P4 Permit Writers Workshop

January 1999
Atlanta, GA

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P4 Permit Writers Workshop
January 27-29
Atlanta, Georgia

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P4 PERMIT WRITERS WORKSHOP
EPA REGION IV: SAM NUNN FEDERAL BUILDING CENTER, 9TH FLOOR
ATLANTA, GEORGIA
JANUARY 27-29

January 27

1:00-1:30	Registration
1:30-1:45	Welcome and Introductions
1:45-2:00	Workshop Overview and Objectives
2:00-2:45	Background/Benefits of P4
2:45-3:00	Break
3:00-4:15	Lasco Bathware P4 Permit example
4:15-4:45	Questions
4:45	Adjourn for the Day

January 28

9:00-9:30	P4 Strategies
9:30-10:30	P4 Tools
10:30-10:45	Break
10:45-11:15	Group Discussion: Regulatory variations in Region 4 States
11:15-12:15	Imation P4 Permit example
12:15-1:15	Lunch (on your own)
1:15-1:30	P2 in Region 4
1:30-2:45	Cytec P4 Permit example
2:45-3:00	Break
3:00-3:30	Innovative Approaches with Particulate Matter Permitting
3:30-4:30	Panel Discussion: Key challenges in P4 Permitting
4:30	Adjourn for the Day

January 29

9:00-9:30	P2 as a Tool for Flexibility
9:30-10:45	Facilitated Group Break-out Session: - Applying P4 within your own regulatory structure
10:45-11:00	Break
11:00-11:30	Break-out Session Report/Discussion
11:30-12:00	P4 "Good Source" Profile
12:00	Adjourn

P4 PERMIT WRITERS WORKSHOP
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P4 Workshop Materials

P4 Background Materials

P4 PERMIT WRITERS WORKSHOP GOALS

- Understand the benefits of incorporating operational flexibility and pollution prevention intoTitle V permits.

- Develop an understanding of effective P4 permit writing "strategies."

- Enhance overall knowledge of existing P4 permit writing tools/mechanisms.

- Learn to recognize which types of sources will most benefit from P4 permits.

- Begin individually tailored P4 implementation plans.

P4 CONTINUUM

- *P4 "cut and paste."* This is a very basic presentation of P4 tools, and a discussion of appropriate scenarios in which they are utilized. This portion could be geared toward a permitting authority with a large back-log of permits that lacks the time and resources for a more detailed effort, but would like to be able to apply basic P4 tools as appropriate.

- *Conceptual P4 model.* This is geared towards permitting authorities that have more time and resources to spend developing P4 concepts, but cannot participate in a full-blown effort. This portion of the workshop could help permit writers recognize different opportunities for applying the tools presented above, and could equip permit writers with skills that allow them to develop new tools for new scenarios. This model could also help permit writers recognize where and how pollution prevention can be integrated into Title V permits.

- *Process.* In addition to having the time and resources to develop P4 concepts, the "process" focus will help orient permitting authorities that have a set of sources they feel can benefit from P4, and need guidance on: (1) bringing together an appropriate mix of skills; (2) developing a working dialogue between stakeholders; (3) allotting adequate financial resources; and (4) creating transferable "model" permits.

POLLUTION PREVENTION IN PERMITTING PROGRAM (P4)

PROJECT HISTORY

A P4 partnership was formed at an April 1993 conference on the role of the Clean Air Act in implementing P2. Through informal discussions between EPA Region 10 and the Office of Air Quality Planning and Standards (OAQPS), two key aspects of P2 implementation were recognized:

- a sources' pollution preventing behavior is, in part, a response to regulatory costs imposed by environmental management agencies; and
- under certain circumstances, regulatory costs can be modified by regulators to create incentives for pollution prevention.

The group also recognized that new regulatory programs, such as Title V of the Clean Air Act, can impose new costs on sources. Therefore, as sources decided how to respond to these costs, an ideal window of opportunity arose for regulators to test pollution prevention as a means of enhancing regulatory flexibility and reducing regulatory costs.

In a formal effort to incorporate the ideas generated by the ad hoc group, EPA Region 10, OAQPS, Oregon DEQ, and the Intel Corporation initiated the Pollution Prevention in Permitting Program (P4) in November of 1993. During the months that followed, the team, with support from the Pacific Northwest Pollution Prevention Research Center (PPRC), discovered ways within existing state and federal laws to craft a Title V permit that enhanced operational flexibility and created incentives for pollution prevention. The selection of the Intel Corporation presented an ideal challenge, as the company initially believed Title V was too inflexible to meet its operational needs, and considered instead the option of taking future plant investments "off shore."

By September of 1994, after a series of face-to-face meetings and interim conference calls, a draft Title V permit was developed that promoted pollution prevention and proactive environmental management, ensured full regulatory compliance, and was responsive to Intel's needs for operating flexibility. The permit was issued in October of 1995; since then, Intel has announced a $500 million plant expansion in the State of Oregon.

Soon after issuance of the Intel P4 permit, EPA obtained additional funding to support "P4 Phase II" that focused on four additional permitting efforts:

- EPA Region 1, Connecticut DEC, Cytec Industries;
- EPA Region 4, Georgia DNR, Searle Pharmaceutical;
- EPA Region 6, Albuquerque APCD, Rio Grande Portland Cement; and
- EPA Region 10, Washington DOE, Olympic APCA, Lasco Bathware.

These efforts further demonstrated the value of P4 in incorporating environmentally beneficial operational flexibility into Title V permits.

In August of 1996, funding for an additional project led to a P4 pilot with EPA Region 6, the Oklahoma Department of Environmental Quality, and Imation Enterprises (now complete). Further resources from EPA Headquarters and OAQPS have also been appropriated for P4 projects in additional EPA Regions, as well as P4 educational materials, a P4 permit writer's manual, and a P4 "benefits assessment."

The future of P4 holds many potential opportunities. It is anticipated that as part of P4's continued focus on Title V air permits, P4 permitting processes will become more streamlined and efficient, with an increased number of participants over time. In addition to its focus on Title V, the P4 approach may be modified to address minor source air permitting and NPDES permitting under the Clean Water Act.

FOR MORE INFORMATION ABOUT P4....

If you have additional questions about the P4 initiative, contact one or both of the following P4 Project Coordinators: **Dave Dellarco**, EPA Region 10, at 206/553-4978, or **Michael Trutna**, EPA OAQPS, at 919/542-5345.

POLLUTION PREVENTION IN PERMITTING PROGRAM (P4)

Introduction

The Pollution Prevention in Permitting Program (P4) is a U.S. EPA initiative that responds to the Clinton Administration's call to reinvent government. Through structured pilot projects, P4 participants have focused on exploring innovative ways to reduce air pollution while enhancing source operational flexibility. Overall, P4 participants have expressed enthusiasm for project achievements to date. These accomplishments include:

- six practically enforceable Title V permits that meet all substantive and procedural requirements;
- pollution prevention conditions that promote recognition, evaluation, and implementation of pollution prevention (P2) opportunities; and
- flexibility conditions that support rapid, cost-effective operational change and create lower administrative burdens for both sources and permitting authorities.

The success of P4 is also evidenced by P4 sources hoping to establish similar P4 permits for other facilities, and permitting authorities beginning to incorporate P4 concepts into standard operating procedures. P4 has also received support from public interest groups, including the Natural Resource Defense Council and the Sierra Club. Representatives from industry, EPA, local permitting authorities, and environmental interest groups agree that P4 works. P4's success is tied to four main factors:

- **Sources and environmental agencies engage in creative, team-oriented problem solving.**

  At the core of each successful P4 initiative is the partnership that evolves between industry, local permitting authorities, and EPA. The P4 process relies heavily on the willingness of each stakeholder to exchange ideas openly and explore new approaches. By working together in permit development teams, all stakeholders have an opportunity to present their Title V and P2 needs. These identified interests create a focal point for the permit development process.

- **Sources and environmental agencies identify common permitting "needs."**

  Regulatory agency P4 permitting needs may include:

  - **Reducing agency administrative burdens** associated with source permitting, while continuing to meet all procedural and substantive regulatory requirements, and ensuring practical enforceability;
  - **Encouraging pollution prevention** by identifying existing regulatory barriers that may discourage P2, and seeking ways to integrate P2 into permitting processes most effectively;
  - **Encouraging economic growth** by demonstrating effective, flexible Title V air permitting techniques that can help maintain economic viability for existing industries and, if desired, attract new industries to the area, while maintaining or improving environmental quality.

  P4 source permitting needs may include:

  - **Meeting operational objectives** and maintaining economic viability by (1) sustaining rapid

market responsiveness; (2) constantly increasing production efficiency; and (3) minimizing the "risk" of doing business, including the need to predict future regulatory requirements and costs;

- **Meeting operational requirements** with a Title V permit that has enough flexibility to allow them to engage in continuous modifications to material inputs, product outputs, equipment, equipment configurations, and operating parameters, with minimal air permitting unpredictability and/or administrative delay;
- **Obtaining regulatory credit for pollution prevention** and enhancing the inherent production efficiencies associated with pollution prevention by researching and implementing additional P2 activities.

While regulatory agency and source needs may appear different on the surface, at the root of these permitting exercises are common, inter-dependent objectives that together facilitate desirable permitting results. While regulatory agencies would like to "streamline" permitting processes to reduce administrative burden, P4 sources would like to streamline permitting processes to help meet operational objectives in a rapidly changing market environment. Because a source's success in increasing production efficiency can result in pollution prevention gains, a permit that encourages resource productivity enhancements and clears the regulatory path to pollution prevention can also help to meet common source and agency goals. Though approaching the permitting task from different perspectives, P4 teams have found that these perspectives have common elements that can facilitate the development of P4 solutions.

- **Solutions begin by first identifying regulatory "barriers."**

Although local permitting frameworks differ, at the heart of most air permitting strategies is the employment of case-by-case regulatory review of new source construction and existing source modifications. For sources that do not make frequent changes, this can be an effective strategy for ensuring that the most up-to-date control technology and compliance mechanisms are implemented. However, for sources that rely on rapid production turnover and constant process changes to maintain market competitiveness, this strategy potentially can create a regulatory environment of constant permit revisions, unpredictable regulatory determinations, administrative encumbrances, production delays, and possibly, reduced market competitiveness. Similarly, P2 advances can also be inhibited, either by burdensome administrative processes (P2 "disincentives") or an inability to receive regulatory "credit" for P2 that does take place. For agencies, the administrative costs and delays of permitting this "type" of source can be substantially greater as well. At the same time, because changes occur so frequently, the net environmental benefit of case-by-case review may be small, while the potential opportunity cost associated with inhibiting P2 can be high.

- **Creative solutions overcome perceived regulatory barriers to meet all stakeholder needs.**

Through the P4 process, solutions ultimately are formulated by identifying where flexibility exists within the regulatory structure and where this flexibility can be leveraged to address perceived regulatory barriers. This collaborative analysis results in a "P4 Package" that effectively meets identified source and agency Title V permitting and P2 needs. This package can include:

- **advanced/conditional approval** of source construction and/or modifications, subject to environmentally protective conditions;
- **"dynamic" compliance demonstration** mechanisms that streamline administrative procedures and result in more practical, cost-effective processes;
- clear **"non-applicability" conditions** that, under specific conditions, restrict source activities to ensure that regulatory program requirements are not triggered; and
- increased **pollution prevention opportunities**, including the use of P2 to meet regulatory requirements, streamlining the regulatory response to P2 activities, using P2 offsets to support flexibility, and linking P2 Program implementation to operational flexibility conditions.

Ultimately, each P4 team creates a package of permit writing tools that best meets their regulatory and source situation. Through this process, teams often have found that single solutions can meet multiple goals. For example, focusing on source operational needs to sustain rapid market responsiveness can help to identify significantly streamlined administrative processes for the permitting authority and EPA. Likewise, streamlined permit provisions that facilitate changes designed to enhance a facility's resource productivity can work hand-in-hand with designated P2 opportunities to help ensure that constant improvements in the source's environmental profile are occurring. This potentially leads to greater long-term environmental protection and satisfies multiple stakeholder requirements.

The promising results of P4 to date have encouraged further work designed to ensure each EPA region has the opportunity to participate in a P4 project, to test new source situations and regulatory structures, and to help streamline the P4 process through expanded education and outreach activities. Ultimately, the goal of this phase is to stimulate nationwide application of P4 concepts and the broad realization of P4 benefits.

FOR MORE INFORMATION ABOUT P4...

If you have additional questions about the P4 initiative, contact one or both of the following P4 Project Coordinators: **Dave Dellarco**, EPA Region 10, at 206/553-4978; or **Michael Trutna**, EPA OAQPS, at 919/542-5345.

P4 Title V Permits

P4 permits utilize existing regulatory mechanisms in ways that leverage Title V permit preparation and issuance to deliver replicable permit provisions that promote P2, streamline permitting requirements, and provide sources with additional operational flexibility.

Pollution prevention can be thought of in two ways:

> P4: *Pollution prevention is defined by the source-specific operational flexibility contained within each permit that promotes practices that reduce or eliminate the creation of pollutants, without the use of curtailment or add-on control technology.*
>
> EPA: *Pollution prevention is source reduction and other practices that reduce or eliminate the creation of pollutants through the increased efficiency in the use of raw materials, energy, water or other resources, or the protection of natural resources by conservation.*

Operational flexibility can be defined as *a permitting strategy that strives to reduce or eliminate regulatory bottlenecks, costs, and uncertainty often associated with raw material, equipment, and operational changes, and particularly, changes likely to involve lowering unit costs through higher manufacturing efficiencies.*

WHY DO A P-4 PERMIT

- ECONOMIC VIABILITY OF INDUSTRY
- COMMITMENT TO DEVELOPMENT
- SERVICE TO INDUSTRY
- POLITICAL INTEREST

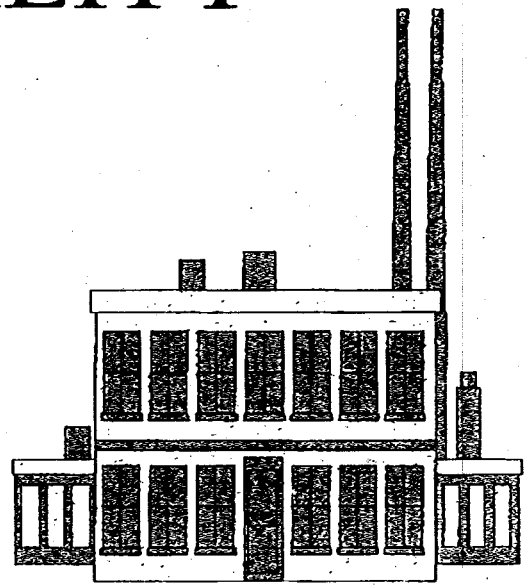
BENEFITS TO AGENCY

- GOOD GUY IMAGE
- BETTER WORKING RELATIONSHIP
- SHOWS CONCERN FOR INDUSTRY
- MAINTAIN/INCREASE TAX BASE
- RELATIONSHIP WITH CHAMBER OF COMMERCE
- INCREASE PROCESS KNOWLEDGE

WHY YOU WILL DO P-4

- MAINTAIN AN EXISTING INDUSTRY
- OTHER STATES ARE DOING IT
- POLITICAL PRESSURE
- STAFFING LIMITATIONS

CHOOSING A FACILITY



- SPECIAL NEED
- ENVIRONMENTAL STAFF
- WORKING RELATIONSHIP
- P-2 COMMITMENT
- COMPLIANCE/ENFORCEMTNT
- CONFIDENTIAL INFORMATION

Pollution Prevention in Permitting Program (P4)

- Under the Direction of:
  - Mike Trutna (EPA OAQPS)
  - Dave Dellarco (EPA Office of Reinvention)
- FY 99 Objective:
  - To establish P4 as a long term program integrated into Office of Air Quality Planning and Standards (OAQPS) operations

Pollution Prevention in Permitting Program (P4)

- FY 99 Activities
  - White Paper III
  - P4 Permit Development Projects
  - Regulatory Alignment
  - P4 Information Management
  - P4 Network
  - Model P2 Permit Conditions and Permit Framework
  - P4 Workshop Delivery
  - New Sector-based P4 Permit Development Projects

Pollution Prevention in Permitting Program (P4)

- Permit Development Projects:
  - Puerto Rico - Merck Pharmaceuticals
  - West Virginia - Cytec Industries
  - Pennsylvania - Printers
  - Wisconsin - Printers

Pollution Prevention in Permitting Program (P4)

- White Paper III
  - March '99 - initial draft
  - April '99 - initiate peer review
  - June '99 - initiate EPA clearance process
- P4 Network
  - March '99 - memo from the Office of Air & Radiation (OAR) to EPA regions establishing P4 Network
  - May '99 - convene first meeting of P4 Network

P4 Accomplishments and Benefits

by Chris James, Assistant Director
CT Bureau of Air Management

P4 Accomplishments

- Practically enforceable permits that meet all substantive and procedural requirements, and are "within the box":
  - 3 permits issued (Intel, Lasco Bathware, and Imation Enterprises)
  - 3 permits in draft (Cytec, Rio Grande, Searle)
- Pollution prevention conditions promote recognition, evaluation, and implementation of P2 opportunities

What's So Special Here?

- Why not stick with traditional Title V path?
- After all, isn't this project resource intensive?
- Why change things now in midstream?

Typical Regulatory Strategy

- Employs case-by-case regulatory review of "modifications" to ensure environmental protectiveness
- Leverages modifications to impose new requirements
- Title V permit requires modification
- Source operational change is often subject to:
  - uncertain applicability
  - uncertain regulatory determinations
  - time consuming procedural requirements
  - administrative process costs
  - new requirement costs

What May be Wrong with this Picture?

- High impact but low probability
  - no modification, no "trigger"
  - no trigger, no requirement
  - no requirement, no progress
- Innovation may be stifled
  - no modification, no process improvement
  - no process improvement, no cleaner process
  - no clean process, limited environmental improvement and economic benefit

P4 Challenges Assumptions

- Sources "play" NSR and are encouraged to change
- Stakeholder dialogue encourages creative problem solving
- Places P2 into mainstream permitting
- Enhances environmental protection
- Encourages holistic thinking by the source and permitting authority
  - identifies long-term operational and regulatory needs

Analysis: Sheep v. Falcon

- Sheep = unit by unit view of emissions, apply regulations individually, it's worked for 25 years and all the other states do it this way...
- Falcon = looking at the whole source, zero in on environmental protection and flexibility, maximize efficiency

P4 Permit Benefits

- Maintains environmental protectiveness
- Produces environmental improvement
  - increased likelihood of continuous environmental improvement
  - greater awareness and value of P2
  - reduced drag on productivity enhancing change
  - result: at any given level of production, fewer emissions produced

P4 Permit Benefits

- Enhances pollution prevention as a practical tool in meeting environmental management objectives
- Lowers administrative resource requirements
- Improves economic performance of sources:
  - Regulatory predictability
  - Regulatory timeliness
  - Regulatory costs
  - Ability to innovate

Little Known P4 Facts

- Meeting location near good restaurants is critical to success
- "You just don't get it" is one of top ten phrases uttered
- Fred Hansen borrowed my pen to take notes at the close-out meeting

LASCO Bathware
P4 Permit Experience

by Dave Bray
EPA Region 10

Source Description

- **Location**: Yelm, WA
- **EPA Authority**: Region 10
- **State Authority**: WA Dept. of Ecology
- **Local Authority**: Olympic Air Pollution Control Authority
- **Products:**
  - Gelcoat surface bathtubs/showers/whirlpools
  - Acrylic surface bathtubs/showers/whirlpools
- **Major for HAPs** (Styrene)
- **PTE limit of 249 tpy VOC** (Styrene only)

Pertinent Applicable Requirements

- Minor NSR & state NSR for toxics: for emissions increases with respect to the stationary source; no de minimis.
  - application
  - NAAQS demonstration (& air toxic impact analysis)
  - state BACT (& T-BACT for air toxics)
  - compliance demonstration
  - public notice
- MACT for existing sources (fiberglass reinforced plastics)
- < 249 TPY VOC federally enforceable limit on PTE, plant-wide

Flexibility Needs

- Modify production processes without delays associated with case-by-case minor New Source Review (NSR) permit modifications:
  - add or move spray booth
  - lengthen production line
  - add or change spray equipment
  - add production line
  - change material formulations
  - increase/decrease material use per station

Flexibility Needs (cont.)

- Minimize styrene expense through pollution prevention and production efficiency
- Maximize regulatory predictability
  - ensure PSD requirements will not be triggered
  - have explicit guidance regarding minor NSR applicability
  - know in advance what certain requirements are likely to be
- Maximize production

Regulatory "Barriers"

- Some changes triggered minor NSR even in the absence of an emissions increase
- Source changes could be inhibited by regulatory uncertainty
  - potentially unpredictable interpretations of minor NSR applicability
  - potentially unpredictable requirements (e.g., minor NSR BACT determinations) and associated costs
- Administrative expense and delay associated with demonstrating certain types of P2 advances

Solutions

- **249 TPY PTE plant-wide cap**
  - limit on styrene usage
  - provides strong P2 incentive
  - **Emission factor modifications**
    - allows for changes in compliance provisions through an administrative amendment (without re-opening the permit)

- **249 TPY PTE plant-wide cap permit language:**
  - PTE Limit → condition E2, **page 26**
  - formula for calculating PTE limit→ condition E2(a), **page 27**
  - emission factor modifications → condition E2(b), **pages 27-28**
  - monitoring → condition E2 (c), **page 28**
  - compliance → condition E2 (d), **page 29**
  - record keeping → condition E2 (e), **page 29**
  - reporting → condition E2 (f), **page 30**

Solutions

- **Pre-approvals**: Lasco is pre-approved to make certain classes of changes as long as NSR requirements are met
  - **Stationary Source**: Interpreted as "building"
  - **Pollution prevention program**: to access pre-approvals and meet BACT for pre-approved changes, Lasco must have an approved P2 program in place
  - **NAAQS** demonstration achieved by applying a *daily cap* on combined stationary source emissions (also meets state air toxic ambient requirements)
    - **P2 Offsets**: Permit encourages use of P2 to offset emission increases

Solutions (cont.)

- **BACT/T-BACT**: determined up-front in the Title V permit (BACT analysis considers P2)
  - permit's annual review procedure satisfies the 18-month re-certification requirement
- **Application/Public Review**: done up-front in the Title V permit

- **Pre-approval permit language:**
  - notice of construction approval → condition E3, **pages 30-31**
  - P2 program linkage → condition E3(a)/(b), **pages 31-32**
  - P2 performance goals → Table 5, **page 33**
  - approved activities, by NSR category → Table 6, **page 36**
  - BACT for pre-approvals → condition E3(g), **pages 36-37**
  - NAAQS cap → condition E3(i), **pages 38-39**
  - request for extension/CT renewal → condition E3(n), **page 40**
  - monitoring → condition E3(p), **pages 40-41**
  - record keeping → condition E3(q), **page 31**
  - reporting → condition E3(r), **page 41-43**

Lasco Bathware P4 Permit Benefits

- Implicit & Explicit P2 incentives for enhanced environmental performance
- Increased regulatory predictability
- Increased ability to modify processes/equipment without delay
- Increased ability to meet market demand
- Decreased production expense through enhanced P2 opportunities and increased efficiency

P4 Permit Strategies

by Rob Greenwood
Ross & Associates Environmental Consulting

P4 Permit Strategies

- Understanding the Source
- Assessing Agency Needs
- Problem Solving

P4 Permit Strategies:
Understanding the Source

- Operational Objectives
- Operational Requirements
- Permitting Needs

P4 Permit Strategies:
Source Operational Objectives

- **Market Responsiveness:**
  - meet customer "just-in-time" demands through rapid existing product mix changes and increases in manufacturing velocity
  - maintain an edge in the marketplace through rapid new product introductions
- **Production Efficiency**: lower costs to increase margins and/or decrease prices through elimination of all "non-value added" aspects of the enterprise
- **Reduce Business Risk**: increase understanding of future requirements and costs

P4 Permit Strategies: Source Operational Requirements

- Conduct "factory experiments" that require temporary changes to equipment configurations and operating parameters
- Engage in continuous modifications to material inputs, product outputs, non-product outputs, equipment, equipment configurations, operating parameters, etc.

P4 Permit Strategies: Source Permitting Needs

- Meet environmental management obligations while receiving:
  - greater regulatory predictability (applicability and requirements)
  - more timely regulatory responses
  - lower regulatory costs
  - acknowledgment of pollution prevention performance
- Enhance competitiveness by engaging in rapid, continuous operational change associated with predictable, timely, and cost effective regulatory responses

P4 Permit Strategies: Public Agency Permitting Needs

- Encourage P2
- Encourage resource productivity enhancing change
- Derive equal or greater environmental benefit
- Produce a cost effective permit
- Enhance source economic performance
- Lower agency administrative burden
- While:
  - meeting all procedural and substantive regulatory requirements
  - ensuring practical enforceability

P4 Problem Solving

- Determine operational requirements
- Examine regulatory variants
- Assess regulatory applicability and associated program requirements
  - » existing status
  - » future changes
- Identify flexibility "inhibitors"
- Consult P4 Tool Box

P4 Permit Strategies

- Ask source to predict/determine operational requirements and associated activities that are likely to occur during the permit term:
  - » operations
  - » R&D

P4 Permit Strategies

- Source variants to consider:
  - » Source Determination
    - – SIC Codes
    - – Grandfathered sources
    - – Attainment/Nonattainment
  - » Nature of Pollutants
    - – Ozone Pre-cursors v. Non Ozone Pre-cursors
    - – Fugitive v. Stack

P4 Permit Strategies

- Determine regulatory applicability
  - » current status
  - » anticipated changes/ "triggers"
  - » potential future requirements (e.g. MACT)

P4 Permit Strategies

- Key minor NSR applicability variants:
  - » applicability measurement
  - » de minimis thresholds, if any
  - » permitting tiers
  - » operative definitions/categorical inclusions
  - » categorical exemptions
  - » substantive/procedural requirements
  - » P2 offsets potential
- Key Title V program applicability variants:
  - » provisions for admin. amendment/minor permit mods
  - » alternative operating scenarios
  - » emissions trading provisions

P4 Permit Strategies

- List requirements for meeting each identified program based on anticipated changes/status
  - » federal PSD/NSPS
  - » MACT
  - » state/local BACT/RACT
  - » state/local toxics impact analyses
  - » ambient impact analyses
  - » emissions offsets
  - » monitoring, recordkeeping, reporting
  - » public notice/comment

P4 Permit Strategies

Identify which components of the regulatory structure (applicability, requirements, etc.) are inhibiting (and/or have inhibited) the ability to meet stated source/agency objectives.

P4 Permit Strategies: A "Model" for Problem Solving

- Consult the P4 "Tool Box"
  - » pre-approvals
  - » alternative/dynamic compliance demonstration
  - » non-applicability provisions
  - » pollution prevention

P4 Permit Strategies: A "Model" for Problem Solving

- What to do if nothing is in the "Tool Box?"
  - » concentrate on thoroughly characterizing the nature of the source need and which aspects of the regulatory framework appear "immovable"
  - » recognize that discretion likely exists outside of "standard practice"
  - » consult White Papers I & II
  - » P4 Operations Manual (pending)
  - » all P4 teams have faced P2/flexibility "sticking points" and ultimately found new & effective tools to use

P4 Permit Tools

By Rob Greenwood
Ross & Associates Environmental Consulting

P4 Permit Tools

- **Overview** - Categories of Tools
  - » Pre-Approved Changes
  - » Non-applicability Provisions
  - » Alternative/Dynamic Compliance Demonstration

P4 Permit Tools

- Pre-approved Changes
  - » Full pre-approved classes of changes
  - » Full pre-approved specific changes
  - » Partial pre-approvals

P4 Permit Tools

- Full Pre-Approved Classes of Changes
  - » Source Situation:
    - – anticipates making frequent changes that trigger minor NSR during the permit term
    - – can characterize/classify a range of changes, and can ensure all provisions are known and can be met
    - – can ensure appropriate environmental safeguarding/MRR
  - » Tool Requirements:
    - – environmentally protective emission cap(s)
    - – pre-approved BACT determination, if necessary
    - – public notice/comment up-front with Title V

P4 Permit Tools

- Full Pre-Approved Classes of Changes (cont.)
  - » Benefits:
    - – enhances regulatory predictability for a wide variety of changes
    - – reduces case-by-case permitting "burden"
    - – substantially decreases regulatory/permitting delays
      - minor NSR
      - Title V modifications
    - – emission caps can encourage P2 reductions

P4 Permit Tools

- Full Pre-approved Specific Changes
  - » Source Situation:
    - – is aware of specific modifications and/or classes of minor source construction that will likely trigger minor NSR during the permit term
    - – pre-approving a broad class of changes is not feasible
    - – all applicable requirements can be identified and met
  - » Tool Requirements:
    - – identify all applicable requirements for each change
    - – include all parameters and procedures for meeting requirements

P4 Permit Tools

- Full Pre-Approved Specific Changes (cont.)
  - » Benefits:
    - – provides regulatory predictability for specified changes
    - – allow the change to occur at any point during the permit term without having to wait for case-by-case approval

P4 Tools

- Partial Pre-approvals
  - » Source Situation:
    - – anticipates making frequent changes that would trigger Title V permit modifications to incorporate compliance details
    - – specific changes/compliance details cannot be identified up-front
  - » Tool Requirements:
    - – see *Compliance Demonstration Menus*

P4 Permit Tools

- Partial Pre-approvals (cont.)
  - Benefits:
    - provides regulatory predictability regarding acceptable compliance demonstration mechanisms for changes
    - decreases administrative burden for applicable changes during the permit term
    - enhances sources' ability to make rapid changes (without having to go through a significant Title V modification)

P4 Permit Tools

- **"Non-Applicability" Provisions**
  - » PTE Caps
  - » PALs

P4 Permit Tools

- **PTE/Emissions Limits**
  - » Source Situation:
    - – has the willingness and ability to limit actual emissions to below regulatory "trigger" thresholds
  - » Tool Requirements:
    - – determine the emissions baseline from which the limit will be measured
    - – ensure limit is federally enforceable

P4 Permit Tools

- **PTE Limits** (cont.)
  - » Benefits:
    - – can eliminate time consuming, resource intensive permitting processes
    - – can provide a strong incentive for P2 reductions

P4 Permit Tools

- **Plantwide Applicability Limit** (PAL)
  - » Source Situation:
    - – is an existing major source for NSR purposes
    - – is willing/able to remain below designated major modification levels
  - » Tool Requirements:
    - – set emission baseline, add NSR threshold
    - – ensure limits are practically enforceable

P4 Permit Tools

- **Plantwide Applicability Limit** (cont.)
  - » Benefits:
    - – provide regulatory certainty regarding NSR modification applicability
    - – facilitate more rapid operational changes
    - – reduce regulatory burdens associated with NSR modification netting requirements
    - – provide an implicit P2 incentive

P4 Permit Tools

- **Alternative/Dynamic Compliance Demonstration**
  - » Administrative Emission Factor Updates
  - » Compliance Demonstration Menus
  - » Emissions Averaging

P4 Permit Tools

- **Administrative Emission Factor Updates**
  - » Source Situation:
    - – uses emission factors for compliance demonstration
    - – anticipates needing to evaluate emission factor improvements/ conducting source tests during the permit term
  - » Tool Requirement:
    - – in permit, create replicable procedures for altering the emission factor

P4 Permit Tools

- **Administrative Emission Factor Updates**
  - » Benefits:
    - – provides a streamlined mechanism for changing the emission factor and recognizing P2 gains/obtaining P2 reductions
    - – does not require a significant Title V permit modification
    - – lowers the "cost" of engaging in pollution prevention

P4 Permit Tools

- **Compliance Demonstration Menus**
  - » Source Situation:
    - – anticipates making frequent changes that would trigger Title V permit modifications to incorporate compliance details
    - – anticipates needing to create enforceable emissions limits to meet an applicable requirement or to demonstrate nonapplicability
    - – specific changes/compliance details cannot be identified up-front

P4 Permit Tools

- **Compliance Demonstration Menus**
  - » Tool Requirements
    - – substantial up-front time identifying compliance demonstration scenarios, menus of options, and replicable protocol for selecting from the menu of options
    - – determine types of methods (control technology, operational limits, P2) the source may use to limit emissions
    - – identify quantification and monitoring methods for each type of emissions limitation mechanism allowed; include in the Title V permit

P4 Permit Tools

- **Compliance Demonstration Menus**
  - » Benefits:
    - – provides regulatory predictability regarding acceptable compliance demonstration mechanisms
    - – enhances sources' ability to make rapid changes
    - – potentially reduces source & permitting authority regulatory burden
      - minor NSR
      - Title V significant permit modifications

P4 Permit Tools

- **Emissions Averaging**
  - » Source Situation:
    - – subject to VOC RACT limits for more than one emission source
    - – compliance costs vary significantly between emission units
  - » Tool Requirements:
    - – determine individual RACT requirement for each emissions unit
    - – create a formula for determining allowable VOC emissions (inter and/or intra-CTG category)
    - – specify provisions for monitoring RACT compliance

P4 Permit Tools

- **Emissions Averaging**
  - » Benefits:
    - – enhanced ability to meet applicable RACT standards in a cost effective manner
    - – potential P2 opportunity

P4 Permit Ingredients: Linking Tools to Create Comprehensive Solutions

- Advance approve categories of changes
- Subject to NAAQS protective emissions cap
- Pre-approve BACT
- Use P2 reductions as means to stay below cap
- Use an emission factor update mechanism to allow P2 gains to be credited
- Use compliance demonstration menus to make P2 gains enforceable

CYTEC INDUSTRIES: P4 PERMIT EXPERIENCE

by:

Chris James
Connecticut Department of
Environmental Protection

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P4 PHASE II

Goal: *Develop Title V Permit for CYTEC Industries' Wallingford facility that maximizes operational flexibility and pollution prevention with no reduction in environmental protection, while increasing incentives for environmentally beneficial behavior (e.g., P2).*

- Participants include:
  - CYTEC Industries Inc.,
  - Connecticut Department of Environmental Protection,
  - EPA Region 1, and
  - EPA OAQPS.

