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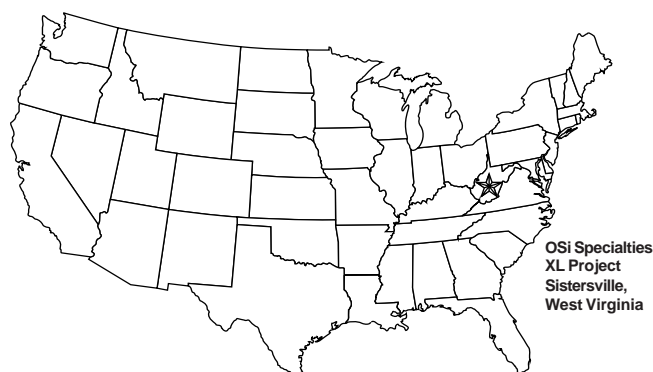
# XL Project Progress Report OSi Specialties



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 1998, 10 XL projects are in the implementation phase and 20 XL projects are under development. Project XL Progress Reports provide project-specific overviews of the status of individual 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 Docket at 202-260-7434. General information on Project XL is available on the web site or by contacting the general information number at 202-260-5754.

## Background

OSi Specialties, Inc. is a specialty chemical manufacturer. This XL project focuses on OSi's chemical manufacturing plant located 6 miles south of Sistersville, West Virginia, where OSi 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



## Major Milestones

September 29, 1995  
OSi XL Proposal  
Submitted

October 17, 1997  
Final Project  
Agreement Signed

December 11, 1998  
Waste Minimization/  
Pollution Prevention  
Study Report Completed

July 31, 1999  
First Annual  
Report Due

2002 Project  
Reevaluation

border of Tyler and Pleasants Counties. The operating units are situated centrally within the facility and encompass approximately 50 acres.

The OSi 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 OSi's products, methyl-capped polyether. Also involved in this project are the facility's generation of solid waste and the lined one-million-gallon surface impoundments that contain process wastewater.

In return for a deferral of certain air emissions standards, OSi will achieve superior environmental performance at this facility by:

- Installing a process vent incinerator that will destroy 98% by weight of certain air emissions (i.e., the organic compounds in the facility's process vent stream), or about 271,000 pounds per year;
- Recovering and reusing an estimated 500,000 pounds of methanol per year that would otherwise generate 815,000 pounds of sludge per year;
- Reducing methanol emissions from the wastewater collection and treatment systems by 38,000 pounds per year; and
- Conducting a WMPP study to identify opportunities for additional reductions in waste generated by the facility.

## Regulatory Flexibility

As an incentive to achieve superior environmental performance at OSi's facility, EPA and the West Virginia Division of Environmental Protection (WVDEP) are offering 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 OSi 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 programs administered by EPA's Office of Prevention, Pesticides, and Toxic Substances.

EPA's Region 3 office also is active in the development and implementation of the OSi XL project as a member of the WMPP study advisory committee, which participated in the design of the WMPP 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 applicable to OSi's two surface impoundments. These surface impoundments are one-million-gallon reservoirs that hold wastewater from the facility's pollution control equipment and other sources. If not deferred, the Subpart CC standards would have required OSi to install air emission controls on its surface impoundments. In response, OSi could have replaced the existing reservoirs with open-top reservoirs that are not regulated under RCRA Subpart CC regulation, and air emissions would not have been reduced. However, with the deferral, OSi will implement the emissions control measures on the capper unit and WMPP activities described at the end of the previous section.

EPA and WVDEP consider the WMPP initiatives to be an important contribution to the superior environmental performance offered by the OSi XL project. The WMPP initiatives could be undermined if the requirements proposed in CAA Subpart YYY are applied to the initiatives. As proposed, CAA Subpart YYY would apply

if OSi begins recovering substances listed in proposed CAA Subpart YYY. If OSi 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 or cause a net adverse environmental impact, and that OSi will remain in compliance with the provisions of the FPA. If such a deferral is granted, EPA and WVDEP will propose regulations implementing the deferral.

