



Project XL Progress Report

Vandenberg Air Force Base—ENVVEST



On March 16, 1995, the Clinton Administration announced a portfolio of reinvention initiatives as a part of its efforts to achieve greater public health and environmental protection at a more reasonable cost. The initiatives included Project XL to be implemented by the U.S. Environmental Protection Agency (EPA), and the Environmental Investment (ENVVEST) program to be implemented by the Department of Defense (DoD). 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/ProjectXL>. 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.

As part of the Clinton Administration's initiative to reinvent environmental regulations, EPA and the DoD signed a Memorandum of Agreement (MOA) in 1995 that established how the two agencies would interact during DoD's implementation of the ENVVEST program. The MOA established a framework for developing ENVVEST pilot programs at three to five DoD facilities. The ENVVEST program emphasizes regulatory compliance through pollution prevention and provides an alternative to prescriptive regulatory requirements through a performance-based environmental management system designed to attain superior environmental results. Vandenberg Air Force Base (AFB) has been selected as the prototype DoD facility to pilot the ENVVEST program and to implement cost-effective environmental protection.



Major Milestones

April 16, 1996
Vandenberg XL Proposal
Submitted

October 23, 1996
Stakeholder Workshop

September 2, 1997
Final Project Agreement
Signed

November 30, 2002
Final FPA Commitments
to be Met

Background

The 30th Space Wing at Vandenberg AFB conducts and supports space and missile launches, operates the Western Test Range, and responds to worldwide military contingencies. Vandenberg AFB covers more than 98,000 acres and is the Air Force's third-largest installation. It is located in Santa Barbara County on the central coast of California, 150 miles northwest of Los Angeles.

Through this XL/ENVVEST project, Vandenberg AFB will upgrade ozone (O₃) precursor emission controls using money that otherwise would be spent complying with the administrative requirements of Title V of the Clean Air Act (CAA), such as permitting, record keeping, monitoring, and training. When Vandenberg AFB reduces ozone precursor emissions to agreed-upon levels, its current designation under Title V as a major source of ozone precursor emissions will be reduced to a designation as a minor source, which will result in a substantial reduction in compliance costs for Vandenberg AFB.

Vandenberg AFB agreed to reduce air emissions of ozone precursors—primarily nitrogen oxides (NO_x) and volatile organic compounds (VOCs)—by 10 tons or more by November 30, 2002. Initially, Vandenberg AFB focused on obtaining reductions by replacing or retrofitting boilers rated from two to five million British thermal units per hour (MMBtu/hour). This class of boilers is Vandenberg AFB's single largest stationary source of ozone precursors and thus offers the greatest emissions reduction potential. Because retrofit and replacement of these boilers was projected to result in only a 3.61-ton reduction for 1999, Vandenberg AFB evaluated additional projects to assist in meeting its 10-ton reduction goal. Three projects—the use of zero-VOC paints and coatings, consolidation of paint booth operations, and construction of a wastewater reclamation system adjacent to a satellite launch facility—were projected to result in an additional emissions reduction of 1.92 tons for 1999. In August 1999, Vandenberg AFB proposed to attain the remaining emissions reduction through an innovative electric-vehicle program.

The Experiment

Through this XL/ENVVEST project, Vandenberg AFB will achieve superior environmental performance using money that otherwise would be spent complying with the administrative requirements of Title V of the CAA, including permitting, record keeping, monitoring, and training.

The Flexibility

The XL/ENVVEST project will provide Vandenberg AFB with relief from the Santa Barbara County Air Pollution Control District's (the District's) operating permit program for major stationary sources. The major-source operating permit program is an EPA-approved permit program implementing EPA regulations under Title V of the CAA. The objective of this operating permit program is to create a single, comprehensive permit that includes all CAA requirements for a major stationary source of air pollution.

The statutory program, and EPA office administering the program, that affects the Vandenberg AFB XL/ENVVEST project are CAA programs administered by EPA's Office of Air Quality Planning and Standards.

