

US EPA ARCHIVE DOCUMENT



Project XL Progress Report

CK Witco Corporation



On March 16, 1995, the Clinton Administration announced a portfolio of reinvention initiatives to be implemented by the U.S. Environmental Protection Agency (EPA) as a part of its efforts to achieve greater public health and environmental protection at a more reasonable cost. Through Project XL, which stands for eXcellence and Leadership, EPA enters into specific project agreements with public or private sector sponsors to test regulatory, policy, and procedural alternatives that will produce data and experiences to help the Agency make improvements in the current system of environmental protection. The goal of Project XL is to implement 50 projects that will test ways of producing superior environmental performance with improved economic efficiencies, while increasing public participation through active stakeholder processes. As of October 1999, 15 XL projects are in the implementation phase and 35 XL projects are under development. EPA Project XL Progress Reports provide overviews of the status of XL projects that are implementing Final Project Agreements (FPAs). The progress reports are available on the Internet via EPA's Project XL web site at <http://www.epa.gov/Project XL>. Or, hard copies may be obtained by contacting the Office of Reinvention's Project XL general information number at 202-260-7434. Additional information on Project XL is available on the web site or by contacting the general information number.

Background

CK Witco Corporation (CK Witco) is a specialty chemical manufacturer. This XL project focuses on CK Witco's chemical manufacturing plant located 6 miles south of Sistersville, West Virginia, where CK Witco produces a broad range of silicone and silane products including surfactants, emulsions, antifoams, and oils. The facility is located along the east side of the Ohio River in a rural setting near the border of Tyler and Pleasants Counties. The operating units are situated centrally within the facility and encompass approximately 50 acres.



CK Witco Corporation
XL Project
Sistersville,
West Virginia

Major Milestones

September 29, 1995 CK Witco XL Proposal Submitted	October 17, 1997 Final Project Agreement Signed	December 11, 1998 Waste Minimization/ Pollution Prevention Study Report Completed	July 30, 1999 First Annual Report Submitted	2002 Project Reevaluation
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The CK Witco XL project strives to reduce air emissions through a combination of flexible air pollution control and waste minimization/pollution prevention (WMPP) activities. The polyether methyl capper unit is the focus of emission control efforts. The capper unit is the site of a two-step reaction that results in one of CK Witco's products, methyl-capped polyether. This project also involves the facility's generation of solid waste and two lined one-million-gallon surface impoundments that contain process wastewater.

In return for a deferral of certain air emissions standards, CK Witco has achieved superior environmental performance at this facility by

- installing a process vent incinerator that is destroying 98% by weight of organic compound emissions in the facility's process vent stream, resulting in a reduction of over 200,000 pounds of emissions per year;
- recovering and reusing over 400,000 pounds of methanol per year, resulting in the reduction of over 500,000 pounds of sludge per year;
- reducing methanol air emissions from the wastewater treatment unit by more than 20,000 pounds per year; and
- conducting a WM/PP Study to identify opportunities for additional reductions in waste generated by the facility.

The Experiment

The CK Witco project tests whether regulatory flexibility will lead to reductions in air emissions and hazardous waste from the two hazardous waste surface impoundments located onsite. The project strives to reduce pollution through a combination of flexible air pollution control, waste minimization, and pollution prevention activities.

The Flexibility

As an incentive to achieve superior environmental performance at CK Witco's facility, EPA and the West Virginia Division of Environmental Protection (WVDEP) have offered CK Witco regulatory flexibility in the areas of pollution control technology and air emissions.

The statutory programs, and the EPA offices administering those programs, that affect the CK Witco XL Project are

- Clean Air Act (CAA) programs administered by EPA's Office of Air Quality Planning and Standards;
- Resource Conservation and Recovery Act (RCRA) programs administered by EPA's Office of Solid Waste; and
- Pollution Prevention Act (PPA) programs administered by EPA's Office of Prevention, Pesticides, and Toxic Substances.

EPA's Region 3 office is also active in the development and implementation of the CK Witco XL project as a member of the WM/PP study advisory committee, which participated in the design of the WM/PP Study and reviewed and commented on progress reports from the study.