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CYTEC INDUSTRIES INC.

- Headquartered in Garret Mountain, New Jersey.
- Develops, manufactures, and markets specialty chemicals and materials worldwide:
  - 37 facilities located in the United States, Great Britain, Netherlands, Canada, and Mexico.
  - 5,200 employees.
- Formerly specialty chemicals group of American Cyanamid Company.

CYTEC INDUSTRIES INC. (Continued)

- Environmental Core Program
  - Currently implementing environmental management systems ensuring compliance at all CYTEC facilities.
- Safety, Health and Environmental Policy
  - CYTEC's business philosophy embraces a global dedication to the health and safety of our employees, customers, and neighbors, and to the protection of the environment.

CYTEC INDUSTRIES INC.
Wallingford Facility

- Major source located in Wallingford, CT (serious non-attainment for ozone).
  - VOC RACT order of 138 tons per year.
- Batch process manufacturer of specialty chemicals with three operational units:
  - Resin products for paint, adhesives, water treatment chemicals and paper products,
  - Thermoset molding compounds for dinnerware and electrical breakers, and
  - Thermoplastics for plastic tail light lenses, glasses, and medical devices.

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CYTEC INDUSTRIES INC.
Wallingford Facility (Continued)

- Emissions Sources:
  - Reactor Trains -- kettles, APCs, ancillary equipment;
  - Combustion Sources -- boilers, sludge incinerator;
  - Storage Tanks; and
  - Wastewater Treatment Plant.
- 600 employees.

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REGULATORY OVERVIEW

- CYTEC's Wallingford facility has a number of CTDEP permits and orders:
  - VOC RACT order (e.g., reactor trains).
  - NOx RACT order under development (e.g., boilers, sludge incinerator), and
  - Several minor NSR (construction/operating) permits (e.g., emergency generators).
- CYTEC is anticipated to be subject to MACT standards for Polymers and Resins III and the Miscellaneous Organic NESHAP (MON).
- New Source Performance Standards (NSPS) (e.g., storage tanks).
- Connecticut NSR (Major/Minor).
- Other Connecticut SIP requirements.
- Non-federally enforceable state requirements.

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OPERATIONAL FLXIBILITY NEEDS

- ➤ Make equipment changes to manufacturing processes without delay.
- Make material formulations changes without delay.
- Construct new projects without delay.
- ➤ Use P2 in lieu of add-on controls, when feasible.
- ➤ Make process changes that trigger an applicable. requirement without re-opening the Title V permit.

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PROPOSED APPROACHES TO OPERATIONAL FLEXIBILITY

- Mechanisms available for providing operational flexibility include:
  - Plantwide Applicability Limit (PAL),
  - NSR Pre-Approvals,
  - Emission Quantification,
  - VOC RACT Emissions Averaging,
  - Like-Kind Equipment Replacement, and
  - Title V Minor Permit Modifications.
- Hybrid approach necessary to address CYTEC's flexibility needs.

PAL FOR VOCs

A federal and state enforceable VOC emission limitation for al lVOC emitting activities at CYTEC's Wallingford facility to avoid minor or major NSR.

- Applicability:
  - Modifications of existing emission units, and
  - Additions of new emission units.
- Provides built-in incentives for pollution prevention if CYTEC wants to grow.

PAL FOR VOCs (Continued)

- Establishing CYTEC's VOC PAL involves a three-step process:
  - Selection of Emissions Estimation Techniques:
    - Same methods that would be used for NSR.
  - Establishment of Baseline Emissions (1990 Actuals).
  - Design of Emissions Compliance Monitoring Approach:
    - Mass balance tracking,
    - Insignificant changes through minor permit modification process, and
    - Confidential Business Information protection.

PAL FOR VOCs (Continued)

- Other Mechanics
  - Reporting and recordkeeping requirements:
    - Tracking changes under the PAL, and
    - Notifying CTDEP of changes made under the PAL.
  - State air toxics approval is separate.
- Future Adjustments to the PAL:
  - New regulatory requirements, and
  - Improved monitoring approaches.

VOC PAL Permit Language

- PAL applicability ● pages 78-79.
- Determination of PAL baseline ● pages 79-82.
- Notification → page 82
- Compliance → page 82
- Quantification →page 82
- Monitoring →page 82
- Emissions above the PAL →pages 82-83

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PRE-APPROVALS

Advanced NSR approvals for specific projects and categories of projects so as to avoid reopening CYTEC's Title V permit.

- Specific projects include:
  - Pilot Plant (Minor Source),
  - New Industrial Boiler, and
  - Sludge Incinerator (Modification/Replacement).
- Specific project category:
  - Storage Tanks.

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Pre-Approvals Permit Language

- Construction/operation of a boiler → pages 74-75
  - minor source BACT requirement → page 74
  - ambient impact analysis → page 75
- Construction/operation of VOL tanks → page 75

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EMISSION LIMITATIONS

Pre-certified list of control equipment, operational limitations, and pollution prevention activities to make emission quantification enforceable.

- The permit contains pre-approved emission quantification and monitoring scenarios that CYTEC can use to limit its PTE and/or to meet emissions limits, through a simple registration mechanism.

- Permit Language:
  - Emissions Limitation Menus → pages 51-54
  - Emissions Quantification Menus → pages 55-62
  - Emissions Monitoring Menus → pages 63-73

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VOC RACT EMISSIONS AVERAGING

Provides CYTEC with greater flexibility in complying with RACT limits.

- Establish requirements for using emissions averaging to satisfy the RACT level of reduction for a group of emission sources.
- Major elements of the proposed averaging approach:
  - Averaging time consistent with shortest averaging time allowed by applicable RACT requirements; and
  - Monitoring under the permit demonstrates compliance with both RACT and PAL to avoid redundant requirements.
- May be used whether or not the emission sources are within the same ACT/CTG category:
  - Batch Chemical ACT,
  - Industrial Wastewater ACT, and
  - Volatile Organic Liquid Storage ACT.

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VOC RACT Emissions Averaging Permit Language

- Intra-CTG Category Averaging → pages 23-24
- Inter-CTG Category Averaging → pages 24-27

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LIKE-KIND EQUIPMENT REPLACEMENT

May establish a procedure that allows for the replacement of an emission source with identical equipment.

- Minor NSR permit is not required for routine replacement.

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TITLE V
MINOR PERMIT MODIFICATIONS

***Provides** CYTEC with a streamlined avenue for incorporating most new applicable requirements without waiting for prior approval.*

- Incorporation of existing NSPS and MACT standards:
  - Specify existing standards where compliance approaches are "cookie cutter" (i.e., not requiring customization); and
  - Addition of newly "triggered" existing requirements.
- Connecticut plans to revise their Title V regulations to add a minor permit modification track; otherwise, all possible standards would need to be specified at permit issuance.

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POLLUTION PREVENTION (P2)

- Built-in incentives in PAL.
- Establishment of a P2 plan as a component of CYTEC's Title V permit. Requirements include:
  a. Corporate Statement of Commitment,
  b. P2 Definition,
  c. Employee Training and Recognition Program,
  d. Existing and New Process P2 Review Procedures,
  e. Community Outreach,
  f. Product/Stewardship/Customer and Supplier Outreach Recognition Program,
  g. Environmental Reviews/Audits,
  h. Bench Marking/Plant Key Performance Indicators,
  i. P2 Metrics, and
  j. Reporting/Tracking Procedures.

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POLLUTION PREVENTION (Continued)

- RACT: Incorporate P2 into RACT determinations.
- BACT: Defines P2 as a valid approach for meeting BACT.
- MACT: Highlights need for EPA to incorporate P2 into MACT determinations.
- P2 Permit Language:
  - P2 Program Language
    - conditions/elements → page 84
  - P2 Component of BACT → page 85

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CYTEC P4 PERMIT FLEXIBILITY AND P2 SUMMARY

Desired Operational Flexibility	Solution(s)
Make equipment changes to manufacturing processes without delay and without reopening the Title V permit	• Establish PAL for VOC emitting units • Register control equipment in order to make emissions reductions enforceable • Establish procedures allowing for "like-kind" replacement of sources
Make material formulation changes without delay	• Establish PAL for VOC emitting units • Broad description of equipment function in Title V permit
Construct new projects without delay	• Include VOCs under the PAL and seek pre-approval for "non-capped" pollutants
Use P2 in lieu of add-on controls to meet emission standards	
1 MACT Standards	1 Ask EPA to add provision to regulations allowing P2 to satisfy MACT standards
2 VOC RACT	2 Incorporate in RACT determination
3 State/EPA BACT Definition	3 Revise State/EPA air regulations to allow for P2 to meet BACT
Make process changes that trigger an applicable requirement without reopening the Title V permit	• Revise state air regulations to allow for minor permit modifications
Inter-RACT emissions trading across CTG categories	• Establish emissions averaging provisions and require limited risk assessment
Modification determination using actual to future actual emissions	• Federal NSR promulgation and PAL/CAP

Rio Grande Portland Cement
Draft Title V Permit

By Dave Bray
EPA Region 10

Rio Grande Portland Cement

- **Plant constructed in 1959**
- **Production capacity of over 500,000 tons/year of various cement products**
  - **quarry operations, stockpile activities**
  - **primary/secondary crushing**
  - **raw material milling, drying, & blending**
  - **raw material processing to form clinker**
  - **milling of clinker to form finished product**

Rio Grande Portland Cement

- **Grandfathered source, except for PSD permit on finish mill system**
- **Pollutants (pre-controlled PTE):**
  - **CO: 468.08 TPY**
  - **NOx: 807.5 TPY**
  - **SO_2: 1103.41 TPY**
  - **PM_{10}: 65,825 TPY**
  - **TSP: 82,817 TPY**
  - **VOC: 11.04 TPY**

Rio Grande Portland Cement P4 Permit - Key Provisions

- Specific pre-approval (crusher re-location)
- "Categorical pre-approvals"
  - new equipment
  - modifications to existing equipment
  - replacement of existing equipment
  - raw material changes
- Emission offsets provisions

Pre-approvals subject to...

- NAAQS-protective modeling protocol
  - limited to "geographic footprint" of modeled area
- Compliance with facility-wide limits
  - plantwide applicability limit (PAL)
    - for PSD applicability purposes
  - pre-controlled emission rate (PER)
    - for minor NSR applicability purposes
- No new applicable requirement
- No relaxation of monitoring
- Notification requirement
  - Administrative Amendment Notification Form

P2 as a Tool for Flexibility

by Dave Bray
EPA Region 10

Why P2?

Most agencies' mission statements include a commitment to P2, and the recognition that P2 is the preferred method of achieving environmental objectives.

P2 is Better in the Long Run

- Promotes sustainability
- Involves productive investments
- Is cleaner, cheaper, smarter

P2 vs. Control Technology

- Control Technology:
  - May have high energy requirements
  - May generate other or transfer pollutants
  - Are non-productive investments
  - Often trigger regulatory review
- P2:
  - Represents productive investments
  - Typically does not trigger regulatory review
  - Can be easier to "pre-approve" than control technology

How can P2 be Integrated into Title V Permits?

P2 as a Means to Meet Existing Requirements (RACT, MACT, SIP limits, etc.)

- Some limits are "P2 friendly," and P2 reductions can be credited towards compliance
- Need to write permit language that can measure P2 reductions in a manner which allows for demonstration of compliance

P2 as an Element in Determining New Requirements (BACT, LAER, case-by-case MACT)

- P2 can be considered when determining new requirements for sources as a part of the case-by-case decision processes
  - how will P2 affect the requirement (directly/indirectly)?
  - how will P2 reductions be measured for compliance demonstration purposes?

P2 as a Means for Producing Creditable Emission Reductions for use in Emission Trades

- PTE limits, PALs, plant-wide caps, bubbles, emission offsets, DERs, etc.
- Important consideration:
  - quantifying emission reductions in a manner consistent with the provisions of the underlying rules

The Ability to Utilize P2 Offsets Can be Streamlined

- Pre-Approved Emission Reduction Registrations
  - Cytec Permit
- Administrative Emission Factor Revisions
  - Lasco Permit

P2 as a Method to Achieve Beyond Compliance Performance

- Some new programs encourage, or even require, beyond compliance performance
  - need to ensure that P2 reductions are measured in terms consistent with the compliance demonstration methodology

Legal Basis for the Incorporation of P2 into Permits

- The basis of Title V permit content is an explicit connection to mechanisms for meeting applicable requirements
- Methods must be enforceable in order to receive "credit."
- P4 permits designate the use of P2 program/performance in lieu of, or in addition to, more "traditional" means of meeting applicable requirements (e.g., BACT, internal offsets to support a cap, etc.)
- P2 Programs provide a straightforward means of ensuring and demonstrating that compliance with applicable requirements is dependent upon meeting P2 activities

P2 Program Implementation Can Support Permit Provisions

- P2 Programs need not be "enforceable"
- Designated Op/Flex capabilities can be "lost" if an approved P2 Program is not implemented
- "Linkage" provides a strong P2 incentive

P2 Program Content (examples)

- P2 Training Programs
- P2 Community Outreach Plans
- Design for Environment Provisions
- P2 Tracking and Reporting Provisions
- P2 Goals and/or Performance Indicators
- Supplier Outreach/Partnerships

P2 Programs Enhance the Likelihood of Identifying P2 Opportunities

- Design for the Environment Provisions
- P2 Training
  - operators directly involved with pollution-generating processes
  - R&D laboratories
  - external community affairs

P2 Programs Enhance the Likelihood of Implementing P2 Opportunities

- P2 Performance Goals
  - Lasco
  - Imation
- Utilization of P2 offsets to meet requirements
  - Lasco
  - Imation
  - Intel
  - Cytec
  - Rio Grande
- P2 Program Linkage to BACT and/or Op/Flex provisions
  - Lasco
  - Searle
  - Intel
  - Imation

P2 Programs Help Ensure Sources Can Comply with Flexibility Provisions that Reduce Agency Permit Processing

- Cytec
  - PAL
- Lasco
  - Annual PTE Limit
  - Daily NAAQS Cap
  - Pre-Approvals
- Intel
  - Annual and short-term Plant Site Emissions Limit (PSEL)
  - Pre-Approvals

P2 Metrics

- P2 v. Emissions
  - Permits must include methods for demonstrating compliance with emissions limits (e.g., lbs/day)
  - P2 metrics must be sensitive to production/process efficiency and have the ability to demonstrate progress

Metrics

- Daily Cap Compliance Demonstration Metric

  $VOC_{emissions,\ daily} = \Sigma^{n}_{i=1}[EF_i * (\Sigma^{m}_{j=i}(M_j * \%\ VOC_j)_i]$

- $VOC_{emissions\ daily}$ = total daily VOC emissions in pounds
- index "i" = unique emission factor EF_i used to characterize VOC emissions
- EF_i = unique OAPCA emission factor in terms of lbs VOC emissions /VOC input
- n = total # of unique emission factors which characterize emissions during the day
- j designates a materials used with a unique VOC content
- $M_{j,i}$= actual total amount in pounds of unique material "j" used during the day
- $\%VOC_j$ = the % by weight of VOC in material "j"
- $\Sigma^{m}_{j+1}(M_j * \%VOC_j)_i$ = the sum of VOC input which can be modeled using EF_i

Metrics

- P2 Metric

  P2 reduct. $= (AS_{annual})*(EF_{agg})*\{[1/((1-\%AS_{reduct})*(1-EF_{reduct}))]-1\}$

  - $P2_{reduct.}$= total amount of emission reductions from P2 measures over the reporting period in pounds
  - AS_{annual} = total available styrene used during the annual reporting period based on monitoring
  - $\%AS_{reduct.}$ = sum of total % reductions in available styrene and resin use
  - % EF_{reduct} = total % reduction in the aggregate approved emission factor
  - EF_{aggreg} = current, approved aggregate emission factor in terms of pounds of styrene emissions per available styrene input

P4 Permit
Good Source Candidacy

Good Source Candidacy

- Operational Objectives
- Regulatory Objectives
- Demonstrated Commitment

Operational Objectives

- **Growth**: sources experiencing rapid growth that will trigger frequent regulatory requirements;
- **Market responsiveness:** sources in competitive industries characterized by the need for rapid and frequent product line changes;
- **Short technology turnover cycles:** sources operating in markets that require frequent changes in production technology to remain competitive;
- **Continuous operational improvement:** sources seeking to create more efficient operations, but are frequently faced with regulatory barriers to such improvement.

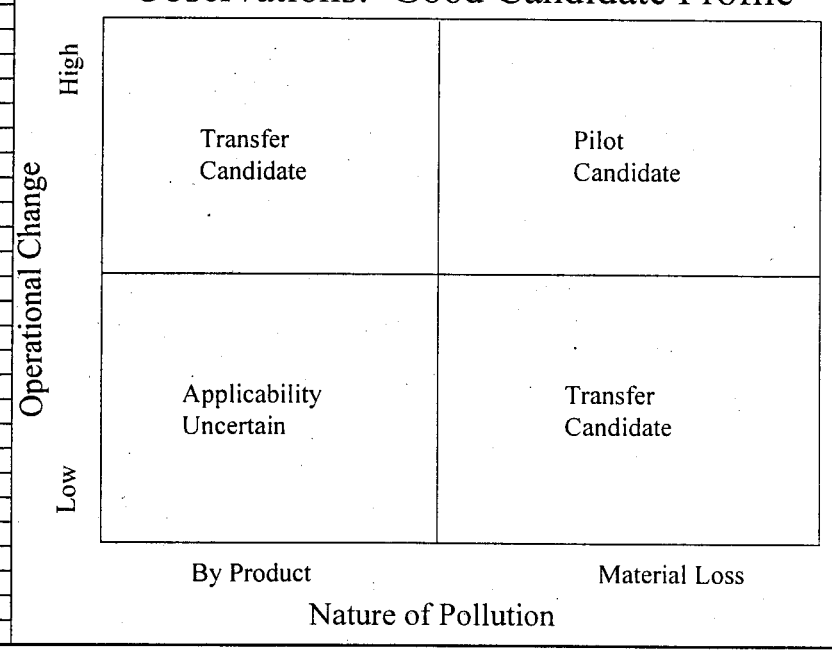
Regulatory Objectives

- Regulatory requirements: sources with complicated regulatory structures;
- Predictability: sources whose operational planning requires a high degree of requirement foreknowledge;
- Administrative streamlining: sources with multiple applicable requirements;
- Timeliness: sources in rapidly changing markets that require quick regulatory turn-around.

Demonstrated Commitment

- **Pollution prevention**: sources with a demonstrated commitment to pollution prevention;
- **Technical ability**: sources "technically" capable of committing to a flexible permit that promotes P2;
- **Permitting history**: sources should have a positive history of Clean Air Act compliance and a solid relationship with EPA/permitting authority.

Observations: Good Candidate Profile



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P2 Question & Answer

Q. *How did the concept of combining pollution prevention and operational flexibility into Title V permit development originate?*

A. The idea originated in April of 1993 at a conference on pollution prevention and the Clean Air Act. Here, representatives from EPA Region 10 and EPA OAQPS held an ad hoc meeting to discuss the viability of a regulatory reinvention initiative that could enhance operational flexibility in Title V permits, using pollution prevention as a pathway to obtaining this flexibility.

Q. *Is pollution prevention a required component of every P4 permit?*

A. Pollution prevention gains are not mandatory, but a *commitment* to P2 is an essential component of every P4 permit. At a minimum, each P4 permit contains a "P2 Program." Each P2 Program is designed to provide a framework that allows the source to increase its focus on, interest in, and utilization of pollution prevention, and increase the likelihood that P2 will occur. As well, these programs create an added assurance to the permitting authorities that sources will be able to comply with flexible permit conditions. While none of the P2 Programs are enforceable, several of the permits (Lasco Bathware, Intel, Searle Pharmaceutical, and Imation Enterprises) contain an explicit link between implementation of an approved P2 Program and many of the Title V operating permits' operational flexibility provisions. In these cases, sources will not be penalized for failing to implement an approved P2 Program; however, they will not be able to utilize designated flexibility provisions if an approved P2 Program is not in place.

Q. *How does P2 enhance operational flexibility?*

A. One of the biggest flexibility "needs" of P4 sources is to reduce or eliminate the time required to process New Source Review (NSR) and undertake associated Title V permit revisions. P2 can help meet this need, and enhance operational flexibility, when a source must create emissions offsets to remain within an emissions cap. Often, the most streamlined way to create offsets is through P2. Because the use of new or altered control technology will almost always require regulatory review and permit revisions, it can be more costly to use control to achieve offsets. Alternatively, if properly built into the permit, P2 can support the creation and utilization of offsets without regulatory review or permit revisions. For example, the Intel permit creates a dynamic system in which the company is "pre-approved" to make a series of operational changes provided it remains under an environmentally protective Plant Site Emissions Limit (PSEL). The permit uses P2 reductions as the means for Intel to remain below this cap, while operating in preapproval mode. This creates a strong P2 incentive if Intel chooses to expand production, and eliminates the time consuming regulatory approvals that otherwise would be necessary if new or altered control technology were used. The Lasco, Cytec, and Rio Grande Portland Cement permits provide a similar system with one important difference: in addition to P2, these permits also allow for the use of curtailment and/or control technology to achieve necessary offsets in preapproval mode (Lasco and Rio Grande Portland Cement only allow P2 and curtailment; Cytec allows for P2, operational limitations, or control technology). Therefore, when these sources wish to expand production and increase emissions, the choice offers maximum decision-making flexibility in creating emissions offsets. If available, however, P2 is often the most attractive option: pre-approving control

technology is a complex permit writing exercise that cannot always be employed, and curtailment can be less attractive to sources. Overall, the use of P2 for emissions offsets can enhance operational flexibility, increase the value of P2 activities, and encourage more P2 endeavors.

Q. *Will measurable environmental improvements occur as a result of the P2 provisions?*

A. Possibly. Because all of the P4 permits contain implicit and/or explicit P2 incentives, the likelihood of pollution prevention occurring is increased. The presence of emissions caps (PTE limits, PALs, etc.) in permits can create particularly strong P2 incentives for sources that are operating with actual emissions that approach their caps. In these instances, if the source plans to expand operations, emissions caps ensure that growth can only occur if corresponding emissions per unit produced go down. While sources are allowed to increase their caps to accommodate growth, such increases are subject to time consuming permit revisions. Therefore, P4 permits offer a lower cost incentive to operate under a fixed emissions cap, which in turn provides implicit incentives for P2 offsets. In addition, the integration of pollution prevention, through P2 incentives and a P2 Program, can encourage sources to strive continuously for operational improvements that will reduce the amount of pollution associated with their products and operations. In this way, P4 permits help sources adopt a pollution prevention mind-set in all operations, and can act as a catalyst for continuous improvement in the environmental profile of these sources. Ultimately, this can also encourage more long-run sustainable production behavior. Already, Intel's Aloha facility has engaged in enough P2 to reduce its emissions cap voluntarily. Similarly, Lasco Bathware's Yelm facility has exceeded the P2 performance goals outlined in its P2 Program requirements.

Q. *Why does each P4 permit appear to vary in the amount and scope of P2?*

A. While all P4 permits have a P2 Program, the amount of actual pollution prevention depends largely upon source incentives, source P2 capabilities, and state/local regulatory structures. For example, sources that are able to use pollution prevention as a component of their BACT and/or RACT determinations may demonstrate more P2 than sources whose regulatory structures do not allow for P2 integration into control standards. Likewise, sources that have strong economic and regulatory incentives to reduce pollution may be more likely to cultivate pollution prevention gains than sources with fewer economic incentives for P2. Lasco Bathware's primary air pollutant is styrene; therefore, Lasco is constantly seeking ways to reduce the amount of costly styrene inputs, which in turn also reduces styrene emissions per unit produced.

Q. *Has it been necessary to change rules in order to accommodate P2 within these permits?*

A. No. However, in several P4 efforts, teams were able to devise alternative means to meeting regulatory requirements that help ensure that P2 will take place. For example, Lasco could only receive P2 credit for activities that reduced the amount of styrene emissions per unit input by revising its emissions factor. Because emissions factor revisions constitute a change in the compliance demonstration method, a significant permit modification to the Title V permit would ordinarily be necessary for each change. The potential need to revise its permit for every emissions factor change would decrease the incentive for undertaking P2 innovations. To help encourage P2, the permit is written so that emission factor changes will only require an administrative modification to the permit, as long as specified procedures are followed. By streamlining this

process, the Lasco permit decreases the costs associated with obtaining credit for P2 offsets and increases the value of P2 gains. On another note, while all permit provisions that promote P2 comply with existing local, state, and federal regulations, the P4 permit development efforts also identified regulatory arenas, such as MACT standard development, where P2 integration into rulemaking would help encourage P2 gains.

Q. *Do sources receive "special" regulatory treatment as a result of the P2 provisions in the permit?*

A. No. While several P4 permits contain an explicit link between implementation of an approved P2 Program and operational flexibility, the actual flexibility provisions found in these permits ensure full regulatory compliance with all applicable requirements and remain within the confines of existing environmental regulations. Because creation of "flexible" permits requires a time commitment beyond that necessary to write a baseline Title V permit, P2 provisions offer the permitting authority increased assurances that the source will remain under its emissions cap, thereby remaining in preapproval mode. This assurance will, in turn, limit the number of regulatory reviews and permit revisions the permitting authority will need to conduct during the permit, and help justify the additional up front resources the permitting authority committed in developing the P4 permit.

Q. *Are P2 provisions easily transferable to other permits?*

A. Certain P2 concepts are quite replicable, whereas some permit language will need source-specific tailoring. For example, the general components of a P2 Program--P2 training, P2 research, and P2 tracking and reporting--can potentially be accommodated to any source that has P2 potential. Other provisions, such as use of P2 to help meet control technology requirements, or the creation of P2 offset mechanisms, may also be transferable, but the degree of tailoring required will depend on the source situation and regulatory requirements.

FOR MORE INFORMATION ABOUT P4...

If you have additional questions about the P4 initiative, contact one or both of the following P4 Project Coordinators: **Dave Dellarco**, EPA Region 10, at 206/553-4978; or **Michael Trutna**, EPA OAQPS, at 919/542-5345.

Pollution Prevention and the Intel Permit

Introduction

In October 1995, Oregon DEQ, EPA, and Intel completed development of an innovative Title V Permit for Intel's Aloha facility that:

- addressed Intel's need for permit flexibility;
- promoted pollution prevention; and
- met all state and federal regulatory requirements.

How Intel's permit promotes pollution prevention is not immediately obvious from reading the permit. Although Condition 16 outlines a pollution prevention program for Intel to follow, *it is the regulatory incentives contained in Conditions 14, 17 and 19 which really motivate Intel to choose pollution prevention as its preferred means of reducing emissions.*

- Condition 14 contains specifications for meeting the required VOC RACT determination. Through the permit development process, Intel and Oregon DEQ developed a "universal," source-specific, performance-based RACT standard for Intel's entire spectrum of wafer manufacturing process. The performance- based standard provides a strong incentive for Intel to use P2 to meet RACT.

- Condition 17 pre-approves Intel to make certain process changes affecting VOC emissions without triggering minor New Source Review (NSR) at the time of the change, as long as Intel meets all applicable requirements including a federally-enforceable VOC emissions cap. However, to qualify for this pre-approval, Condition 17 specifies that Intel cannot alter or add to its control technology requirements, and that any emissions increases must be offset by reductions through pollution prevention. The permit condition therefore makes pollution prevention--rather than control technology--Intel's preferred strategy for addressing VOC emissions.

- Condition 19 gives Intel a regulatory incentive to limit its generation of Hazardous Air Pollutant (HAP) emissions. Under this condition, Intel agrees to reduce aggregate HAP emissions to a greater degree than federally required in exchange for not having to specify individual HAP emissions.

The remainder of this document summarizes in more detail the background behind the Intel permit, and how permit Conditions 14, 16, 17, and 19 work to provide environmentally beneficial permit flexibility. For reference, these conditions are included as an appendix to this document, as they appear in the final permit.

Background

Intel's Aloha facility:

- is a "major" source of volatile organic compounds (VOC) subject to Title V of the Clean Air Act;
- manufactures semiconductors in a highly competitive market characterized by constant technical innovation and frequent modification of production processes;
- operates under a VOC Plant Site Emissions Limit (PSEL) of 190 tons per year (tpy) (Oregon assigns PSELs (emissions caps) as part of its State Implementation Plan [SIP] process);
- had actual VOC emissions of 152 tons in 1993;
- has planned expansions that are expected to contribute an additional 53 tpy to overall VOC emissions, with likely continued future expansion; and
- was concerned that the time associated with permit modification procedures under minor NSR and Title V would severely hinder Intel's ability to develop new products rapidly and thus compete in its market.

In this setting, Conditions 14, 16, 17, and 19 of Intel's Title V permit were crafted to provide Intel operational flexibility and promote pollution prevention. Each of these permit conditions is described below.

Permit Condition 14: Source-specific Pre-approved changes for VOC Emitting Processes

Motivation

- Intel was the first semiconductor manufacturing facility in Oregon to become subject to a source-specific VOC RACT determination. The permit writing challenge was therefore to develop a RACT standard that would: meet all legal requirements; provide flexibility for meeting operational needs; allow for NSR pre-approvals (see Condition 17); and provide incentives for pollution preventing behavior.

Permit Condition Summary

- Condition 14 specifies a RACT determination for the photoresist operations (responsible for 90% of Intel's VOC emissions). The determination includes a "universal" source-specific RACT standard for Intel's entire spectrum of wafer manufacturing processes: 2×10^{-4} lbs VOC per cm^2 wafer processes. This performance-based standard was determined to be as

environmentally beneficial as control technology alternatives (which were found to be cost prohibitive).

How Permit Condition 14 Promotes Pollution Prevention

- Because the condition is performance-based and does not specify how to meet the standard, Intel can choose to use pollution prevention measures or control technology. However, P2 is often more attractive to Intel because a Title V permit modification is required if Intel chooses to comply with the RACT standard by altering or adding to its existing control technology.

- The standard also provides an assurance that Intel cannot crank up emissions per unit of production, and use non-production or equipment downtime to show compliance with the VOC PSEL.

Permit Condition 17: Pre-approved changes for VOC Emitting Processes

Motivation

- To compete successfully in the semiconductor industry, Intel must operate in a continuous improvement mode by continuously developing new products and adapting processes to changing market conditions.

- Oregon's SIP structure has no de minimis exemption from minor NSR. Therefore, any physical or operational change affecting Intel's VOC emissions, no matter how small, could subject Intel to time consuming and costly minor NSR at the time of the desired change. (While the costs of actually getting a minor NSR permit may be small, the costs to Intel due to lost sales resulting from delay in making process changes may be great).

- Intel was willing to commit to using pollution prevention to create emission reductions to offset any increases resulting from pre-approved changes subject to minor NSR.

Permit Condition Summary

- Condition 17 pre-approves Intel to make certain physical and process changes to narrowly defined categories of activity that would increase the maximum capacity to emit VOC, provided that:

  (1) such changes are offset by emission reductions achieved through the pollution prevention program so that the maximum capacity of the plant to emit VOC does not exceed 190 tpy (and 8.0 tons in any one week); and

  (2) control equipment is unaltered, compliance demonstration methods do not change, and all other applicable requirements are met.

