STATE OF INDIANA)
) SS:
COUNTY OF MARION)

BEFORE THE INDIANA DEPARTMENT
OF ENVIRONMENTAL MANAGEMENT

IN THE MATTER OF:
ORDER OF THE COMMISSIONER
PURSUANT TO 326 IAC 8-1-5
FOR ELI LILLY AND COMPANY

NOTICE AND ORDER OF THE COMMISSIONER OF THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

VIA CERTIFIED MAIL No.

To:

This Notice and Order of the Commissioner of the Department of Environmental Management ("Order") is issued pursuant to IC 13-14-1-9 and IC 13-14-2-1, and is based on 326 IAC 8-1 5. During the commissioner's review it was determined that the Petitioner met all requirements of 326 IAC 8-1-5 according to the terms specified below:

PETITION REQUIREMENTS

Pursuant to 326 IAC 8-1-5, petition for site-specific reasonably available control technology (RACT) plan, a petition for a site-specific RACT must include the following:

(1) The name and address of the company and the name and telephone number of a responsible company representative over whose signature the petition is submitted.
(2) A description of all operations conducted at the location to which the petition applies and the purpose the volatile organic compound emitting equipment serves within the operations.
(3) Reference to the specific emission limits, operational or equipment controls for which alternative emission limits, operational or equipment controls are proposed.
(4) A detailed description of the proposed alternative emission limits, operational or equipment controls, the magnitude of volatile organic compound emission reduction which will be achieved, and the quantity and composition of volatile compounds which will be emitted if the alternative emission limits, operational or equipment controls are instituted.
(5) A schedule for the installation or institution of the alternative operational or equipment controls in conformance with the appropriate compliance schedule section.
(6) A demonstration that the alternative control program constitutes reasonably available control technology for the petitioned facility. The factors to be presented in this demonstration include but are not limited to:

(A) the capital expenditure necessary to achieve the petitioned level of control;
(B) the impact of these costs on the firm;
(C) the energy requirements of the petitioned level of control;
(D) the impact on the environment in terms of any increase in air, water, and solid waste effluent discharge of the petitioned level of control;
(E) any adverse worker or product safety implications of the petitioned level of control; and
(F) an analysis for each of the factors in (6) (A) through (E) for the control levels otherwise required by 326 IAC 8.

PETITION

Background

Petitioner (Eli Lilly and Company) submitted a petition for a site-specific reasonably available control (RACT) plan on November 29, 1993 (Exhibit 1) to the Indiana Department of Environmental Management (IDEM). A permit containing the site-specific RACT plan was issued on July 27, 1994 (Exhibit 1), for the research and development facility and submitted to U.S. EPA on August 11, 1994. U.S. EPA subsequently returned the submittal as incomplete.

An amended permit and revised RACT plan were issued on May 2, 2001 (Exhibit 2); IDEM submitted them to U.S. EPA as a SIP amendment on December 19, 2001. Petitioner is currently operating under the permits issued in 1994 and 2001.

The Petitioner is subject to the requirements of 326 IAC 8-5-3(b)(1) and (b)(2). Under subsection (b)(1), volatile organic compound (VOC) emissions from all reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers shall be controlled by surface condensers or equivalent controls. If surface condensers are used, the condenser outlet gas temperature must not exceed:

(i) minus 25 degrees Celsius when condensing VOC of vapor pressure greater than 40 kilo Pascals (5.8 pounds per square inch);
(ii) minus 15 degrees Celsius when condensing VOC of vapor pressure greater than 20 kilo Pascals (2.9 pounds per square inch);
(iii) zero degrees Celsius when condensing VOC of vapor pressure greater than 10 kilo Pascals (1.5 pounds per square inch);
(iv) 10 degrees Celsius when condensing VOC of vapor pressure greater than 7 kilo Pascals (1 pound per square inch); or
(v) 25 degrees Celsius when condensing VOC of vapor pressure greater than 3.5 kilo Pascals (0.5 pound per square inch).

The vapor pressure limits shall be measured at twenty degrees Celsius.
If equivalent controls are used, the VOC emissions must be reduced by at least as much as they would be by using a surface condenser above.

Under subsection (b)(2), VOC emissions from all air dryers and production equipment exhaust systems at sources existing as of July 1, 1990 in Marion County shall be reduced by:

(A) at least eighty-five percent until July 1, 1991, and by at least ninety percent commencing July 1, 1991, if emissions are one hundred fifty kilograms per day (three hundred thirty pounds per day) or more of VOC; or
(B) fifteen kilograms per day (thirty-three pounds per day) or less if emissions are less than one hundred fifty kilograms per day (three hundred thirty pounds per day) of VOC.