EPA plans to promulgate National Emission Standards for Hazardous Air Pollutants (NESHAPs) that would be applicable to miscellaneous organic processes. EPA plans to promulgate miscellaneous organic NESHAPs, called “the MON,” in 2000. Production activities at the Sistersville facility are 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 OSi under the XL project. Therefore, the 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. OSi 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 achieve new approaches to superior environmental performance.

## 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 that have emerged from the OSi XL project are described below:

*Innovative Technology.* The OSi 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. Installing a process vent incinerator on OSi’s capper unit in return for deferral of air emission standards for its surface impoundments will lead to air emission reductions four times greater than would be provided without undertaking the XL project, and will defer expenses for several years of approximately \$2 million for OSi.

*Emission Standards.* As EPA works to promulgate NESHAPs applicable to miscellaneous organic processes by 2000, the Agency will gather data on, assess the performance of, the technology used at the Sistersville plant. The new technology standard will require process vent controls similar to the controls installed by OSi.

## Project Commitment Summary

This section summarizes project commitments described in the FPA for OSi Specialties' Sistersville facility in West Virginia.

Commitment	Status
<b>Regulatory Implementation</b>	
EPA to propose a site-specific rule to defer surface impoundment requirements under RCRA Subpart CC by December 7, 1997.	Deferral final rule: <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 CAA Subpart YYY to wastewater collection and treatment system within 120 days of verifying need for deferral.	Not yet necessary.
WVDEP to execute a Consent Order to defer application of CAA Subpart YYY to wastewater collection and treatment system within 45 days of verifying need for deferral.	Not yet necessary.
<b>Equipment Installation, Operation, and Monitoring</b>	
Complete installation and initial startup of thermal incinerator by April 1, 1998.	Due to the delays in completing thermal incinerator performance tests, EPA revised site-specific rule to extend startup completion date. Installation and startup completed according to new schedule.
Conduct performance test of thermal incinerator to determine minimum temperature at which compliance is achieved.	Test completed according to new schedule..
Monitor incinerator operating temperature and closed vent stream flow.	Being done.
Monitor methanol recovery by condenser unit.	Being done.
Develop incinerator startup, shutdown, and malfunction plan.	Complete.

Commitment	Status
<b>Methanol Recovery</b>	
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).	To be reported in semiannual report due January 31, 1999.
Monitor amount of methanol reused, recovered, incinerated, and treated biologically in the wastewater treatment unit.	To be reported in semiannual report due January 31, 1999.
<b>Waste Minimization/Pollution Prevention (WMPP)</b>	
Create study team within 45 days of FPA signing to perform WMPP study.	Study team made up of representatives of Witco Corporation (OSi's parent company); a Witco contractor, STV; Concurrent Technologies Corporation; and the Waste Reduction and Technology Transfer (WRATT) Foundation.
Identify and prioritize waste streams to be evaluated in WMPP study.	Presented in final WMPP project report delivered December 11, 1998.
Establish advisory committee within 30 days of FPA signing to oversee WMPP study.	Advisory committee established 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, Witco Corporation, and West Virginia University at Parkersburg.
Submit WMPP 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 WMPP study report of December 11, 1998. OSi 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 WMPP project implementation plans.

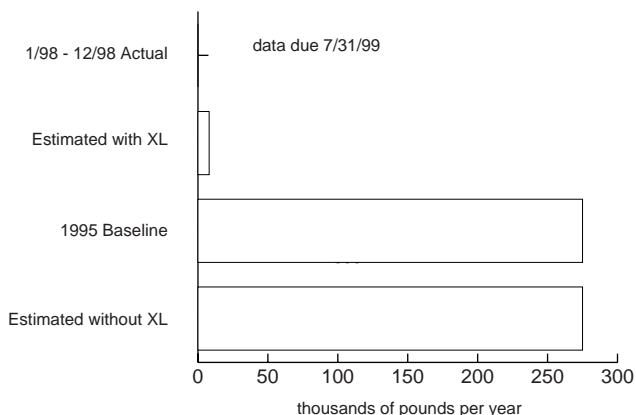
Commitment	Status
<b>Waste Minimization/Pollution Prevention, continued</b>	
Prepare draft WMPP study report one year after FPA signing.	Final report completed December 11, 1998.
Implement WMPP opportunities.	A number of opportunities identified in the study were determined to be technically and economically feasible and are being implemented.
<b>Reporting</b>	
Prepare semiannual progress reports beginning January 31, 1999.	Not yet available.
Prepare annual reports on beginning July 31, 1999.	Not yet available.
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