How Permit Condition 17 Promotes Pollution Prevention

- Without any additional controls or pollution prevention activities, the maximum capacity to emit VOCs, given Intel's newly expanded facility would be expected to exceed the 190 tpy cap. To take advantage of the minor NSR pre-approvals and stay within that cap, Intel can only expand production by creating offsets through pollution prevention and remaining under the 8 ton weekly cap. Condition 17 therefore provides a powerful regulatory incentive for Intel to seek ways to reduce VOCs through pollution prevention: if it does not, process modifications would violate the pre-approved minor NSR condition, and Intel would instead be subject to minor NSR at the time of the desired change. Therefore, Condition 17 creates a framework in which Intel can only qualify for pre-approved process changes by creating pollution prevention-based offsets.

- Condition 17 also gives Intel a strong regulatory incentive to become more effective at preventing pollution in the future. When Intel wishes to expand production and utilize the pre-approved minor NSR condition, it must offset any additional VOC emissions by reducing VOC emissions from existing processes *through pollution prevention.* The explicit link between pre-approval and pollution prevention in Condition 17 gives Intel the incentive to invest continuously in innovative ways to prevent pollution.

Permit Condition 16: Pollution Prevention Program

Motivation

- DEQ and EPA wanted Intel to develop an explicit pollution prevention program and document the effectiveness of pollution prevention in reducing air emissions.

- DEQ and EPA wanted Intel to use pollution prevention as the primary means of achieving the pollution reductions necessary to receive pre-approval for certain process changes (outlined in Condition 17 above).

Permit Condition Summary

- Condition 16 requires Intel to develop and implement a pollution prevention program.

- Condition 16 also specifies minimum elements for the program, including pollution prevention data collection, monitoring, and reporting requirements.

How Permit Condition 16 Promotes Pollution Prevention

- Condition 16 is not the main driving force for Intel to *undertake* pollution prevention. The regulatory incentives in Conditions 14, 17 and 19 are the pollution prevention drivers. Condition 16, however, outlines the schedule, minimum pollution prevention elements, and

reporting requirements that Intel must address as it implements pollution prevention at the Aloha facility.

- One of the biggest challenges to expanding the use of pollution prevention is the difficulty of measuring success. Condition 16 requires Intel to develop metrics for quantifying and communicating prevention success that may then inform and encourage other companies' efforts.

Permit Condition 19: Aggregate HAPs Emission Limits

Motivation

- Typically, a source can restrict activities to ensure they will not be classified as a "major" source for a particular pollutant, by limiting its potential to emit (PTE) below a certain threshold. This can be done by adopting permit conditions that specify federally enforceable limits on operations. Both Oregon and federal rules specify that to become a "synthetic minor" for HAPs, a source must limit its PTE to less than 10 tpy of any individual HAP and less than 25 tpy of aggregate HAPs.

- Intel wanted to avoid specifying emissions limits for individual HAPs, for fear that disclosing emissions for specific pollutants could reveal proprietary business information.

Permit Condition Summary

- Condition 19 establishes a PTE of only 20 tpy of aggregate HAPs (less than the 25 tpy found in the state and federal rules).

- Condition 19 also establishes a PTE of 10 tpy of aggregate organic HAPs and 10 tpy of aggregate inorganic HAPs (thereby assuring that no individual HAP could be greater than 10 tpy).

How Permit Condition 19 Promotes Pollution Prevention

- Before the Title V permit, Intel had actual aggregate HAPs emissions of approximately 40 tpy. Qualifying for synthetic minor status required Intel to drop to 25 tpy. Because many HAPs are VOCs, Intel is likely to reduce HAP emissions through pollution prevention, as motivated by Conditions 16 and 17.

- Condition 19 encourages Intel to continue to prevent pollution in the future: Intel can expand production without crossing a regulatory threshold and becoming regulated as a major source of HAPs only by continuously reducing per-unit HAPs emissions as production expands.

Summary

The Intel Permit provides environmentally beneficial flexibility and promotes pollution prevention. The permit:

- meets all federal and state regulatory requirements;

- allows Intel to make certain pre-approved process changes in compliance with the minor NSR rules;

- enables Intel to protect proprietary business information by not specifying individual HAP emissions; and

- provides strong incentives for Intel to prevent pollution and to pursue continuous pollution prevention innovation.

This is accomplished through the following permit conditions:

- *Condition 14* - establishes a performance based source-specific RACT standard with strong incentives to use pollution prevention as a means of complying with the standard;

- *Condition 16* - requires Intel to develop a pollution prevention program, and document results;

- *Condition 17* - commits Intel to produce pollution prevention-based offsets so that certain pre-approved changes comply with minor NSR; and

- *Condition 19* - uses EPA's "synthetic minor" process and an innovative approach to HAP specification to create incentives for Intel to reduce HAPs emissions, and to reduce them continually in the future.

The Intel permit conditions are unique to the Aloha facility, but the *process* used to develop the Intel permit can be replicated and applied to other sources in the Title V program to create similarly innovative, flexible, environmentally beneficial permits. The basic elements of the process include:

- the identification of aspects of the regulatory program that are particularly burdensome to the source;

- the willingness of permitting authorities to work with the source to address such concerns within the existing regulatory framework in a creative way that promotes pollution prevention; and

- a willingness on the part of the source to work cooperatively with the permitting authority to achieve mutually beneficial results.

Pollution Prevention and the Lasco Permit

Introduction

In July 1997, the Olympic Air Pollution Control Authority issued an Title V Permit for Lasco's Yelm, Washington facility that:

- addressed Lasco's need for flexibility;
- promoted pollution prevention; and
- met all state and federal regulatory requirements.

This document summarizes the background behind the Lasco permit, and how permit Conditions E2, E3(d), E3(f), E2(b), E3(e)(i-ii), E3(e)(iv), and E3(a-g) provide environmentally beneficial permit flexibility. For reference, these conditions are included as an appendix to this document.

Background

Lasco's Yelm facility:

- produces a variety of fiberglass bathware products from two production lines (acrylic and gelcoat), housed in separate but connected buildings;
- is a "major" source of volatile organic compounds (VOC) and a hazardous air pollutant (HAP) subject to Title V of the Clean Air Act;
- has a strong interest in reducing the overall use of styrene as it is an expensive input in the facility's manufacturing process; and
- wants to be able to expand overall production to meet market demand.

Permit Condition E2: Potential to Emit Limitation

Motivation

- Lasco desired clarification with respect to when it would be subject to major NSR requirements. The company also wanted to ensure that it would not unintentionally have to meet stringent federal BACT requirements that might jeopardize the facility's financial viability.

Permit Condition Summary

- Condition E2 creates a federally enforceable limitation on plant-wide potential to emit, set at no more than 249 tons per consecutive 12 month period.

How Permit Condition E2 Promotes Pollution Prevention

- In order to comply with the enforceable cap, Lasco can only expand production by decreasing per unit emissions. This provides a strong incentive for pollution prevention offsets.

Permit Condition E3(f): Pre-approved actions

Motivation

- Lasco wanted to make equipment changes to increase productivity and/or efficiency. Process and/or equipment changes desired by Lasco include: adding spray booths, changing spray equipment, adding spray equipment, changing mechanical equipment (e.g., adding a stack), or changing the facility's mold conveyor system. Many of these changes would enable Lasco to decrease production costs, minimize styrene use, and/or reduce styrene emissions. However, adding or replacing equipment often triggers NSR regardless of whether an emission increase occurs. Major equipment changes, even in the absence of emissions increases, can trigger minor NSR.

- The Olympic Air Pollution Control Authority wanted to incorporate greater flexibility into the permit to prevent time-consuming minor NSR permit modifications and accompanying Title V modifications.

Permit Condition Summary

- This condition pre-approves certain types of modifications that trigger minor NSR (for criteria pollutants and toxics). Applicable requirements for these changes are met up-front in the Title V permit. Implementation of a pollution prevention program is a pre-requisite for pre-approval.

How Permit Condition E3(f) Promotes Pollution Prevention

- Because pre-approvals must operate under a combined stationary source cap, any emissions increases associated with the pre-approved changes are to be offset by emission decreases elsewhere in the facility. Given that Lasco wishes to expand production, such offset requirements provides another incentive for pollution prevention: to decrease styrene use and/or emissions per unit of production. Pollution prevention goals are also advanced because P2 Program implementation is required

before pre-approvals can be utilized. Once pre-approvals are exercised, the P2 program becomes an enforceable requirement.

Permit Condition E2(b): Emissions factors

Motivation

- Lasco and the permitting authority wanted to cut down on time-consuming and costly Title V permit revisions required for emission factor changes.

- Lasco wanted to be able to make production changes that decreased emissions per unit of input; however the regulatory structure inhibited Lasco's ability to recognize gains in production efficiency, as altering the emissions factor to ensure compliance required a time consuming permit modification.

Permit Condition Summary

- Lasco's emissions level (and compliance with both the daily cap and annual PTE cap) is determined by applying an emissions factor to styrene input. The Lasco permit provides that changes to emission factors used for determining compliance do not require significant Title V permit modification. Instead, an administrative amendment to the permit can be made if administrative procedures specified in the permit are followed..

How Permit Condition E2(b) Promotes Pollution Prevention

This provision ensures a low-cost, streamlined mechanism for translating pollution prevention gains into emissions offsets, and, as a result, can make pollution prevention more attractive to the source. Pollution prevention activities can lead to less styrene emitted per unit of styrene input. Such activities will change the basis for Lasco's emissions factor (which estimates the amount of styrene emitted per unit input). Because Lasco desires to increase production, it has an incentive to reduce emissions per unit input so it can produce more and still remain in compliance with its emissions caps. However, the prospect of requiring a (major) permit modification could dissuade Lasco from undertaking pollution prevention that it could not translate into offsets for purposes of increasing production under its caps.

Permit Condition E3(a-b): P2 Program

Motivation

- The local permitting authority (OAPCA) wanted to ensure that the Lasco permit maintained maximum protection of the environment and public health, and promoted pollution prevention.

- Lasco wanted to be able to demonstrate its serious commitment to pollution prevention and strong environmental performance.

Permit condition summary

- The permit incorporates the option of a voluntary pollution prevention program for Lasco. The program is voluntary, but there is an explicit link between the adoption of an approved pollution prevention program and the flexibility conditions in the permit: to access pre-approvals, Lasco must have an approved P2 program in place. In addition, an approved P2 program is part of BACT for the pre-approved changes. (Condition E3(g))

How Condition E3(a-b) Promotes Pollution Prevention

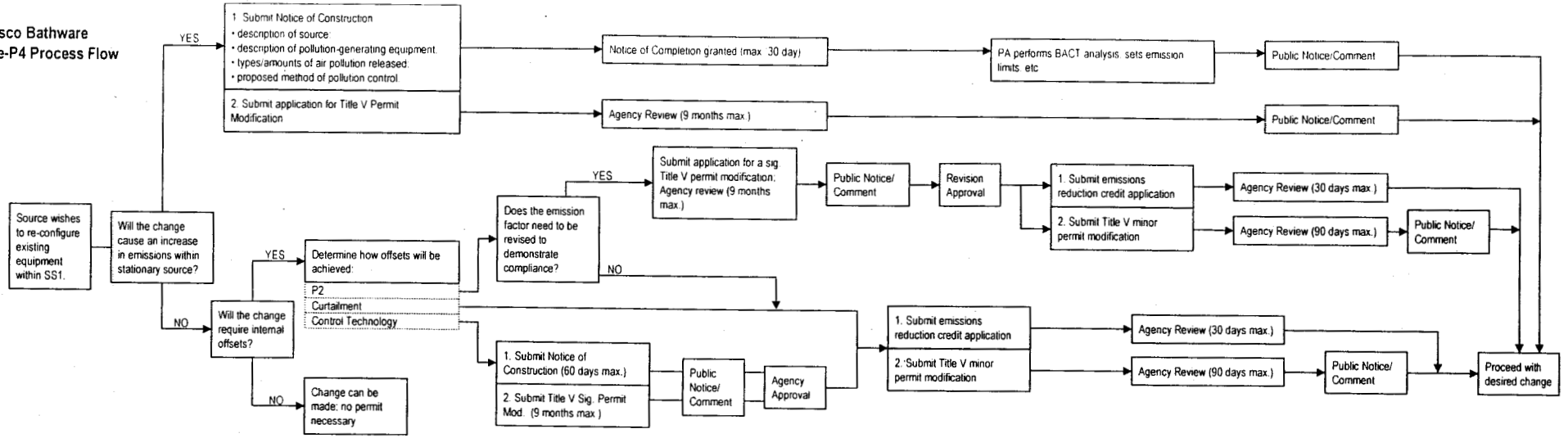
- The pollution prevention program helps to ensure that Lasco maintains an ongoing, systematic commitment to evaluating and implementing P2 opportunities. Lasco is encouraged to implement the program because permit flexibility can only be obtained after an approved program is implemented.

- The P2 program includes P2 objectives and requires annual reporting on P2 activities and outcomes. This establishes a mechanism through which regulatory agencies and the general public can hold Lasco accountable for its P2 performance.

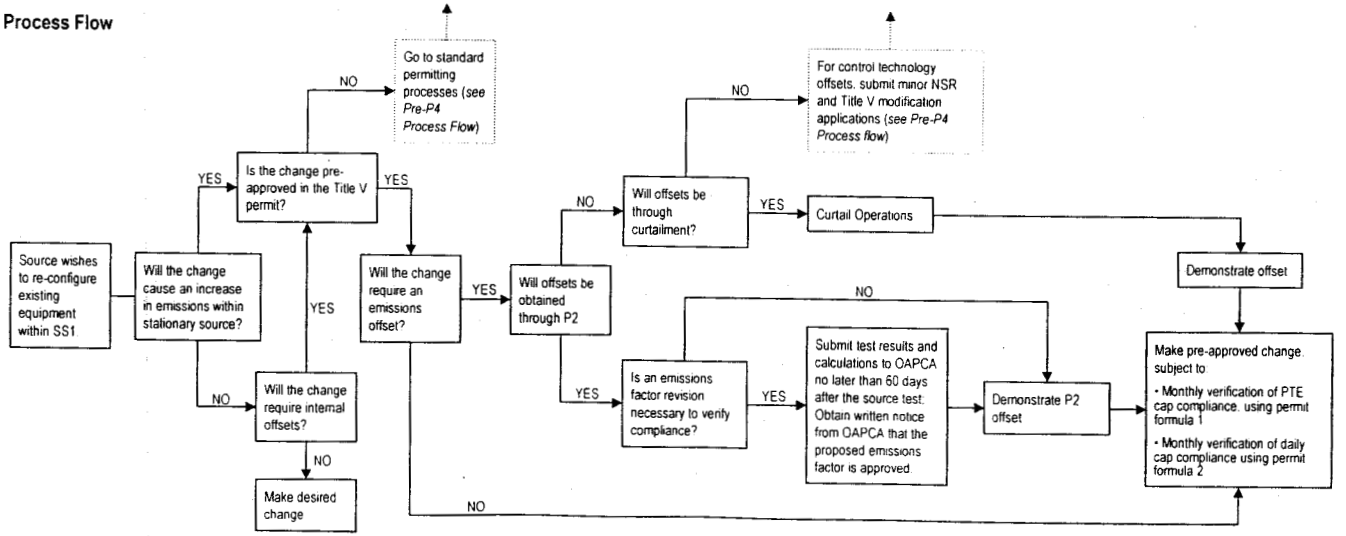
Permit condition E3(g): summary

- An approved P2 program is part of BACT for the pre-approved changes. This condition also specifies and pre-approves BACT requirements for the pre-approved modifications.

Lasco Bathware Pre-P4 Process Flow



P4 Process Flow



Homework Assignment

1. List several "innovative" permit concepts you've heard about in this workshop that potentially would not be "allowed" under your regulatory structure?

   - What aspect of your regulatory structure will not allow these mechanisms?

2. List the "innovative" permit concepts you've heard about in this workshop that potentially WILL be allowed under your regulatory structure.

3. In any of your own permits, have you prepared other "flexible" terms/conditions that address source operational and/or regulatory needs?

- **Potential to Emit (PTE) Emissions Cap**

This cap is a federally enforceable limit on styrene usage that limits plant-wide VOC PTE to 249 TPY, ensuring that the source does not exceed the 250 TPY major NSR status threshold, so long as the source chooses to remain below the limit.

See permit language, page 20-21; see also "Critical Points," *PTE Limit.*

- Cap Compliance. The permit includes a formula for calculating VOC emissions for any 12-month period using an approved emissions factor.

See permit language, page 21.

- Emissions Factor Updates. Emissions factors used for determining compliance can be updated through an administrative amendment process if procedures designated up-front in the permit are followed. This tool also supports minor NSR (NAAQS cap) compliance described in the next section.

See permit language, pages 21-22; see also "Critical Points," *Administrative Emissions Factor Updates.*

- Enforceability. The permit includes additional monitoring, record keeping, and reporting for PTE cap compliance.

See permit language, pages 22-24.

- **Notice of Construction Approval (Full Pre-approval)**

Under this provision, Lasco is approved to construct new emission units and to make modifications, alterations, and replacements within its two designated stationary sources, provided that specified provisions are met.

See permit language, page 24; see also "Critical Points," *Notice of Construction (Full Pre-Approvals).*

- Stationary Source. The permit specifies what the interpretation of "stationary source" is for purposes of the permit and the pre-approved changes.

See permit language, page 27; see also "Critical Points," *Interpretation of Stationary Source.*

- Types of Pre-approved Changes. Specifically, the permit pre-approves: construction of new emissions units; stationary source/emission unit modifications; emission unit replacements; control technology replacements; and control technology substantial alterations.

See permit language (Table 6), page 28.

- P2 Program. The permit specifies that pre-approved changes are only allowed if an approved P2 Program has been implemented. The P2 Program contains general directions for investigating and implementing P2 opportunities in addition to P2 Program performance goals and compliance demonstration.

  See permit language, page 24; see also "Critical Points," *P2 Program.*

- NAAQS Cap. To ensure that pre-approved changes do not violate the NAAQS or state toxic ambient requirements, the permit specifies that any emissions increases resulting from actions approved under the Construction Approval condition be offset by emissions reductions so that combined stationary source emissions do not exceed 3419 pounds of VOC per calendar day.

  See permit language, pages 30-31; see also "Critical Points," *NAAQS-protective Emissions Cap.*

  - P2 Offsets. The permit encourages the use of P2 to offset emissions increases that occur as a result of a pre-approved construction/modification activity, and to remain under the NAAQS cap.

    See "no net emissions increase" permit language, page 30; see also "Critical Points," *P2 Offsets.*

  - Cap Compliance. The permit includes a formula for calculating VOC emissions on a monthly basis, by computing the combined daily VOC emissions for each stationary source using approved emission factors and records of the actual daily amount of material used.

    See permit language, page 31..

  - Enforceability. The permit includes additional monitoring, record keeping, and reporting for the daily cap.

    See permit language, pages 32-33.

- BACT. The permit specifies up-front what BACT (and T-BACT for air toxics) will be for all installations of new emission units, and modifications and replacements of existing emissions units that are made under this Construction Approval provision. An approved P2 program is one component of the BACT determination for pre-approved changes.

  See permit language, pages 28-29; see also "Critical Points," *Advanced BACT.*

- Prohibitions. The permit specifies that pre-approved changes under the Construction Approval provision are not allowed if they result in the emission of new air toxics, trigger a new applicable requirement, or

  See permit language, page 31.

require a change in permit monitoring, record keeping, and/or reporting. This specification ensures that no changes that could cause significant environmental implications, or changes to permit enforceability, will be undertaken in the "pre-approval" mode.

- Request for an Extension. The permit approves the extension of these conditions to enable continuous minor NSR streamlining if: Lasco submits an annual extension request; BACT does not change for the categories of pre-approved changes; and the permit continues to assure compliance with all applicable requirements for pre-approved changes.

See permit language pages 31-32.

- **Operational Changes Not Subject to NSR**

The permit both defines "modification" for purposes of the pre-approval condition, and specifies which types of operational changes will *not* be considered modifications subject to NSR.

See permit language, page 27 ("Modifications"); see also "Critical Points," *Clarifying Modifications*

LASCO BATHWARE P4 PERMIT
CRITICAL POINTS

- **PTE Limit**

The PTE cap provides regulatory certainty that Lasco will not be subject to major NSR requirements so long as it chooses to comply with the limit. As well, because it is in Lasco's economic interest to increase/expand production as necessary, and yet remain synthetic minor for NSR, Lasco has an implicit incentive to find ways to decrease per unit of production emissions. This encourages pollution prevention activities at the source.

- **Administrative Emissions Factor Updates**

Because compliance with both the daily cap and yearly PTE cap is determined by applying an emissions factor to styrene input, a significant permit modification would normally be required for any alterations to the emissions factor that were made to verify certain P2 advances. The Lasco permit, however, includes enough information up-front so that changes to emissions factors only require an administrative amendment to the permit, if identified procedures are followed. The administrative amendment process is significantly less time consuming; therefore, by eliminating administrative difficulties, Lasco has the ability to utilize P2 offsets more quickly and at lower cost. This, in turn, increases the value of undertaking P2 activities.

- **Notice of Construction (Full Pre-Approvals)**

Pre-approved minor NSR (and minor NSR for air toxics) changes offer Lasco greater predictability and flexibility to make product line changes, as applicable requirements are identified and met up front in the Title V permit. Pre-approving certain classes of changes in the Title V permit also helps to streamline administrative processes for Lasco, who might normally have to go through numerous, time consuming, case-by-case minor NSR processes throughout the permit term in the absence of this pre-approval provision. As well, both the lack of regulatory predictability and the potential for time consuming requirements previously may have inhibited Lasco from making certain types of changes. Pre-approved NSR helps encourage Lasco to undertake operational changes, many of which hold the potential to increase resource productivity and efficiency, and to produce greater environmental benefit.

- **Interpretation of "Stationary Source"**

Washington state law defines stationary source as: "any building, structure, facility, or installation that emits or may emit any regulated air pollutant." Because the interpretation of this definition can vary, the Lasco permit provides an explicit interpretation of stationary source up-front in the permit (stationary source is interpreted as a "building" as opposed to smaller structures or emissions units within each building). Because emissions increases that trigger minor NSR are measured *with respect to the stationary source*, clarifying the interpretation up-front in the permit provides the source with regulatory certainty regarding which changes will

trigger regulatory requirements. Potentially, a broader interpretation of stationary source in this context can also encourage P2 opportunities: emissions reductions achieved within the same stationary source can be utilized to stay below minor NSR regulatory thresholds.

- **P2 Program**

The permit incorporates the option of a voluntary pollution prevention program for Lasco. While the program is voluntary, there is an explicit link between the adoption of an approved P2 program and the flexibility conditions in the permit. This linkage creates a very strong incentive for the source to maintain a strong P2 program. As well, a P2 program that represents a continuous effort to reduce pollution in all aspects of facility operations increases the likelihood that P2 opportunities will be identified and implemented by the source. In this way, the P2 Program helps to ensure that Lasco will remain below its emissions cap, and thereby increasing the likelihood that Lasco will remain in "pre-approval mode," and limit the number of NSR changes the authority will need to process during he permit term.

- **NAAQS-Protective Emissions Cap**

All pre-approved changes must comply with a short-term, environmentally protective "NAAQS cap," such that any emissions increases associated with the pre-approved changes are to be offset by emission decreases elsewhere in the facility. Given that Lasco wishes to expand production, such offset requirements give Lasco another incentive for pollution prevention by decreasing styrene use and/or emissions per unit of production. In Lasco's case, this cap also ensures compliance with state toxic ambient impact requirements.

- **P2 Offsets**

The permit specifies the option of using P2 to offset any emissions increases that occur as a result of pre-approved changes, and to remain in compliance with the NAAQS-protective cap. This provision re-enforces the notion that P2 can be the most attractive option for achieving offsets. Pre-approving control technology is a complex permit writing exercise that cannot always be employed, and curtailment can be less attractive to sources. Overall, the use of P2 for emissions offsets can enhance operational flexibility, increase the value of P2 activities, and encourage more P2 endeavors.

- **Advanced BACT**

Designating the BACT (and T-BACT for air toxics) requirement for pre-approved changes is essential to authorizing the minor NSR changes in advance; this also provides regulatory certainty to the source regarding BACT determinations for these changes. To satisfy an 18-month BACT re-certification requirement, the permit establishes an annual BACT review procedure, where the determination is revised, as necessary, to reflect new technology.

- **Clarifying Modifications**

Because interpretations of "modification" can also vary, the permit clarifies certain categories of activities which are not considered substantial modifications in the context of the Lasco permit. These clarifications provide greater regulatory certainty to the source by clearly indicating that such changes do not have minor NSR implications. These changes include: routine maintenance and repair of existing equipment that does not increase production capacity of either stationary source; an increase in the production rates of either stationary source if the increase can be accomplished without a capital expenditure; an increase in the hours of operation; and use of an alternative raw material, varying filler content, or varying styrene content, if prior to the permit date, the stationary sources were designed to accommodate such alternatives.

Lasco Bathware Permit

PROJECT PARTICIPANTS

- Lasco Bathware
- Washington State Department of Ecology ("Ecology")
- Olympic Air Pollution Control Authority ("OAPCA")
- EPA Region 10
- EPA OAQPS

SOURCE SITUATION

- Lasco Bathware operates several facilities nationwide that produce a variety of fiberglass bathware products. Lasco's Yelm, Washington facility (hereafter referred to as Lasco) participated in the P4 Project. Lasco operates two basic production lines that make surface tubs, showers, and whirlpools: an acrylic production line and a gelcoat production line. These two production lines are in separate but connected buildings.

- Lasco is a Title V source because it is "major" for both VOCs and HAPs: Its potential to emit (PTE) for styrene -- a hazardous air pollutant (HAP) and a VOC -- is more than 100 tons per year (tpy). Other facility emissions include particulate dust and minor amounts of combustion byproducts.

- Lasco's styrene emissions occur during the production process from the curing of resin, as styrene is a key component of the bathware manufactured from both lines. Particulate dust results from drilling and grinding processes in the finishing of cured parts. VOC emissions also result from the combustion of natural gas to provide space heating for the two warehouse buildings which house the facility.

- Lasco's Yelm facility is located in an attainment area for all criteria pollutants. The facility's only air permit prior to entering the Title V process was a "Notice of Construction" (NOC), or Washington State minor New Source Review (NSR) permit issued when the facility was established in 1981. On June 20, 1996, OAPCA issued an Approval Order establishing a voluntary, facility-wide, enforceable limit on potential to emit of VOC of 249 tpy per consecutive 12 month period.

PARTICIPANT NEEDS/OBJECTIVES

Source Responsiveness Needs

- **General regulatory predictability:**

  In Washington State, minor NSR is triggered when there is a "modification" to an existing "stationary source," or a new "emissions unit." A wide range of possible regulatory interpretations of the terms "modification," "stationary source," and "emissions unit" created uncertainty surrounding state minor NSR applicability. Interpreting "stationary

source" as a product line or smaller unit would mean that any modification within a product line that increased emissions would trigger minor NSR and its requirements. These uncertainties made it difficult for Lasco to plan its operations, as the regulatory determination was not made until the time of the change. This prohibited Lasco from making changes that might subject them to minor NSR requirements, even if such changes clearly would have resulted in pollution prevention.

BACT requirements were also very uncertain, as these requirements would also be determined by the permit writer at the time of the permit application. BACT requirements could have included mandatory, prohibitively expensive (from the sources' point-of-view) control equipment. Lasco believed certain BACT determinations would be too costly to implement (and might have forced them to close the facility). The source needed a predictable way to "lock in" BACT requirements in advance of making NSR changes, to provide for more precise business planning. Minor NSR BACT approvals also had to be re-certified every 18 months. Lasco considered this process time consuming, unpredictable, and unacceptably risky.

- **Product input expense/waste reductions:**

Because styrene is an expensive input in the facility's manufacturing process, Lasco had a strong interest in reducing the overall use of styrene as well as emissions or waste associated with its use.

- **Product line modifications:**

Lasco wanted to make certain physical or process changes that could, for example, temporarily increase production at one part of the facility (i.e., production line) without going through minor NSR at the time of the change. This flexibility would help Lasco meet unpredictably high short-term market demand for products made at one line. In such instances, Lasco would be willing to offset emissions increases at one part of the facility by decreasing emissions (through curtailment) at another part of the facility, effectively keeping overall facility-wide emissions constant. However, even temporary physical or operational changes in production are likely to require modifications, because such changes are operational alterations affecting source capacity. These changes result in emissions increases that could trigger minor NSR, regardless of emissions decreases made elsewhere. Because the minor NSR process is time consuming and the requirements are often unpredictable, Lasco did not undertake temporary line changes and lost market share.

- **Equipment changes:**

Lasco also wanted to make equipment changes to increase productivity and/or efficiency. Process and/or equipment changes desired by Lasco include: adding spray booths, changing spray equipment, adding spray equipment, changing mechanical equipment (e.g., adding a stack), or changing the facility's mold conveyor system. Many of these changes would enable Lasco to decrease production costs, minimize styrene use, and/or reduce

styrene emissions. However, adding or replacing equipment often triggers NSR regardless of whether emission increases occur. Major equipment changes, even in the absence of emissions increases, trigger minor NSR.

- **Production expansion:**

  Lasco wanted to be able to expand overall production to meet market demand. Given that Lasco was subject to an enforceable facility-wide cap, production expansion could only be achieved by decreasing emissions per unit product. Compliance with this cap was measured by applying an approved emissions factor to product inputs. While Lasco had made changes over time that it felt decreased emissions per unit of input (wrapped more styrene into the product), Lasco could not alter the emissions factor (demonstrating this increase in efficiency and allowing it to increase production) without a time consuming significant Title V permit modification.

- **Pollution Prevention:**

  Being able to make production changes that decrease emissions per unit of input also advanced pollution prevention, as it allowed for increased production without a corresponding increase in emissions. However, the regulatory structure inhibited Lasco's ability to recognize gains in production efficiency, as altering the emissions factor to ensure compliance required a significant Title V permit modification. Ultimately, these requirements inhibited this type of pollution prevention activity, and made it difficult for the facility to expand production as desired.

- **Acknowledgment of P2 Gains:**

  As leaders in the industry, Lasco wanted to maintain a strong environmental reputation. Lasco also wanted to be recognized for its previous gains in pollution prevention.

Local Permitting Authority Needs

- **Administrative Streamlining**

  The Olympic Air Pollution Control Authority (OAPCA) wanted to incorporate greater flexibility into the permit to prevent time-consuming minor NSR permit modifications, and to provide greater economic benefits to the source.

- **Environmental Protection**

  OAPCA also wanted to be responsive to the needs of the source, while ensuring that the Lasco permit maintained maximum protection of the environment and public health, and promoted pollution prevention.

- **Enforceability**

  OAPCA wanted a Title V permit that met all legal requirements and contained practical enforceability.

- **Title V Procedures**

  Lasco's Title V permit was one of OAPCA's first Title V permits. With this, OAPCA wanted to establish durable permit writing procedures and concepts that could be incorporated in other Title V permits it would write.

State Environmental Agency Needs

- **Flexibility:**

  The Washington State Department of Ecology wished to identify incentives and barriers to environmentally beneficial flexibility in existing regulatory structures, and find ways to obviate these barriers while simultaneously promoting pollution prevention.

- **P2 Documentation:**

  Ecology wanted to gather data on pollution prevention effectiveness, and document pollution prevention gains.

- **State Air Program Reform:**

  Ecology was also interested in making state NSR program revisions to promote flexible and environmentally beneficial permitting concepts.

REGULATORY COMPONENTS AFFECTING PARTICIPANT NEEDS

- **Minor NSR:**

  - *Applicability:*

    Under Washington State and Olympic Air Pollution Control Authority (OAPCA) regulations, NSR is triggered by: i) *any* new stationary source; ii) any new/replaced emissions unit; or iii) a modification (physical or operational change) that causes an increase in the emissions with respect to the stationary source.

  - *Program Requirements:*

    - permit application;
    - state BACT review and certification;
    - 18-month BACT re-certification;

- compliance with WA Air Toxics Regulations
- compliance with other general regulations (odors, dust, etc.)
- demonstration of no adverse air quality impact (NAAQS demonstration);
- compliance demonstration; and
- public notice and comment.

- *Needs impeded by regulatory requirements:*

  - general regulatory predictability
  - control equipment predictability
  - product line changes
  - equipment changes
  - production expansion
  - pollution prevention

♦ **Minor NSR Toxics**:

- *Applicability:*

  NSR toxics applies only to the affected emission unit(s) and the corresponding actual emissions from the unit(s), and is limited to the emission unit(s) proposed to be modified, and the toxic emissions that increase as a result of the modification.

- *Program requirements:*

  - application (can be made jointly with minor NSR application, if both are applicable);
    - state BACT for Air Toxics (T-BACT);
    - ambient impact determination ("Acceptable source impact level (ASIL)"), to demonstrate emissions are sufficiently low to protect human health and safety from carcinogenic and/or other toxic effects; ASIL requirements apply only to incremental increases in air toxic emissions with respect to the source.
  - compliance monitoring/recordkeeping;
  - public notice and comment.