In lieu of 326 IAC 8-5-3(b)(1) and (b)(2), the Petitioner seeks a site-specific RACT, under 326 IAC 8-1-5, for the reactors, centrifuges, filters, vacuum shelf dryers, agitated filter dryer, evaporator, rotary vacuum dryer, and distillate receivers for the pilot plant in Building 110. Petitioner seeks modification from permit conditions and construction operating permits issued on August 7, 1987, January 2, 1992, and July 16, 1993, by the City of Indianapolis, Air Pollution Control Division. These permits will be amended into Petitioner's final Title V permit.

Issuance of a site-specific RACT plan pursuant to 326 IAC 8-1-5(a):
1. *Petitioner.* Petitioner is Eli Lilly and Company which owns and operates a pilot plant associated with the Building 110 Chemical Process Research and Process Development Pilot Plant (ID 097-00072) located at 1555 South Kentucky Avenue in Indianapolis (Marion County), Indiana.

2. *Description of Operations.* Building 110 is a chemical process research and development source. The source is organized into process modules. A module consists of all the various process units required to produce a product. Each module is an independent production unit. Major process equipment in a module consists of reactor vessels, filters, centrifuges, and dryers in various combinations. Volatile organic compounds (VOC) are used primarily as solvents in each unit of operation. Existing and proposed process equipment are summarized in Exhibit 1, the Technical Support Document of the 1994 permit, Tables 1 through 11, pages 4 to 8 with portable equipment listed on pages 8 to 11.

New equipment added to Building 110 does not require any revision to the construction permit if:

1. it is part of this research and development process;
2. complies with the site-specific RACT plan requirements specified in the construction permit; and
3. The source-wide emissions of VOC are still limited to less than ten (10) tons per year after the modification.

3. *Proposed RACT.* Petitioner evaluated 8 different control technologies as required under RACT (see Exhibit 1, pages 21-23). Each control technology was evaluated on its cost effectiveness and feasibility. Only condensation and absorption were considered to be technically feasible VOC control methods for the existing and proposed equipment in Building 110. However the condensation cost effectiveness far exceeds the generally acceptable VOC RACT cost effectiveness thresholds.

Petitioner's 2001 amended RACT (Exhibit 2) includes the following:

(A) Volatile organic compound (VOC) emissions from the pilot plant in Building 110 shall be limited to less than 10 tons per 12 consecutive months period rolled on a monthly basis.

(B) The primary reactor condensers shall operate during reactor venting, material transfer, distillation, and storage of filtrates in reactors which are transferred from the filters. The primary reactor condensers working fluid inlet temperature will be minus (-)10 degrees centigrade (C) or colder for mixtures that will not freeze at minus (-)10 degrees centigrade (C) (includes most non-aqueous streams).

(C) Submit a quarterly certification that the condensers were operating at all times

required by condition (B). If exceptions to this occur, note the exception, indicate what caused the exception and how it was corrected.
(D) The emission units that have potential to emit VOC greater than 15 pounds per day shall comply with requirements of 326 IAC 8-5-3 (b)(3) through (b)(6) in addition to the site-specific RACT plan requirements.

4. *Compliance schedule*. See Exhibit 1 "Petition for a Site-Specific RACT Plan, Table 11.2, page 74.

5. *Demonstration of RACT in accordance with 326 IAC 8-1-5(a)(6).*

A. *Capital expenditure and operating costs*. Capital expenditure for equipment as required by 326 IAC 8-5-3 would be $1,815,000 with annual operating expenses of $600,000. Compliance with 326 IAC 8-1-5 would require no additional costs to Lilly.

Lilly's alternative RACT proposal includes limiting the VOC emissions to less than 10 tons per 12 consecutive months period rolled on a monthly basis. In addition, the primary reactor condensers shall operate during reactor venting, material transfer distillation, and storage of filtrates in reactors, which are transferred from the filters. Other requirements include submitting a quarterly certification and complying with the requirements of 326 IAC 8-5-3(b)(3) through (b)(6).

B. *Impact of cost on firm.* Lilly evaluated 8 control technologies in their RACT proposal for meeting 326 IAC 8-1-5. Only 2 technologies, absorption and condensation, were considered feasible control systems. In each module, a scrubber system has a lower removal efficiency than a condenser system. The cost effectiveness for absorption and condensation controls for all the affected facilities was initially estimated to cost $47,110 and $34,113 per ton of VOC removed, respectively. That estimate has since been doubled with the issuance of the 2001 permit and the 50% reduction of allowable tons per year in the 2001 permit amendment. These costs are determined by Lilly to be economically infeasible based on their $2,000 to $5,000 per ton controlled standard. IDEM is of the opinion that the SIP revision sought by the applicant fulfills the requirements of 326 IAC 8-1-5.

