

Flexibility, simplicity and certainty

Eli Lilly and Company Flexible Permit Projects

The Eli Lilly logo, featuring the word "Lilly" in a red, cursive script font.

Answers That Matter.

The situation

Tippecanoe Laboratories is Lilly's most important site

- Process development/process optimization
- Initial launch of new products
- Bulk scale production of existing products
- Backup site for other sites
- Ability to change is critical – many products and intermediate compounds made at site

Site anticipated significant change and growth with several new products

Site anticipated replacement of several existing production operations

Site subject to complex air quality regulatory requirements

- Large number of old permits and synthetic minor limits
- Multiple MACT rules/overlapping MACT, NSPS, RACT requirements
- NSR requirements and Title V revisions affect site's ability to change quickly and create administrative costs with little benefit

Site characteristics

Multiple emission points routed through few control devices

- RTOs [Regenerative Thermal Oxidizers]
- Small fume incinerators
- 2 waste incinerators

Control devices achieve high degree of removal efficiency

Process development role leads to significant pollution prevention efforts

- Presidential Green Chemistry Challenge Award Winner in 1999

The process

Discussions with USEPA and IDEM about a flexible permit began in early 1990s; negotiations began in earnest in September 2000

Joint Title V and PSD permit process used

Lilly solicited input from two external advisory groups [community advisory panel and environmental advisory group] during the development of the permit and months before public comment period.

Lilly invited community leaders and site advisory groups to participate in public comment process

Public hearing held during comment period [no one attended]

Permit received favorable local media coverage

The flexible permit

Combined Title V and PSD permit

BACT controls for 5 pollutants with advance approval/notification provisions for future changes

- Overlapping MACT, NSPS, RACT requirements streamlined into BACT requirements

Emission caps on 5 pollutants to ensure air quality and increment protection

Rigorous compliance monitoring – primarily with CEMS

- 2/3 of emissions measured with CEMS [CO, NO_x, and SO₂ significantly higher %]