- *Needs impeded by regulatory requirements:*

  See impediments listed under minor NSR, beginning on page 5.

APPROACHES TO FLEXIBILITY AND POLLUTION PREVENTION

♦ **Plant-wide emissions cap**

- *Description:*

  This cap is a federally enforceable limitation on plant-wide potential to emit, set at no more than 249 tons per consecutive 12 month period. (See condition E2, page 20).

- *Program addressed:*

  This cap addresses major NSR applicability by ensuring that the source will not be subject to major NSR's Prevention of Significant Deterioration (PSD) requirements.

- *Needs addressed:*

  - ***Pollution prevention:*** To comply with this enforceable cap, Lasco can only expand production by decreasing per unit emissions. This encourages pollution prevention.

  - ***General regulatory predictability:*** This cap clarifies when Lasco is subject to major NSR requirements, and helps ensure they will not unintentionally have to meet stringent federal BACT requirements that might jeopardize the facility's financial viability.

♦ **Interpretation of the definition of "stationary source"**

- *Description:*

  Washington State law defines stationary source as: "any building, structure, facility, or installation that emits or may emit any regulated air pollutant." The Lasco permit interprets stationary source as a building, rather than as smaller structures or emissions units within each building. Because Lasco has two buildings (one housing the acrylic production line, the other the gelcoat line), the facility has two stationary sources. (See condition E3(d), page 27.)

- *Regulatory Program Addressed:*

  The interpretation of "stationary source" addresses minor NSR applicability (both for criteria pollutants and for toxics), as only modifications that cause an increase in emissions are subject to minor NSR. Modifications are defined as physical or operational changes that increase emissions with respect to the stationary source.

- *Needs addressed:*

  - ***General regulatory predictability:*** In the absence of a specified "stationary source" interpretation, Lasco might not know in advance which types of changes would be subject to minor NSR requirements. Specifying the

interpretation in the permit provides greater regulatory predictability for the source.

- ***Equipment changes:*** This interpretation allows Lasco to undertake physical or process changes within a product line without triggering minor NSR, as long as emissions do not increase. Therefore, the interpretation sets up the ability to offset emissions between units within each stationary source, and to keep overall stationary source emissions constant, or lower. The interpretation provides greater operational flexibility for making process changes without compromising environmental quality.

- ***Administrative streamlining:*** Because the permit will require less frequent modifications, administrative processes for the permitting authority are streamlined.

- ***Pollution prevention; product input expense/waste reduction:*** This provision gives Lasco an incentive to decrease emissions within a stationary source, and encourages pollution prevention activity (using less styrene per unit product) within a building and production line.

- Example: Prior to this permit, if a stationary source was defined as a "production line," adding a spray booth to an existing production line and subsequently increasing emissions from that production line (but with no building-wide increases) would have constituted a "modification" and triggered minor NSR. Under the interpretation in Lasco's Title V permit, stationary source is defined as "building;" in this instance, there is no increase in emissions with respect to the source as long as any increased emissions within the building are offset by decreases within the building. Therefore, NSR is not triggered.

♦ **Minor NSR Pre-approvals**

- *Description:*

  - The permit pre-approves certain types of modifications that trigger minor NSR (for criteria pollutants and toxics). (See condition E3(f), page 27; and Table 6, page 28.) Applicable requirements for these changes are not avoided, they are simply met up-front in the Title V permit. Pre-approved changes include:

    - adding new emissions units
    - modifying stationary source/emissions units
    - replacing emission units
    - replacing control technology
    - substantially altering control technology

- Implementation of a pollution prevention program is a pre-requisite for pre-approval. Once pre-approvals are exercised, the P2 program becomes an enforceable requirement.

- NSR Requirements are met in the following manner:

  - **<u>BACT review</u>: control technology pre-approvals** (See condition E3(g), page 28-29.)

    - The permit specifies and pre-approves BACT technology for the pre-approved modifications, provided that specified conditions are met. The permit also establishes an annual review procedure to satisfy the 18-month re-certification.

    - An approved P2 program is part of the pre-approved BACT determination.

  - **<u>NAAQS (criteria) and ASIL (toxics) demonstration</u>: Stationary Source Cap** (See condition E3(i), page 30.)

    - This is a cap over combined stationary source emissions, set at 3419 pounds of VOCs per day. This cap was intended for NAAQS (and air toxic) protection, as this is the daily rate which corresponds to the facility as originally approved.

  - **<u>Public notice and review requirements</u>: Title V process**

    - Public notice requirements are met up front in the public comment and review process for the Title V permit.

  - **Other requirements include:**

    - No new air toxics
    - No new applicable requirements
    - No changes in monitoring/recordkeeping

- *Needs addressed:*

  - ***General regulatory predictability; product line changes; equipment changes; control equipment predictability:*** Pre-approved changes offer Lasco greater predictability and flexibility to make product line changes because applicable requirements are made clear or met up front in the Title V permit. Pre-approved BACT addresses Lasco's need for control technology predictability.

- ***Pollution prevention:*** Because pre-approvals must operate under a combined stationary source cap, any emissions increases associated with the pre-approved changes are to be offset by emission decreases elsewhere in the facility. Given that Lasco wishes to expand production, such offset requirements give Lasco another incentive for pollution prevention: to decrease styrene use and/or emissions per unit of production. Pollution prevention goals are also advanced because P2 Program implementation is required before pre-approvals can be utilized.

- Example: Adding new emissions units to either stationary source triggers minor NSR even in the absence of an emissions increase. Previously, requirements associated with NSR for this type of change might preclude Lasco from making the change. Because the Title V permit pre-approves this category of change, Lasco can add an emissions unit (for example, to Stationary Source 1) without a time-consuming NSR application at the time of the change, as long as the emissions cap is not exceeded. If an increase in emissions results, emissions reductions can be made at either stationary source 1 or stationary source 2. All other applicable requirements are met up-front.

- ***Administrative streamlining:*** Pre-approving certain classes of changes up front in the Title V permit ultimately helps streamline administrative processes for the permitting authority.

♦ **Administrative Emissions Factor Updates**

- *Description:*

  Lasco's emissions level (and compliance with both the daily cap and yearly PTE cap) is determined by applying an emissions factor to styrene input. The permit provides that changes to emission factors used for determining compliance (i.e., the method of compliance demonstration) do not require a re-opening of the permit, if certain administrative procedures are followed (see condition E2(b), page 21-22). An administrative amendment to the permit provides that new emissions factors can be used, if they are approved by OAPCA following a source test.

- *Regulatory Program Addressed:*

  Emissions factor flexibility addresses compliance demonstration requirements for both major and minor NSR (criteria and toxics).

- *Needs addressed:*

  - ***Pollution prevention; production expansion:*** This provision gives Lasco an added incentive to seek pollution preventing innovations. Pollution

prevention activities include innovations which lead to more styrene incorporated into the product (less styrene emitted per unit of styrene input); in estimating emissions, such changes should be reflected in the emissions factor (which estimates the amount of styrene emitted per unit input). Because Lasco desires to increase production, it has an incentive to reduce emissions per unit input so it could produce more and still remain in compliance with its emissions caps. However, the prospect of requiring a (major) permit modification could dissuade the source from revising its emission factor. This potentially dissuaded Lasco from undertaking pollution prevention that could not translate into offsets for purposes of increasing production under its caps. Ultimately, this provision ensures a low-cost, streamlined mechanism for translating pollution prevention gains into emission offsets.

- ***Administrative streamlining:*** This provision potentially streamlines previously time-consuming and costly permit revisions required for emission factor changes.

♦ **Clarifying Modifications**

- *Description:*

Because interpretations of "modification" can vary, the permit clarifies certain categories of activities which are *not* considered substantial modifications in the context of the Lasco permit. The following processes are not considered modifications in the Lasco permit, as long as there is no increase in maximum capacity to emit during any eight-hour period: (See condition E3(e)(I) & (ii), page 27.)

- Routine maintenance and repair of existing equipment that does not increase production capacity of SS1 and SS2.

- An increase in the production rates of SS1 and SS2 if the increase can be accomplished without a capital expenditure (i.e., no physical change is made).

- An increase in the hours of operation.

- Use of an alternative raw material, varying filler content, or varying styrene content, if prior to the permit date, the stationary sources were designed to accommodate such alternatives, is not considered a modification. In other words, such changes can be made as long as no new equipment is necessary for the change to occur, and as long as emissions do not exceed the eight-hour cap. (See condition E3(e)(iv), page 27.)

- *Regulatory Program Addressed:*

  These clarifications address minor NSR and minor NSR toxics.

- *Needs addressed:*

  - ***Regulatory Predictability***: These "modification" clarifications provide greater regulatory certainty to the source by ensuring that these categories of changes will not trigger NSR/NOC.

  - ***Pollution Prevention***: Pollution preventing behavior is encouraged by allowing production rate increases at the stationary sources, as long as no capital expenditure has been made. This is because production increases, and any associated emission increases within a stationary source, must be offset by emission decreases through P2 (or curtailment) to avoid triggering NSR. In addition, including the "use of an alternative raw material" rewards inherent pollution preventing behavior of the source. Presumably, changes in raw material, filler content, etc., will result in less emissions because styrene is expensive, and Lasco has an economic incentive to reduce its inputs. In this scenario, Lasco also has an incentive to maintain or reduce emissions resulting from raw material changes in order to avoid triggering minor NSR. Therefore, with this provision, Lasco has an incentive to use alternative raw materials to promote pollution prevention. This provision clarifies Lasco's ability to make certain beneficial raw material changes.

♦ **Pollution Prevention Program**

- *Description:*

  The permit incorporates the option of a voluntary pollution prevention program for Lasco. The *program* is not a "plan" for some future action; rather, it reflects a commitment to continuous efforts to reduce pollution in all aspects of the facility. While the program is voluntary, there is an explicit link between the adoption of an approved pollution prevention program and the flexibility conditions in the permit: to access pre-approvals, Lasco must have an approved P2 program in place. In addition, an approved P2 program is part of BACT for the pre-approved changes. This creates a very strong incentive for the source to implement and maintain a strong P2 program. (See Condition E3(a)-(g), pages 24-29.)

  - P2 program requirements include:

    - a P2 training program;

- pollution prevention investigation into ways to reduce product input and emissions, and implementation of techniques found to be technically and economically feasible;
- research in new P2 technologies;
- P2 tracking and reporting;
- P2 program performance demonstration; and
- public meetings.

- P2 program goals:

  - The total sum of percent reduction in styrene emitted per unit of production shall equal or exceed one percent reduction by the end of the third year from permit issuance, and a two percent reduction by the end of the fifth year from permit issuance.[1]

- P2 program reporting/compliance requirements:

  - Demonstration that applicable P2 performance goals have been met through implementation of P2 measures, or partial attainment of the applicable P2 performance goals was achieved, and full attainment of the goals was not feasible;

  - Demonstration of attainment or progress towards performance goals based on actual material use and production records. If goals are not achieved, Lasco must document why such goals were not achieved; and

  - A report demonstrating compliance with the P2 program submitted to OAPCA prior to the end of the 3rd and 5th year of the permit term.

- *Program addressed:*

  The program is not directed at any specific requirements (and as such, is voluntary). However, implementation of the program is necessary for Lasco to obtain the flexibility provisions established under minor NSR (criteria and toxics) and to meet BACT requirements imposed on pre-approved operational changes.

- *Needs addressed:*

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[1]The State's pollution prevention staff considered Lasco a leader in pollution prevention that already had made considerable strides in emissions per unit reductions. Thus, regulatory agencies found ostensibly modest goals acceptable since future gains would be decidedly difficult. Others also did not want to create unrealistic expectations.

- ***Pollution prevention:*** The pollution prevention program provides a very strong incentive to engage in pollution preventing behavior, as most source flexibility needs can only be met through P2 program implementation.

- ***Acknowledgment of P2 gains:*** The pollution prevention program provides a visible way for Lasco to demonstrate its serious commitment to pollution prevention and strong environmental performance.

- ***P2 documentation:*** The program's specification and quantification of goals and objectives provided Lasco an incentive to measure pollution prevention effectiveness, and to document pollution prevention gains. The P2 program also provides the necessary mechanism for tracking and reporting P2 offsets that must be used to ensure compliance with the daily emissions cap.

Lasco Bathware P4 Permit

Source Benefits

	Regulatory Objectives			
P4 Tools	Predictability		Timeliness	Administrative Streamlining
	Applicability	Requirements		
Annual Cap	Gives the source certainty that PSD will not be triggered as long as emissions remain below the 249 TPY cap.	Requirements do not apply.	Time-consuming PSD requirements are not triggered.	
Interpretation of the definition of "Stationary Source"	An explicit interpretation gives the source greater predictability regarding minor NSR applicability.	Minor NSR requirements may be triggered less frequently with a broader interpretation of the definition of stationary source.	Changes involving emissions increases with respect to the stationary source can now be made without time consuming permit delays as long as corresponding decreases within the stationary source also occur.	The ability to make a greater number of changes within each stationary source, without triggering minor NSR, reduces administrative burdens.
Minor NSR Advanced Approvals	Applicability is determined up-front in the Title V permit.	Requirements are determined and met up-front in the Title V permit.	Changes within the categories of advanced approvals can be made without delay as long as permit conditions are followed.	Advanced approvals potentially condense a whole series of otherwise case-by-case procedural activities (NOC, NAAQS demonstration, BACT, public notice, etc.) into a single event (issuance of the Title V permit).
NAAQS protective daily cap	Applicability is determined up-front in the Title V permit for designated changes.	Compliance with the cap ensures that the source will always meet the NAAQS for pre-approved changes.	Because compliance with the cap ensures NAAQS protection, specified advanced NSR approvals can occur at any time during the permit term.	Compliance with the cap facilitates advanced approvals, and streamlines NAAQS protection demonstration.
Advanced BACT	Applicability is determined up-front in the Title V permit for designated changes.	Pre-approved BACT for the pre-approved modifications grants the source certainty regarding specific minor NSR regulatory requirements for pre-approved changes.	Pre-approved BACT enables advanced approvals to occur at any time during the permit term, without delay.	Pre-approved BACT facilitates administrative streamlining by enabling advanced NSR approvals up-front in the Title V permit, and avoiding administrative burdens associated with case-by-case BACT determinations throughout the permit term.
Administrative Emissions Factor Update			The source has the ability to access certain types of P2 offsets more quickly.	If the source chooses to increase production efficiency and/or engage in pollution prevention, this provision reduces the administrative burden associated with using P2 offsets to stay below a cap, and makes P2 offsets more valuable.
"Design to accommodate"	This provision provides certainty regarding the ability to make specified raw material changes without triggering minor NSR.	Requirements are not triggered.	The raw material changes designated in this provision can be made at any time during the permit term without delay.	No NSR administrative activities will be undertaken for changes that meet Design to Accommodate criteria.
Pollution prevention offsets	P2 offsets can be used to ensure that major/minor NSR is not triggered.	Under this permit, P2 offsets can be used to help meet permit requirements (NAAQS protection, etc.)	P2 can be used to help ensure that emissions remain below the NAAQS protective cap. P2 offsets also ensure pre-approved changes can be made without delay.	Using P2, in lieu of control technology, to offset emissions increases ensures greater administrative streamlining. Unlike offsets through control technology, use of P2 does not trigger minor NSR or a significant Title V permit modification.
Pollution Prevention Program	Implementation of a P2 program is linked to most flexibility provisions that enhance regulatory predictability.	The P2 Program enhances the likelihood that opportunities to use P2 to meet requirements will be identified.	The P2 Program provides the mechanism for tracking P2 offsets that may be required in order to remain below an emissions cap.	Minor NSR advanced approvals, and the administrative streamlining that results, cannot be accessed by the source without an approved P2 program in place.

- **Compliance Demonstration Menus**

The Cytec permit contains menus of pre-approved emission limitation, quantification, and monitoring techniques, and associated selection protocol, which can allow Cytec to install new emissions units and/or create new federally enforceable emissions limits by authorizing the incorporation of these compliance details through a minor permit modification process.

See permit language, pages 51-73; see also, "Critical Points," *Compliance Demonstration Menus.*

- Compliance. Emission quantification techniques are to be cross referenced with the compliance method associated with the emission unit (in the emissions unit section of the permit).

See permit language on pages 55-62.

- Monitoring. The permit specifies that monitoring for emission quantification be conducted consistent with the emission monitoring menus identified in the permit.

See permit language pages 63-73; see also "Critical Points," *Compliance Demonstration Menus.*

- **Plantwide Applicability Limit (PAL)**

Cytec's PAL caps actual VOC emissions in a manner that allows the source to change its operations (and make associated emission changes) in a streamlined manner that minimizes the likelihood that it will trigger major NSR requirements for a significant modifications. In essence, the PAL provides a form of "advanced netting," where Cytec has the ability to utilize emissions offsets to remain below the PAL. In developing this P4 permit, the State of Connecticut also chose to create new SIP provisions that adopt the PAL approach in lieu of minor NSR requirements for VOC-emitting changes.

See permit language, pages 78-83; see also "Critical Points," *PAL.*

- PAL Baseline. The permit provides detailed procedures for determining the PAL baseline.

See permit language, pages 79-82.

- PAL Compliance. The permit requires that actual VOC calculations be made on a monthly basis.

See permit language, page 82.

- Enforceability. The permit specifies that emission quantification and monitoring be conducted consistent with the emission quantification and monitoring menus identified in the permit.

See permit language, page 78; see also "Critical Points," *Compliance Demonstration Menus.*

- PAL Increases. The permit includes provisions in the event that Cytec wishes to increase (or causes a violation of) the established PAL.

See permit language, pages 82.

- **Fully Pre-approved Modifications**

The Cytec permit identifies minor NSR requirements for construction of a new boiler and volatile organic liquid storage tanks, and fully pre-approves these activities up-front in the permit.

See permit language pages 74-76; see also, "Critical Points," *Pre-Approved Minor NSR.*

- Specified Parameters. In order to fully pre-approve these activities, operational parameters for the boiler (stack height, fuel consumption, etc.), and criteria for the VOL storage tanks (size, capacity, vapor pressure, controls, testing) are identified up-front in the permit.

See permit language, pages 74-76.

- BACT. A BACT analysis for the boiler was completed and included up-front in the permit.

See permit language, pages 74.

- NSPS. The permit references the applicable citations to NSPS requirements that specify necessary monitoring, record keeping, and reporting that shall be conducted for the pre-approved changes

See permit language, pages 74-76.

- Ambient Impact Analysis. An analysis of the effects the proposed boiler will have on ambient air quality is performed in advance and results are included up-front in the permit.

See permit language, page 75.

- Prohibitions. The permit specifies that any new source or modification under this section cannot be defined as "major" for NSR purposes.

See permit language, page 74.

▸ VOC RACT Emissions Averaging

The permit includes provisions allowing Cytec to implement emissions averaging as an alternative means of complying with applicable RACT standards.

See permit language, pages 19-27. See also, "Critical Points," VOC RACT Emissions Averaging.

- Equivalent Calculations. The permit identifies detailed equivalent emission limitation procedures for both intra-CTG category averaging and inter-CTG category averaging.

  See permit language, pages 23-27.

- State HAP requirements. The permit identifies additional requirements for intra and inter-CTG category averaging.

  See permit language, page 27.

- Monitoring. The permit specifies that any monitoring associated with this provision be conducted consistent with the monitoring menus listed in the permit.

  See permit language, page 27; see also "Critical Points," *Compliance Demonstration Menus.*

▸ Like-Kind Equipment Replacement

The Cytec permit establishes streamlined procedures for upgrading less efficient, higher pollution emitting sources with more efficient "similar" equipment. This provision is a placeholder for EPA's proposed change to the methodology used to determine the emissions increase from modifications. If EPA's proposed change is implemented, approved "similar" equipment will be required to have the same throughput, capacity, and utilization rates as the equipment being replaced.

See permit language, page 77; see also "Critical Points," *Like-Kind Replacement.*

- Emissions Test. The permit specifies the like-kind applicability determination as the difference between the projected future actual emissions of the "like" replacement and the current actual emissions of the replaced unit must be below state and federal NSR threshold levels.

  See permit language, page 77.

- Exclusions. The permit indicates that like-kind replacement does not apply to modifications that are subject to a new applicable federally enforceable requirements not addressed in the permit.

  See permit language, page 77.

- Practical Enforceability. The permit specifies use of the emission quantification and monitoring menus to ensure practical enforceability.

See permit language, page 77 and pages 51-73; see also "Critical Points," *Compliance Demonstration Menus.*

- **Pollution Prevention Plan**

The permit includes instructions for Cytec to develop and implement a P2 Plan within 60 days of permit issuance.

See permit language, pages 84-75; see also "Critical Points," *Pollution Prevention Plan.*

- Plan Components. Cytec's P2 Plan is to include (but not be limited to) activities such as:
  - an employee training program;
  - P2 review procedures for new and existing operations;
  - community outreach;
  - environmental review/audit processes;
  - P2 benchmarks/performance indicators; and
  - P2 reporting/tracking.

See permit language, pages 84-85.

- P2 as BACT. The Cytec permit identifies a procedure that allows the use of P2 to meet a BACT limit.

See permit language, page 85; see also "Critical Points," *P2 as BACT.*

- BACT Determination Approach. The permit includes procedures for determining BACT, and instances when P2 can be used to satisfy a BACT requirement.

See permit language, page 85.

  - P2 Specifications. The permit details that only pollution prevention offsets that are real, quantifiable and of identical pollutants can be considered as BACT.

See permit language, page 85.

CYTEC INDUSTRIES P4 PERMIT
CRITICAL POINTS

- **Compliance Demonstration Menus**

  By identifying emission limitation, quantification and monitoring provisions up-front in the Title V permit, the number of case-by-case reviews requiring compliance demonstration determinations by the permitting authority are substantially reduced. This also enhances a source's ability to make corresponding changes more rapidly, without having to go through case-by-case review at the time of the change. Further, by enabling such changes to occur through the Title V minor permit modification process, the amount of time previously needed to make significant Title V permit modifications is reduced.

- **Plantwide Applicability Limit (PAL)**

  PALs can provide a source with enhanced regulatory certainty that, as long as permit procedures are followed, it will not exceed the major NSR major modification threshold for the designated pollutant. Under some SIPs, sources may also make changes under a PAL that will not trigger case-by-case minor NSR review for the designated pollutant. Operating under a PAL, Cytec has a streamlined, alternative approach to the complex and time consuming netting calculations and associated significant permit modifications that might otherwise need to occur. PALs also create an implicit pollution prevention incentive for sources that must create emissions reductions to remain under the PAL during periods of growth.

- **Pre-Approved Minor NSR**

  Including all of the parameters and requirements for designated changes up-front in the permit significantly enhances source regulatory predictability for those changes. This provision also substantially decreases the regulatory delay associated with case-by-case review that would otherwise occur during the permit term, and eliminates the need for significant Title V permit modifications to be made at the time of each change.

- **RACT Emissions Averaging**

  Emissions averaging provides an alternative means of complying with RACT standards, and enhances the ability for Cytec to meet RACT in the most cost effective manner. Potentially, RACT emissions averaging can also provide incentives for using P2 as one means of complying with the standard.

- **Pollution Prevention Plan**

  The Cytec permit incorporates a pollution prevention plan for the source. This plan represents a commitment by Cytec to seek out ways to reduce pollution continuously in all aspects of facility operations. The plan also increases the likelihood that P2 opportunities will be

identified and implemented by the source. For the permitting authority, the P2 Program can also enhance the possibility that Cytec will remain below its PAL and provide greater environmental benefits as a result of the P4 permit.

P2 as BACT

By including a process that allows Cytec to use P2 performance to meet State BACT emissions limits, the permit offers a potentially more cost effective and streamlined option for Cytec to meet state BACT requirements. This provision also provides a very explicit P2 incentive, particularly in instances where control technology may be prohibitively expensive.

CYTEC Permit

PROJECT PARTICIPANTS

- CYTEC Industries' Inc, Wallingford Facility (CYTEC)
- Connecticut Department of Environmental Protection (CTDEP)
- EPA Region 1

SOURCE SITUATION

- CYTEC Industries, Inc., formerly the specialty chemicals group of American Cyanamid Company, is a Fortune 500 company that develops, manufactures, and markets specialty chemicals worldwide. With headquarters in Garrett Mountain, New Jersey, CYTEC Industries employs approximately 5,200 people at 37 facilities located across the United States, Great Britain, the Netherlands, Canada, and Mexico. The P4 project focused specifically on CYTEC Industries' facility in Wallingford, Connecticut.

- Integral to CYTEC's core business, the Wallingford facility manufactures specialty chemicals at three distinct operational units:
  - Resin products for paint, adhesives, water treatment chemicals, and paper products;
  - Thermoset molding compounds for dinnerware and electrical breakers; and
  - Thermoplastics for plastic tail light lenses, glasses, and medical devices.

- CYTEC's Wallingford facility also operates a wastewater treatment plant that treats effluent from each production line and a boiler that supplies power to the entire facility.

- As a batch process manufacturer, the Wallingford facility uses several types of volatile organic compounds (VOCs), which account for much of the facility's emissions. While most of the VOCs used in its manufacturing process are either consumed by the final product or captured and recycled, some VOCs are lost to the environment. In 1990, CYTEC estimated total VOC emissions from the manufacturing lines to be approximately 320 tons per year. Other emission sources at CYTEC's Wallingford facility include:
  - Wastewater Treatment Plant,
  - Storage Tanks,

- Combustion Sources (e.g., power boiler/sludge incinerator), and
- Reactor Trains (e.g., kettles, APCs, and ancillary equipment).

- In addition to VOCs, the Wallingford facility emits other criteria pollutants including NO_x, SO_2, CO, and PM_{10}.

- CYTEC's Wallingford facility is located in a serious non-attainment area for ground level ozone, and therefore is subject, or will be subject, to several applicable state and federal requirements including:

  - CTDEP Permits and Orders:
    - VOC RACT order of 138 tons per year (reactor trains),
    - NOx RACT order (under development for its boiler and sludge incinerator), and
    - Several minor New Source Review (NSR) (construction/ operating) permits.
  - New Source Performance Standards for its storage tanks,
  - MACT standards for Polymers and Resins III and the Miscellaneous Organic NESHAP (MON),
  - Connecticut major/minor NSR requirements,
  - Other Connecticut SIP requirements, including particulate emissions standards and VOC emissions limitations.
  - State-only enforceable requirements for HAPs and odors.

PARTICIPANT NEEDS/OBJECTIVES

Source Responsiveness Needs

- In order for CYTEC's Wallingford facility to remain competitive and respond to changing market demands, it anticipates needing to:

  - Expand capacity,
  - Install new equipment,
  - Replace and/or upgrade existing equipment
  - Change material formulations, and
  - Change product process lines.

- CYTEC's primary objective is to streamline the Title V permit process to expedite these types of operational changes, while minimizing risks inherent to the permitting process, including delays in purchasing new equipment and upgrading existing equipment, or possibly suspending its manufacturing processes while the permit goes through added public

review. At the outset of the P4 project, CYTEC requested that its Title V permit address the following specific operational flexibility needs:

- Avoid costly delays associated with major/minor NSR review and/or reopening its Title V permit in response to:
  - Equipment changes to its manufacturing processes;
  - Material formulation changes associated with manufacturing;
  - Remediation activities; and
  - Construction of new projects (e.g., pilot plants, new boilers, storage tanks, a sludge incinerator, and new control equipment).
- Make process/equipment changes or modifications that trigger a new applicable requirement without reopening the Title V permit and without needing to obtain additional approvals under NSR.
- Use P2 techniques, separately or in combination with add-on controls, to meet established emission standards.
- Establish Inter-RACT emissions trading across Control Technology Guidance (CTG) categories.
- Establish modification determinations and assess applicability requirements for like-kind equipment replacement based on actual-to-future-actual emissions as opposed to actual-to-future-potential emissions.

- In addition, CYTEC requested that the Title V permit process provide incentives for complying with applicable requirements through alternative environmental management techniques (e.g., P2).

State Environmental Agency Needs

- "Road test" Connecticut's Title V program.
- Identify barriers in current state regulations that limit operational flexibility and discourage the use of P2.
- Streamline Title V permitting procedures.
- Create a template for use in developing future Title V permits that encourage P2 and maximize operational flexibility.
- Identify and address issues that have the potential to significantly increase resource commitments following Title V permit issuance.

- Develop a Title V permit shell that is applicable to other Connecticut sources.

Regional Environmental Needs

- Identify barriers in current federal regulations that limit operational flexibility and discourage the use of P2.
- Create a working partnership with Connecticut that encourages innovative environmental solutions and "smart" permit writing.
- Communicate key P4 permitting issues to EPA Headquarters and incorporate solutions into national policies and standards.
- Transfer P4 lessons learned to other state permitting agencies in Region 1.

REGULATORY COMPONENTS AFFECTING PARTICIPANT NEEDS

- **Major/Minor NSR**

  Major NSR Applicability

  CYTEC's Wallingford facility is located in a serious non-attainment area for VOCs and NO_x. Modifications that result in emission increases equal to or greater than 25 tons per year for non-attainment pollutants, including NO_x and VOCs, are subject to major NSR regulations. The federal method for determining applicability is the actual-to-potential emissions test.

  Likewise, modifications that result in aggregate emission increases for NO_x and VOCs equaling 25 tons or more over the previous five years are subject to major NSR regulations, regardless of whether the emission increases attributable to the individual modification are less than 25 tons.

  Modifications at a major source that result in emission increases for attainment pollutants above the following thresholds also are subject to major NSR requirements:

  - PM10 = 15 tons per year
  - SO2 = 40 tons per year
  - CO = 100 tons per year

  Major NSR Program Requirements

  Major modifications involving NO_x and/or VOCs are subject to federal provisions for Lowest Achievable Emission Rate (LAER) and emission

offsets. In addition, such major modifications require a pre-construction permit, compliance determination, and public notice and comment.

Major modifications involving attainment pollutants, including PM_{10}, SO_2, and CO, require a pre-construction permit, BACT analysis, and public notice and comment. Such modifications also may require an air quality impact analysis and compliance determination.

Minor NSR Applicability

CYTEC's Wallingford facility is located in a serious non-attainment area for VOCs and NO_x. Modifications that result in emission increases greater than 15 tons per year for either pollutant are subject to Connecticut's minor NSR regulations. The state method for determining applicability is the actual-to-potential emissions test.

Current Connecticut construction regulations do not allow CYTEC's Wallingford facility to "net out" of major NSR applicability. Moreover, the state relies on a complex set of requirements to determine NSR applicability for process or equipment modifications. Depending on the source, these requirements may be more stringent than the federal requirements.

Minor NSR Program Requirements:

- Construction Permit
- BACT Determination
- Public Notice and Comment
- CTDEP may also require CYTEC to conduct an air quality impact analysis, including a toxics screening analysis

Needs impeded by major/minor NSR regulatory requirements

CYTEC anticipates upgrading some of its existing emission units (e.g., its sludge incinerator) with newer, yet similar equipment. If the existing equipment is underutilized and its actual emissions are below the design capacity, then the federal and state method for determining applicability (i.e., actual-to-potential emissions test) may subject the replacement unit to major/minor NSR requirements. Alternatively, CYTEC may be required to accept an operational limit on the replacement unit.

CYTEC anticipates making the following operational changes to its Wallingford facility, all of which may be subject to major/minor NSR requirements if emission increases exceed the listed threshold levels:

- Equipment changes to its manufacturing processes;
- Material formulation changes associated with manufacturing;

- Remediation activities; and
- Construction of new projects, for example:
  - Pilot plant (minor source),
  - New industrial boiler,
  - Sludge incinerator,
  - Storage tanks, and
  - New control equipment.

◆ **Title V**

Under current Title V regulations, regulatory agencies are required to "reopen" a source's Title V permit if:

- The source triggers an applicable requirement through a voluntary action (e.g., CYTEC's decision to modify its manufacturing processes or change the formulation of its materials);
- EPA promulgates a new standard within two years of permit issuance; and
- The source implements practically enforceable limits for the purpose of "netting out" of a major NSR action.

Modifications that require the Title V permit to be reopened can be problematic both for the source and for the regulatory agency. In CYTEC's case, reopening and modifying its Title V permit can result in delays, reducing incentives for CYTEC to expand its operations or implement newer, more efficient technologies. For CTDEP, the time and personnel required to process routine permit transactions are likely to place further demands on already scarce resources. The operational changes CYTEC anticipates making at its Wallingford facility that are likely to require Title V permit modifications are identical to those included in the previous section on major/minor NSR.