All air quality permitting programs required to implement the CAA requirements have been delegated by EPA to the State of California. California has delegated permitting authority to the County of Santa Barbara. Permits are issued by the District.

Stationary Source Classification. Vandenberg AFB, like other military installations, differs from civilian or industrial stationary sources in that the base hosts and supports a unique and wide variety of functions and

activities. These activities include residential housing, schools, recreational parks, wildlife reserves, shopping centers, industrial maintenance, airfield operations, and various other mission-related activities. Vandenberg AFB creates criteria pollutants normally associated with residential, commercial, and light industrial operations. Most of the stationary source ozone precursor emissions (primarily NO_x) are generated by boilers, furnaces, process heaters, and internal combustion engines.

For purposes of permitting, EPA and the District historically have considered Vandenberg AFB and all of its individual emission units to be a single stationary source. Vandenberg AFB is a military installation with a unique space launch mission for military, commercial, and scientific projects. However, Vandenberg AFB does not fit the single stationary source definition as generally applied to civilian or industrial sources.

Vandenberg AFB, in cooperation with the District and EPA Region 9, determined that, if the actual emissions that are used to make a major stationary source determination for the base could be reduced to minor source levels, then Vandenberg AFB would be eligible to comply with rules that entail a significantly diminished administrative burden. The District's Rule 370, *Potential to Emit—Limitations for Part 70 Sources*, allows stationary sources that emit minor source levels of criteria air pollutants to comply with Rule 370 requirements rather than having to obtain a Title V operating permit, thereby decreasing the permit administrative requirements for Vandenberg AFB.

Together, the District, EPA Region 9, and Vandenberg AFB applied EPA Major Source Guidance to group different base activities (for example, hospital services and base amenities) as separate stationary sources for purposes of Title V applicability only. In addition, the District amended its rules and regulations to exclude from its major source determination emissions that meet EPA's definition of "non-road engine," including equipment used for tactical support, infrastructure, and maintenance. These amendments are contingent upon Vandenberg AFB meeting the EPA's milestones and ultimately reducing annual emissions of ozone precursors by at least 10 tons by November 30, 2002. This regulatory flexibility allowed the XL/ENVVEST project to proceed and Vandenberg AFB to be redesignated as a minor stationary source pursuant to Rule 370.

Permit Administrative Requirements. Vandenberg AFB will use the funds that otherwise would be spent to comply with the administrative requirements of the major source operating permit program to reduce emissions by upgrading combustion equipment on ozone precursor emission sources.

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 Vandenberg AFB XL project are described below.

Administrative Burden Reduction. A number of XL projects are testing different approaches to reducing the administrative permitting requirements imposed by Federal, state, and local regulations. The Vandenberg AFB project is a testbed for sector-wide burden reduction for Federally regulated entities. EPA is undertaking a coordinated permitting reform effort. Lessons learned from the Vandenberg AFB XL/ENVVEST permit approach will be used to influence the Permit Reform Action Plan.

Federal Budget Process. ENVVEST is testing new approaches to the Federal budgeting process. In the past, DoD's budgeting process allowed resources meant for environmental protection to be used only for meeting legally mandated environmental protection levels. New approaches are being tested to create a budget process that allows DoD to spend resources on pollution prevention programs, innovative technologies, and other approaches that will cost-effectively reduce emissions below legally mandated levels.

Project Commitment Summary

This table and the environmental performance section that follows summarize progress in meeting commitments described in the FPA for Vandenberg AFB.