Reducing complexity of old permits

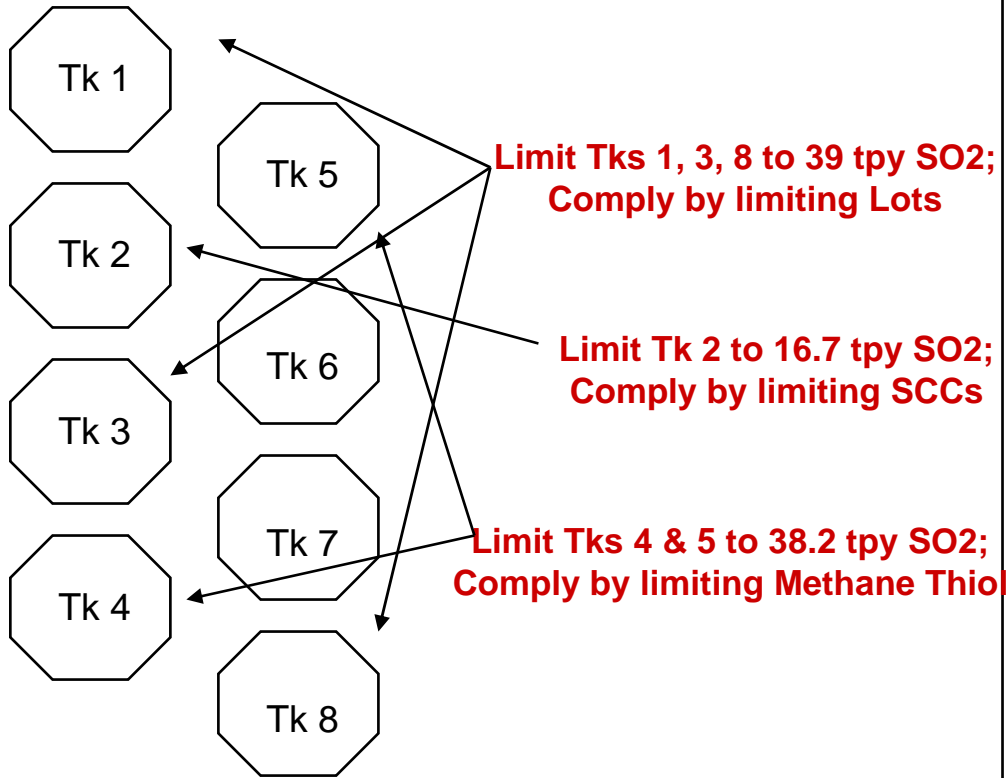
Old permits eliminated

PSD BACT requirements enabled elimination of old synthetic minor limits

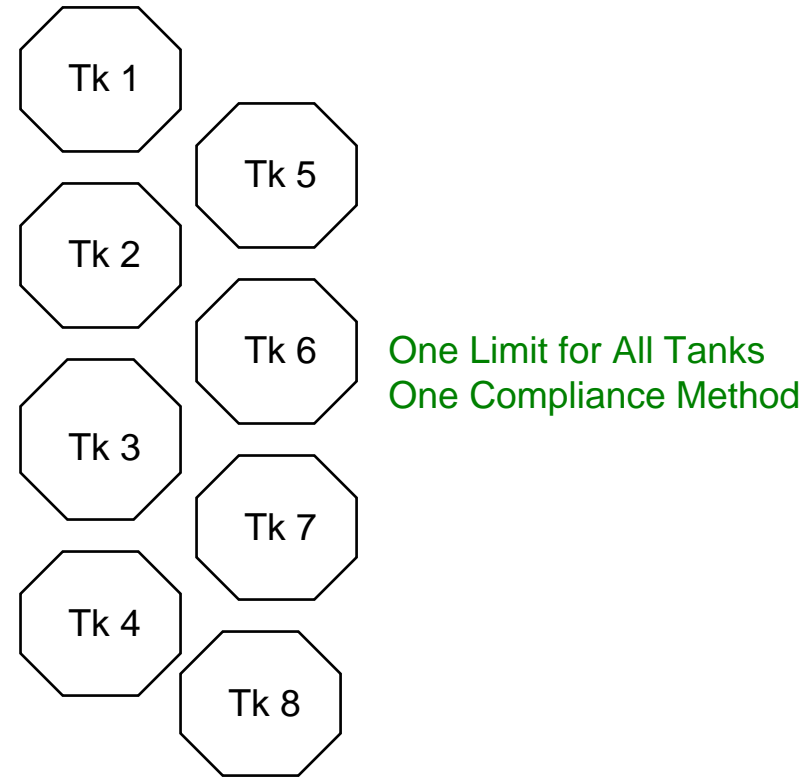
Before	After
<ul style="list-style-type: none">• 100 Permits for Site• 50 Permits for BPM• 13 Permits for Tank Additions/Replacements• 11 Permits with SO₂ Limits• 4 SO₂ Compliance Methods	<ul style="list-style-type: none">• 1 Permit for Site• 1 Section of 1 Permit for BPM• Pre-Approved Conditions for Tank Additions/Replacements• 1 SO₂ Limit for BPM• 1 SO₂ Compliance Method

Complex SO2 limits

Before



After



Where did permit exceed basics?

Previous practice for site was to obtain synthetic minor permits – no BACT

- BACT for 5 pollutants on 4 systems

Upgraded SO₂ emission controls on waste incinerators to meet BACT

Higher degree of VOC/HAP control

- Applied new source MACT requirements to existing production operations [98% control vs. as low as 93%]
- Applied 98% BACT/MACT requirement to areas previously subject only to NSPS or RACT requirements
- Leak Detection and Repair program applies in areas where not previously required

CEMS used where not previously required

Internal benefits

Eliminate NSR applicability uncertainty

Quicker implementation of projects

Reduced administrative costs

- Fewer internal applicability determinations
- 4 projects that would have required minor NSR permits [savings of 800+ person-hours]

Growth allowed without iterative major NSR review

Compliance is more simple

- Improved change management process
- Reduced number of emission limits and monitoring schemes
- Streamlining of overlapping requirements reduces complexity

External/environmental benefits

Provide public and regulatory agencies with better understanding of plant site and changes that occur

- Holistic approach versus incremental permitting

Emissions capped at levels significantly lower than previous allowable

Higher degree of emission controls [SO₂ and VOC/HAP]

Compliance verification predominantly with CEMS

Air quality benefits

Air quality impacts	Potential to emit/allowable emissions	Emission caps in flexible permit
Carbon monoxide emissions	~ 750 tons per year	150 tons per year
Fluorides emissions	No limitations/PTE difficult to calculate	6 tons per year
Nitrogen oxide emissions	~ 700 tons per year	300 tons per year
Sulfur dioxide emissions	~ 500 tons per year	300 tons per year
Volatile organic compound emissions	~ 8500 tons per year	300 tons per year
Hazardous air pollutant emissions	~ 1300 to ~1600 tons per year	No cap in permit – emissions expected < 100 tons per year

Administrative Impacts

Administrative impacts	Old system	Flexible permit
Number of permits	63 (and growing)	1
Number of permit modifications/new permits	4-6 per year More analyzed but no permits needed Title V could increase # of revisions	0
Number of emission limits from permits	20	9
Number of parametric limits	~40	< 10

Estimated financial benefits

Before flexible permit	After flexible permit
<p>Time:</p> <p>40-50 day internal evaluation/project</p> <p>120 day IDEM review/project</p> <p>Resources:</p> <p>Approximately 200 person hours per application and permit</p>	<p>Time:</p> <p>10 day notification requirement</p> <p>No significant time restraints</p> <p>Resources:</p> <p>< 10 person hours per notification</p>