◆ **RACT/State Hazardous Air Pollutant (HAP) Rule**

Seeking greater flexibility in complying with RACT limits, CYTEC's Wallingford facility proposed using emissions averaging to satisfy the RACT reduction level for a group of emission sources. Connecticut's regulations do not, however, have a generic RACT averaging method that allows sources to use emissions averaging as an alternative compliance mechanism. For Connecticut to consider this request under its current regulations, it would have to submit to EPA a single source SIP revision. In addition, CTDEP's HAP rule requires an analysis of the proposed alternative averaging compliance method to ensure that said method does not result in an increase of a "more toxic" HAP.

CYTEC also sought greater flexibility in using P2 to comply with applicable RACT standards. Connecticut's current regulations allow P2 emission credits only in cases where P2 compliance terms are explicitly stated in a practically enforceable document.

- **State/EPA BACT Definition**

  CYTEC requested greater flexibility in using P2 to comply with State and EPA BACT requirements. While current Connecticut regulations allow P2 for minor NSR BACT determinations on a case-by-case basis, EPA allows P2 for major NSR BACT determinations only in instances where the P2 conditions are federally enforceable and P2 is implemented at the emission unit of concern.

- **MACT Standard**

  CYTEC anticipates having to comply with several proposed MACT standards including the Amino-Resin NESHAP and the Miscellaneous Organic NESHAP (MON). In an effort to achieve greater operational flexibility, CYTEC proposed complying with the standards using enforceable emissions credits from P2 activities elsewhere at the facility. P2 opportunities are limited, however, if the MACT standard does not explicitly allow P2 as an alternative compliance method. In response, CYTEC requested that EPA specifically consider P2 when developing future MACT standards.

- **Practical Enforceability of Emission Reduction Credits**

  EPA allows credit for emission reductions achieved through pollution control equipment so long as the controls are provided for in an enforceable document and are "practically enforceable." For example, CYTEC may decide to install a new unit with uncontrolled emissions exceeding major modification threshold levels. When controlled, however, the same unit's emissions are below Connecticut's minor NSR levels (15 tons per year). Prior to constructing the new unit, CYTEC would need to obtain a permit enforcing the controlled emission levels. Such permitting delays can be costly and time-consuming both for the source and for the regulatory agency.

APPROACHES TO FLEXIBILITY AND POLLUTION PREVENTION

CYTEC, CTDEP, and EPA Region 1 agreed on several approaches for providing CYTEC with operational flexibility including:

- Plantwide Applicability Level (PAL) for VOCs;
- NSR Preapprovals;

- VOC RACT Emissions Averaging;
- Like-Kind Equipment Replacement;
- Title V Minor Permit Modification; and
- Pollution Prevention.

Given the range of CYTEC's requests, a hybrid approach was necessary to arrive at a Title V permit that promotes P2, encourages innovative environmental behavior, ensures full regulatory compliance, and responds to CYTEC's desire for increased operational flexibility. Each approach is discussed in further detail below.

- **Plantwide Applicability Limit (PAL) for VOCs**

  Description:

  The PAL "caps" CYTEC's VOC emissions at a level consistent with Connecticut's attainment plan for the Wallingford area. Under the PAL, CYTEC can make modifications to its facility that are likely to affect VOC emissions without applying for additional permits (construction/operating). For example, CYTEC can institute equipment changes to its manufacturing processes or make changes to its material formulations that may result in a change in VOC emissions without applying for additional operating or construction permits so long as total actual VOC emissions remain under the PAL.

  Regulatory Programs Addressed:

  The PAL addresses major/minor NSR and Title V. Under the PAL, CYTEC will not be subject to major/minor NSR requirements or be required to reopen its Title V permit provided the permit contains appropriate monitoring and emissions quantification methods, and ensures that the proposed modification to the VOC emitting unit(s) or new VOC emitting unit(s) are in compliance with the established PAL limit.

  Needs Addressed:

  - **Pollution Prevention**

    The PAL encourages CYTEC to improve its operational efficiency (i.e., reduce emissions per unit of product) in response to growth opportunities and market demands with minimal regulatory oversight. CYTEC has indicated that many of these operational improvements will be achieved through the use of P2 and "design for the environment" techniques.

- **Equipment/Material Formulation Changes and New Project Construction**

  In instances where CYTEC constructs new projects, for example the new pilot plant, the VOCs emitted by these "new" units will be included under the PAL. So long as total actual VOC emissions for the new units are contained under the PAL limit, CYTEC will not need to seek additional operating/construction permits or reopen its Title V permit.[1]

- **NSR Preapprovals**

  Description:

  CYTEC's draft Title V permit provides advance NSR approval for specific emission units (e.g., pilot plant and new industrial boiler) and for classes of units (e.g., storage tanks) that CYTEC anticipates installing during the five-year life of the permit.

  Regulatory Programs Addressed:

  In seeking advance NSR approval, CYTEC can avoid reopening its Title V permit and at the same time satisfy many CTDEP regulatory requirements and policy goals.

  NSR preapproval allows CYTEC to respond to market demands by minimizing costly delays and forgoing the added risks associated with major permit modifications under Title V, including delays in purchasing new equipment and upgrading existing equipment, or possibly suspending its manufacturing processes while the permit goes through additional public review.

  Needs Addressed:

  - **Construct New Projects Without Delay**

    In order for CYTEC to obtain advance NSR approval for its pilot plant and new industrial boiler, it must complete an engineering evaluation to establish emissions limits and a requisite BACT analysis for each source prior to permit issuance. With these in place, CYTEC can initiate construction of its pilot plant and industrial boiler without delay and without reopening its Title V permit.

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[1] CYTEC concurrently plans to seek preapprovals for certain "non-capped" pollutants. Refer to the discussion on NSR preapprovals.

- **Control Equipment Registration**

  The draft Title V permit also contains pre-approved control and monitoring scenarios that CYTEC can use to limit its potential to emit (PTE). Using a simple registration mechanism, CYTEC can avoid costly delays associated with minor NSR review. For example, the permit includes a list of control technologies, establishes operational limits for each type of control equipment listed, and incorporates all relevant NSR terms and conditions into the Title V permit prior to permit issuance. By notifying the permitting authority of its intent, CYTEC can opt to use any of the control equipment included in this list during the life of the permit without obtaining additional operating/construction permits and without reopening its Title V permit. CYTEC must, however, comply with the appropriate monitoring and compliance scenarios included in its permit. The pre-approved control and monitoring scenarios allow EPA to ensure that associated emission reductions are practically enforceable, while remaining self-implementing.

- **Leverage CTDEP Resources**

  Likewise, advance NSR approval does not constrain CTDEP to the same deadlines and time constraints that are common to NSR. By investing resources up front to incorporate specific NSR terms and conditions into the Title V permit, CTDEP can allocate its permitting resources more efficiently and focus on other projects after permit issuance.

◆ **VOC RACT Emissions Averaging**

Description:

Provisions have been included in CYTEC's draft Title V permit allowing it to implement emissions averaging (bubbling) as an alternative means of complying with applicable RACT standards. Until now, Connecticut regulations did not explicitly allow for emissions averaging to comply with RACT standards. Connecticut has since proposed revised state regulations that allow emissions averaging.

Regulatory Programs Addressed:

As a result of the proposed change in CTDEP's regulations, CYTEC can use emission averaging (bubbling) as an alternative means of complying with applicable RACT standards.

Needs Addressed:

- **VOC RACT Emissions Averaging Across Control Categories**

  CYTEC can choose to over-control specific VOC emitting units, or implement P2, to satisfy its overall RACT limit. In addition, CYTEC can use VOC RACT emissions averaging regardless of whether or not the emission sources are within the same ACT/CTG category. For example, CYTEC can over-control its batch chemical units to meet industrial wastewater and state air toxic requirements.

- **Like-Kind Replacement**

Description:

CYTEC's Title V permit establishes streamlined procedures for upgrading emission sources with identical equipment. For the newer, more efficient unit to be considered similar, it must have the same throughput, capacity, and utilization rates as the existing equipment. It is important to note, however, that this provision acts only as a placeholder for the changes EPA is proposing in its NSR reform package.

Regulatory Programs Addressed:

The inclusion of a "like-kind replacement" provision will allow CYTEC to replace outdated equipment with similar units without being subject to major/minor NSR requirements, or having to accept an operational limit on the newer unit.

Needs Addressed:

- **Like-Kind Equipment Replacement**

  For example, CYTEC anticipates replacing its sludge incinerator with another similar incinerator--CYTEC plans to maintain the same throughput, capacity, and utilization rates as its existing incinerator. In the absence of the like-kind replacement provision, CTDEP would have based its source modification determination (i.e., major or minor) on the potential to emit of the new incinerator, and not on the five-year average (actual historic) emissions of the older, outmoded unit as is currently provided for in CYTEC's Title V permit. Assuming CYTEC's existing sludge incinerator is underutilized and its actual emissions are below design capacity, either the replacement unit would have been subject to major/minor NSR requirements, or CYTEC would have had to accept an operational limit on the newer unit. Either

scenario would have resulted in time-consuming and costly permitting transactions.

- **Title V Minor Permit Modification Process**

Description:

CYTEC's draft Title V permit draws on EPA's streamlined minor permit modification process as outlined in its permitting regulations to expedite two types of changes:

1. Minor changes to CYTEC's emissions quantification and monitoring requirements. CYTEC's permit contains a pre-approved protocol of monitoring and emission quantification methods for a broad range of emission units/control equipment. During the life of the permit, CYTEC may decide to replace the monitoring/emission quantification method for a specific emission unit with an alternative method from the list of pre-approved methods included in its Title V permit.

2. Incorporation of new applicable requirements. The minor permit modification process also allows for the specification of compliance details for applicable requirements that contain replicable compliance requirements included in CYTEC's Title V permit. The Title V permit anticipates future applicable requirements and allows for these requirements to be self-implementing through the minor permit modification process, thereby allowing CYTEC to avoid reopening or modifying its permit.

Regulatory Programs Addressed:

The Title V minor permit modification process allows CYTEC to limit the instances where it must reopen or modify its permit.

Needs Addressed:

- **Streamlines the permit revision process**

  The minor permit modification provision has the potential to significantly streamline the permit revision process. The minor permit revision process does not require public review, a labor intensive process for both CTDEP and CYTEC. Also, the availability of the minor permit modification process precludes the need for CYTEC to include in the permit an exhaustive discussion of the compliance details of all potentially applicable requirements, further reducing the burden on CTDEP's permitting staff. The permit includes full specification of only those lower likelihood applicable requirements that CYTEC has identified to be of

significant concern. Less likely requirements are referenced, and compliance details can be filled in through the minor permit modification process.

- **Maximizes operational flexibility, while ensuring full regulatory compliance**

  For example, the minor permit review process would be used to replace approved emission monitoring and quantification methods only with methods from a hierarchy of pre-approved methods included in the permit. The methods included in this hierarchy will have already undergone full public review and comment as required by Title V regulations. In addition, the minor permit process provides EPA and CTDEP with a 45-day review period during which time EPA and CTDEP can disapprove methods that are considered to be inappropriate.

◆ **Pollution Prevention**

The VOC PAL minimizes regulatory disincentives while promoting P2. Under the PAL, CYTEC is allowed to modify its facility so long as overall VOC emissions are well monitored and remain below the prescribed PAL limit. CYTEC's PAL is based on historic actual emissions and will be adjusted to account for new applicable requirements. Therefore, if CYTEC decides to expand capacity under the PAL it must offset the expansion by using additional end-of-pipe controls or by implementing P2. Built-in incentives exist for CYTEC to decrease emissions to below applicable thresholds in order to maximize operational flexibility.

The permit also allows CYTEC the option of complying with state BACT determinations and state/federal RACT requirements using P2. Any emissions reductions achieved through the use of P2, however, must be quantifiable and practically enforceable. Also included in the permit are monitoring and emission quantification methods for P2 ensuring that associated reductions are practically enforceable.

Finally, the permit contains a P2 operation and management plan. Under this plan, CYTEC is required to implement several P2 programs and activities including:

- Employee training and recognition program,
- P2 review procedures for new and existing operations,
- Community outreach ,
- Product, stewardship, customer, and supplier outreach recognition,
- Environmental review and audit,

- P2 bench marks/key P2 plant performance indicators, and
- P2 reporting and tracking procedures.

SUMMARY

CYTEC's Title V permit successfully incorporates a hybrid of the approaches described in the previous sections. Combined, these approaches provide CYTEC with enhanced operational flexibility and increased incentives to explore P2 opportunities, while ensuring full regulatory compliance and minimizing the burden on Connecticut and EPA Region 1 to respond to routine permitting transactions. Specifically, CYTEC's Title V permit will allow it to:

- Expand capacity and install new equipment,
- Replace and/or upgrade existing equipment, and
- Change material formulations and/or product process lines.

Each of the approaches described above have been designed to address regulatory issues that, to date, have restricted operational flexibility while providing minimal environmental benefit. For example, CYTEC can make equipment changes to its manufacturing processes while avoiding costly delays associated with major/minor NSR review and/or the reopening of its Title V permit by:

- Complying with a PAL for VOC-emitting units,
- Registering its control equipment, and
- Following a set procedure for the "like-kind" replacement of existing emissions sources.

Also under the PAL, CYTEC can construct new VOC-emitting projects and avoid delays associated with major/minor NSR review so long as total VOC emissions remain below the prescribed PAL limit.

As a complement to the PAL approach, CYTEC's permit includes provisions for advance NSR approval of specific emission units and of classes of units that emit certain "non-capped" pollutants. By incorporating certain pre-approved changes into its Title V permit, CYTEC can maximize operational flexibility while reducing the burden on CTDEP resources to respond to routine permit transactions and minimizing the risks inherent to the permitting process (e.g., public review). Likewise, the minor permit modification process reduces the need for CTDEP to expend additional staff resources while allowing CYTEC to implement relatively minor operational changes quickly and without reopening its Title V permit. Additional provisions in CYTEC's Title V permit also allow it to implement emissions averaging as an alternative means of complying with applicable RACT standards.

Finally, CYTEC has asked that CTDEP allow it to comply with certain applicable requirements through alternative environmental management techniques like P2. For example, CYTEC has requested that P2 be incorporated into future RACT determinations and has suggested that both Connecticut and EPA consider revising their existing air

regulations to allow P2 for complying with BACT. With respect to upcoming federal regulations, CYTEC has asked that EPA consider including provisions allowing P2 as an alternative means of complying with MACT.

CYTEC's Title V permit marks the successful completion of Region 1's P4 permit development effort. At the outset of the project, each team participant outlined their multiple objectives ranging from enhanced operational flexibility for CYTEC to "road testing" Connecticut's Title V program to establishing a working partnership between Connecticut and EPA Region 1 that encourages innovative environmental solutions and "smart" permit writing. CYTEC's Title V permit development process realized each of these objectives and culminated in a Title V permit that ensures full regulatory compliance, increases incentives for environmentally beneficial behavior like P2, and maximizes operational flexibility. A further measure of the Region 1 P4 permit development team's success is in its having satisfied all three key P4 project objectives:

1. To produce an integrated Title V permit that promotes P2 and maximizes operational flexibility while ensuring full regulatory compliance;
2. To identify the key opportunities and barriers inherent to current regulations and communicate these findings to EPA Headquarters; and
3. To provide opportunities for businesses like CYTEC to grow without compromising environmental quality.

In short, the Region 1 team successfully met all of its objectives in developing a Title V permit that other state and regional permitting agencies can use as a model to draft legal, enforceable, and implementable Title V permits that maximize operational flexibility and promote environmentally beneficial behavior.

Cytec Industries P4 Permit
Source Benefits

	Regulatory Objectives			
P4 Tools	Predictability		Timeliness	Administrative Streamlining
	Applicability	Requirements		
Plant-wide applicability limit	The PAL gives the source certainty that it will not trigger the major NSR modification threshold, or minor NSR for VOC-emitting changes.	The Title V permit can be modified through a permit notification process, rather than a significant Title V permit modification.	VOC-emitting construction or modifications can occur without delay as long as the PAL is not exceeded, and the designated MRR and emission quantification methods are followed.	Major and minor NSR permitting will not be necessary as long as VOC emissions remain below the PAL and proper monitoring, emission quantification, and notification requirements are met.
Advanced Approvals	Applicability for pre-approved change is determined up-front in the Title V permit.	Advanced NSR for specific changes provides certainty regarding the nature of the permitting requirements.	A new boiler and/or VOL storage tank, as specified, can be constructed without delay.	Meeting specific NSR requirements up-front in the Title V permit ensures that the Title V permit will not have to be re-opened during the permit term when these changes are made.
VOC RACT Emissions Averaging		Source has greater flexibility to select the most cost effective way (including P2) to meet the requirements of the RACT standard.	Including the RACT emissions averaging provision up-front in the Title V permit enabled a more timely implementation of the emissions averaging plan.	If RACT emissions averaging had not been included as a provision in the Title V permit, it may not have been feasible for the source to draft a RACT averaging plan, seek approval of a SIP revision, and then modify its Title V permit to reflect the new plan, all by the necessary compliance deadline. The RACT averaging provision streamlines this process.
Compliance Demonstration Menus		Emission monitoring & quantification methods for new/modified emissions units are pre-approved in a hierarchy of procedures included in the permit.	The time spent obtaining a significant Title V permit modification can be eliminated for many types of changes.	This provision has the potential to significantly streamline the permit revision process, and is less labor intensive for both the source and permitting authority, by limiting the instances where the source must incorporate new requirements using the significant Title V modification process.
Pollution Prevention		The permit contains a P2 Plan that can encourage and increase the potential that P2 activities occur and are used to meet permit requirements. The permit also includes conditions that will allow the use of P2 to meet future state BACT limits. Emissions reductions achieved by P2 must be quantifiable and practically enforceable.		This program provides a streamlined mechanism for the P2 reporting and tracking procedures necessary to expedite operational changes using P2.

Imation Enterprises Corp.
P4 Permit

Source Description

Location: Weatherford, Oklahoma

EPA Authority: Region VI

State Authority: Okla. Dept. of Environ. Quality

Products:

- Products used by Printing and Publishing industry - Digital/Conventional proofing systems
- Magnetic Tape manufacture in a web coating process - Data Storage

Major for HAPs and VOCs

PTE limit of 249 TPY VOC

New Permit Features

- P2
- Alternate Operating Scenarios (Pre-approvals)
- Streamlining
- 249 TPY VOC emissions cap
- Transferability

P2

- Link P2 to permits in general
- Link P2 to pre-approved flexibility
- Agreed P2 performance earns continued flexibility

Alternate Operating Scenarios (pre-approvals)

- Advanced minor NSR approval (pre-approved BACT component).
- Advanced approval for use of alternative raw materials.
- Up front minor NSR construction application and public review.

Streamlining

- Applicable requirements
- Future applicable requirements
- Alternate Operating Scenarios (pre-approved future action)

249 TPY VOC Emissions Cap

- Operational flexibility
- Future growth
- Encourages continued P2 program success

Transferability

- P2
- Alternate Operating Scenarios
- Emissions cap

Presented: Air & Waste Management Association, June 17, 1998, San Diego

Pollution Prevention in Permitting Program (P4) – Lessons Learned and Next Steps

98-WA68.03 (A471)

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ABSTRACT

The Pollution Prevention in Permitting Program (P4) is an EPA initiative intended to combine operating pollution prevention (P2) with manufacturing and regulatory flexibility in Title V operating permits. The program functions entirely within requirements of existing laws and regulations, but seeks through a team consisting of the permitting authority, EPA, and the source to provide permit flexibility through innovative regulatory approaches and in part through using P2 to facilitate such approaches. A P4-based Title V permit recently drafted for the Imation Corp. manufacturing plant in Weatherford, OK provides some key examples of flexibility possible through the P4 program.

INTRODUCTION

Air permits for modification or new construction of manufacturing equipment are too inflexible and take too long to be issued, and can thus be a significant business constraint. Pollution Prevention (P2) is the almost universally recognized approach of choice for environmental management. Neither of these two statements represents anything new, except that combined they are the basis of EPA's Pollution Prevention in Permitting Program (P4). P4 seeks through Title V operating permits to provide the maximum manufacturing flexibility possible under current law while integrating P2 and the source's operations. Imation has been a key player in EPA's P4 project and I will discuss herein our experiences with this program.

Dimensions of the Permitting Problem: How Business is Constrained

Like Imation, many companies participate in global product markets that change rapidly. To compete successfully, rapid and sometimes frequent manufacturing process changes are often needed, including changes which implement new manufacturing technologies or utilize new raw materials. Since profit margins are typically narrow in highly competitive, global markets, some

of these manufacturing changes are likely to involve lowering of unit cost through higher manufacturing efficiencies, including through using lesser amounts of raw materials or energy, all of which are inherently pollution preventing (P2). The needed speed and flexibility of manufacturing, however, easily butts against the air permitting programs which have built up over years of a command-and-control approach to environmental regulation.

Air permitting concerns, of course, are long-standing and are shared across diverse industries. In general, whenever an air permit is needed to perform a manufacturing change, no part of the change whatsoever, that is, no construction, no installation, no modification, and in most cases not even site preparation, can begin prior to the permit being issued. The "official" permitting time-line, that is, from the time that the permitting authority declares the permit application to be complete until the time that the permit is formally issued, varies according to the nature of the regulatory issues of the proposed project, how well the permit application identifies, analyzes, and communicates the issues, and the administrative efficiency of the permitting authority. Some permitting authorities have become quite efficient in recent years, but under the current permitting structure, permitting timelines of several months to more than a year are virtually assured to persist. In cases where states have directly incorporated construction into their Title V permitting programs, slow permitting timelines are further assured.

The actual delay that an intended manufacturing change experiences almost always exceeds, sometimes greatly so, the above-noted "official" permitting timeline, in part because under the existing permitting structure there is little opportunity for design and development of the manufacturing project to occur concurrently with the permitting process. Since the "official" permitting clock does not start ticking until the permitting authority has deemed the permit application to be complete, the application needs to be filed with the agency as far in advance as possible of the project's expected construction/installation date. But to be complete, permit applications often must include project details which are not available early on. Especially for projects involving design-and-build or other fast-track approaches, certain design details of the manufacturing equipment that are at the heart of generating the air emissions, or design details of pollution control devices, simply may not exist at early stages of the project. The permitting authority's need for detailed project information is thus not in sync with the availability of such information, and the permitting process and project design are forced into being consecutive steps. The permitting process is thereby assured a prominent place in the project critical path of the manufacturing change.

Air permitting can also aggravate ongoing manufacturing and underlying business planning. Direct and indirect costs of both emission control equipment and non-equipment environmental management factors can figure prominently in manufacturing decisions. Under the current permitting structure, these costs can be difficult to quantify, even on an order-of-magnitude basis, in light of the sometimes uncertain applicability of air rules to a particular manufacturing project and the uncertain exercise of agency discretionary authority. First, there is not always consensus amongst or within companies, environmental consultants, or even the staffs of permitting

authorities as to how or even whether a particular air rule applies to a particular manufacturing project. Second, where there is agreement, the agency in some cases has broad discretionary authority to determine, for example, what level of control or even the exact technology to be applied to an individual emissions unit. Within the context of command-and-control, broad agency discretion makes sense, helping, among other things, to cover for the impossibility of any regulation being able to anticipate all conceivable manufacturing situations and optimally set forth requirements for each. Even federal air rules such as NSPS (New Source Performance Standards) and MACT (Maximum Achievable Control Technology) standards which are specific to an industry category often result in a far from perfect match with some of the manufacturing situations that they are intended to regulate. But such discretion and its attending uncertainty can distort the economic analyses of manufacturing and business planning, leading potentially to decisions that are best for neither the business nor the environment. Uncertainties over the rules and agency discretion are often only magnified where innovative, pollution preventing approaches are being contemplated. Thus these aspects of permitting programs provide a P2 disincentive and impede the step-wise movement (even if by small increments) of an industry toward a position of environmentally sustainable operations.

P4 a Paradigm Shift?

How about a Title V operating permit which need not be modified during its full 5-year term for manufacturing modifications, even for construction or installation of new equipment? And how about a Title V permit that provides the basis for accurate prediction of the control and other environmental management requirements of future manufacturing scenarios, including scenarios that can only vaguely be defined at the time of permit issuance? These possibilities exist with a Title V permit designed under EPA's Pollution Prevention in Permitting Program (P4). P4 is specific to Title V operating permits and functions entirely within the boundaries of all existing regulatory requirements, including all requirements pertaining to public notice and review of the permit. At a minimum, P4-based Title V permits provide an equal level of environmental protection and in most cases should result in a higher level of environmental performance through encouraging P2 and, in the long run, movement toward sustainability.

Government Reinvention

P4 is part of the government reinvention initiatives of the Clinton Administration, although it had its beginnings prior to the subsequently stated, broad agenda of environmental regulation reinvention announced by EPA in March 1995. The following description is from draft training materials under development by WESTAR, through a grant by EPA.

> *A P4 partnership was formed at an April 1993 conference on the role of the Clean Air Act in implementing P2. Through informal discussions between EPA Region 10 and the Office of Air Quality Planning and Standards (OAQPS), two key aspects of P2 implementation were recognized:*

- *a source's pollution preventing behavior is, in part, a response to regulatory costs imposed by environmental management agencies; and*

- *under certain circumstances, regulatory costs can be modified by regulators to create incentives for pollution prevention.*

The group also recognized that new regulatory programs, such as Title V of the Clean Air Act, can impose new costs on sources. Therefore, as sources decided how to respond to these costs, an ideal window of opportunity arose for regulators to test pollution prevention as a means of enhancing regulatory flexibility and reducing regulatory costs.

In a formal effort to incorporate the ideas generated by the ad hoc group, EPA Region 10, OAQPS, Oregon DEQ, and the Intel Corporation initiated the Pollution Prevention in Permitting Program (P4) in November of 1993. During the months that followed, the team, with support from the Pacific Northwest Pollution Prevention Research Center (PPRC), discovered ways within existing state and federal laws to craft a Title V permit that enhanced operational flexibility and created incentives for pollution prevention. The selection of the Intel Corporation presented an ideal challenge, as the company initially believed Title V was too inflexible to meet its operational needs, and considered instead the option of taking future plant investments "off shore."

By September of 1994, after a series of face-to-face meetings and interim conference calls, a draft Title V permit was developed that promoted pollution prevention and proactive environmental management, ensured full regulatory compliance, and was responsive to Intel's needs for operating flexibility. The permit was issued in October of 1995; since then, Intel has announced a $500 million plant expansion in the State of Oregon.

Since the initial P4 effort, EPA has sponsored "P4 Phase II," consisting of the following pilot projects having diverse flexibility needs and P2 considerations:

- Searle Pharmaceutical, with EPA Region 4, Georgia DNR
- Cytec Industires, with EPA Region 1 and Connecticut DEC
- Rio Grande Portland Cement, with EPA Region 6 and Albuquerque APCD
- Lasco Bathware, with EPA Region 10, Washington DOE, and Olympic APCA
- Imation Corp., with EPA Region 6 and Oklahoma DEQ

While additional pilot projects are being started under Phase II, "P4 Phase III" is also under way, consisting mainly at this time of Imation Corp. with EPA Region 3 and West Virginia OAQ. This phase of the project is intended to accomplish writing of a P4-based Title V operating permit in a significantly lesser amount of time and utilizing significantly lesser staff resources than has been typical of the Phase II projects.

Benefits of P4 to Permitting Authorities

Key benefits of P4 to the source have been described: greater manufacturing flexibility, greater regulatory certainty, and greater speed of manufacturing change. P4-based Title V operating permits also provide significant benefits to permitting authorities. Permitting authorities are swamped with Title V work, even where larger agency staffs have been made possible through Title V-designated fees. Most agencies are well behind the schedules that they are required to meet for issuing an initial Title V permit to each of the major sources within their jurisdiction (EPA-delegated programs typically require that one third of the total number of Title V permits be issued in the first year of the program, two thirds by the end of the second year, and all permits issued after three years). Some agencies are so far behind schedule that their first-issued permits will have expired (5-year permit terms) and need to be reissued before all companies within the permitting authority's jurisdiction have been issued their initial permit.

But the greatest impact on manufacturing operations is likely to be how the agency performs ongoing management of its Title V permitting program. Each Title V operating permit issued represents potentially one or more permit modifications that will be needed during its term, with the permits of highly competitive and rapidly changing industries likely to require multiple and even overlapping permit modifications. Layered further atop the agency will be the ongoing re-issuance of permits expiring their 5-year terms. Even as most permitting agencies continue to realize higher administrative efficiencies, in part through greater experience and confidence with their Title V programs, how permitting authorities will contend with the workload in a way that meets the needs of the environment and the needs of companies operating in a global economy is debatable. At least several agencies have suggested the possibility of "regulatory gridlock."

P4-based Title V operating permits are expected to reduce significantly the permitting authority's administrative burden of modifying Title V permits, allowing the agency to focus resources on designing the new and reissued permits to provide manufacturing flexibility and incorporate P2. This benefit to the permitting authority along with others have been summarized by WESTAR as follows:

> - ***Reducing agency administrative burdens*** *associated with source permitting, while continuing to meet all procedural and substantive regulatory requirements, and ensuring practical enforceability;*

- ***Encouraging pollution prevention*** *by identifying existing regulatory barriers that may discourage P2, and seeking ways to integrate P2 into permitting processes most effectively;*

- ***Encouraging economic growth*** *by demonstrating effective, flexible Title V air permitting techniques that can help maintain economic viability for existing industries, and if desired, attract new industries to the area, while maintaining or improving environmental quality.*

Structure of P4 Projects

P4 pilot projects to-date have been conducted on a team basis involving the source, the permitting authority (typically the state air pollution control agency), the corresponding regional office of EPA, and EPA OAQPS (Office of Air Quality and Planning and Standards). The starting point is an analysis of the flexibility needs of the source. This is followed by identifying and analyzing all applicable regulations, focusing on those parts of the rules which hinder manufacturing flexibility. Such regulations include mainly those under:

- Major NSR
- NSPS
- NAAQS (National Ambient Air Quality Standards)
- MACT

Mechanisms are next identified or formulated to provide the needed flexibility while meeting the legal requirements of the applicable rules. Concurrently the P4 team considers P2 opportunities for the source, and certain elements of the P2 program are tied to the mechanisms of permit flexibility. In each of the P4-based Title V permits issued or drafted to-date, permit flexibility has been explicitly linked to the source having an active and verifiable P2 program. Such permits to-date also typically apply site emissions limits [caps or PALs (Plant Applicability Limit) depending on the PSD-status (Prevention of Significant Deterioration) of the facility] and P2-facilitated permit pre-approvals to provide flexibility for manufacturing changes. Permit pre-approvals essentially authorize in advance a certain class of manufacturing changes by identifying all requirements that would be triggered by that change and how they would be met. Some type of notification and similar administrative requirements are generally included, although these are structured to not be in the critical path of the manufacturing project.

Although state-only rules are not federally enforceable under Title V permits, these are included in the P4 process, identifying for these rules also mechanisms for providing manufacturing flexibility. The goal of regulatory flexibility would hardly be met if the federal rules only were addressed, with rapid manufacturing changes still being prevented by the state's minor NSR or related state air rules.

P4 a Facilitator of Flexible Permitting?

P4-based Title V permits meet all requirements of existing applicable regulations but do so through new approaches that are beneficial to both the source and the permitting authority. A reasonable question then is why, if all aspects of the program are within boundaries of existing rules and regulations, is P4 needed at all. The answer would seem to be twofold: 1) there really is something new here, that being incorporation of P2 as a tool for regulatory flexibility into air permits, and 2) a large lever is seemingly needed to change paradigms where a complex set of rules, such as those of air permitting programs, have become established over a significant period of time (such paradigm shifts are difficult no matter where complexity resides, be it governmental, educational, or business-related institutions).

With its nearly consensus value, P2 by itself is a solid agency inducement for change. But what is truly innovative is how P2 can be deployed in P4-based operating permits as an instrument for accomplishing certain aspects of permit flexibility. First, P2 provides possibly the best assurance to the permitting authority that even with growing manufacturing output the permitted source will be able to operate below its cap or PAL, if not indefinitely then at least over the 5-year term of the permit. Thus whatever changes occur at the facility, it is less likely that the permit will have to be formally opened during its 5-year term to revise the cap (which change would open a host of applicable requirments), and the permitting agency thereby realizes the intended, reduced administrative burden of having to perform permit modifications.

Second, P2 helps reduce the frequency that permit pre-approvals are triggered. Compared to a minor or major permit modification, the administrative burden to the agency of reviewing the notifications and other information submittals of the source in executing a pre-approved change is low. But to realize the lowest possible administrative burden means having the source trigger its pre-approvals as infrequently as possible, while encouraging this with no loss of manufacturing flexibility to the source. P2 assists this well: where P2 plays prominently in manufacturing planning, and especially where P2 is well integrated across the manufacturing and research and development functions of a company, the P2 itself can become a source of flexibility and partially replace what permit flexibility otherwise might be needed through use of the permit pre-approvals.