Commitment	Status
Emission Reduction Planning and Permitting	
Vandenberg AFB will complete the initial assessment and cost feasibility study within 30 days of executing the FPA.	Initial assessment and cost feasibility study completed on November 26, 1997.
The District will provide technical assistance to Vandenberg AFB in development of Rule 1301 emission reduction plan.	The District's innovative technologies group has provided technical assistance for the development of the emissions reduction plan.
Vandenberg AFB will develop a Rule 1301 emission reduction plan and submit to the District no later than November 30, 1997.	Plan and protocols submitted November 26, 1997.
The District will review and approve the Rule 1301 emission reduction plan.	Plan partially approved on February 20, 1998.
EPA will review and approve District rule changes.	District Rule 370 approved on December 15, 1997. District Rule 1301 approved on December 15, 1997.
Source Identification and Replacement	
Vandenberg AFB will complete the final evaluation of the 24 preselected candidate boilers to determine their eligibility and feasibility for retrofit or replacement with low-NO _x technology by October 30, 1998.	Vandenberg AFB submitted a final candidate boiler list on October 29, 1998.
Vandenberg AFB will retrofit or replace 30% of candidate boilers by April 30, 1999, and 70% of candidate boilers by April 30, 2001, with a goal of reducing annual emissions of ozone precursors by two tons by April 30, 2000, and by 10 tons or more by November 30, 2002.	Vandenberg AFB retrofitted or replaced 30% (3 of 10) of the candidate boilers with low-NO _x technologies by April 1998 and 70% of the candidate boilers by April 1999. All 10 of the candidate boilers were retrofitted or replaced by May 1999.
Vandenberg AFB will assess emission reduction potential from solvents, surface coatings, and other sources.	Vandenberg AFB assessed several emission reduction projects in 1999 and summarized the results in the August 1999 semiannual progress report. Additional reductions were obtained through the use of zero-VOC paints and coatings, consolidation of paint booth operations, and building a wastewater reclamation system adjacent to a satellite launch facility.

Commitment	Status
Reporting	
Vandenberg AFB will prepare progress reports 30 days after FPA signing and every 6 months thereafter.	Initial progress report was completed on December 2, 1997. Semiannual progress report was completed on June 29, 1998. Semiannual progress report was completed on January 29, 1999. Semiannual progress report was completed on August 30, 1999.
Stakeholder Meetings	
Vandenberg AFB will conduct public meetings.	Stakeholder updates provided at Community Advisory Board (CAB) meetings on August 22, 1997; November 21, 1997; and June 4, 1998.

Environmental Performance

This section summarizes progress in meeting the environmental performance described in the FPA for Vandenberg AFB.

Through the process outlined in the FPA, Vandenberg AFB agreed to five milestones. Vandenberg AFB achieved Milestones 1 through 4 ahead of schedule and now is pursuing ways to achieve its final milestone. The following is a summary of the progress made on each milestone.

Milestone #1: Within 30 days of execution of the FPA, Vandenberg AFB shall complete the initial assessment and cost feasibility study.

Progress: Complete. The initial assessment and cost feasibility study was submitted on November 26, 1997. Vandenberg AFB subsequently evaluated 44 boilers rated two to five MMBtu/hour to determine which were appropriate candidates for retrofit or replacement under the ENVVEST program. The evaluations were based on emission reduction potential, cost, age, and overall condition of the boilers. Vandenberg AFB identified 10 “candidate boilers” that qualified for ENVVEST program funds. In addition, 15 other boilers, termed “Capital Improvement Program” (CIP) boilers, were identified. Vandenberg AFB replaced these boilers through attrition with funds from their infrastructure maintenance budget. The ENVVEST program quality assures the reductions from all 25 boilers by conducting baseline and post emission tests, installing gas meters, and tracking emission data requirements.

Milestone #2: By April 30, 1999, 30% of candidate boilers identified in Milestone #1 shall be retrofitted.

Progress: Complete. Three of the 10 candidate boilers were retrofitted or replaced by April 1998.

Milestone #3: By April 30, 2000, two tons per year of emission reductions shall have been accomplished.

Progress: Complete. Vandenberg AFB projected an emissions reduction of 3.61 tons for 1999 from the retrofit and replacement of the 10 candidate boilers (2.22 tons) and the 15 CIP boilers (1.39 tons). Vandenberg AFB is compiling actual emissions reduction data for 1999 based on actual fuel usage.