EPA and WVDEP agreed to a deferral of the RCRA Subpart CC organic air emission standards through a site-specific rule and consent order, respectively, applicable to CK Witco's two surface impoundments. These surface impoundments are one-million-gallon reservoirs that hold process wastewater from the facility's pollution control equipment and other sources. If not deferred, the Subpart CC standards would have required CK Witco to install air emission controls on these surface impoundments. Alternatively, CK Witco could have replaced the existing reservoirs with open-top tanks that are not regulated under RCRA Subpart CC regula-

tion, and air emissions would not have been reduced. However, with the deferral, CK Witco has implemented both the emissions control measures on the capper unit and the WMPP activities mentioned above.

In 2000, EPA plans to promulgate National Emission Standards for Hazardous Air Pollutants (NESHAPs) that would be applicable to miscellaneous organic processes; this standard is called "the MON." Production activities at the Sistersville facility will likely be classified as one type of these "miscellaneous organic processes." The MON is anticipated to require process vent controls similar to the vent incinerator installed by CK Witco under the XL project. Therefore, the XL project will provide superior environmental performance only until the MON is in effect. The FPA provides for re-evaluation of the project following proposal of the new standards. CK Witco will prepare a project re-evaluation report within 90 days following the close of the comment period for the new standards. If EPA, WVDEP, and other stakeholders agree to continue the project, the FPA will be amended to include new approaches to providing superior environmental performance.

EPA and WVDEP consider the WMPP initiatives important to the superior environmental performance offered by the CK Witco XL project. Some of the WMPP initiatives could be undermined, however, if the requirements proposed in CAA Subpart YYY are approved. As proposed, CAA Subpart YYY would apply to certain WMPP initiatives if CK Witco begins recovering substances, such as acetic acid, listed in proposed CAA Subpart YYY. If CK Witco starts recovering these substances, EPA and WVDEP will consider issuing a limited-scope "allowable exclusion/allowable increase" deferral of the regulations on a case-by-case basis, provided that EPA and WVDEP determine that this deferral will not cause an increase in actual emissions of volatile organic compounds (VOCs) or cause a net adverse environmental impact, and that CK Witco will remain in compliance with the FPA's provisions. If such a deferral is granted, EPA and WVDEP will propose regulations implementing the deferral.

Promoting Innovation and System Change

Project XL provides EPA opportunities to test and implement approaches that protect the environment and advance collaboration with stakeholders. EPA is continually identifying specific ways in which XL projects are helping to promote innovation and system change. The innovations and system changes emerging from the CK Witco XL project are described below;

National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Processes. Flexibility in the control of air pollutants by CK Witco's Sistersville plant shows the adaptability that is possible in complying with air regulatory requirements. These adaptations may be applicable to other plants that are facing similar emission requirements and should be investigated relative to existing and future air emissions issues. As EPA works to promulgate by the year 2000 NESHAPs applicable to miscellaneous organic processes; the Agency will gather data on, and assess the performance of, the technology used at the Sistersville plant. The new technology standard may require process vent controls similar to the controls installed by CK Witco.

Waste Minimization and Pollution Prevention (WMPP). CK Witco committed to conducting a Waste Minimization/Pollution Prevention (WM/PP) Study to identify opportunities for additional reductions in waste generated by the facility. Normally, WMPP assessments are conducted as single events and outside of the routine business operations of companies. However, the CK Witco study was an employee-driven effort that sought to integrate the pollution prevention process into the company's standard business practices, facilitate employee involvement, and implement a site-specific process tailored to the particular needs at the facility. CK Witco used a multiphased process to conduct the WM/PP study: (1) identifying and characterizing plantwide wastes and emissions; (2) screening and prioritizing these wastes and emissions; (3) identifying pollution prevention options; (4) screening and prioritizing pollution prevention options; (5) examining the

technical and economic feasibility of these options; and (6) developing an implementation plan. CK Witco's project approach toward pollution prevention and recycling may offer an innovative model for other chemical intermediate-product manufacturers.