Regarding the size of the lever needed to effect significant change in the well-established air programs, it is worth noting that these programs originated and were largely built up over a period of much different economic circumstances than what exist today. Command-and-control does work in the narrow sense that it does apply the law and does protect the environment. But within about the past five years the pace of manufacturing change has accelerated dramatically. Delayed manufacturing changes, such as those incurred through permitting, that may once have amounted to an inconvenience at best or reduced profits and shareholder value at worst, have in some cases become imperatives of a company's economic viability. But throughout this historic and continuing build up of precedents, interpretations, agency policy, new and modified rules, etc. have existed all along some significant if underutilized possibilities for regulatory and permitting flexibility. That these possibilities are largely not applied or even realized to exist exists for a variety of reasons, most important of which are probably 1) the difficulty of determining cause-effect relationships within complex systems of rules and 2) the tendency toward equilibrium of such systems.

Where complexity exists, predicting the full consequences of additional rules or of even a revised interpretation of one part of an existing program is problematic. Any subsequent program correction directed toward an unintended consequence sometimes itself adds further to complexity. The federal Title V permitting program itself provides one, though surely very broad, example. The form in which the Title V program is now being delegated to state and local permitting authorities is in many respects quite different than what could be reasonably anticipated by the 1990 Amendments of the Clean Air Act, and program interpretations are different than what were anticipated more recently on the basis of 40 CFR 71. With the complexity of air rules in general, and their far reaching and often highly detailed requirements, there is little possibility of anticipating all outcomes on the activities which are the target of the rules.

Another consequence of complexity is the tendency of organizations that are responsible for implementing the rules, that is the permitting authorities, to gravitate toward safe rule interpretations which effectively establishes an intended or *de facto* set of agency standard operating procedures. While flexibility may in theory be possible through the rules as they are currently written, any meaningful possibility of accessing that flexibility is largely missing. Most agencies are unwilling, or due to staffing limitations, are unable to venture far from safe rule interpretations. To do so means having to involve a greater number of persons within the agency, including those on the policy side, the technical side, and the legal side, to analyze and maybe ultimately not know the full consequences of a departure from previous approaches. Departing from safe interpretations can also risk an uncertain response by EPA, even in cases of a fully delegated program. One example is provided by emission caps. State Title V permitting programs are required to include provisions for issuance of emissions caps, indeed some of the state minor NSR programs currently in place provide explicitly for setting emissions caps. While the provision is there, some such states have said informally that under no circumstances would they actually issue a cap because doing so would take them into uncharted territory with the public and with EPA.

Pressure from within and outside the agency for quick turnaround of permits also discourages applying legally available permit and regulatory flexibility. Arguably rapid permit turnaround and a high degree of permit flexibility cannot co-exist. Rapid permit turnarounds typically mean conservative rule interpretations, "cookie-cutter" approaches, and like-standardization of permitting staff workflow. The approach taken by P4 is to effectively eliminate permit turnaround as a consideration by designing the permits up-front so that they are very unlikely to require modification.

Thus due to the equilibrium that effectively exists within interpretation and application of the rules, EPA's direct facilitation of a paradigm change, such as that through P4, is indispensable. P4 has thus in certain respects been a facilitator of change, or even just a facilitator for tapping into flexibility options which already exist within state and federal air rules.

P2 Aspects of P4 Permits

The P2 dimensions of each P4-based Title V operating permit are different depending on the circumstances and needs of the source and those of the permitting authority. In general, however, P4 permits are intended to ensure that P2 is a way of business for the permitted source. Every effort is made to align P2 within the permit with underlying economic drivers and provide the means of ensuring a viable program. The elements of regulatory flexibility of the P4 permit are explicitly conditioned on the P2 program being viable. What must be avoided, however, is a list of P2 requirements or similarly overly prescriptive requirements which become obsolete as the business changes and thereby become distortions within the company to allocation of economic resources. There has been considerable acknowledgment within P4 teams that such distortions benefit neither the company nor the environment.

Key Features of the Imation Weatherford Oklahoma Permit

The Title V permit drafted for the Imation plant located in Weatherford Oklahoma is under review by the State of Oklahoma, EPA, and Imation at the time of this writing. Details of mechanisms for permit flexibility will be discussed as part of the presentation of this paper at A&WMA's 91st Annual Meeting and Exhibition.

P4 Next Steps

The Title V permitting effort performed under the P4 project at the Imation Weatherford, Oklahoma facility has been a nearly two year effort involving multiple representatives each from the State of Oklahoma, EPA Region 6, Imation, and others. Although the resulting permit is expected to provide important benefits to the agency and to Imation, while ensuring full compliance with all existing regulations, too much time and too many resources have been required of all participants to make such a permitting process practical on a more routine basis either for state permitting authorities or for companies. As such, EPA has begun a series of

"mini-P4" efforts, one of which involves the Imation manufacturing plant at Middleway, West Virginia. The project in Middleway involves both a permitting authority (State of West Virginia, Office of Air Quality) and an EPA region (Region 3) with no previous involvement with the P4 program. A key objective of the mini-P4 effort is to determine how well the P4 process can be transferred to agencies without prior experience by drawing upon the experience and precedents set by the P4 projects completed to-date. A second objective of the mini-P4 projects is to compress the project schedule from about the two years expended in the Oklahoma project to approximately six to eight months. Through the mini-P4 and additional "full-process" P4 projects which have been approved elsewhere by EPA as of this writing, P4 shows promise to move eventually into the mainstream of agency permitting procedures.

Imation Enterprises, Corp. P4 Permit

PROJECT PARTICIPANTS

- Imation Enterprises, Corp. Weatherford, OK facility
- Oklahoma Department of Environmental Quality
- EPA Region 6
- EPA OAQPS

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SOURCE SITUATION

- Imation Enterprises Corp. is an industry leader in the creation of system, product, and service solutions for the handling, storage, transmission and use of information. Imation's Weatherford, Oklahoma facility is divided into two Standard Industrial Classification (SIC) codes: Printing and Publishing (3861) and Data Storage (3695). The Printing and Publishing Systems Division (PPSD) manufactures products for the graphic arts and printing industries, including digital and conventional proofing systems. The Data Storage Division (DSD) manufactures data storage products including 1.44 megabyte diskettes, and Super Disk, the 120 megabyte diskette.

- Most of the facility's emissions occur in the PPSD. Within the PPSD, Imation currently operates two manufacturing lines known as 12W and 15W. Prior to the P4 permit, the 15W line operated under a permit issued by ODEQ, while the 12W line was a grandfathered source. The DSD manufacturing operations (also known as Emission Unit Group 5, or EUG-5) were permitted.

- Imation is a Title V major source because its PTE is above the major source threshold of 100 TPY for Volatile Organic Compounds (VOCs), and 25 TPY for Hazardous Air Pollutants (HAPs). Also because of potential HAP emissions being above 25 TPY, the plant is a major source under Title III of the Clean Air Act. Primary HAPs (which are also VOCs) include: MEK; 1-methoxy-2-propanol; toluene; and methanol. Criteria pollutants emitted at the Weatherford facility (other than VOCs) include NOx, CO, and SO_2 from combustion sources such as boilers. In most cases, actual emissions at the Weatherford facility are significantly lower than source PTE.

- Imation is also subject to New Source Performance Standards (NSPS) (Subpart Kb - Volatile Organic Liquid Storage Vessels; and Subpart SSS - Magnetic Tape Coating Facilities); and Maximum Achievable Control Technology (MACT) standards (the DSD is subject to Subpart EE for Magnetic Tape manufacturing, and the PPSD will be subject to the future MACT for Paper and Other Web Coating when promulgated). The Weatherford plant is also a major source under the Prevention of Significant Deterioration (PSD) program because potential VOC emissions exceed 250 TPY.

- Imation's Weatherford facility is located in an attainment area for all criteria pollutants.

PARTICIPANT NEEDS/OBJECTIVES

Source Responsiveness Needs

- **General regulatory predictability:**

  Imation wanted to achieve greater certainty regarding air pollution control equipment requirements, particularly for Best Available Control Technology (BACT) and future applicable MACT standards. In addition, Imation wanted like to achieve greater regulatory program certainty with regards to future PSD applicability.

- **Factory experiments:**

  Imation wanted to be able to perform factory experiments and similar short-term, experimental uses of manufacturing equipment to support development of new products or to determine if changes to existing products are viable. This could involve short term emissions in excess of previously permitted levels, or the temporary emission of a new substance.

- **Rapid process/equipment modifications:**

  Imation wanted to be able to make rapid process changes, as are frequently needed within the competitive product markets serviced by the Weatherford plant. Some anticipated changes include, but are not limited to:

  - substituting raw materials and/or introducing new raw materials;
  - relocating equipment, adding new equipment, reconstructing existing equipment, or modifying existing equipment; and/or
  - interchanging pollution control devices.

- **Product input expense/waste reductions and pollution prevention (P2):**

  As leaders in its industry, Imation also wanted a permit that facilitated further enhancement of its overall environmental performance and environmental reputation. As such, Imation wanted latitude to perform factory experiments and/or production modifications that might reduce the cost and/or the polluting potential of existing raw materials.

- **Administrative streamlining/economizing:**

  Imation wanted to find ways to meet all applicable Clean Air Act requirements through less costly and more efficient means that can provide equal or greater environmental protection.

State Environmental Agency Needs

- ODEQ was interested in using the P4 experience to learn more about the use of regulatory incentives for air permitting compliance and pollution prevention as alternatives to traditional

"command and control" options. Similarly, ODEQ hoped to learn more about ways to integrate pollution prevention into air permits.

- Because Imation has a strong environmental reputation, ODEQ was interested in creating a mechanism whereby the facility could receive maximum "credit" for its pollution prevention activities.

- ODEQ was interested in benefiting from enhanced source operational flexibility by leveraging the streamlined processes to reduce agency administrative burdens.

- ODEQ also hoped to transfer "lessons learned" through the P4 process and the actual permit, to other permitting efforts in Oklahoma.

REGULATORY COMPONENTS AFFECTING PARTICIPANT NEEDS

- **Major New Source Review (NSR):**

  - *Applicability:*

    For attainment areas, the major NSR threshold for sources of the type represented by the Weatherford plant is potential emissions of 250 TPY for any one criteria pollutant. For an existing major source, a modification is considered a major modification, and subject to major NSR, if it has the potential to increase emissions of the major pollutant by more than the designated significant emissions increase. The significant emission increase that triggers a major NSR modification for VOCs is 40 TPY.

  - *Program Requirements:*

    - Ambient air impact analysis for NAAQS protection
    - BACT
    - Public review

  - *Needs impeded by regulatory requirements:*

    Imation was considered a major source for PSD purposes because its potential VOC emissions exceeded the 250 TPY PSD threshold. However, Imation's actual emissions for VOCs were significantly below the 250 TPY threshold. Using the federal methodology for determining PSD applicability, which entails comparing past actual emissions and future potential emissions, certain modifications could trigger a PSD significant emissions increase for Imation, regardless of the actual emissions increase (and even if the *actual*

increase were only slight). Resulting PSD modification permitting processes could take up to 540 days, thereby likely delaying the necessary operational change.

- **MACT Standards:**

  - *Applicability:*

    Because Imation is a Title III major source, it is subject to Clean Air Act provisions under 112(g), which, in the case of the Weatherford plant, would apply MACT standards for modifications and reconstructions. If no MACT standard has been promulgated for the source category that applies to the equipment being modified or reconstructed, then the agency is required to determine MACT on a case-by-case basis. 112(g) applies to existing sources if an emissions unit by itself is large enough to be considered a major source is added or rebuilt. A change is considered a "reconstruction" if it costs 50% (or more) of the cost of constructing a new unit like the one being rebuilt.

    The Publishing and Printing facility will be subject to the future MACT to be promulgated under the source category Paper and Other Web Coating, if applicable construction/reconstruction is made.

  - *Program Requirements:*

    Exact program requirements for the Paper and Other Web Coating MACT will not be known until the standard is issued by EPA in November of 2000 according to the schedule set forth in the 1990 amendments to the Clean Air Act.

  - *Needs impeded by regulatory requirements:*

    The lack of regulatory predictability regarding the future MACT for Paper and Other Web Coating requirements may inhibit Imation from effectively planning future manufacturing changes that might trigger the standard. As well, the regulatory delay associated with bringing the source into compliance (once requirements are known) could inhibit the source's ability to bring the associated operations on line in a timely manner.

- **Minor NSR: Criteria pollutants**

  - *Applicability:*
    State construction permits are required for:
    - addition of a new source; or

- modification of an existing source either of which results in, or may result in, a net increase in ACTUAL?/potential air contaminant emissions in excess of one pound/hour.

- *Program Requirements:*
  - NAAQS compliance demonstration for criteria pollutants;
  - Modeling, using acceptable DEQ procedures;
  - Compliance with all federal NSPS and NESHAPs; and
  - Public notice/comment.

- *Needs impeded by regulatory requirements:*

  - Construction permits can take as long as 365 days to be reviewed and issued or denied; associated modifications to the Title V operating permit could take as long as 540 days. These delays directly impede rapid process and equipment changes necessary to develop new products and respond to market demand.

  - Under current regulations, factory experiments, even if they could lead to manufacturing changes resulting in pollution prevention, must follow the same, potentially lengthy, permitting procedures as projects whose intent is long term. Even temporary, short-term emissions increases can be subject to state construction permitting requirements.

◆ **Minor NSR: Toxic pollutants**

- *Applicability:*

  Construction or modification of existing stationary sources which emit or may emit any state regulated toxic air contaminant requires a construction permit if emissions exceed the following de minimis rates:

  - State Category A toxics (highly toxic, suspect and confirmed human carcinogens): 1,200 lbs/year;

  - State Category B toxics (substances of moderate toxicity): 1.2 TPY;

  - State Category C toxics (substances of low toxicity): 6 TPY.

- *Program requirements:*

  Each regulated toxic is designated by the state as Category A, B, or C, and is also designated a Maximum Acceptable Ambient Concentration (MAAC). The MAAC is

determined by dividing the toxic's occupational exposure limits (OEL), or some other toxicological parameter, by 100, 50, and 10 for Category A toxics, B toxics, and C toxics respectively. For air toxics that are not currently on the state list, case-by-case MAACs must be established by the state using data provided by the source.

Permitting requirements include:

- BACT for all new sources emitting any Category A pollutant;
- MAAC compliance demonstration at the property line for each pollutant;
- Compliance with federal NESHAPs, as applicable;
- Public notice/comment.

- *Needs impeded by regulatory requirements:*

  - The BACT determination for Category A toxics, which, in part, involves technical judgements on the part of the agency, is potentially unpredictable and can thereby complicate and delay necessary process, raw material, and/or equipment changes.

  - There is no regulatory incentive to move from category B to category C toxics (i.e., to less toxic substances) because the requirements are no less stringent.

  - A separate, potentially time consuming review is required for new toxics that do not have an OEL and MAAC. ODEQ must make this determination before the permit can be written.

  - Construction permits can take as long as 365 days to be reviewed and issued or denied; associated modifications to the Title V operating permit can take as long as 540 days. These delays can easily interfere with necessary rapid process and equipment changes to develop new products and respond to market demand.

  - Under current regulations, factory experiments, even if they could lead to manufacturing changes resulting in pollution prevention, must follow the same, potentially lengthy, permitting procedures as projects whose intent is long term. Even temporary, short-term emissions increases can be subject to state construction permitting requirements.

- **Plant-wide emissions cap**

  - *Description:*

    This cap is a federally enforceable limitation on plant-wide potential to emit, set at no more than 249 tons of VOC emissions per consecutive 12-month period.

  - *Program addressed:*

    This cap makes Imation a "synthetic minor" source for PSD applicability purposes. If Imation remains in compliance with this cap, it will not be subject to major PSD modification requirements.

  - *Needs addressed:*

    - ***Reduced potential emissions:***

      Prior to this permit, Imation voluntarily controlled its grandfathered source with a catalytic oxidizer. This control effectively reduced potential emissions for that source from 3556 TPY to actual emissions of 3.22 TPY. With a 249 TPY limit on PTE, controls at the grandfathered source are no longer "optional." Instead, the limit is a federally enforceable requirement which must be monitored in accordance with federal requirements.

    - ***General regulatory predictability:***

      This cap clarifies that Imation will not be subject to time consuming major NSR modification requirements and associated (often unpredictable and costly) BACT determinations.

- **Minor NSR Full Pre-approved Specific Changes**

  - *Description:*

    Imation's draft Title V permit provides advanced NSR approval for specific changes it anticipates making at the facility during the five-year permit term. These specific changes include: the installation/construction of VOL storage tanks, equal or greater than 40m^3 and which store VOLs with vapor pressure of 1.5 psia or greater; and replacement of one or more of the existing boilers, with a boiler having a maximum rated heat input capacity of greater than 10 MMBTUH and less than 100 MMBTUH.

- Minor NSR requirements for these specific changes are met in the following manner:

  - Pre-approved activities are subject to the 249 TPY VOC emissions limit, as well as NAAQS-protective emissions limit for PM_{10}, SO_2, NOx, and CO, specified in the permit.

  - NSPS requirements (Subpart Kb for VOL storage tanks, and Subpart Dc for Industrial boilers) are identified and met up-front in the Title V permit.

- *Needs addressed:*

  - ***General regulatory predictability:*** These specific pre-approvals offer Imation greater predictability and flexibility to make desired changes when needed, as applicable requirements are made clear or met up front in the Title V permit.

  - ***Rapid process/equipment modifications:*** By pre-approving these specific construction activities up-front in the Title V permit, changes can be made at any point during the permit term without having to undergo time consuming minor NSR construction permitting and significant Title V permit modification processes at the time of the change.

◆ **Minor NSR Pre-approved Modification/Construction/Reconstruction** (for criteria and toxic pollutants)

- *Description:*

  The Imation permit pre-approves certain classes of modifications that trigger minor NSR (for criteria pollutants and toxics). Applicable requirements for these changes are not avoided, they are simply met up-front in the Title V permit. Pre-approved classes of changes subject to state BACT and/or NSR include:

  - Modification or reconstruction of EUG-5;
  - Installation/construction of coating line(s) to EUG-5;
  - 12W and/or 15W coater reconstruction(s);
  - 12 W and/or 15W coater modification(s); and
  - New coating lines subject to the source category Paper and Other Web Coatings.

Applicable requirements for these classes of changes are met in the following manner:

- **BACT:**

  BACT specifications are listed up-front in the Title V permit , and apply to all pre-approved categories of changes for which BACT is applicable. BACT includes:

  - Implementation of a Pollution Prevention (P2) program (see page 13, "P2 Program.");

  - Routing VOC emissions and/or new Category A toxics through a thermal oxidizer, catalytic oxidizer, or equivalent device that maintains a minimum overall control efficiency of 80% capture efficiency and 95% destruction/recovery efficiency, or their combined equivalent.

- **NAAQS (criteria):**

  An ambient impact analysis was conducted as part of the permit development process. A short-term cap on VOC emissions of 836 pph was set to be protective of the ozone NAAQS. For all other criteria pollutants, none of the pre-approved changes contained in the permit could conceivably adversely impact the corresponding NAAQS.

- **MAAC (toxics) demonstration:**

  Air toxic emissions that will or may exceed de minimis levels during the permit term were modeled to determine MAAC compliance. The maximum hourly emissions of each toxic allowed from a single stack was then calculated and listed as toxic-specific emission limits in a table in the Title V permit. The MAAC for new toxics not listed in the permit are to be modeled by Imation using protocols pre-approved in the permit.

- **MACT:**

  See "Applicable Requirement Streamlining Analysis," page 10 for a description of MACT compliance mechanisms for applicable changes.

- **Public notice and review requirements:**

  Public notice and review requirements are satisfied during the normal Title V public review process, since all project specifications and compliance details are identified up-front in the permit.

- No later than 30 days after completion of the construction, reconstruction, or modification made under the pre-approval provisions, Imation is to submit a notification letter to ODEQ and/or EPA that includes:

  - Type of construction, reconstruction, or modification;
  - Identification of relevant standards, applicable requirements;
  - Anticipated project commencement and completion dates;
  - Types and quality of HAPs or state toxics emitted in TPY, PPH, and CAS number;
  - Emission rates in TPY and PPH of any regulated air pollutant other than HAPs;
  - Fuels, fuel usage, raw materials, production rates, and operating schedules (to the extent needed to determine emissions);
  - Identification/description of air pollution control equipment and compliance monitoring devices;
  - Identification of any increase in potential to emit for any other emission unit.

- *Needs addressed:*

  - ***General regulatory predictability; control equipment predictability:***

    The permit details contained under this provision are designed specifically so that all applicable requirements are identified and met up-front in the permit. Therefore, Imation has maximum regulatory predictability regarding any of the types of changes that are pre-approved in the permit. Because most of these changes have required performance standards, compliance with these requirements and potential costs, is also ensured up-front. Throughout the permit term, this advanced knowledge will allow Imation to most effectively plan its operational changes.

  - ***Rapid process/equipment modifications; factory experiments; administrative streamlining:***

    Because compliance with all applicable requirements is assured up-front, Imation is allowed to make the specified changes (as long as identified procedures are followed) without the permitting delays associated with case-by-case review at the time of each desired change. These pre-approved changes also provide a much more streamlined ability to make temporary changes associated with factory experiments. Finally, by identifying all of the permitting requirements up-front, administrative processes associated with case-by-case permitting are also significantly streamlined for the source and the permitting authority.

- ***Product input expense/waste reduction; pollution prevention:***

  Because Imation operates in a highly competitive manufacturing environment, it is constantly seeking new ways to lower unit costs through greater manufacturing efficiencies. This often involves using lesser amounts (or less toxic) raw materials and/or energy, a fundamentally pollution preventing activity. This often involves using lesser reduction is more likely to occur with the flexibility offered through the pre-approval provisions, because experiments and changes can occur without regulatory delays and other disincentives.

◆ Applicable Requirement Streamlining Analyses

- *Description*:

  - As part of the permit development exercise, the P4 team conducted several regulatory streamlining analyses, consistent with EPA White Paper #2 guidance. The goal was to identify potentially redundant requirements on an emission unit basis, and determine if such overlapping requirements could be subsumed under one single umbrella of the most strict requirements. These requirements could then be included in the permit and utilized for pre-approved changes.

  - As a result of the streamlining analyses, the team determined that the permit could subsume EPA's future MACT for Paper and Other Web Coating under the existing MACT for magnetic tape manufacturing.

  - The streamlining analyses also determined that Magnetic Tape NSPS (Subpart SSS) compliance requirements can be subsumed under the Magnetic Tape MACT, as can the state BACT control efficiency requirement.

- *Needs addressed*:

  - These analyses facilitate NSR pre-approvals (and associated regulatory predictability, rapid process/equipment modifications, waste reduction, and administrative streamlining) by ensuring compliance with applicable NSPS, MACT and/or BACT standards in a streamlined manner. The specific classes of changes that utilize the streamlining analyses include:

    - EUG-5 modifications and/or reconstructions;
    - Construction of a new coating line for EUG-5;
    - 12W/15W modification and/or reconstruction; and
    - Construction of a new coating line for 12W/15W.

- **Control Device Flexibility**

  - *Description*:

    - The permit authorizes the use of several alternative control devices for EUG-5 (the DSD coater). These alternatives are consistent with the Magnetic Tape MACT compliance requirements. Alternatives include:
      - using lower HAP density coating solutions;
      - in lieu of controlling emissions from each solvent storage tank, applying an overall (higher level) control efficiency from all coating operations;
      - controlling the vent of any HAP storage tank through the use of the thermal oxidizer, solvent recovery unit, or other VOC control device;
      - establishing alternative emission limits for EUG-5 other than the incinerator and Coater 51;
      - controlling bypass vents through alternative means specified in the permit.

  - *Needs addressed*:

    Regulatory predictability; rapid process/equipment modifications; administrative streamlining.

    Allowing the use of alternative control devices, consistent with the Magnetic Tape MACT, explicitly confirms Imation's ability to select the method which best suits its operational needs, without having to obtain approval from ODEQ at the time of the change.

- **Raw Material Change Pre-approvals**

  - *Description*:

    The permit authorizes the use of alternative raw materials without the need to obtain advanced approval from ODEQ at the time of the change, provided certain procedures are followed. Requirements for making raw material changes vary, depending on the specific change that is made:

    (1) **If:** the change will result in lesser or equal VOC emissions, and lesser or equal emissions of each toxic emitted at or above de minimis levels, and the toxic(s) is already authorized by the permit; **then**, records of the composition of the alternative raw material must be maintained.

(2) **If:** the change will result in lesser or equal VOC emissions, and a de minimis addition of any toxic air pollutant not previously emitted; **then**, sufficient records of usage, retention, and capture and control efficiency must be maintained.

(3) **If:** the change will result in lesser or equal VOC emissions, and either an increase above de minimis levels of a toxic air pollutant not previously emitted, or any increase of a toxic air pollutant previously emitted; **then,** the following analyses must be submitted to ODEQ at least 10 working days prior to making the change, and provided sufficient records of usage, retention, and capture and control efficiency are maintained:

- an air toxic that has not previously been evaluated by ODEQ must be categorized and have a MAAC developed, upon request by Imation;[1]
- any new Category A toxic must meet BACT as described in the permit;
- EPA approved modeling (as specified in the permit) shall be used to demonstrate compliance with the MAAC.

- *Needs addressed*:

  - ***General regulatory predictability:***

    With the pre-approved raw material provisions, Imation has maximum regulatory predictability regarding different types of raw material changes, as all requirements for making the designated changes are identified up-front in the permit.

  - ***Rapid process/equipment modifications; factory experiments; administrative streamlining:***

    Because procedures for establishing and verifying compliance with all applicable requirements are established up-front, Imation is allowed to make the specified raw material changes without the permitting delays often associated with case-by-case review at the time of each desired change. These pre-approved raw material changes also provide a much more

[1] ODEQ is committed to reviewing new MAACs within 72 hours of receipt of the request from Imation.

streamlined ability to make temporary changes associated with factory experiments. Finally, by identifying all of the permitting requirements up-front (as opposed to at the time of each change), administrative processes are also significantly streamlined for the source and the permitting authority.

- ***Product input expense/waste reduction; pollution prevention:***

  Because Imation operates in a highly competitive manufacturing environment, it is constantly seeking new ways to lower unit costs through greater manufacturing efficiencies. This can include use of less amounts and/or less toxic raw materials that can potentially result in pollution prevention. Such expense and waste reduction is more likely to occur with the flexibility offered through the pre-approved raw material change provisions, because experiments and changes can occur without potential regulatory delays and other disincentives.

◆ **Pollution Prevention Program**

• *Description:*

The permit incorporates the option of a pollution prevention program for Imation. This program reflects a commitment to continuous efforts to reduce pollution in all aspects of the facility. Although the program is voluntary, there is an explicit link between the adoption of an approved pollution prevention program and the BACT determination for pre-approved changes. Therefore, to access pre-approvals that trigger BACT, Imation must have an approved P2 program in place.

P2 program requirements include:

- P2 Training & Education program (on-site, R&D lab, and external community affairs);

- P2 Performance Measurement, which factors in business changes and measures P2 on a per unit basis (production, waste percentages, and emissions per unit);

- P2 Leadership Review of P2 progress, conducted on a semi-annual basis;

- P2 Reporting and Documentation, which will include an annual Executive Summary and 18-month review by ODEQ.

Intel Permit

PROJECT PARTICIPANTS

- Intel Corporation's Aloha, Oregon facility
- Oregon Department of Environmental Quality (DEQ)
- EPA Region 10
- EPA Office of Air Quality Planning and Standards (OAQPS)
- Pollution Prevention Research Center (PPRC)

SOURCE SITUATION

- Intel Corporation is the world's largest manufacturer of semiconductors. The Aloha, Oregon Campus is one of Intel's largest semiconductor manufacturing plants.

- Intel's Aloha plant is a Major Title V source because it emits more than 100 tons per year (tpy) of VOCs. The plant is a minor source of CO, and a synthetic minor source of Hazardous Air Pollutants (HAPs). It is located in a nonattainment area for ozone and CO, so it is subject to Major NSR/nonattainment requirements for major VOC and CO modifications.

- Ninety percent of the VOCs emitted from Intel's semiconductor manufacturing processes come from the photoresist operations (a light-sensitive polymeric material applied to material substrates at various stages in the process). The remaining 10 percent of VOCs result from the solvent cleaning stations and the storage/handling operations. A very small amount of VOCs are emitted from the boilers, which operate on natural gas.

- Prior to the Title V permit, the plant was operating under a State Air Contaminant Discharge Permit (ACDP), an operating permit which contained a Plant Site Emission Limit (PSEL) for the entire plant of 190 TPY of VOCs, based on the plant's baseline 1978 actual emissions. Intel also was operating under a weekly VOC PSEL of 8 tons per week, reflecting the maximum weekly production rate. Oregon issues pollutant-specific annual and short-term PSELs, essentially emissions caps on actual emissions, as part of its State Implementation Plan (SIP) structure.

- Intel had actual VOC emissions of 152 tons in 1993, but plans to expand production.

- In addition to Title V, the Intel facility is also subject to: State Minor NSR, State toxics rules (which are closely modeled after federal toxics rules), source-specific RACT requirements, other Oregon State SIP requirements, and non-federally enforceable State requirements.

PARTICIPANT NEEDS/OBJECTIVES

Source Responsiveness Needs

- **Rapid process/equipment changes:**

  The highly competitive semiconductor market is characterized by frequent changes in product types and product specifications that reflect the latest technological breakthroughs. To compete successfully in this market, Intel must constantly change its products, and thus its manufacturing processes and product inputs. Moreover, reflecting the unpredictable nature of technological innovation, Intel cannot foresee the type of process changes that might take place, even in the near future. Intel therefore wanted a permit that would give it the flexibility to make frequent and rapid manufacturing changes. Intel did not desire relief from meeting federal or state applicable requirements; rather, it wished to avoid potentially costly administrative and procedural delays.

- **Compliance demonstration/monitoring efficiency:**

  Intel needs to make numerous changes each day that would result in minor emissions increases or decreases throughout the plant. Intel was concerned that minor NSR and Title V might require it to monitor and report emissions associated with each change at the time the change occurred, which it saw as time consuming and burdensome. Intel also had to monitor VOC emissions to demonstrate compliance with different requirements (e.g., the annual and weekly PSEL, RACT standards, and HAP requirements) and desired to do so as efficiently as possible. Intel therefore desired the ability to efficiently demonstrate compliance with all applicable requirements, and to do so in a manner that minimized disruption to its operations.

- **Protection of confidential business information:**

  In addition to being dynamic, the semiconductor industry is very competitive. Much of Intel's success rests on its ability to stay on the cutting edge of technological innovation. For this reason, Intel desired that the details of its manufacturing processes not become publicly available. This concern primarily arose in regard to monitoring and reporting to demonstrate compliance with HAPs and RACT conditions of the permit. For example, Intel wanted to avoid specifying emissions limits for individual HAPs, for fear that disclosing emissions for specific pollutants might effectively reveal proprietary information.

- **Acknowledgment of pollution prevention activity:**

  As the largest private employer in Oregon, Intel has a strong commitment to furthering the goals of environmental quality and economic vitality in the state. Intel had an exemplary compliance history (recognized in its Title V permit's review report), and sought to

demonstrate its commitment to pollution prevention as a means of achieving lower emissions.

State Permitting Authority Needs

- **Title V procedures:**

  DEQ desired to create a precedent for a strong, effective Title V permitting process which would provide sources with environmentally protective operational flexibility.

- **Administrative streamlining:**

  DEQ wanted to be able to reduce the administrative burden associated with source changes that have negligible environmental impact.

- **Environmental protection/enforceability:**

  Above all, DEQ wanted to ensure that the permit met all applicable requirements and was practically enforceable.

- **Pollution prevention promotion:**

  DEQ sought ways to encourage pollution prevention as a means of Clean Air Act compliance, and to better integrate pollution prevention in the State regulatory structure.

- **Pollution prevention documentation:**

  DEQ wanted to measure and document the effectiveness of pollution prevention in reducing air emissions. DEQ was also interested in the possibility of transferring P4 "lessons learned" to other facilities.

REGULATORY COMPONENTS AFFECTING PARTICIPANT NEEDS

- **Major NSR/Nonattainment (for ozone):**

  - *Applicability:*

    Because Intel is a major source for ozone located in a nonattainment area, major modifications above the significant emissions rate (accumulative VOC emission increases/decreases that result in a net actual emission increase greater than 40 TPY) triggers major New Source Review/Nonattainment.