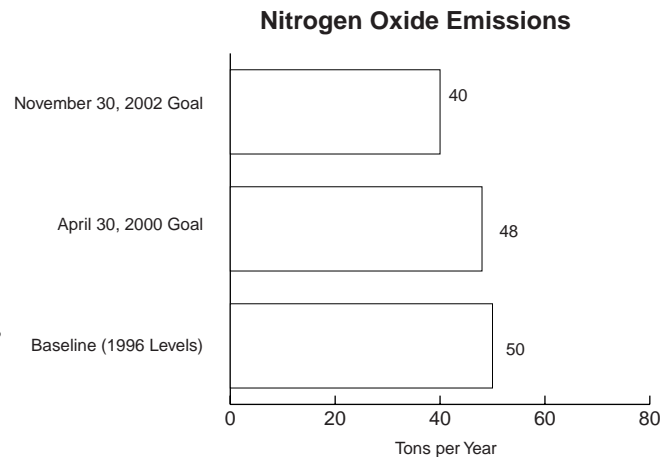
Milestone #4: By April 30, 2001, 70% of candidate boilers identified in Milestone #1 shall be retrofitted.

Progress: Complete. Seven of the 10 candidate boilers were retrofitted or replaced by April 1999. All 10 were retrofitted or replaced by May 1999.

Milestone #5: By November 30, 2002, Vandenberg AFB shall achieve a reduction in annual emissions of ozone precursors by 10 tons or more.

Progress: Ongoing. Recognizing that the emissions reductions achieved by controlling emissions from the candidate and CIP boilers fell short of the 10-ton goal, Vandenberg AFB evaluated the following projects to help achieve the goal.

- Using internal combustion engine control technologies to reduce NO_x emissions from aerospace ground equipment.
- Replacing lawn mowers and other ground maintenance and irrigation equipment that utilize internal combustion engines with electric equipment.
- Replacing a booster pump used for irrigation with a fuel-efficient, low-NO_x, diesel powered internal combustion engine.
- Using zero-VOC paints and coatings in corrosion control, industrial facility painting, and architectural interior and exterior coating operations.
- Consolidating paint booth operations to include application of corrosion control coatings to reduce VOC emissions.
- Building a wastewater reclamation system adjacent to the satellite launch facility where a large volume of wastewater is generated, to avoid having to transport it by tanker truck to the industrial wastewater treatment plant.
- Constructing sustainable military family housing and reducing the amount of natural gas and energy consumption.
- Implementing an electric vehicle (EV) fleet program.



The evaluations showed that the projects would result in real, quantifiable, and enforceable emission reduction potentials. However, the amount of emissions reduction potential that could be credited to the ENVVEST program as “surplus” was low. As a result, the cost per ton of emissions reductions for some projects became cost prohibitive.

Vandenberg AFB projects an additional 1.92 tons of reductions through three of the projects listed above: the use of zero-VOC paints and coatings (1.27 tons), consolidation of paint booth operations (0.50 tons) and building a wastewater reclamation system adjacent to a satellite launch facility (0.15 tons). This brings the total projected emissions reductions to 5.53 tons for 1999. Vandenberg AFB is determining the actual reductions achieved based on actual fuel and paint usage.

On August 25, 1999, Vandenberg AFB presented a proposal to the District for investing the balance of ENVVEST funds in an EV fleet pilot program. This program will help achieve the remaining reduction requirements. The District has conceptually agreed with the proposal and is currently consulting with EPA on its merits.

Stakeholder Participation

Vandenberg AFB has involved its stakeholders in formulating the FPA and has met with stakeholders three times to discuss the initiative and receive input. The organizations directly involved in negotiating the FPA included Vandenberg AFB, EPA Region 9, EPA Headquarters, Santa Barbara County Air Pollution Control District, the Vandenberg AFB Community Advisory Board (CAB), and the District Community Advisory Council.

The Vandenberg AFB CAB was originally organized to promote community awareness and review the remedial cleanup process at Vandenberg AFB. The role of the CAB has been expanded to address negotiation and implementation of the Vandenberg AFB XL/ENVVEST project. Representatives on the CAB include residents of Santa Maria, Lompoc, Vandenberg AFB, and Santa Ynez; community service districts of Mission Hills and Vandenberg Village; local high schools and colleges; California EPA Department of Toxic Substances Control; Santa Barbara County Air Pollution Control District; county and city Fire Departments and Public Works Departments; and the California Regional Water Quality Control Board.