Innovative Technology. The CK Witco XL project provides a pilot for testing the benefits of allowing regulatory flexibility in the technology used to control air emissions under RCRA regulations, in order to provide superior and less expensive environmental protection. In return for a deferral of air emission standards for its surface impoundments, CK Witco agreed to install a thermal oxidizer and route the process vents from its polyether methyl capper unit to that oxidizer for control of organic air emissions. Since the process vent incinerator was installed on CK Witco's capper unit in April, 1998, air emissions have been reduced by more than twice the amount that would have otherwise been achieved without project XL. On July 15, 1998, a performance test demonstrated that the thermal oxidizer is reducing total organics in the vent stream by 99.99%, versus the 98% minimum required by the EPA. CK Witco estimates cost savings from emission reductions and methanol recycling at approximately \$16,000 for calendar year 1998. When combined with other Pollution Prevention ("P2") opportunities identified by the Pollution Prevention Council, total potential cost savings to the facility are estimated at \$640,000 per year.

Project Commitment Summary

This table and the environmental performance section that follows summarize progress in meeting commitments described in the FPA for CK Witco's Sistersville facility in West Virginia.

Commitment	Status
Regulatory Implementation	
EPA to propose a site-specific rule to defer surface impoundment requirements under RCRA Subpart CC by December 7, 1997.	Deferral final rule published in the <i>Federal Register</i> September 15, 1998.
WVDEP to execute a Consent Order to defer surface impoundment requirements under RCRA Subpart CC by December 7, 1997.	Consent Order executed.
EPA to propose a site-specific rule to defer application of the proposed CAA Subpart YYY to wastewater collection and treatment systems, within 120 days of verifying need for deferral.	Not yet necessary.
WVDEP to execute a Consent Order to defer application of the proposed CAA Subpart YYY to wastewater collection and treatment systems, within 45 days of verifying need for deferral.	Not yet necessary.
Equipment Installation, Operation, and Monitoring	
Complete installation and initial startup of thermal incinerator by April 1, 1998.	Installation and startup completed April 1, 1998.
Conduct a performance test of thermal incinerator to determine the minimum temperature at which compliance is achieved.	Performance test completed July 15, 1998.

Commitment	Status
Equipment Installation, Operation, and Monitoring	
Monitor incinerator operating temperature and closed vent stream flow.	Ongoing.
Monitor methanol recovery by condenser unit.	Ongoing.
Develop incinerator startup, shutdown, and malfunction plan.	Complete.
Methanol Recovery	
Begin collection of methanol from condenser unit within 10 days of FPA signing.	Begun October 8, 1997.
Reuse, recycle, or incinerate 95% of methanol (remaining 5% to go to wastewater biotreatment unit).	100% of methanol collected has been reused from April 1, 1998 to December 31, 1998.
Monitor amount of methanol reused, recovered, incinerated, and treated biologically in the wastewater treatment unit.	Monitoring in progress.
Waste Minimization/Pollution Prevention (WM/PP) Study	
Create study team within 45 days of FPA signing to perform WM/PP Study.	Study team formed December 16, 1997. It is made up of representatives of CK Witco Corporation; a CK Witco contractor, STV; Concurrent Technologies Corporation; and the Waste Reduction and Technology Transfer (WRATT) Foundation.
Identify and prioritize waste streams to be evaluated in WM/PP Study.	Presented in final WM/PP Project Report delivered December 11, 1998.
Establish advisory committee within 30 days of FPA signing to oversee WM/PP Study.	Advisory committee established December 30, 1997 to review and comment on the study team's activities and periodically review the effectiveness of WMPP opportunities implemented. Advisory committee made up of representatives from WVDEP, EPA Region 3, local residents, CK Witco Corporation, The International Chemical Workers Union Council, and West Virginia University at Parkersburg.
Submit WM/PP Progress Reports every 90 days after signing of FPA.	Three progress reports submitted on schedule. A WMPP assessment of the facility identified numerous ways to reduce waste, which are included in the WM/PP Study final report issued December 11, 1998. CK Witco also sponsored brainstorming sessions from a cross-section of the plant's technical and operating staffs to screen, prioritize, and analyze the feasibility of WMPP opportunities and prepare WM/PP Project implementation plans.

Commitment	Status
Waste Minimization/Pollution Prevention	
Prepare draft WM/PP Study Report one year after FPA signing.	Draft report issued for Advisory Committee comment on October 16, 1998. Final report completed December 11, 1998.
Implement WMPP opportunities.	The Annual Report issued on July 30, 1999 lists 59 WMPP opportunities in various stages of implementation, 25 of which are implemented.
Reporting	
Prepare semiannual progress reports beginning January 31, 1999.	First semiannual progress report issued January 29, 1999.
Prepare annual reports beginning July 31, 1999.	First annual report issued July 30, 1999.
Prepare final project report within 180 days after termination of project.	Not yet necessary.
Prepare project re-evaluation report within 90 days following the close of the comment period for MON standards.	Not yet necessary.