The cost effectiveness of condensation control technologies for the affected facilities of $15,518 to $191,871 per ton VOC controlled for different modules, when minus 25 degree centigrade condensers are used, far exceeds the generally acceptable case-by-case VOC RACT cost effectiveness thresholds. Lilly's permitted limits of minus 10 degrees centigrade would be even more costly per ton VOC controlled.

Complying with 326 IAC 8-5-3 will increase the research costs in Building 110 which in turn will increase the product development costs. The proposed RACT under 326 IAC 8-1-5 will minimize compliance costs for Lilly.

C. *Energy requirements.* The RACT proposal would require an increase in annual electricity consumption of approximately 11,000 Kilowatt-hours. Compliance with 326 IAC 8-5-3 would require an increase in annual electricity consumption of approximately 17,000 Kilowatt-hours, therefore, the proposed site-specific RACT represents a savings of 6,000 Kilowatt-hours.

D. *Environmental impact.* VOC emissions to the air would be reduced by approximately 10.79 tons per year through implementation of the proposed level of controls. The volume of waste solvent transferred off-site for incineration would increase by approximately 10.79 tons per year. No other environmental impacts are foreseen.

E. ***Health and safety impact.*** No adverse impact on health or safety is anticipated by either the proposed RACT or RACT per 326 IAC 8-5-3.

F. *Relative impact of site-specific RACT SIP revision on attainment and maintenance plan.* If Building 110 emission sources had been able to comply with the RACT requirements of 326 IAC 8-5-3(b), the actual emissions from the affected units would have been 0.033 tons/day VOCs in 1990. Under the petitioned 326 IAC 8-1-5 alternative RACT plan, actual maximum emissions would be 0.051 tons/day, based on the projected operating schedule and control measures outlined in the permit application and SIP revisions. Therefore, a worst case difference of 0.018 tons/day would accrue by the approval of this SIP revision.

Marion County is currently in attainment of the 1-hour ozone standard. When Marion County was redesignated to attainment, the redesignation request, dated November 12, 1993, included a Maintenance Plan which outlined how attainment was expected to be maintained into the future. In that plan, the 1990 base year VOC emissions for all source categories were 215.7 tons per day and were projected to be 180.8 tons per day in 2006. The worst case difference of 0.018 tons per day is 0.009% of 2006 projected VOC emissions.

In actuality, point source VOC emissions have greatly decreased since 1990. Daily emissions for 2001 have not been calculated, but point source VOC emissions for the year were 2645 tons. While production is usually somewhat higher during the ozone season, dividing 2645 tons by 365 days to approximate daily emissions equals 7.2 tons per day.

Point sources were 26.8 tons per day in 1990 and projected to be 25.4 tons per day in 2006. Therefore, the addition of 0.018 tons per day would still be within the growth anticipated for point sources in the Maintenance Plan.

Marion County will likely be designated non-attainment for the 8-hour ozone standard. It has not been determined what control measures will be effective in achieving this standard once measures already scheduled for implementation in the next few years are in place. Therefore, emission projections into the future have not been made. Plans to achieve reductions will cover nine counties in this Consolidated Metropolitan Statistical Area. These counties had VOC point source emissions of 5215 tons for 2001, or when divided by 365, approximately 14.28 tons per day. The relatively small increase expected from the approval of this site-specific RACT will have an imperceptible impact on the formation of ozone in this area.

Attached Documents:
The following documents are incorporated into this document:

Exhibit 1. Petition for a Site-Specific RACT plan with compliance plan; Construction permit (097-3341) issued July 27, 1994; Supplement to original submittal to EPA for SIP change; Technical Support Document for 1994 permit; List of additional permit additions dated February 20, 1996; Notice of 30-day comment period; and Transcript of public hearing held March 30, 1994.

Exhibit 2: Construction permit amendment No. 097-12128-00072 issued May 2, 2001; Technical Support Document Addendum; Notice of 30-day comment period; Transcript of public hearing held April 4, 2001.

Exhibit 3. Notice of Decision Approval; Notice of 30-day comment period (no comments were received and no hearing was requested).