- *Key Program Requirements:*

  - application;
    - Lowest Attainable Emission Rate (LAER) review (applied to each modified emission unit);
    - demonstration of compliance with all applicable limitations and standards;
    - provide emissions offsets;
    - demonstration of net air quality benefit (to ambient air quality standards, through modeling);
    - analysis of alternatives to each nonattainment pollutant;
  - compliance demonstration requirements;
  - public notice and comment.

- *Needs impeded by program requirements:*

  Rapid process/equipment changes

♦ **Federal and State HAPs rules (MACT standard and/or 112(g) standard)**

- *Applicability*

  Oregon's HAP rules are modeled after federal HAP rules. Sources become classified as a "major" source for HAPs if the source emits or has the potential to emit 10 tpy of any individual HAP or 25 tpy of any combination of HAPs. A source can choose to be a synthetic minor, taking an enforceable limit on its potential to emit, so that it cannot emit more than 10 tpy of any individual HAP or 25 tpy of any combination of HAPs.

- *Key Program Requirements*

  (for major sources)
  - when the permit was developed, Oregon had 112(g)-like rules that required case-by-case MACT determinations for any major HAP source that made a change resulting in HAP increases above a set of de minimis levels.
  - state MACT standards
  - compliance demonstration requirements

  (for sources choosing to be synthetic minor for HAPs)
  - if a source chooses to be a synthetic minor for HAPs, it needs extra compliance demonstration to show it is keeping within the synthetic minor limitations.

- *Needs impeded by regulatory requirements:*

Rapid process/equipment changes
Protection of confidential business information

♦ **Minor NSR:**

- *Applicability:*

Oregon has no de minimis exemption from minor New Source Review. Any new stationary source or physical or operational change causing an increase in actual VOC emissions (as measured by maximum capacity to emit) with respect to a stationary source, no matter how small, requires Intel to apply for and receive approval before undertaking the change. Intel had three stationary sources for VOC (as defined in the Title V permit): (1) the two existing semiconductor manufacturing facilities, which share a common material flow, which have a baseline of 190 tons per year; (2) a building which Intel plans to develop into a semiconductor manufacturing facility, with a projected capacity to emit of 53 tpy of VOC; and (3) office buildings with no rated VOC emissions capacity.

- *Key Program Requirements:*

  - application;
    - demonstration of no adverse air quality impact;
    - demonstration of compliance with all applicable requirements;
  - compliance demonstration, monitoring & reporting requirements;
  - public notice and comment.

- *Needs impeded by regulatory requirements:*

Rapid process/equipment changes
Compliance demonstration/monitoring efficiency
Pollution prevention acknowledgment

♦ **Source-specific Reasonably Available Control Technology (RACT) requirements**

- *Applicability*

As required by the 1990 Clean Air Act Amendments and federal regulations, Oregon's SIP contained provisions requiring VOC RACT standards for existing sources in nonattainment areas. Oregon's SIP specified RACT for certain categorical sources, and called for source-specific (case-by-case) RACT determinations to be made for certain non-categorical "affected" sources like Intel

(sources located in nonattainment areas, having uncontrolled PTE VOC emissions greater than 100 tpy, for which no categorical RACT standards exist). The source must always be in compliance with these RACT standards; therefore, existing operations and any future modifications are subject to RACT.

- *Key Program Requirements*

  - For an "affected source" like Intel, Oregon's SIP (and federal regulations) called for source-specific RACT standards to be determined in the permit. Per federal regulation, RACT standards are "devices, systems process modifications, or other apparatus or techniques that are reasonably available taking into account (1) the necessity of imposing such controls to attain a national ambient air quality standard, (2) the social, environmental, and economic impact of such controls, and (3) alternative means of providing for attainment and maintenance of such standard" (40 CFR §51.100(o)). The State therefore has some flexibility in determining a source-specific RACT standard, but the standard must be approved by EPA.
  - Compliance demonstration requirements
  - Procedural requirements, including public notice and hearing

- *Needs impeded by program requirements:*

  Compliance demonstration/monitoring efficiency
  Protecting confidential business information

APPROACHES TO FLEXIBILITY AND POLLUTION PREVENTION

♦ **Plant-site emissions limit (PSEL)**

- *Description:*

  The PSEL is a pollutant-specific, plant-wide annual cap on actual emissions, established in Oregon's SIP. Oregon's rules also require a short-term PSEL, set at a level compatible with business operations (and at a level that ensures NAAQS compliance). Intel's PSEL for VOC (established since the plant was constructed in 1978) was set at 190 tpy, and the weekly PSEL at 8 tons per week. Its annual CO PSEL was set at 32 tpy. The Title V permit retained this innovative, pre-existing element of Oregon's SIP.

- *Program addressed:*

  The annual PSEL addresses major NSR applicability. The PSEL serves as the baseline from where the Significant Emissions Rate (SER) is measured. For

example, Intel triggers major NSR if a modification leads to net (actual) increase in VOC emissions of 40 tpy beyond the 190 tpy PSEL.

- *Needs addressed:*

  - ***Pollution prevention promotion:*** To avoid triggering the permit modification process, Intel has a strong incentive not to increase VOC emissions beyond 190 tpy, and 8.0 tons per week. Intel wishes to expand production, but it must comply with the PSEL. The permit makes it likely that Intel will use pollution prevention (decreasing per unit emissions) to comply with the PSEL. Using additional or modified control technology to comply with the PSEL would trigger additional regulatory requirements, because a source's pollution reduction and compliance demonstration processes must be specified in its Title V permit. Intel chose not to list any additional control technology in its Title V permit, believing it could meet emissions reduction through pollution prevention. In sum, Intel's PSEL compliance requirements outlined in its Title V permit resulted in a strong incentive for Intel to continue to reduce emissions through pollution prevention.

♦ **Innovative Synthetic Minor Approach**

- *Description:*

  With respect to Hazardous Air Pollutants (HAPs), the permit contains a federally enforceable limit of plant emissions of 10 TPY of organic and 10 TPY of inorganic HAP emissions. This ensures that no individual HAP can be greater than 10 TPY. It also ensures that aggregate HAP emissions will be less than 20 tpy (which is actually 5 tpy less than the 25 tpy aggregate HAP major source threshold).

- *Program addressed:*

  This cap addresses major New Source MACT (and 112(g)) applicability. As long as Intel meets certain conditions including the limits specified above, it is not subject to federal and State requirements for major Sources of HAPs.

- *Needs addressed:*

  - ***Pollution prevention promotion.*** Prior to the Title V permit, Intel was classified as a "major" source for HAPs, because it had aggregate PTE HAPs emissions exceeding 25 tpy and/or emissions of an individual HAP greater than 10 tpy (the federal threshold for a "major" source of HAPs). Qualifying for "synthetic minor" status required Intel to take federally-enforceable limits to keep its HAP PTE emissions below these thresholds.

Intel's Title V permit establishes federally-enforceable limits on Intel's HAPs PTE of only 20 tpy of aggregate HAPs (a PTE of 10 tpy aggregate organic HAPs and 10 tpy aggregate inorganic HAPs). By mutual agreement, the permit resulted in a more environmentally beneficial outcome than that required by law.

This approach encourages Intel to continue to prevent pollution in the future: Intel can expand production without crossing a regulatory threshold and becoming regulated as a major source of HAPs only by reducing per-unit HAPs emissions continuously as production expands.

- ***Protection of confidential business information:*** Intel is required in the permit to report emissions of total organic and inorganic HAPs. Confidential business information is protected because permit compliance demonstration does not require monitoring or reporting of individual HAPs.

- ***Compliance demonstration/monitoring efficiency:*** Monitoring organic HAPs is accomplished through chemical mass balance, the same procedure Intel is required to use for VOCs to demonstrate compliance with the PSEL and RACT standard (a different procedure is necessary for monitoring of inorganic HAPs). This enables Intel to streamline its monitoring and reporting efforts.

♦ **Minor NSR Pre-approvals**

- *Description:*

Conditions in the permit pre-approve a narrowly defined category of physical and process changes that would increase the maximum capacity of a stationary source to emit VOC. Applicable requirements are not avoided, they are simply met up-front in the Title V permit.

Pre-approved changes that cause emission increases of a stationary source are to be offset by emissions reductions achieved through pollution prevention so that the combined emissions of all three stationary sources does not exceed the 8 tons/wk short term PSEL.

Pre-approved changes that increase the emissions of a stationary source to emit VOC are limited to those involving installing new VOC emitting activities, and to making physical changes or changes in the method of operation of existing VOC emitting activities at the plant's three existing stationary sources.

To qualify for the pre-approval, Intel must meet all applicable requirements. In making changes, Intel must comply with the source-specific RACT standard, and meet specified monitoring and record-keeping requirements. Control equipment and compliance demonstration methods cannot be altered.

Permit application and public review requirements associated with Minor NSR are met up-front in the Title V permit.

To monitor compliance with the weekly PSEL, the permit required Intel to use a combination of direct and indirect methods. The chemical mass balance procedure (a direct measure of emissions used for the annual PSEL) could not be used on a weekly basis, given the complexity of Intel's operations. The permit requires the use of a bi-monthly emissions factor (EF), based on the actual solvent usage and the actual production figures from the previous two month period. The permit calls for the bi-monthly EF to be updated every two months, to reflect the most recent process changes. Weekly emissions are then estimated by multiplying EF by the weekly production output. It is important to note that direct emissions monitoring is not avoided, but delayed for a two month period of time. The accuracy of each EF is verified at the end of each monitoring period by comparing the EF-determined emissions to the actual emissions obtained from the direct chemical mass balance method. This monitoring method enabled the pre-approved changes to proceed while ensuring that the requirements were met.

Underscoring that pre-approvals are designed to be in both Intel and ODEQ's best interest, the permit condition outlining the pre-approval (and the pollution prevention program) will expire after one permit term unless its extension is agreed to by mutual consent.

- *Program addressed:*

Pre-approvals address minor NSR and source-specific RACT requirements.

- *Needs addressed:*

  - ***Rapid process changes/equipment changes:*** Pre-approved changes give Intel operational flexibility to make rapid process changes and continuously develop new products. Without the pre-approval, Intel would be subject to minor NSR review each time it wishes to make a minor process change. Intel perceived the procedural requirements of minor NSR to be time consuming; for example, it could not proceed with a minor change before it received approval from the agency (which by regulation could take as long as 60 days). The pre-approval alleviates this potentially time consuming process, allowing Intel to meet all the requirements for minor NSR in advance.

- ***Pollution prevention promotion:*** To access the flexibility made possible by the pre-approval permit conditions, Intel must offset any emissions increases in emissions associated with the minor NSR-triggering modification through *pollution prevention.* This is because a Title V permit modification would be triggered if Intel modifies its existing control technology, or uses a different control technology beyond that specified in the permit. (Intel chose not to specify any alternative control technology in the permit, believing it could achieve emissions reduction through pollution prevention). Intel could use pollution prevention to decrease its emissions by making process changes (including input substitution) that enable a product unit to be made with less VOC input, resulting in less per unit emissions. The chemical mass balance compliance demonstration method specified in the permit captures emissions reductions through this type of change. In sum, the pre-approval permit condition provides a strong incentive for Intel to adopt pollution prevention measures as its primary strategy for seeking emissions reductions.

- ***Administrative Streamlining:*** Because certain classes of changes are approved up-front in the Title V permit, there is less administrative burden for DEQ throughout the life of the permit. DEQ can complete the procedural requirements for a class of changes up-front, combining them with the procedural requirements of the Title V permit..

♦ **Source-specific RACT determination**

- *Description:*

Intel was the first semiconductor manufacturing facility in Oregon that became subject to a source-specific VOC RACT determination. The permit writing challenge was therefore to develop RACT standards that would: meet the legal requirements; be predictable and flexible enough to allow Intel to plan its operations; be flexible enough to be pre-approved (allowing NSR pre-approvals to occur); and have efficient compliance demonstration and monitoring requirements that did not require the release of confidential business information.

The RACT determination was directed at 4 types of operations occurring at the plant. Existing controls in the permit were found to be sufficient for RACT for the first two types of operations (VOC storage, and VOC waste collection and disposal). More specific RACT requirements were necessary for the remaining two types of operations: solvent cleaning stations and photoresist operations. The RACT standard for solvent cleaning operations was developed by applying EPA's control technology guidelines to specific conditions at the source, resulting in standards for certain operational procedures.

The most significant and innovative element of the RACT determination was directed at the photoresist operations (which were responsible for 90% of Intel's VOC emissions). The process resulted in the development of a "universal" source-specific RACT standard for Intel's entire spectrum of wafer manufacturing processes: $2x10^{-4}$ lbs VOC per cm^2 wafer processed. This performance-based standard was determined to be as environmentally beneficial as control technology alternatives (which were found to be cost prohibitive). Intel's operations at the time of permit issuance met this standard. The permit required the standard to be met in the future, and for Intel to monitor compliance with it.

- *Regulatory program addressed:*

  - State source-specific RACT requirements

- *Needs addressed:*

  - ***Administrative streamlining:*** The development of a universal standard that would remain effective over time as manufacturing processes changed greatly facilitated regulatory oversight. Regulatory oversight (in addition to source compliance) was further simplified because the standard alleviated the need to monitor many different pieces of equipment frequently.

  - ***Compliance demonstration efficiency:*** To monitor compliance with the standard, the permit called for Intel to use a chemical mass balance, the same method used to demonstrate compliance with the VOC PSEL and organic HAPs. The performance-based manner in which the standard was written precluded the need to monitor VOC emissions from different pieces of equipment. (Wafer production information was also necessary to demonstrate compliance, but this would be readily available from Intel's production records and verified by Oregon/EPA inspections).

  - ***Confidential business information protection:*** Confidential business information was protected because Intel did not need to monitor and report VOC emissions from individual pieces of equipment.

  - ***Pollution prevention promotion:*** The RACT standard did not specify how Intel was to meet the standard; Intel could choose to use pollution prevention measures or control technology. However, pollution prevention was more attractive to Intel because a Title V permit modification was required if Intel chose to comply with the RACT standard by altering or adding to its existing control technology. The standard also provides an assurance that Intel cannot crank up emissions per unit of production, and use non-production or equipment downtime to show compliance with the VOC PSEL. In sum, the RACT standard, coupled with the compliance

demonstration requirements of Title V, encourages Intel to incorporate pollution prevention when making necessary process and/or equipment design changes and chemical substitution.

♦ **Pollution Prevention Program**

- *Description:*

The permit requires Intel to develop and implement a pollution prevention program, reflecting Intel's ongoing commitment to pollution prevention. The permit specifies ODEQ review procedures for the pollution prevention program, and outlines the procedures for Intel to revise the program. It specifies minimum elements for the program, including the formulation of performance goals and objectives to comply with the innovative VOC and HAP limits in the permit through pollution prevention, and data collection to demonstrate the effectiveness of the pollution prevention measures. The permit also specifies requirements for monitoring and reporting requirements for the program. The permit conditions requiring the pollution prevention program (and the pre-approval process) will expire after one permit term unless its extension is agreed to by mutual consent.

- *Program addressed:*

The pollution prevention program is not directed at any particular regulatory program. However, it is related to the pre-approval and HAP permit conditions. The pre-approval condition requires that VOC offsets needed to allow pre-approvals be "achieved by pollution prevention, as outlined in the pollution prevention program." The pollution prevention program must include the process to "formulate performance goals and objectives to comply with the VOC and HAP limits through pollution prevention."

- *Needs addressed:*

  - ***Pollution prevention acknowledgment:*** The pollution prevention program requirements in the permit provide a visible acknowledgment of the pollution-preventing activities already underway at Intel. Given the incentives for pollution prevention provided by the PSEL and the pre-approval, Intel believes it can achieve further gains in pollution prevention in the future.

  - ***Pollution prevention promotion:*** The program requirement will lead to even more pollution prevention. Intel may discover new pollution-prevention opportunities as it develops and continuously refines its program. Moreover, the program is likely to demonstrate some of the pollution prevention possibilities inherent in semiconductor manufacturing

processes, which may be emulated by other manufacturers, promoting pollution prevention nationwide.

- ***Pollution prevention documentation:*** The permit requires Intel to set performance goals based on the VOC and HAP limits, and to gather data on and document the effectiveness of pollution prevention measures. To date, not much quantitative information on the effectiveness of pollution prevention in reducing air emissions exists, perhaps because of the prior lack of incentives to collect it. Information attesting to the overall effectiveness of pollution prevention may promote its overall use as a strategy to reduce air emissions to comply with Title V and other aspects of the Clean Air Act.

Searle Permit

INTRODUCTION

The EPA Region 4 Pollution Prevention in Permitting Pilot focused on the development of a Title V permit for the Searle pharmaceutical plant in Augusta, Georgia. The effort involved representatives of G.D. Searle & Company; its parent corporation, Monsanto Company; the Georgia Department of Environmental Resources, Environmental Protection Division (EPD); and U.S. EPA Region 4, which is based in Atlanta and covers the southeastern U.S. Like similar efforts in other EPA regions, the Searle pilot is nearing completion, with plans to issue Searle-Augusta's draft Title V permit in the summer of 1997. As set forth in a memorandum of understanding signed by all parties in October 1996, Searle-Augusta's permit is designed to provide the facility with increased operating flexibility within the current regulatory framework, while at the same time providing strong incentives for pollution prevention.

SOURCE DESCRIPTION

G.D. Searle & Company, a subsidiary of Monsanto, is a pharmaceuticals manufacturer with annual sales of over $1.5 billion. Searle's sole U.S. manufacturing facility and the company's largest bulk manufacturing facility worldwide is located in Augusta, Georgia. Constructed in 1983, Searle-Augusta produces approximately 25 different active ingredients or intermediate products, including a broad spectrum antibiotic and drugs for the treatment of heart arrhythmia, high blood pressure, arthritis, and Parkinson's disease. These products are manufactured via batch processes in reactors, followed by centrifugal isolation and fluid-bed or tumble drying. The resulting powdered solids are packaged and shipped in drums to other Searle facilities, where they are encapsulated.

The principal air pollution issue of concern at Searle-Augusta is control of volatile organic compounds (VOCs), which are employed at various stages in the pharmaceutical manufacturing process; some of these compounds are also considered hazardous air pollutants (HAPs) and/or are regulated under Georgia's air toxics guidelines. To control these emissions, all process reactors are equipped with primary and secondary condensers. The resulting condensate can be recovered on-site for reuse in the production process. The remainder of the spent solvents are incinerated on-site in a RCRA-permitted Subtitle C hazardous waste incinerator. Other potential sources of emissions at Searle-Augusta include the tanks in which virgin, spent, and recovered materials are stored, the facility's boiler, and its wastewater treatment processes.

According to its Title V permit application, Searle-Augusta is a major source of HAPs, with a potential to emit (PTE) of approximately 32 tons per year (TPY) and actual emissions of approximately 20 TPY. Searle-Augusta's current PTE for VOCs is approximately 90 tons per year, while current actual VOC emissions are approximately 65 TPY. Because its PTE is less than 100 TPY and the Augusta area is in full attainment of National Ambient Air Quality Standards (NAAQS), the Searle-Augusta facility in and of itself would not be considered a major source of VOCs. For determination of its status under Title V, however, Searle may be required to combine its PTE with the PTE of a nearby Nutrasweet plant, which the state may determine to be contiguous and held under common control (Nutrasweet is also a subsidiary of Monsanto; contiguous facilities held under common control are treated as a single entity in

determining the facilities' major or minor source status under Title V). In that case, Searle's PTE would likely exceed the major source threshold. This issue must be resolved prior to issuing Searle's Title V permit. As described below, however, the resolution of this issue is unlikely to affect the innovative permit conditions developed under the P4 effort, which in this case focus on the permit's non-federal requirements.

DESIRED OPERATIONAL FLEXIBILITY

Searle's manufacturing operations are subject to regulation by the U.S. Food and Drug Administration (FDA). The process of winning FDA consent to bring a new drug to market includes plant trials to support clinical tests and to demonstrate the feasibility of commercial-scale manufacture to product specifications. Since any change in the process upon which clinical trials are based would require submittal of a New Drug Application to FDA, experimentation with alternative manufacturing processes (e.g., the mix of reactants, changes in temperatures, or the use of different solvents) to optimize reaction rates, reduce waste, and otherwise minimize costs while meeting product quality standards is essentially limited to the plant trial period. The flexibility to test different manufacturing processes during this period without delay due to air permitting requirements could save Searle millions of dollars in potentially lost sales and increase the viability of conducting plant trials at Augusta.

POTENTIAL REGULATORY IMPEDIMENTS

Georgia's minor New Source Review (NSR) program, as embodied in the State Implementation Plan (SIP), requires state approval prior to any modification, which is defined as a change in operations that affects the amount or character of emissions (changes in operations that do not affect the amount or character of emissions are not considered modifications under the minor NSR program, and therefore are not subject to state approval). The need for state approval of any modification is the primary impediment to experimentation during plant trials; it has limited Searle's operating flexibility under the state air permit program, and could continue to limit it under the Title V permit program. Providing flexibility within the confines of this requirement, without reopening the Title V permit, was the principal focus of the Searle-Augusta P4 effort.

An additional concern for Searle is compliance with state RACT requirements for the control and treatment of emissions from pharmaceutical manufacturing. Any increase in Searle's potential to emit VOCs beyond 100 TPY would require Searle to demonstrate compliance with the categorical treatment guidelines for pharmaceutical manufacturers instituted under Georgia's air quality control rules (Chapter 393-3-1-.02, Rule KK). In addition, Searle must at all times comply with state air toxics standards, which establish maximum allowable concentrations of toxic pollutants at the facility's fence line.

Under the federal Prevention of Significant Deterioration (PSD) program, Searle-Augusta would be subject to preconstruction review and BACT requirements for any new construction or major modification that increases air emissions above the PSD significance levels; however, Searle does not currently anticipate any expansion at the Augusta plant that would trigger PSD review (the PSD trigger for a major source of VOCs is an increase in PTE of 40 TPY; the trigger for minor sources is 100 TPY). Since the Augusta area attains NAAQS for all criteria pollutants, non-attainment New Source Review is not required.

A potential future issue for Searle is the forthcoming MACT standard for pharmaceutical manufacturers, which is currently under development. As a major source of HAPs, Searle will be subject to this standard; however, the standard will have no regulatory bearing until three years after its final promulgation (facilities have three years to comply with a MACT standard once it becomes final). If less than three years remain on Searle-Augusta's permit when EPA promulgates the final MACT standard, the MACT requirements will not apply until the permit is renewed. In light of the uncertainties concerning the timing and nature of the MACT requirements, the P4 permit development effort did not attempt to take them into account.

Searle-Augusta may also be subject to the hazardous waste incinerator MACT. These standards, however, are not considered likely to be an impediment to the operating flexibility desired.

APPROACHES TO OPERATIONAL FLEXIBILITY

As noted above, Georgia's SIP requires state approval prior to implementing any modification. Under Georgia's air quality control rules, a modification is defined as:

> ...any change in or alteration of fuels, processes, operation or equipment (including any chemical changes in processes or fuels) which affects the amount or character of any air pollutant emitted or which results in the emission of any air pollutant not previously emitted....[1]

Awaiting EPD approval of such changes has in the past led to significant and costly delays in plant trials at Searle-Augusta. To provide Searle with the operating flexibility sought, project participants focused on developing permit conditions that would pre-approve certain types of modifications, thereby avoiding delays in state review. As outlined below, these conditions establish notification and review protocols that are scaled to the significance of the modification.

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[1] The following operations are not considered modifications under this definition:

- Routine maintenance, repair, and replacement.
- An increase in production rate (not to exceed the maximum production rate stated in a pertinent application), if that increase can be accomplished without a capital expenditure, unless that increase is prohibited by a permit condition.
- An increase in the hours of operation, unless that increase is prohibited by a permit condition.
- The use of an alternative fuel or raw material that the source is designed to accommodate. A source is considered designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications prior to the change and that use is allowed under a current air quality permit.

Sources of Lesser Significance

The Searle permit defines a "source of lesser significance" modification as any modification that does not result in:

(a) the installation of required control devices;

(b) the installation of new equipment, including tanks, centrifuges, vacuum driers or other equipment that would be classified as a source of emissions;

(c) an increase in the worst-case hourly emission rate of any existing pollutant;[2]

(d) an emission of any new regulated air pollutant; or

(e) violation of state air toxics guidelines.

To avoid unnecessary delay, the permit conditions allow Searle to make such modifications without prior notification to the Georgia EPD; however, Searle must submit a quarterly report summarizing all such modifications implemented during the prior three months. This notification is to include a general description of each modification and must identify the date on which the modification occurred, the pollutants emitted, and the air pollution control devices utilized. In addition, Searle must maintain records of the calculations employed to determine the emissions associated with each modification and to determine the modification's compliance with state air toxics guidelines, and must make these calculations available to EPD upon request. Searle's quarterly report must contain a certification by a responsible official that each modification implemented complies with all applicable requirements, and that the information submitted in the report is complete and accurate. These reporting and record keeping requirements are designed to ensure adequate tracking and review of pre-approved changes.

Sources of Greater Significance

A "source of greater significance" modification is defined as any modification that does not meet the definition of a less significant modification (see above) but is not subject to any federal air quality requirement (i.e., major NSR, PSD review, or national emission standards for HAPs). The draft permit conditions allow Searle to make these types of modifications 21 days after the submission of associated information (the permit conditions spell out in detail the nature of the information required). The 21-day prior notification requirement is designed to allow EPD to perform an expedited review of the submittal prior to implementation of the modification, providing a window of opportunity to contact Searle with any questions or concerns; however, no action on the part of the state is required prior to the modification's implementation.

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[2] The worst-case hourly emission rate of a pollutant is calculated according to EPD guidance on determining potential to emit, and is developed by considering a facility's highest polluting product, raw material, fuel and/or operational method.

Like the conditions that apply to less significant modifications, the conditions that apply to modifications of greater significance include monitoring, record keeping, and reporting requirements. These requirements are similar to but more extensive than those pertaining to less significant modifications.

Rescinding Approval

Although modifications of the type described above are pre-approved, Georgia EPD reserves the right to rescind such approval if the information Searle provides in support of the modification is incomplete or insufficient for the state's review, or if EPD finds Searle to be in noncompliance with any rule, regulation, permit condition, air toxics guideline limit, emissions limit, or operational limit. EPD can take such action at any time up to 180 days after it receives notification of a pre-approved modification from Searle. EPD has retained the right to rescind approval of a pre-approved modification in order to ensure fulfillment of its legal responsibility to the public to protect human health and the environment. As always, Searle remains subject to enforcement action for any noncompliance with an applicable rule, regulation, permit condition, air toxics guideline limit, emissions limit, or operational limit.

The possibility that EPD could rescind pre-approval of a modification exposes Searle to both some economic risk and the risk of enforcement action. The conditions under which the state can rescind pre-approval, however, are limited to those noted above: failure to submit adequate information to support state review of the modification, or implementation of a modification that violates a rule, regulation, permit condition, air toxics guideline limit, emissions limit, or operational limit. Since the information required for state review is detailed in the permit, the risk of cancellation due to the submission of inadequate supporting data should be small; the cancellation clause should simply provide a strong incentive for Searle to provide the state with all necessary documentation of pre-approved modifications. Similarly, the other provisions of the cancellation clause simply reinforce the stipulation that pre-approved modifications must comply with all applicable state and federal requirements, thereby giving Searle a strong incentive to ensure compliance with these requirements as such modifications are implemented.

Other Limitations

It is important to note that the draft permit conditions for Searle-Augusta expressly limit pre-approved modifications to those that are not subject to the following federal regulations:

(a) 40 CFR 60, Standards of Performance for New Stationary Sources;

(b) 40 CFR 61, National Emission Standards for Hazardous Air Pollutants; and

(c) 40 CFR 63, National Emission Standards for Hazardous Air Pollutants.

In addition, the draft permit conditions expressly prohibit pre-approval of any modification that would result in a significant emissions increase as defined in 40 CFR 52.21, Prevention of Significant Deterioration of Air Quality. Thus, the pre-approvals described above apply solely to modifications that are subject to state regulation but not federal regulation.

POLLUTION PREVENTION

Before Georgia issues Searle's Title V permit, Searle has agreed to develop and submit for the state's approval a pollution prevention (P2) plan for the Augusta plant. Searle expects to submit a draft of the plan to EPD in April 1997. According to the draft permit conditions, Searle-Augusta's P2 plan is to include the following elements:

(1) A statement of Searle's support for pollution prevention and a commitment from Searle-Augusta to implement the plan.

(2) Identification of the staff who will coordinate and implement the P2 program, and their areas of responsibility.

(3) Identification of all reasonable opportunities to apply P2 to reduce or eliminate air pollutants associated with existing processes, and development of related annual P2 performance goals.

(4) Development and implementation of a protocol to implement P2 in new drug manufacturing processes, with associated P2 performance goals for each new process.

(5) Formal training of employees to promote P2, and implementation of a system to recognize significant employee efforts in the P2 area.

(6) Outreach to the Augusta community regarding Searle's P2 program.

(7) A program implementation schedule.

(8) Development of a mechanism for evaluating the effectiveness of the P2 program.

(9) Methods for documenting the costs and savings attributable to P2 initiatives.

Although the P2 plan itself will not be incorporated directly into Searle's Title V permit, the permit will explicitly link implementation of the plan to the permit's flexible operating provisions. Specifically, Searle must provide a discussion of its new process P2 evaluation as part of the information submitted to EPD in support of all modifications of greater or lesser significance. In addition, Searle must submit an annual P2 progress report to EPD and to Searle's Community Advisory Board, describing Searle-Augusta's P2 efforts and evaluating the overall effectiveness of the P2 program. At minimum, EPD will conduct an annual review of Searle's P2 program to determine compliance with the P2 requirement. If Searle has not achieved its performance goals, it must adequately demonstrate that P2 opportunities were investigated but implementation was not technically feasible or economically practicable. If EPD determines that Searle has complied with the P2 program requirement, the permit conditions governing

pre-approved modifications will remain in effect another year. If EPD determines that Searle has failed to comply, the pre-approval conditions will be invalidated for the remainder of the permit term, or until EPD determines that Searle has come into compliance with the P2 requirement.[3]

In addition to this explicit P2 requirement, Searle has an implicit incentive to undertake pollution prevention. As noted above, Searle's PTE for VOCs must remain below 100 TPY in order to avoid triggering state RACT requirements for the control and treatment of emissions from pharmaceutical manufacturing. Any increase in Searle's potential to emit VOCs beyond 100 TPY would require Searle to demonstrate compliance with the categorical treatment guidelines for pharmaceutical manufacturers instituted under Georgia's air quality control rules (Chapter 393-3-1-.02, Rule KK). This requirement acts as a virtual cap on Searle-Augusta's VOC PTE, providing strong incentives to employ P2 to reduce VOC emissions.

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[3] As noted above, Searle-Augusta's P2 plan is currently under development. As a result, numeric P2 performance goals (e.g., percentage reductions in emissions) have yet to be defined, and means of measuring performance against those goals have yet to be determined. Once these goals are agreed upon, EPD will use the process outlined above to determine compliance with the permit's P2 requirement. The compliance determination will be based on Searle's demonstration via its annual report that the activities required by the approved P2 plan have been adequately addressed, and that the performance goals for existing and new process review have been met through the implementation of P2 measures. To encourage Searle to set aggressive performance goals, EPD will not automatically treat failure to achieve these goals as a violation of the P2 condition. Should it fail to achieve its performance goals, however, Searle will be required to demonstrate that P2 opportunities were adequately investigated but proved to be technically infeasible or economically impracticable.

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FULL PRE-APPROVALS (SPECIFIC CHANGES)

This provision can provide full pre-approval of specific projects and classes of sources that trigger certain regulatory programs, where all applicable requirements and procedures are addressed up-front in the Title V permit.

Initial Requirements

- **Source**:
  - anticipates making changes that trigger a regulatory program(s),[1] but pre-approving a broad class of anticipated changes is not feasible;
  - can predict specific projects and/or classes of sources (new construction, modifications) that will likely occur during the permit term.

- **Permitting Authority**:
  - for minor NSR pre-approvals, ensure that local regulations do not explicitly require separate case-by-case approval for every project at the time of the change;
  - ensure all regulatory requirements (including NSPS, etc.) can be identified and addressed up-front in the Title V permit;
  - ascertain that the project could meet these applicable requirements throughout the five-year permit term.

Steps

- Identify operational parameters (if any) of construction/modification;
- Perform control technology analysis (if necessary) and include up-front in the permit;
- Perform ambient impact analysis, if necessary;
- Identify monitoring, record keeping, and reporting (emissions quantification/measurement) that will be performed;
- Identify emissions limits and averaging period[s], if any;
- Write permit language that identifies all relevant compliance details for the change.

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[1]To date, this provision has only been used to provide for full pre-approval of specific minor NSR changes.