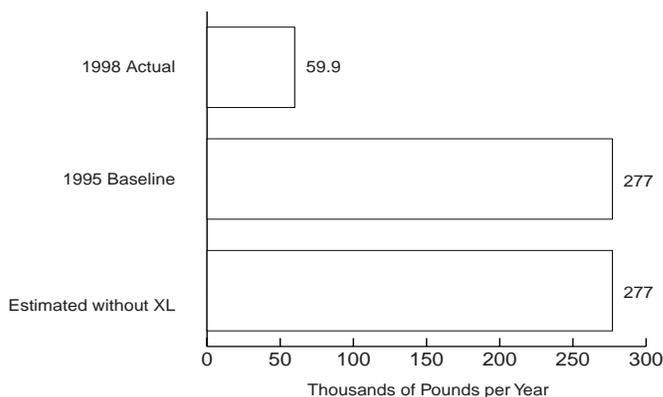
Environmental Performance

This section summarizes progress in meeting the environmental performance described in the FPA for CK Witco.

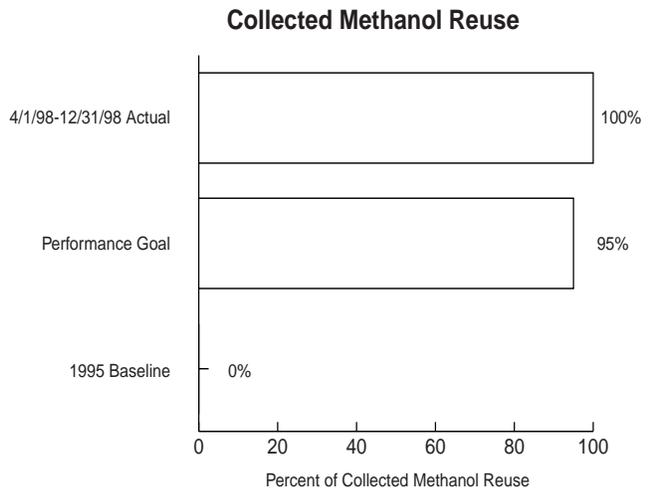
Reduce Air Emissions from Capper Unit: Methyl chloride, dimethyl ether, and methanol emissions generated in the capper unit during production of the methyl-capped polyether are being collected and routed to a new process vent incinerator installed on the capper unit. CK Witco estimated the incinerator would destroy at least 98% of the organic compounds (by weight) in the vent stream, or about 271,000 pounds of these by-products per year.

Progress: The Annual Report issued July 30, 1999, provided data on the level of air emissions for 1998. In 1998 the capper unit emitted a total of 59,898 pounds of organic compounds. This data includes emissions from the capper prior to the oxidizer startup on April 1, 1998. Since the vent incinerator was installed and put into operation, air emissions of total organics have been reduced by over 217,000 pounds per year as compared with 1995 baseline levels. Performance tests indicate that the oxidizer is reducing total organics in the vent stream by 99.99%, versus the 98% minimum required by the agreement.