The District Community Advisory Committee (CAC) provides advice on air quality issues to the Santa Barbara Air Pollution Control District Board of Directors. Each member of the Board appoints two community members to serve on the CAC. The CAC has formed a subcommittee to assist the District in overseeing the execution of the FPA.

Vandenberg AFB efforts to continue stakeholder involvement include

- issuing press releases;
- running information notices in local newspapers;
- sponsoring public meetings; and
- working with the CAB and CAC.

Public meetings related to the Vandenberg AFB XL/ENVVEST project began in October 1996, and will continue every six months after execution of the FPA. The purpose of the meetings is to advise interested members of the public on the progress toward meeting FPA goals. The meetings inform the public of the steps taken to reduce pollution, include information on proposed steps to meet the goals of the FPA, and solicit comment from the public.

Six-Month Outlook

The key focus areas for continued successful implementation of the FPA over the next six months will be the following.

- Continue stakeholder meetings.
- Prepare the next XL/ENVVEST project semiannual progress report for February, 2000.
- Negotiate an agreement on Vandenberg AFB's proposal for an EV pilot program.
- Install a temporary EV infrastructure for the EV loaner program at Vandenberg AFB.
- Begin implementing an EV loaner program in January 2000 to help validate the applicability of EVs.
- Deploy at least 20 EVs into the light-duty vehicle fleet by the end of fiscal year 2000.

Project Contacts

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- Maureen Sullivan, DoD Headquarters, (703) 604-0519.
- Peter Cantle, Santa Barbara County Air Pollution Control District, (805) 961-8827.
- Sara Segal, EPA Region 9, (415) 744-1569.
- Christopher Knopes, EPA Headquarters, (202) 260-9298.

Information Sources

The information sources used to develop this progress report include (1) discussions during a teleconference among representatives of the U.S. EPA, Santa Barbara County Air Pollution Control District, Vandenberg AFB, and DoD; (2) the FPA for the Vandenberg AFB XL/ENVVEST project; and (3) annual and semiannual status reports prepared by Vandenberg AFB. The information sources are current through December 1999.

Glossary

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

British Thermal Unit (Btu): A unit of heat energy equal to the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit at sea level.

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

Criteria Air Pollutants: The CAA requires EPA to set NAAQS for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six criteria air pollutants—ozone, carbon monoxide, total suspended particulates, sulfur dioxide, lead, and nitrogen oxide. EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on this basis that standards are set or revised.

District Rule 1301: Rule 1301 was adopted by the Santa Barbara County Air Pollution Control District to implement EPA regulations governing stationary source operating permits in Santa Barbara County.

District Rule 370: Rule 370 was adopted by all Air Quality Control Districts in California to clarify the applicability of EPA regulations governing stationary source operating permits. Rule 370 defines major, minor, and synthetic minor stationary source classifications (and exemptions), and therefore, spells out the requirements that must be met by Vandenberg AFB to be eligible for designation as a minor stationary source.

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.

Major Stationary Source: The term used to determine the applicability of Prevention of Significant Deterioration (PSD) and New Source Review (NSR) regulations. In a nonattainment area, any stationary pollutant source with the potential to emit more than 100 tons per year is considered a major stationary source. The cutoff emissions levels are lower for more seriously polluted areas.

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

Memorandum of Agreement (MOA): An agreement between Federal agencies or divisions within an agency or department that delineates tasks, jurisdictions, standard operating procedures, or other matters that the agencies are duly authorized and directed to conduct.

Minor Source: New emissions sources or modifications to existing emissions sources that do not exceed NAAQS emission levels.

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

National Ambient Air Quality Standards (NAAQS): Regulations promulgated by EPA under the CAA for six criteria pollutants—sulfur dioxide, particulate matter, nitrogen dioxide, carbon monoxide, ozone, and lead—to protect the public from toxic emissions to the atmosphere.