Additional Flexibility Possibilities

- Incorporate P2 Program implementation to support the pre-approval provision **(See P2/P2 Program Permit Language, page 27);**
- Include P2 performance, or an approved P2 Program implementation, as a component of the BACT determination **(See P2 as BACT permit language, page 27).**

Examples

- The Cytec permit and Imation permit pre-approve construction of a new boiler and volatile organic liquid storage tanks.

Benefits

- **Source**
  - enhances regulatory predictability;
  - substantially decreases the regulatory delay associated with case-by-case review at the time of the specified change;
  - eliminates the need to apply for a significant Title V permit modification at the time of the change;
  - encourages a long-term view of operations, which results in process improvements and overall efficiency.

- **Permitting Authority Benefit**
  - substantially decreases the administrative/permitting burdens at the time of the specified change;
  - provides a holistic (or source-wide) view of the business (as opposed to vent by vent);
  - provides the public with an understanding of the entire plant over the course of the permit term.

Sample Permit Language

The Source is allowed to construct and operate one boiler meeting the following operational parameters.

Fuel Type:
Minimum stack height (ft):
Minimum distance from stack to property line (ft):
Maximum fuel consumption over any consecutive 12 month period ($mmft^3$):
Maximum gross heat input (MMBtu/hr):
Minimum exhaust gas flow rate (acfm):
Design stack exit temperature used for dispersion modeling purposes (°F):

If constructed, the boiler shall be subject to the following requirements:

(a) 40 CFR 60 Subpart Dc Requirements
The boiler shall be subject to the requirements of this Subpart, however, the only section to which the boiler will be subject is §60.48c (Reporting and record keeping requirements). The Source shall fulfill the requirements of both §60.48c and the notification section of this permit.

(b) Minor source BACT requirement
A BACT analysis was performed for TSP, NO_x and CO. The following are the results of that analysis:

- *(i) TSP emission limit: 0.0137 lb/MMBtu. Technique: Good combustion practices.*
- *(ii) NO_x emission limit: 0.043 lb/MMBtu. Technique: FGR, Low NO_x burner.*
- *(iii) CO emission limit: 0.035 lb/MMBtu. Technique: Good combustion practices.*

(c) Stack testing requirements: The Source shall perform stack testing in accordance with the methods cited in ...

(d) Ambient Impact Analysis: A Stationary Source Stack Height Guideline Analysis was performed per RCSA 22a-174-3. The Good Engineering Practice (GEP) Stack Height was determined by the method described in ..... The stack height shall be a minimum of ____feet.

FULL PRE-APPROVALS (CLASSES OF CHANGES)

This provision can provide full pre-approval of classes of changes that trigger minor New Source Review (NSR) as long as all applicable requirements can be identified and addressed up front in the Title V permit.

Initial Requirements

- **Source**:
  - anticipates making changes that trigger minor NSR during the permit term, and all necessary provisions are known and can be met up-front in the permit;
  - can sufficiently characterize the range of changes, and their effects, to ensure appropriate environmental safeguarding and compliance demonstration.

- **Permitting Authority**:
  - ensure that state/local rules do not explicitly require case-by-case review under all circumstances;
  - verify that state/local rules give sufficient authority for permit writers to develop permitting requirements that can be unique to this form of "up-front" permitting (e.g., monitoring, record keeping, etc.);
  - ensure that state/local minor NSR public notice procedures are not explicitly required on a case-by-case basis at the time of the change.

Steps

- Determine a way to ensure NAAQS (or other state ambient air) protection for all categories of changes. One possibility is a NAAQS-protective plant-wide emissions cap, enforceable on an appropriate temporal basis (e.g., daily);
- Identify advanced control technology parameters and control technology duration requirements, if any (if control technology determinations are valid for less than 5 years, the permitting authority will need to incorporate additional steps to ensure the determinations can be modified and extended);
- Determine if any additional monitoring, record keeping and reporting requirements should be included for the pre-approved changes;
- Determine minor NSR procedural requirements and ensure they can be satisfied with the issuance of the Title V permit.

Additional flexibility possibilities

- Incorporate P2 Program implementation to support the pre-approval provision **(See P2/P2 Program Permit Language, p. 27);**
- Establish P2 performance as an option for meeting BACT, or use approved P2 Program implementation as a component of the BACT determination. **(See P2 as BACT Permit Language, p. 27);**
- Establish a P2 reduction mechanism to allow the option of using P2 to comply with the NAAQS-protective cap.

Examples

- The Intel permit pre-approves categories of physical and process changes that would increase the maximum capacity of a stationary source to emit VOCs/air toxics, subject to a weekly Plant Site Emission Limit (PSEL) (Oregon does not have a state BACT requirement);
- The Lasco permit pre-approves categories of modifications that trigger minor NSR, subject to a plant-wide NAAQS-protective cap and pre-approved BACT.

Benefits

- **Source**
  - enhances regulatory predictability for, potentially, a wide variety of changes;
  - reduces the regulatory "burden" associated with frequent case-by-case review for certain types of changes;
  - substantially decreases the regulatory delay at the time of each change;
  - eliminates the need to apply for a significant Title V permit modification at the time of the change.

- **Permitting Authority**
  - decreases the need for case-by-case review of certain types of changes, and substantially reduces administrative/permitting burdens at the time of each change;
  - enhances the potential for pollution prevention to occur if an emissions cap is required to ensure ambient air protection.

Sample Permit Language

Pre-approval language

The permittee is approved to make physical changes and changes in method of operation that would increase the maximum capacity of a stationary source to emit VOC, provided that the following conditions are met:

- *Such changes are limited to installing new VOC emitting activities and to making physical changes or changes in the method of operation of existing VOC emitting activities at the stationary sources comprising emission unit 1(EU1);*
- *No new stationary source shall be added to EU1;*
- *Increase in the maximum capacity to emit of a stationary source at EU1 resulting from changes approved under this condition shall have been offset by emissions reductions at EU1 achieved through the pollution prevention program, such that the maximum capacity to emit of EU1 does not exceed the weekly VOC Plant Site Emission Limit (PSEL) for EU1 specified in Condition _____* ***(see Facility-wide NAAQS-protective Cap language, page 8).***
- *Any new VOC emitting activities and any physical changes or changes in the method of operation of existing VOC emitting activities must be subject to, and comply with, the RACT requirements specified in Conditions _____ and _____. Any new VOC emitting activities and may physical changes or changes in the method of operation of existing VOC emitting activities must be subject to, and comply with, the source-specific VOC compliance monitoring requirements specified in Condition _____.*
- *No new applicable requirement is triggered.*
- *Monitoring and Reporting requirements:*
  - *The permittee shall conduct monitoring related to this pre-approval condition in accordance with the monitoring protocols identified in Condition _____.*
  - *Notice of Completion: The permittee shall include in a semi-annual report, a summary of any pre-approved changes made to EU1 pursuant to this condition during the 6-month period covered by the report, if the maximum capacity to emit of any stationary source at the end of the 6-month period covered by the report is greater than the maximum capacity to emit at the end of the 6-month period covered by the previous semi-annual report, as determined from monitoring conducted in Condition__.*

Facility-wide NAAQS-protective Cap language(Intel Permit):

The plant site emissions shall not exceed the following:

Process (EU1) PSEL

Pollutant	*Limit*	*Units*	*Monitoring Requirements*
VOC monitoring	*8.0*	*tons/week*	*Chemical mass balance, parametric*
VOC	*190*	*tons/year*	*and source test as specified in Condition 24.*

Pre-approved BACT language (Lasco permit):

Best available control technology (BACT) shall be utilized for all installations of new emission units, and modifications and replacements of existing emissions units approved under [the pre-approval] condition as follows:

- *The permittee shall implement a P2 program which meets the requirements of Conditions _____ and _____.*
- *New, modified, or replaced spray booths shall be designed, installed and operated such that overspray and fugitive emissions are captured, controlled with a filter to remove particulates, and exhausted through a vertical stack.*
- *Height of exhaust stacks from ground level for new spray booths shall be at least 1.3 times the height of the highest point of the building roof line from ground level.*

POTENTIAL TO EMIT (PTE) CAPS

This provision can establish "synthetic" minor source status for purposes of major and/or minor source applicability.

Initial Requirements

- **Source**:
  - has the ability to maintain actual emissions below major source thresholds (for NSR/112(g)), and a willingness to restrict PTE to below these levels.

- **Permitting Authority**:
  - state/local rules give permit writers the authority to create PTE limits to maintain actual emissions below regulatory threshold levels, and that can accommodate changes within the source and maintain appropriate enforceability.

Steps

- Determine the relevant pollutant(s), generally on a plantwide tons-per-year basis;
- Decide which units will fall under the PTE limit. Depending on emission unit enforceability conditions, some units may require unit-specific limits, while others can be grouped into a class of units;
- Determine the emissions baseline from which the limit will be measured;
- Determine replicable criteria for arriving at a PTE limit;
- Ensure limit(s) are federally enforceable [note: sources retain the option to exceed the PTE limit; however, exceedance triggers the major source program].

Additional Flexibility Possibilities

- Establish a mechanism in the Title V permit whereby enforceable pollution prevention, curtailment, or control technology reductions[2] can be used to ensure compliance with the PTE limit **(See "Compliance Demonstration Menus," page 19.)**

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[2]It should be noted that pre-wiring control technology for emission reductions can be much more complicated than pre-wiring pollution prevention offset opportunities. As well, certain types of control technology may not be available, or may have monitoring requirements that cannot be fully pre-approved in the Title V permit.

Examples

- Intel's permit contains a federally enforceable limit on material usage that ensures that organic HAP emissions do not exceed 10 TPY, inorganic HAP emissions do not exceed 10 TPY, and total aggregate HAP emissions do not exceed the 25 TPY major source threshold;
- Lasco's permit contains a federally enforceable limit on styrene usage that limits plant-wide VOC PTE to 249 TPY, ensuring that the source does not exceed the 250 TPY major NSR status threshold.

Benefits

- **Source:**
  - eliminates time consuming and resource intensive major source permitting processes, as long as the source is able to restrict operations to below the PTE level;
  - can allow sources to seek out the most cost-effective methods for reducing emissions from new emissions units.

- **Permitting Authority**:
  - can provide a strong incentive for P2 reductions, particularly if the source's actual emissions are at a level close to the PTE limit;
  - relieves permitting authorities from having to go through the time consuming/resource intensive major source permitting processes if potential emissions are restricted to below major source thresholds.

Sample Permit Language

VOC PTE limit (Lasco Permit):
Total usage of VOC containing materials during any consecutive 12-month period is limited to an amount which ensures that the potential to emit volatile organic compounds shall not exceed 249 tons per year.

- *Limitation on Materials Containing VOC: The maximum amount of VOC containing materials that can be used in any consecutive 12-month period shall be limited to an amount which ensures that emissions do not exceed 249 tons of VOC in any consecutive 12-month period.*

- *Monitoring: The permittee shall monitor daily usage of resin, gelcoat, catalyst, and resin and gelcoat additives in terms of pounds per day.*

- *Compliance Verification: The permittee shall verify compliance with the potential to emit limitation on a monthly basis by computing the facility's VOC emissions over the previous 12 consecutive month period.*

- *Records: The records identified [below] shall be maintained in addition to the standard record keeping requirements:*
  - *Material Safety Data Sheets*
  - *Daily Tank Monitoring Log*
  - *Daily Drum Monitoring Log*
  - *Daily Material Use Log*
  - *Emissions Log*

- *Reporting: The standard reporting requirements suffice as appropriate for this condition.*

HAPs PTE limit (Intel Permit):

The permittee shall emit organic (VOC) and inorganic (non-VOC) hazardous air pollutants (HAPs), on a total aggregate plant site basis, within the following annual limits in order to retain the area source status for HAPs:

- *Aggregate organic HAPs emissions, based on a twelve month rolling average, shall be less than 10 tons per year;*

- *Aggregate inorganic HAPs emissions, based on a twelve month rolling average, shall be less than 10 tons per year.*

PLANTWIDE APPLICABILITY LIMITS (PALS)

PALs cap actual emissions in a manner that allows sources to change operations and make associated emission changes in a streamlined manner that minimizes the likelihood that they will trigger major NSR modification requirements for a significant net emissions increase.

Initial Requirements

- **Source**:
  - is an existing major source for NSR purposes (PSD or non-attainment) and is willing to restrict operations to remain below designated major modification threshold levels.

- **Permitting Authority**:
  - must ensure SIP language (pertaining to Part 51 regulations) can accommodate the PAL approach.

Steps

- Decide which units will fall under the PAL limit. Depending on emission unit enforceability conditions, some units may require unit-specific limits, while others can be grouped into a class of units. Combining emissions units provides greater flexibility, as units within a defined "class" can be added and modified as long as the limit is not violated;
- Set the PAL limit at an emissions level analogous to that which would be used as the actual emissions baseline for netting calculations (at the facility's actual emissions from a period that accurately reflects the facility's normal operations). Once the facility's baseline is determined, add the applicable NSR modification threshold level, and adjust to account for any further reductions achieved by new applicable requirements (e.g., RACT);
- Ensure limit(s) are practically enforceable with appropriate emissions quantification and monitoring, record keeping and reporting protocols;
- Include a mechanism that adjusts the PAL baseline if the source triggers any future applicable requirement during the life of the permit or if a new, more accurate method to quantify emissions is developed;
- Include provisions for requests to exceed the PAL, or for violations of the PAL.

Additional Flexibility Possibilities

- Establish a mechanism whereby enforceable pollution prevention reductions (or reductions through operational limits or end-of-pipe controls) can be used to ensure compliance with the PAL;
- Front-load the Title V permit with "menus" of different monitoring and emissions quantification requirements. If monitoring and emissions quantification requirements are included for a proposed modification that occurs under a PAL, the source can implement the modification through a minor permit modification process, as opposed to a significant Title V permit modification process **(See "Compliance Demonstration Menus," page 19)**.
- Develop a federally approved state PAL rule that can also pre-approve pollutant-specific changes allowed under the PAL that might trigger minor NSR.

Example

- The Cytec permit contains a PAL that caps VOC emissions at a level under which the source can make facility modifications that are likely to affect VOC emissions without applying for major NSR modifications.

Benefits

- **Source:**
  - can provide a source with regulatory certainty that, as long as permit procedures are followed, it will not exceed the major NSR significant emissions threshold for modifications;
  - may also provide increased regulatory certainty that pollutant-specific changes that occur under the PAL will not trigger minor NSR, and create the benefit of decreased resource requirements associated with case-by-case minor NSR for certain types of changes;[3]
  - can enhance a major source's ability to make appropriately designated changes quickly, without having to evaluate a baseline for each modification, determine the contemporaneous increases and decreases, and engage in other time consuming netting procedures required under the major source construction program on a case-by-case basis;

[3]Permitting Authorities can maintain their authority to impose minor NSR requirements for changes that occur under the PAL; states may also choose to adopt SIP provisions that adopt the PAL approach in lieu of minor NSR requirements (as anticipated in the State of Connecticut).

- can provide sources with the incentive to seek out the most cost-effective methods of reducing emissions from new emissions units.

- **Permitting Authority:**
  - can significantly streamline regulatory processes for permitting authorities by helping to ensure major modifications, and potentially, minor NSR permit processes will not be necessary, if the source remains below designated levels;
  - can provide significant incentives for sources to engage in pollution prevention if sources need to create additional room for growth under the PAL.

Sample Permit Language

- ***Applicability**: This section applies to all modifications to existing emissions units or the additions of new emissions units that would result in a change in the site's PTE for VOC, provided the following conditions are met:*
  - *Emissions quantification methods for the new or modified emissions units are currently approved into the Title V permit as described in the quantification section of this permit.*
  - *Emissions monitoring requirements for the new or modified units are currently approved into the Title V permit as described in the monitoring section of this permit.*
  - *(Requirements for pollution control devices used for VOC control).*

- ***Determination of Plant-Wide Emission Limitations Baseline** (source-specific procedures)*

- ***Notification.** Source shall notify the permitting authority in writing of any activity under this section a minimum of 30 days before beginning the activity. The notification shall comply with the notification section of this permit.*

- ***Compliance**. Actual VOC emissions for the source shall be calculated at the end of each month. The monthly emission total shall be added to the total aggregated actual emissions of the previous 11 months. The resultant 12 month actual emission total shall not exceed the PAL baseline.*

- ***Quantification.** The source shall determine emissions under this section in accordance with the quantification section of this permit.*

- ***Monitoring**. The source shall conduct monitoring under this section in*

accordance with the monitoring section of this permit.

- ***Emissions Above the PAL.***

  - *If the source applies to increase the PAL baseline, the proposed increase shall be subject to the NSR requirements for a major modification.*
  - *If the source violates the PAL and cannot reduce its emissions to below PAL levels within three months, then each modification made pursuant to the PAL, beginning with the most recent, shall be subject to the NSR requirements for a major modification until actual emissions decrease below the PAL baseline. If all modifications made pursuant to the PAL are subject to NSR and the emissions remain above the PAL baseline, then the remaining amount of emissions above the PAL baseline shall be offset at a ratio of 1.2 to 1. If no modifications pursuant to the PAL occurred at the premise, then the amount of emissions above the PAL baseline shall be offset at a ratio of 1.2 to 1.*
  - *Notwithstanding the requirements of [above], any emissions above the PAL shall be a violation of this permit and the Clean Air Act.*

APPLICABLE REQUIREMENT STREAMLINING

Applicable requirements streamlining provisions can allow a source to streamline multiple, overlapping, redundant requirements that may apply to a single emissions unit, into one set of requirements. The streamlined set of requirements will ensure compliance with all applicable requirements for that emissions unit.

Initial Requirements

- **Source**:
  - has multiple, overlapping, redundant applicable requirements (e.g., NSPS, BACT, MACT) for any one emissions unit.

- **Source and Permitting Authority**:
  - streamlining analyses may work best when the source and permitting authority can work together to ensure that all requirements are addressed appropriately.

Steps

- Conduct a thorough analysis of the regulatory mandates associated with each applicable requirement (emissions limits for the same pollutant, and monitoring recordkeeping, and reporting requirements);
- Determine the most stringent emissions limit among the overlapping applicable requirements;
- Determine the most stringent monitoring, recordkeeping, and reporting requirements among the overlapping applicable requirements (typically, the most stringent M, R, R requirements will be associated with the most stringent emissions limit);
- Verify that the most stringent provisions will in fact ensure compliance with all applicable requirements for the designated emissions unit(s);
- Write permit language that identifies all relevant compliance details for the streamlined unit(s);
- Create a permit shield for all other applicable requirements that are subsumed into the streamlined permit language.[4]

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[4]EPA White Paper II for Improved Implementation of the Part 70 Operating Permits Program (March, 1996) suggests that streamlined analyses be submitted to EPA for review in advance of the draft Title V permit issuance.

Additional Flexibility Possibilities

- It may be possible to conduct streamlining analyses for requirements that have not yet been promulgated (e.g., a presumptive MACT), if the future requirements will likely have emissions limits, etc. that are redundant with existing requirements for a designated emission unit(s). Any necessary changes to the streamlining analysis can potentially be made via a Title V minor permit modification when the rule is actually promulgated.

Examples

- In the Intel permit, monitoring organic HAPs is accomplished through chemical mass balance, the same procedure Intel is required to use for VOCs to demonstrate compliance with the PSEL and RACT standard (a different procedure is necessary for monitoring of inorganic HAPs);

- The Imation P4 team determined that Magnetic Tape NSPS (Subpart SSS) compliance requirements can be subsumed under the Magnetic Tape MACT, as can the state BACT control efficiency requirement;

- The Imation P4 team also determined that the permit could subsume EPA's future MACT for Paper and Other Web Coating under the existing MACT for magnetic tape manufacturing.

Benefits

- **Source**
  - enhances regulatory predictability;
  - decreases regulatory costs and time associated with ensuring compliance with multiple, overlapping, redundant applicable requirements.

- **Permitting Authority Benefit**
  - substantially decreases the administrative/permitting burdens associated with ensuring source compliance with multiple, overlapping applicable requirements.

Sample Permit Language

- *On the basis of a streamlining analysis performed by AQD, all of the activities identified in Section H, Subsection 1, Specific Condition 1(w) of this permit which meet applicable requirements under 40 CFR 63 Subpart A and Subpart EE, as identified in this permit, are determined to also meet all requirements of 40 CFR 50 Subpart A and Subpart SSS.*

- *On the basis of a streamlining analysis performed by AQD, all of the activities identified in Section H, Subsection 1, Specific Condition 1(e) of this permit which meet applicable requirements under 40 CFR 63 Subpart A and Subpart EE, as identified in this permit, are determined to also meet all requirements of the future MACT standard for the source category Paper and Other Web Coating.*

- *On the basis of a streamlining analysis performed by AQD, all of the activities identified in Section H, Subsection 1, Specific Condition 1(e) of this permit which meet applicable requirements under 40 CFR 63 Subpart A and Subpart EE, as identified in this permit, are determined to be also BACT under OAC 252:100-8.*

COMPLIANCE DEMONSTRATION MENUS

Pre-approved compliance demonstration menus and selection protocols can allow sources to install new emissions units and/or create new federally enforceable emissions limits in a streamlined manner, by authorizing the incorporation of compliance details through a minor permit modification process.

Initial Requirements

- **Source:**
  - anticipates making a number of changes during the permit term that would otherwise require time consuming significant Title V permit modifications to incorporate compliance details, but specific changes and compliance details cannot be fully identified up-front;
  - anticipates the potential need to establish new federally enforceable emissions limits during the permit term;
  - anticipates installing equipment where uncontrolled potential emissions exceed NSR thresholds, but actual emissions might not.
- **Permitting Authority:**
  - Title V program must contain provisions for a minor permit modification process.
- **Source & Permitting Authority:**
  - Both stakeholders will need to spend time up-front identifying emission quantification and monitoring methods for emission sources and control equipment, rather than during the permit term, on a case by case basis.

Steps

For Control Technology

- Identify categories of emission sources and control equipment present at the source and control equipment that may reasonably be anticipated to be located at the source;
- Identify appropriate quantification methods for determining air pollutant emission rates from specified control equipment and emission sources, both for instances when an applicable requirement requires a specific method, and for when an applicable requirement does not identify a specific method;

- Identify protocol for emissions quantification in the event that a new source or control device is added during the permit term that is not represented by any of the methods previously identified;
- Create procedures for the source to notify the permitting authority when control technology will be utilized to obtain emission reductions.

For Operational Limits/Pollution Prevention:

- Determine types of operational limits and/or P2 that can potentially be utilized to obtain emission reductions or limits during the permit term;
- Identify appropriate monitoring protocol for each type of limitation and P2 activity chosen;
- Create procedures for the source to notify the permitting authority when an operational limitation or P2 activity will be utilized.

Example

- The Cytec permit contains a pre-approved protocol of emission quantification and monitoring methods for a broad range of emission units/control equipment. During the life of the permit, Cytec may use specified methods for new or modified emissions units from the list of pre-approved methods included in its Title V permit.

Benefits

Source:

- creates substantially greater regulatory predictability regarding acceptable compliance demonstration mechanisms for new/modified units;
- requires significantly less time identifying compliance demonstration mechanisms at the time of the actual change, and enhances a source's ability to make changes rapidly during the permit term;
- enhances/facilitates sources' ability to set and comply with emissions limits during the permit term;
- significantly reduces the amount of time needed to modify the Title V permit.

Permitting Authority:

- substantially reduces the number of case-by-case compliance demonstration determinations that would otherwise need to occur throughout the permit term;
- reduces Title V permitting burdens by allowing the incorporation of designated compliance details via a Title V minor permit modification.

Sample Permit Language

Emissions Limitations (via Pollution Prevention)[5]*:*

- *This section applies to pollution prevention that can be directly related to quantification of emissions. Examples include:*
  (1) operating practices that reduce air pollution generation
  (2) raw material substitutions
  (3) process and equipment design modifications

- *Any proposed pollution prevention must be consistent with all applicable requirements. In addition, any pollution prevention technique requiring creation of either a new emissions quantification method or a new emissions monitoring method for the emissions unit shall not be eligible under this section.*

- *Pollution prevention used for emissions limiting purposes shall be registered by notifying the permitting authority in writing and obtaining agreement in accordance with the notification section of this permit.*

- *After initial registration of a pollution prevention technique under this permit, notification to the permitting authority will be made prior to:*
  (1) adding or removing an emission source from the list of sources covered by the pollution prevention;
  (2) 30 days before performing emissions testing that will be used to determine the emissions reduction.

- *The emissions limit provided by any pollution prevention technique registered under this section shall be determined consistent with the methods employed for the equipment affected by the pollution prevention as described in the emissions unit section of this permit.*

- *Any emissions unit affected by pollution prevention technique registered under this permit shall be monitored consistent with the methods described in the monitoring section of this permit.*

Emissions Monitoring

- *(a) For any pollution prevention measure subject to an applicable requirement which defines the monitoring requirements, the source shall perform monitoring consistent with the applicable requirement. If more than one applicable requirement defines the monitoring requirements for a pollution prevention measure, the source shall perform*

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[5]This structure resembles the permit language for control technology or operational limitation compliance demonstration menus.

that monitoring which is most precise, accurate, and continuous as identified in the emissions units section of this permit. If an applicable requirement specifies monitoring not sufficient to yield data that can be relied upon to determine compliance, then monitoring will be performed consistent with (b);

- *(b) For a pollution prevention measure subject to an applicable requirement which does not specify emissions monitoring sufficient to yield data that can be relied upon to determine compliance, or for which an air pollutant emission rate is relied upon in demonstrating that a requirement is not applicable, the following lists the emissions monitoring parameters for the pollution prevention measure:*

  (1) operating practices that reduce air pollution generation

  monitoring: log of operating method
  measurement sensitivity: as needed to show compliance
  measurement frequency: periodic, as used

  (2) raw material substitutions

  monitoring: log of raw material used in process
  measurement sensitivity: as needed to show compliance
  measurement frequency: periodic, as used.

ADMINISTRATIVE EMISSION FACTOR UPDATES

This provision can allow for changes to a source's emissions factor to be made through specified (pre-approved) administrative procedures following a source test, rather than through a significant permit modification process.

Initial Requirements

- **Source:**
  - uses emissions factors for compliance demonstration;
  - anticipates needing to conduct source tests and evaluate emissions factor improvements during the permit term.

- **Permitting Authority:**
  - state/local rules do not explicitly require case-by-case review under all circumstances;
  - state Title V program contains provisions for an administrative amendment process.

Steps

- Create replicable procedures for the source to follow when altering its emissions factor, such as:
  - submitting a source test plan to the permitting authority;
  - obtaining approval of the source test plan;
  - conducting the source test;
  - submitting source test results and calculations supporting the revised emissions factor;
  - obtaining approval of the proposed emissions factor.

Benefits

- **Source**
  - can provide sources with the ability to access certain types of P2 offsets much more quickly, as the source no longer has to go through time consuming Title V significant permit modifications in order to demonstrate compliance in these instances.

- **Permitting Authority**
  - eliminates disincentives for engaging in certain types of pollution preventing activities and helps to improve the chances that P2 will occur;
  - significantly reduces the amount of permitting time associated with making emission factor revisions.

Sample Permit Language

Emission Factors: Emission factors used for determining compliance with this condition shall be approved by the permitting authority and may be updated provided the following conditions are met:

- *Emission factors are based on measured pollutant concentrations from the permitting authority approved source tests;*
- *At least 30 days prior to any scheduled source test date, the permittee submits a source test plan to the permitting authority which identifies proposed test methods, operational conditions, and other details regarding the proposed source test;*
- *The source test plan is approved by the permitting authority prior to conducting the source testing;*
- *No later than 60 days after conducting the source test, the permittee submits to the permitting authority test results and calculations supporting the proposed styrene emission factor;*
- *The permittee receives written notification from the permitting authority that the proposed emission factors are approved for use in verifying compliance with this permit.*

Upon written notification of approval from the permitting authority, approved emission factors shall be used to verify compliance for operations and emissions after the corresponding source test.

VOC RACT Emissions Averaging

Emissions averaging can provide the source with an alternative means of complying with applicable RACT standards. The source can choose to over-control specific VOC-emitting units to offset excesses at other emission sources where the prescribed RACT level is less practical and/or cost-effective.

Initial Requirements

- **Source**:
  - is, or will be, subject to VOC RACT limits for more than one emission source;
  - would like maximum flexibility in meeting overall VOC RACT requirements in the most cost-effective manner.

- **Permitting Authority**:
  - has SIP requirements can be interpreted to allow for RACT emissions averaging.

Steps

- Describe all VOC RACT requirements the source is subject to;
- Indicate the individual RACT requirement for each individual VOC emission source;
- For both intra and/or inter-CTG category emissions averaging, determine a "formula" for allowable VOC emissions for a group of emission sources (e.g., the sum of the allowable emissions of the individual sources) and how this rate shall be calculated;
- If necessary, include provisions for incorporating the emissions averaging plan(s) into the permit (e.g., via a minor permit modification process);
- Include a provision for modifying the emissions averaging plan via a minor permit modification process.

Additional Flexibility Possibilities

- Include the use of P2 as one alternative to meeting the overall required average.

Example

- The Cytec permit contains provisions which allow the source to implement emissions averaging as an alternative means of complying with applicable RACT standards. Cytec can choose to over-control specific VOC emitting units, or implement P2, to offset excesses at other emission sources where the prescribed RACT level is less practical.

Benefits

- **Source**
  - enhances the ability for sources to meet RACT standards in the most cost effective manner.

- **Permitting Authority**
  - can provide greater incentives for using P2 as one means for complying with the standard.

Permit Language

RACT Equivalent Emission Limitation

- *Intra-CTG Category Averaging for Batch Operations*

  The allowable VOC emissions required by RACT for a group of batch process emission sources included in an intra-CTG category emissions averaging plan shall be equal to the sum of the allowable emissions of the individual sources. The allowable emissions of the individual sources shall be calculated based on the lesser of the following:
  - *the emission rate required by RACT; or*
  - *the historical actual average emission rate.*

- *Inter-CTG Category Averaging*

  The allowable VOC emissions per averaging period required by RACT for a group of batch process emission sources included in an inter-CTG category emissions averaging plan shall be equal to the sum of the emissions of the individual sources. The allowable emissions of the individual emission sources shall be calculated based on the lesser of the following:
  - *the emission rate required by RACT; or*
  - *the historical actual average emission rate.*

P2/P2 PROGRAM PERMIT LANGUAGE

- **Incorporation of a P2 Program to support operational flexibility** (Lasco Bathware)

  - *P2 Program. Prior to initiating any action subject to [pre]-approval under this condition, and no later than 4 months from permit issuance, the permittee shall commence implementation of a Pollution Prevention (P2) program for reducing air pollutant emissions. The P2 program required under this condition shall include, at a minimum, the following program elements:*

    - *An ongoing training program geared towards teaching operators directly involved with the application and open air use of VOC-containing materials P2 techniques and the importance of P2;*

    - *A program for investigating and implementing measures to reduce the content of available styrene and other VOCs in resin, gelcoat, and other VOC containing materials;*

    - *A program for investigating and implementing measures to reduce the amount of styrene emitted during application and curing;*

    - *A program for investigating and applying new technologies which reduce VOC emissions;*

    - *A plan for tracking and reporting P2 progress.*

- **P2 Program as a component of BACT** (Lasco Bathware)

  - *Best Available Control Technology (BACT) shall be utilized for all installations of new emission units, and modifications and replacements of existing emissions units approved under this condition as follows:*

    - *The permittee shall implement a P2 program which meets the requirements listed in ..*

- **Required use of P2 to create emissions offsets/reductions** (Intel)

  - *Increases in maximum capacity to emit of a stationary source at EU1 resulting from changes approved under this condition shall have been offset by emission reductions at EU1 achieved through the pollution prevention program such that the maximum capacity to emit of EU1 does not exceed the weekly VOC Plant Site Emission Limit (PSEL) for EU1.*

- **P2 Performance** (Lasco Bathware)

  - ***P2 Performance Goals***. *The total sum of percent reduction in styrene emitted per unit of production, of all categories listed below, shall equal or exceed the following levels by the due date specified to meet the prescribed performance goals:*

    - *1% reduction by the end of the third year from permit issuance; and,*
    - *2% reduction by the end of the fifth year from permit issuance.*

  - ***P2 Program Performance***. *The P2 program shall result in thorough investigation of applicable P2 techniques, and appropriate implementation of those P2 techniques found to be technically feasible, economically viable, and likely to result in air pollutant emission reductions. Compliance with this requirement shall be determined after the end of the third and fifth years of the permit term and shall be within the sole discretion of the permitting authority. Compliance shall be considered met provided the permittee adequately demonstrates either that:*
    - *The applicable P2 performance goals have been met through implementation of P2 measures; or*
    - *Partial attainment of the applicable P2 performance goals was achieved and full attainment of the goals was not feasible.*

    Demonstration of attainment or progress towards the performance goals shall be based on actual material use and production records.