Air Emissions from Capper Unit

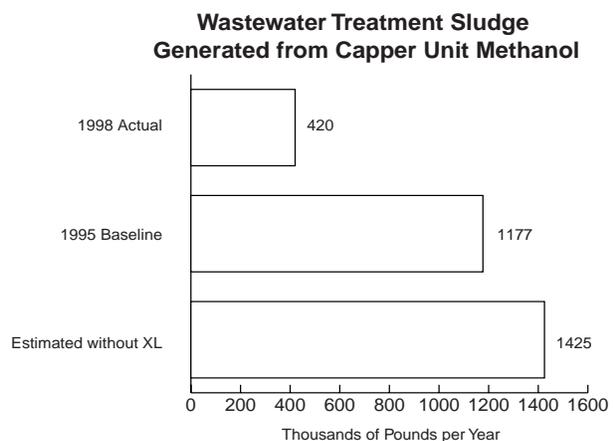


Reduce Organic Capper Unit Discharges to Wastewater Treatment System: Production of methyl-capped polyether generating excess methanol in the capper unit. Formerly, a portion of this methanol was condensed, collected, and either disposed of in the facility's wastewater treatment unit or incinerated. Under this XL project, CK Witco agrees to direct a minimum of 95% of the collected methanol towards reuse and recycling, or subject it to thermal recovery or treatment, thus minimizing biotreatment of the methanol in wastewater treatment units. CK Witco estimated that approximately 550,000 pounds of methanol that otherwise would be biotreated in the wastewater system would be transferred to tank trucks or rail cars for reuse or recycling each year. Therefore, the 940,000 pounds of discharges that would have occurred without the XL Project was estimated to be reduced to 389,000 pounds per year.



Progress: The July 30, 1999, Annual Report included data on the rate of methanol discharges for 1998. In 1998, the capper unit discharged to the wastewater treatment system, resulting in a reduction of nearly 519,000 pounds per year of menthol as compared to 1995 baseline figures. 424,254 pounds, or 100% of recovered methanol by weight, were reused, recycled, or thermally recovered or treated in 1998, exceeding the 95% performance standard established in the agreement.

Reduce Wastewater Treatment Sludge Generated from Capper Unit Methanol: As a result of CK Witco's methanol recovery and reuse efforts, the amount of sludge generated by the wastewater treatment system from capper operations, and disposed of in an onsite hazardous waste landfill was expected to decrease by an estimated 815,000 pounds per year, from an estimated 1,425,000 pounds per year to an estimated 610,000 pounds per year.



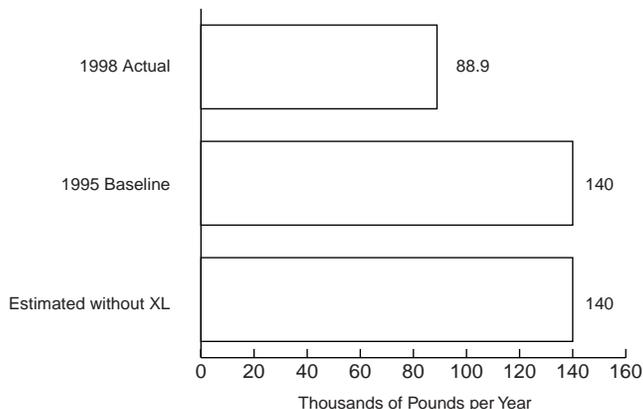
Progress: The July 30, 1999, Annual Report included data on the reduction of sludge generation for 1998. In 1998, 420,053 pounds of sludge were generated by the wastewater treatment system from capper operations representing a 757,247 pound reduction per year as compared with 1995 baseline figures. Superior environmental performance is evident in that 542,783 fewer pounds of sludge were generated in 1998 than would otherwise have been if the XL project were not implemented.

Reduce Air Emissions from Wastewater Treatment Unit: Reducing the amount of methanol that is sent to the wastewater treatment system leads to a reduction in air emissions from the wastewater treatment system that could occur during the treatment of that methanol. CK Witco estimated that as a result of its recovery and reuse of methanol, air emissions from the wastewater treatment system would be reduced by 38,000 pounds per year, from 140,300 pounds per year to 102,000 pounds per year.

Progress: The Annual Report issued July 30, 1998, included data on reduced air emissions for 1998. In 1998, 88,932 pounds of air emissions were released by the wastewater treatment unit representing a reduction of 51,368 pounds per year as compared to 1995 baseline figures.

Implement a Comprehensive Waste Minimization/Pollution Prevention Project: The WMPP Project included a study of plant operations that identified existing and future WMPP opportunities and developed a plan to implement those that are technically and economically feasible. Through the use of an advisory committee, CK Witco has involved EPA, WVDEP, The International Chemical Workers Union Council, and other stakeholders in the study and implementation phases of the WM/PP Project.

Air Emissions from Wastewater Treatment System



Progress: CK Witco delivered the final WM/PP Study Report on December 11, 1998. Highlights of the study are described below.