**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 will be collected and routed to a new process vent incinerator installed on the capper unit. OSi estimates the incinerator will 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 vent incinerator was installed and put into operation on April 1, 1998. Required incinerator performance test results were delivered September 8, 1998. Data on the level of air emissions for 1998 are expected in the annual report due July 31, 1999.

**Air Emissions from Capper Unit**



**Reduce Organic Copper Unit Discharges to Wastewater Treatment System:** Excess methanol is produced in the copper unit during the production of methyl-capped polyether. Currently, a portion of this methanol is condensed, collected, and either disposed of in the facility's wastewater treatment unit or incinerated. Under this XL project, OSi intends 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. An estimated 500,000 pounds of methanol that otherwise would be treated in the wastewater system will be transferred to tank trucks or rail cars for reuse or recycling each year.

*Progress:* Data on the rate of methanol discharges for July through December 1998 are expected in the semiannual report due January 31, 1999. Data for all of 1998 are expected in the annual report due July 31, 1999.

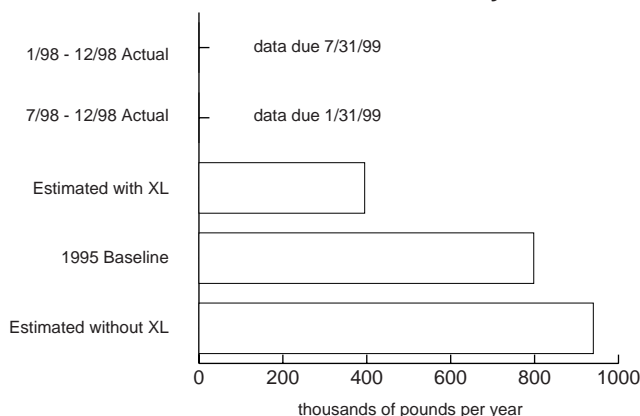
**Reduce Wastewater Treatment Sludge Generated from Copper Unit Methanol:** As a result of OSi's methanol recovery and reuse efforts, the amount of sludge generated by the wastewater treatment system and disposed of in an onsite hazardous waste landfill will be decreased by an estimated 815,000 pounds per year.

*Progress:* Data on the reduction of sludge generation for 1998 are expected in the annual report due July 31, 1999.

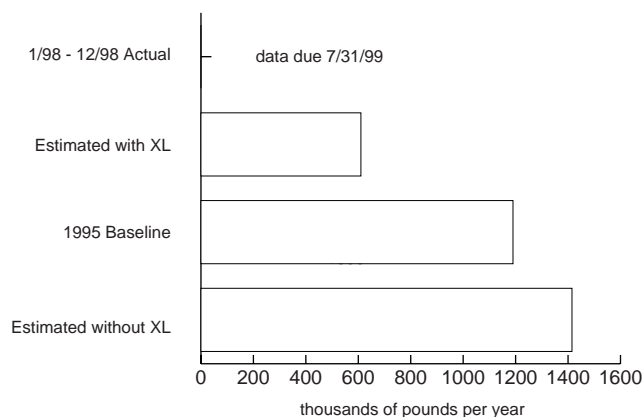
**Reduce Air Emissions from Wastewater Treatment Unit:** By reducing the amount of methanol that is sent to the wastewater treatment system, air emissions from the wastewater treatment system that could occur during the treatment of that methanol are reduced. OSi estimates that as a result of their recovery and reuse of methanol, air emissions from the wastewater treatment system will be reduced by 38,000 pounds per year.

*Progress:* Data on reduced air emissions for 1998 are expected in the annual report due July 31, 1999.