FINDINGS

1. The Petitioner seeks an alternate site-specific Reasonably Available Control Technology (RACT) for reactors, centrifuges, filters, vacuum shelf dryers, agitated filter dryer, evaporator, rotary vacuum dryer and distillate receivers for this pilot plant in Building 110 under 326 IAC 8-1-5 in lieu of 326 IAC 8-5-3(b)(1) and (b)(2).
2. The petition submitted by the applicant for approval of a RACT plan and a revision to the state implementation plan fulfills the requirement of 326 IAC 8-1-5(b):
   (1) the petition is submitted in accordance with 326 IAC 8-1-5(a);

(2) the petition demonstrates that the alternative control measures represent reasonably available control technology with the following findings:

(A) no additional capital expenditure is necessary to achieve the petitioned level of control in accordance with 326 IAC 8-1-5;

(B) the impact of the costs for compliance with 326 IAC 8-5-3 would be $1,815.000 for capital expenditures and $600,000 annual operating costs, not a cost effective emission control strategy;

(C) the energy requirements under 326 IAC 8-1-5 would save 6,000 Kilowatt-hours compared to 326 IAC 8-5-3;

(D) the impact on the environment will be a reduction of 19.34 tons per year VOC controlled under 326 IAC 8-1-5, an additional reduction of 2.11 tons VOC per year from 326 IAC 8-5-3;

(E) there are no adverse health or safety issues.

(3) the petition contains a compliance schedule (Exhibit 1) for achieving and maintaining a reduction of volatile organic compound emissions as expeditiously as practicable.

(4) The commissioner agrees the petitioner meets the requirements for a site-specific RACT submitted in accordance with 326 IAC 8-1-5(a) and the petition demonstrates that the alternative control measures represent reasonably available control technology.

CONDITIONS OF APPROVAL

1. Pursuant to 326 IAC 8-1-5 and 326 IAC 8-5-3 the following conditions shall be met:

   (A) the volatile organic compound (VOC) emissions from pilot plant in Building 110 shall be limited to less than 10 tons per twelve consecutive months period rolled on a monthly basis;

   (B) the primary reactor condensers shall operate during reactor venting, material transfer, distillation, and storage of filtrates in reactors, which are transferred from the filters. The primary reactor condensers working fluid inlet temperature shall be minus 10 degrees C or colder for mixtures that will not freeze at minus 10 degrees C (includes most non-aqueous streams); and

   (C) the applicant shall submit a quarterly certification that the condensers were operating at all times as required by condition 4.b (see Exhibit 2). If exceptions to this occur, note the exception, indicate what caused the exception, and how it was corrected.

   (D) the emission units, which have potential to emit VOC greater than 15 pounds per day shall comply with requirements of 326 IAC 8-5-3(b)(3) through (6) in addition to the site-specific RACT plan requirements.

2. The construction of the pilot plant equipment in Building 110 will be subject to the conditions

of Construction Permit Numbers CP 097-3341, permit CP 097-12128, Plt ID No. 097-00072, and the 2001 RACT Plan, as attached.

ORDER

1. This Order issued pursuant to IC 13-14-1-9 and IC 13-14-2-1 approves the petition submitted by the Petitioner subject to the conditions of approval and allows Petitioner to operate pursuant to 326 IAC 8-1-5 in accordance with this Order.

2. This Order shall apply to and be binding upon the Petitioner, its successors and assigns. No change in ownership, corporate, or partnership status of the Petitioner shall in any way alter its status or responsibilities under this Order.

EFFECTIVE DATE OF ORDER

Pursuant to IC 13-14-1-9 and IC 13-14-2-1, the Order will only take effect after a thirty (30) day public notice period, a public hearing of this Order, if requested and issuance of this Order. This Order will be submitted to the U.S. Environmental Protection Agency as a revision to the state implementation plan. Upon approval by the U.S. Environmental Protection Agency, this Order will be part of the state implementation plan.

Pursuant to IC 4-21.5-3-2, IC 4-21.5-3-5 and IC 4-21.5-3-7, this Order becomes effective eighteen (18) days after service through the United States mail, of the issued Order, unless a petition for judicial review is filed before, or on, the eighteenth (18^{th}) day. Standing and substantive requirements are specified in IC 4-21.5-5-3 and IC 4-21.5-5-7, respectively.

Pursuant to IC 4-21.5-5-9, a person seeking judicial review of this Order may, by filing a verified petition, request an order of the court staying this Order, pending a decision by the court.

If there are procedural or scheduling questions regarding a request for review, contact the Office of Environmental Adjudication at (317) 232-8591.

Issued at Indianapolis, Indiana, this 11th day of February 2004.

Janet G. McCabe
Assistant Commissioner
Office of Air Quality