A WM/PP Study Team (made up of CK Witco Corporation management and employees and an independent contractor, STV Incorporated) was established to guide and conduct the daily activities of the WM/PP Study. An advisory committee (made up of representatives of the community, regulatory agencies, and the plant) was established to offer comments and suggestions throughout the process.

Four employee brainstorming sessions were a key component of the process. These sessions included representatives from a cross-section of the plant’s technical and operating staffs. The goals of the brainstorming sessions were to develop criteria and methods to screen, prioritize, and analyze the feasibility of WMPP opportunities; to increase awareness of pollution prevention; to evaluate and prioritize opportunities based on technical and economic feasibility; to prepare implementation plans; and to determine how to measure progress. In addition, a week-long survey conducted by the Waste Reduction And Technology Transfer Foundation (WRATT) helped the facility identify waste and emission sources, and suggested ways to reduce the quantity or toxicity of plant wastes.

A number of the study’s pollution prevention options were determined to be technically and economically feasible; these options are currently being implemented. The WM/PP Study Report is available from CK Witco. The Annual Report issued on July 30, 1999, lists 59 WM/PP opportunities in various stages of implementation (scoping, planning, implementing, etc.). Of these, 25 projects have been implemented and are in place.

CK Witco WM/PP Study Results*

CK Witco Waste Minimization/Pollution Prevention Study		Potential Cost Savings	Potential Waste/Emission Reductions
One-time pollution prevention options—completed in 1998.		\$42,000	26,000 pounds
Expected recurring/ongoing savings	XL project air emissions reduction and methanol recycle (excludes capital savings).	\$16,000 per year	1,100,000 pounds per year
	Other pollution prevention options.	\$620,000 per year	730,000 pounds per year
	Total savings	\$636,000 per year	1,830,000 pounds per year

**CK Witco has not yet assigned the expense of implementing these projects, and when it does the net cost savings will be less.*

Stakeholder Participation

Stakeholder involvement during the project development stage was encouraged in several ways. The methods included communicating through the media (newspaper and radio announcements), directly contacting interested parties, and offering an educational program on the regulatory programs impacted by the XL project. Stakeholders have been kept informed via mailing lists, newspaper articles, public meetings and the establishment of public files at the Sistersville Public Library and the EPA Region 3 office.

A local environmental group, the Ohio Valley Environmental Coalition, was contacted but stated that it did not have time to participate actively in the development of the XL project. However, a representative from the Natural Resources Defense Council, a national environmental interest group, participated in conference call meetings with the XL project team and provided comments during the FPA’s development. There are few homes located near the facility, and therefore, few local stakeholders other than the employees of the facility expressed interest in actively participating in the development of the project. The Sistersville Plant provided stakeholders with regular project development updates by circulating meeting and conference call minutes.

As this XL project’s continues implementation, the stakeholder involvement program will shift its focus to ensuring that stakeholders are apprised of the project’s status, and have access to information sufficient to judge the success of this Project XL initiative. Facilitating stakeholder involvement during the term of the project likely will include holding general public meetings to present periodic status reports and making available data and other information as it is generated. CK Witco has appointed a Sistersville Plant Project XL contact at the facility to serve as a resource for the community. In addition, the plant is required to make copies of semiannual and annual project reports available to all interested parties.

Six-Month Outlook

Key focus areas for successful implementation of the FPA over the next six months include the second semiannual project report due January 31, 2000, the second annual project report due July 31, 2000, and the ongoing implementation of options identified in the WM/PP.

Contacts

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- Nancy Birnbaum, EPA Headquarters, (202) 260-2601.
- Tad Radzinski, EPA Region 3, (215) 814-2394.
- Lucy Pontiveros, DEP, (304) 558-1220.
- Jonathan McClung, DEP, (304) 558-1220.

Information Sources

The information sources used to develop this progress report include (1) discussions during a teleconference among representatives of the U.S. EPA, CK Witco, and WV DEP; (2) the FPA Final Project Agreement for the CK Witco XL project; (3) the final Report from the WM/PP Study undertaken by CK Witco as part of this XL project; and (4) the First Annual CK Witco XL Project Report, issued July 30, 1999. The information sources are current through July, 1999.

Glossary

Air Emissions: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.

Air Emission Standard: The maximum amount of air-polluting discharge legally allowed from a single source, either mobile or stationary.