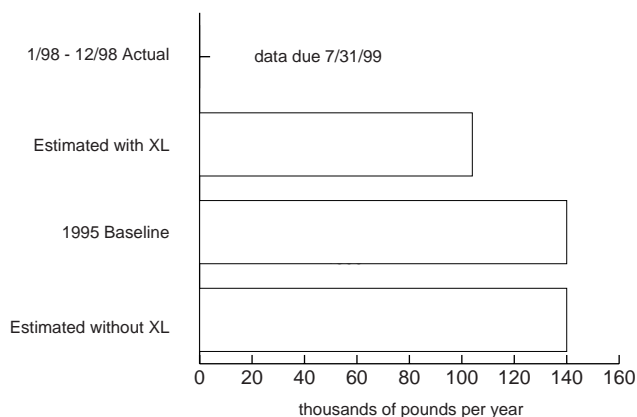
**Organic Copper Unit Discharges to Wastewater Treatment System**



**Wastewater Treatment Sludge Generated from Copper Unit Methanol**



**Air Emissions from Wastewater Treatment System**



***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 the development of a plan to implement those that are technically and economically feasible. Through the use of an advisory committee, OSi has involved EPA, WVDEP, and other stakeholders in the study and implementation phases of the WMPP Project.

*Progress:* OSi delivered the final WMPP Study Report on December 11, 1998. Highlights of the study are described below:

A WMPP study team (made up of OSi management and employees and an independent contractor, STV Incorporated) was established to guide and conduct the daily activities of the WMPP 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; increase awareness of pollution prevention; evaluate and prioritize opportunities based on technical and economic feasibility; prepare implementation plans; and determine how to measure progress. In addition, a week-long survey was conducted by the Waste Reduction And Technology Transfer Foundation (WRATT) to help the facility identify waste and emission sources, and to suggest ways to reduce the quantity or toxicity of plant wastes.

A number of pollution prevention options identified in the study were determined to be technically and economically feasible and implementation of those options is in progress. The WMPP Study Report is available from OSi.

## Stakeholder Participation

Stakeholder involvement during the project development stage was cultivated 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 they did not have time to participate actively in the development of the XL project. However, a representative from Natural Resources Defense Council, a national environmental interest group, participated in conference call meetings with the XL project team and provided comments during the development of the FPA. There are few homes located near the facility, and, therefore, few local stakeholders other than employees of the facility expressed interest in actively participating in the development of the project. However, the Sistersville Plant provided stakeholders with regular project development updates by circulating meeting and conference call minutes.

As this XL project continues to be implemented, the stakeholder involvement program will shift its focus to ensure that stakeholders are apprised of the status of the project, and have access to information sufficient to judge the success of this Project XL initiative. Stakeholder involvement during the term of the project will likely include holding general public meetings to present periodic status reports and making available data and other information as it is generated. OSi 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:

- Semiannual project report due January 31, 1999.
- First Annual project report due July 31, 1999.
- Begin implementation of options identified in waste minimization/pollution prevention study.

## Contacts

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## Information Sources

The information sources used to develop this progress report include: 1) discussions during a teleconference among representatives of the U.S. Environmental Protection Agency, OSi Specialties, Inc., and West Virginia Department of Environmental Protection; 2) the Final Project Agreement for the OSi XL project; and 3) the final report from the waste minimization/pollution prevention (WMPP) study undertaken by OSi as part of this XL project. The information sources are current through December, 1998.

## Glossary

**Air Emission:** 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, mobile or stationary.

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

**Capper Unit:** The polyether methyl capper unit (the "capper unit") is the point in OSi's production process where a two-step reaction occurs that results in the intended endproduct, 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 volatile organic compound 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 concentrations of volatile organic compounds above a specified amount and that produce any of a specific list of substances ("Subpart YYY Substances") as a product or by-product.

**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.

**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.

**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.

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

**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 C.F.R. Parts 264 and 265.

**Sludge:** A semi-solid residue from air or water treatment processes; it can be a hazardous waste.

**Thermal Recovery or Treatment:** In the OSi 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.