6-In-place & On-going	Implemented October 2006	Credited elsewhere	Credited elsewhere	N
514	Boilers	Boiler efficiencies -- improve boiler water feed quality, to raise efficiency, lower maintenance costs	3-Implementing	Working toward installation	---	---	N
511	Boilers	Steam distribution piping insulation repair/replace	6-In-place & On-going	Implemented December 2006	Credited elsewhere	Credited elsewhere	N
513	Boilers	Steam traps -- install instruments to monitor performance	3-Implementing	Some equipment has been installed. Evaluating and improving operation.	---	---	N
509	CICU	Waste reduction in Process IA	6-In-place & On-going	Implemented November 2006	---	15,000	N
497	Drums	Bulk storage for Product HB, reduce drums use	3-Implementing	Working toward installation	---	---	N
512	Electricity	Lighting - install modern efficient lighting with motion detectors in Warehouse	6-In-place & On-going	Implemented December 2006	Credited elsewhere	Credited elsewhere	N
508	K-57	Refrigerated condensers - to improve solvent recovery in unit IB	6-In-place & On-going	Implemented October 2006	Credited elsewhere	Credited elsewhere	Y
507	K-81	Refrigerated condensers - to improve solvent recovery in unit IC	6-In-place & On-going	Implemented October 2006	Credited elsewhere	Credited elsewhere	Y
506	K-83	Refrigerated condensers - to improve solvent recovery in unit ID	6-In-place & On-going	Implemented October 2006	---	12,000	Y
515	Waste Solvents	Solvent reuse in unit IE	6-In-place & On-going	Implemented January 2007	\$38,000	242,000	Y
516	Waste Solvents	Solvent reuse in unit IF	6-In-place & On-going	Implemented January 2007	\$248,000	472,000	N
518	Waste Solvents	Solvent reuse in unit IG	6-In-place & On-going	Implemented January 2007	\$84,000	336,000	N
519	Misc Solid Waste to Land Disposal	e-Cycling: collection of electronics from plant and general public, for recycling and material recovery	5-Complete	Completed June 2007	Not known if this will reoccur.	Non-recurring	N
520	Waste Solvents	Solvent reuse in unit IH	6-In-place & On-going	Implemented January 2007	\$22,000	140,000	Y
521	Waste Solvents	Solvent substitution in unit II	6-In-place & On-going	Implemented January 2007	\$36,000	60,000	N
522	Waste Solvents	Solvent substitution in unit IJ	6-In-place & On-going	Implemented January 2007	\$96,000	None	N
517	By-Product IK	Production of useful product from waste stream in unit IK	3-Implementing	Investigating the process.	---	---	Y
524	Product IL	Use and sale as a useful product a waste stream in unit IL	6-In-place & On-going	Implemented June 2007	\$230,000	160,000	N
525	Waste Solvents	Solvent substitution in unit IM	3-Implementing	Trials underway	---	---	Y

TABLE 2. POLLUTION PREVENTION OPTIONS IN PROGRESS or IN PLACE

ID	Wastes & Emissions -- XL	P2 Options -- XL	Implementati on 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?
526	Product IN	Solvent substitution in unit IN	3-Implementing	Trials underway	---	---	Y
527	Product IO	Recycle of raw material IO	3-Implementing	Early stages of implementing	---	---	N
528	Product IP	Recycle of raw material IP	3-Implementing	Early stages of implementing	---	---	N
529	Waste Solvents	Solvent reuse in product IQ	6-In-place & On-going	Implemented April 2007	---	---	Y
530	Utility Use	Capture steam condensate for reuse in unit IR	1-Scoping	Investigating feasibility	---	---	N
531	Unit IS	Raw material efficiency improvement in unit IS	1-Scoping	Scoping equipment changes	---	---	Y
532	Waste Solvents	Reuse of spent solvent in unit IT	1-Scoping	Investigating feasibility	---	---	Y