Allowable Exclusion/Allowable Increase: Where CK Witco implements a Qualifying Change to a process unit at the Facility, EPA and WVDEP expect to defer applicability of CAA Subpart YYY for the Qualifying Change.

Baseline: The measure by which future environmental performance can be compared.

Biotreatment: A process that uses bacteria to consume organic waste.

Capper Unit: The polyether methyl capper unit is the point in CK Witco's production process where a two-step reaction occurs that results in the intended end product, methyl-capped polyether.

Clean Air Act (CAA): The Clean Air Act is the Federal law that regulates air emissions from area, stationary, and mobile sources. This law authorizes the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

CAA Subpart YYY (New Source Performance Standards): Proposed regulations to control VOC emissions from wastewater generated by certain process units. As proposed, these standards would generally apply to new or modified process units that generate a wastewater stream with VOC concentrations above a specified amount and that produce any of a specific list of substances ("Subpart YYY Substances"), such as acetic acid as a product or by-product.

Consent Order: An agreement between two parties that does not involve any judicial action.

Deferral: A legally sanctioned delay in compliance with regulations.

Dimethyl Ether: A colorless flammable gas. Used in refrigeration, as a solvent, and in chemical production. Harmful if inhaled; irritating to eyes.

Discharges: Flow of liquid or chemical emissions from a facility into water or air.

Final Project Agreement (FPA): The FPA outlines the details of the XL project and each party's commitments. The project's sponsors, EPA, State agencies, Tribal governments, other regulators, and direct participant stakeholders negotiate the FPA.

Hazardous Waste: By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. These wastes possess at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity—or appear on special EPA lists.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Incineration: A treatment technology involving destruction of waste by controlled burning at high temperatures.

Incinerator: A furnace for burning waste under controlled conditions.

Media: Specific environments—air, water, soil—which are the subject of regulatory concern and activities.

Methanol: An alcohol that can be used as an alternative fuel or as a gasoline additive. Poisonous if ingested.

Methyl Chloride: A colorless flammable gas. Used in the production of chemicals, as a solvent and refrigerant, and as a food additive. Mildly toxic if inhaled.

Multi-media: Several environmental media, such as air, water, and land.

“The MON”: The National Emission Standard for Hazardous Air Pollutants (NESHAP) for the source category “Miscellaneous Organic Chemical Production and Processes.” Some examples of these processes are: explosives production, photographic chemicals production, polyester resins production, and the production of paints, coatings and adhesives.

National Ambient Air Quality Standards (NAAQS): Standards established by EPA applicable to outdoor air throughout the country.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs): Emissions standards set by EPA for air pollutants not covered by National Ambient Air Quality Standards (NAAQS), that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness. Primary standards are designed to protect human health, and secondary standards are designed to protect public welfare (e.g., building facades, visibility, crops, and domestic animals).

Organic Compounds: Naturally occurring (animal or plant-produced) or synthetic substances containing mainly carbon, hydrogen, nitrogen, and oxygen.

Pollution Prevention (P2): Identifying, altering, or eliminating areas, processes, and activities that create excessive waste products or pollutants. Such activities, consistent with the Pollution Prevention Act (PPA) of 1990, are conducted across all EPA programs.

Process Vent: A gas stream discharged to the atmosphere (with or without passing through a control device or recovery device) from chemical processing equipment.

Resource Conservation and Recovery Act (RCRA): RCRA gives EPA the authority to control hazardous waste from the “cradle to grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of nonhazardous wastes. RCRA enables EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned sites.

RCRA Subpart CC: Requirements for the control of air emissions from hazardous waste tanks, surface impoundments, and containers. The name comes from the fact that they are found in the regulations in Subpart CC of 40 CFR Parts 264 and 265.

Sludge: A semisolid residue from air or water treatment processes; it can be a hazardous waste.

Thermal Oxidizer: An enclosed device that destroys organic compounds by thermal oxidation, i.e. reacting at elevated temperatures with oxygen.

Thermal Recovery or Treatment: In the CK Witco XL project, refers to the use of collected methanol in fuels blending or as a feed to any combustion device.

Waste Minimization: Measures or techniques that reduce the amount of wastes generated during industrial production processes; term is also applied to recycling and other efforts to reduce the amount of waste going into the waste stream.

Wastewater: The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.