New Source Review (NSR) : The NSR and PSD provisions of the CAA strive to ensure that potential new sources of air pollution (new plants or facilities, or additions to existing ones) take proper steps to minimize pollution levels. The goals of the NSR program are (1) to ensure that an increase in emissions due to a new source or modification to an existing source does not significantly deteriorate air quality; (2) to ensure that source emissions are consistent with applicable state attainment plans; (3) to ensure that air quality related values are not negatively impacted in areas that have greater pollution problems; and (4) to establish control technology requirements that maximize productive capacity while minimizing impacts on air quality.

Nitrogen Oxides (NO_x): An air pollutant that is the result of photochemical reactions of nitric oxide in ambient air. Typically, it is a product of combustion from transportation and stationary sources. It is a major contributor to the formation of ozone in the troposphere, photochemical smog, and acid deposition.

Nonattainment Area: A geographic area in which the level of a criteria air pollutant is higher than the level allowed by the Federal standards. A single geographic area may have acceptable levels of one criteria air pollutant but unacceptable levels of one or more other criteria air pollutants; thus, an area can be both in attainment and nonattainment at the same time. It has been estimated that 60% of Americans live in nonattainment areas. Based on the severity of the problem, nonattainment areas are classified as marginal, moderate, serious, severe, and extreme.

Non-road Engine: A term used in the CAA to refer to engines on farm and construction equipment, gasoline-powered lawn and garden equipment, and power boats and outboard motors.

Ozone (O₃): Ozone is found in two layers of the atmosphere, the stratosphere and the troposphere. In the stratosphere (the atmospheric layer 10 miles or more above the earth's surface) ozone is a natural form of oxygen that provides a protective layer shielding the earth from ultraviolet radiation. In the troposphere (the layer extending up to 10 miles from the earth's surface), ozone is a major component of photochemical smog. It can seriously impair respiratory systems, and is one of the most widespread of all the criteria pollutants for which the CAA required EPA to set standards. Ozone in the troposphere is produced through complex chemical reactions of NO_x, VOCs, and sunlight.

Part 70 Sources: Part 70 refers to the regulations promulgated by EPA to implement Title V of the CAA, which are contained in Title 40, Code of Federal Regulations, Part 70. Part 70 Sources are major stationary sources of pollutants that are subject to regulation under Title V.

Precursor: In photochemistry, a compound antecedent to a pollutant. For example, VOCs and NO_x often react in sunlight to form ozone or other photochemical oxidants. As such, VOCs and NO_x are precursors of ozone or other photochemical oxidants.

Prevention of Significant Deterioration (PSD): The 1977 amendments to the CAA established the PSD program, designed to help areas maintain their clean air. National policies and guidelines were developed for managing economic growth while preventing deterioration of air quality.

Potential to Emit (PTE): A pollution source's total PTE is determined by a two-step process. First, the source's potential emissions at maximum physical capacity are established. This is then reduced by any recognized limits on the source's emissions, such as limits on rates of production, hours of operation, and type and amount of fuel burned or materials processed. The PTE is a significant factor in regulations implementing the Title V operating permits program.

Retrofit: To furnish with new parts or equipment not available at the time of manufacture.

Stationary Source: A stationary place or object from which pollutants are released. Stationary sources include power plants, gas stations, incinerators, and houses.

Surplus Reductions: Reductions not required by an applicable legal requirement.

Title V of the Clean Air Act: Title V establishes a Federal operating permit program that applies to any major stationary facility or source of air pollution. The purpose of the operating permits program is to ensure compliance with all applicable requirements of the CAA. Under the program, permits are issued by states or, when a state fails to carry out the CAA satisfactorily, by EPA. The permit includes information on which pollutants are being released, how much may be released, and what kinds of steps the source's owner or operator is taking to reduce pollution, including plans to monitor the pollution.

Volatile Organic Compound (VOC): Any organic compound that easily evaporates and participates in atmospheric photochemical reactions, except those designated by EPA as having negligible photochemical reactivity.