PERMIT BOOK

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 03 2007 - 004 Project Number: 2006-11-098

Parent Company: Mallinckrodt Chemical, Inc.

Parent Company Address: 3600 N Second Street, PO Box 5439, St. Louis, MO 63147

Installation Name: Mallinckrodt Chemical, Inc.

Installation Address: 3600 N Second Street, St. Louis, MO 63147

Location Information: City of St. Louis

Application for Authority to Construct was made for:
Installation of a 2.7 MMBTU/hr Diesel Engine (Air Compressor). This review was conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, Construction Permits Required.

☐ Standard Conditions (on reverse) are applicable to this permit.

☑ Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

MAR 15 2007

EFFECTIVE DATE

DIRECTOR OR DESIGNEE

DEPARTMENT OF NATURAL RESOURCES
STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devises shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the department’s Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant sources(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources’ personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.
SPECIAL CONDITIONS:
The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. “Conditions required by permitting authority.”

Mallinckrodt Chemical, Inc.
City of St. Louis
1. Superseding Condition
   The conditions of this permit supersede all special conditions and limits for EP-1169 found in the previously issued construction permit (Permit Number 04-05-010A) from the City of St. Louis Air Pollution Control Program.

2. Operational Limitation
   The diesel fuel oil combusted in Diesel Engine (EP-1169) shall have a sulfur content of 0.5 percent (%) by weight or less. Mallinckrodt, Inc. shall maintain records of the fuel supplier certifications or analytical testing documentation on-site for not less than five (5) years and make them available to City of St. Louis, Air Pollution Control Program upon request.
REVIEW SUMMARY

- Mallinckrodt Chemical, Inc. has applied for authority to install a 2.7 MMBTU/hr Diesel Engine (Air Compressor).

- Hazardous Air Pollutant (HAP) emissions are expected from the proposed equipment. Total HAP emissions at maximum hourly design rate of the equipment are insignificant at only 0.05 tons per year.

- None of the New Source Performance Standards (NSPS) apply to the proposed equipment. Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines of the New Source Performance Standards (NSPS) does not apply to the diesel engine because it was manufactured before April 1, 2006.

- The Maximum Achievable Control Technology (MACT) standard, 40 CFR Part 63, Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines does not apply to the proposed equipment because the equipment is transportable (designed to be and capable of being carried or moved from one location to another).

- No air pollution control equipment is being used in association with the new equipment.

- This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of all regulated air pollutants are below de minimis levels.

- This installation is located in City of St. Louis a nonattainment area for ozone (O₃) and an attainment area for all other criteria air pollutants.
• This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2] as a Chemical Process Plant.

• Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.

• Emissions testing is not required for this equipment.

• Mallinckrodt, Inc. is required to apply to amend their Part 70 Operating permit within 1 year of equipment startup.

• Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Mallinckrodt, Inc. is major source under construction permits and is a Part 70 source under operating permits. A Part 70 operating permit application was received by the Air Pollution Control Program on May 13, 1997 and is still under review.

Mallinckrodt, Inc. is located within the city limits of the City of St. Louis, Missouri. It manufactures a range of pharmaceutical, imaging and respiratory products using an assortment of raw materials.

The following permits have been issued to Mallinckrodt Chemical, Inc. from the Air Pollution Control Program.

Table 1. Previously issued construction permits.

<table>
<thead>
<tr>
<th>Permit Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>94-11-123</td>
<td>Building 200W (Special Case)</td>
</tr>
<tr>
<td>95-06-082SC</td>
<td>Building 97 Modifications To Processes Involved In Pharmaceutical Production (Special Case)</td>
</tr>
<tr>
<td>95-09-112A</td>
<td>Building 507 Triiodamide And Pharmaceutical Intermediate 104 Manufacture (Permit Matter; No Emissions Increase)</td>
</tr>
<tr>
<td>97-05-041</td>
<td>Potassium Chloride Production Facility Building 3E</td>
</tr>
<tr>
<td>97-08-097A</td>
<td>Additional Equipment For Processing Pharmaceuticals (Building 5)</td>
</tr>
<tr>
<td>98-12-079SC</td>
<td>Increase Of Peptide Production, Mallinckrodt Buildings 96, 98, And 99. (Special Case)</td>
</tr>
<tr>
<td>98-12-079SC PM</td>
<td>Addition Of Pilot Scale Pharmaceutical Production Buildings 96/98/99</td>
</tr>
<tr>
<td>98-12-079SC PM2</td>
<td>Addition Of Chloroform To Allowable HAPs List In Buildings 96/98</td>
</tr>
<tr>
<td>98-12-079SC PM3</td>
<td>Building 96/98 Emission Limit Increases</td>
</tr>
<tr>
<td>98-12-079SC PMA</td>
<td>Amendment To Permit 98-12-079SC PM3</td>
</tr>
<tr>
<td>98-12-079SC PM4</td>
<td>Addition Of Hexane To Allowable HAPs</td>
</tr>
<tr>
<td>99-02-012SC</td>
<td>Building 6/7 Increase Of Toluene Extraction Batches (Special Case)</td>
</tr>
<tr>
<td>99-02-013T</td>
<td>Water Based Pilot Study</td>
</tr>
<tr>
<td>99-02-015</td>
<td>DMSO Bulk Transfer operation</td>
</tr>
<tr>
<td>99-04-028</td>
<td>Building 6/7 (Permit Matter; No Emission Increase)</td>
</tr>
<tr>
<td>99-10-073PM</td>
<td>Building 504/505 Revision Of Terms In Original “Alternative Synthesis Of Loversol In Building 504 And 505” (Permit Matter; No Emission Increase)</td>
</tr>
<tr>
<td>99-10-073</td>
<td>Loversol Synthesis</td>
</tr>
<tr>
<td>99-11-075S</td>
<td>Building 235 Expansion (Special Case)</td>
</tr>
<tr>
<td>99-11-078</td>
<td>Building 260 Construction</td>
</tr>
</tbody>
</table>
Mallinckrodt, Inc. has several electric compressors onsite. These compressors are used to provide the plant with compressed air necessary for plant operation. EP-1169 is the lone diesel air compressor and is used only in the event there is high demand for compressed air over the capacity of the electric units or when the electric units are down for maintenance. EP-1169 was limited to a throughput of 20,000 gallons per consecutive 12-month period by City of St. Louis permit No. 04-05-010A. Mallinckrodt, Inc. applied through a City Of St. Louis Application For Construction Or Modification Of An Air Pollution Source Within The City Of St. Louis form dated November 8, 2006 to increase fuel throughput for EP-1169 to 40,000 gallons per 12-month period. This was to compensate for the higher than anticipated usage of the diesel air compressor.

At its maximum design capacity of 2.7 MMBTU/hr, EP-1169 has the potential to emit criteria air pollutants less than de minimis levels (Table 2). Fuel throughput limitations are therefore not required for EP-1169.

No control devices will be used to control air pollutants from EP-1169.
EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies used in this analysis were obtained from the Environmental Protection Agency (EPA) document AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.4, Large Stationary Diesel and All Stationary Dual Fuel Engines (10/96). Potential emissions of the application represent the potential of the new equipment, assuming continuous operation (8760 hours per year). The existing actual emissions were obtained from the installation’s 2005 Emission Inventory Questionnaire (EIQ) submittal. The following table provides an emissions summary for this project.

Table 2. Emissions Summary (tons per year)

<table>
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<tr>
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<tbody>
<tr>
<td>PM_{10}</td>
<td>15.0</td>
<td>18.06</td>
<td>0.68</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SOx</td>
<td>40.0</td>
<td>Major</td>
<td>262.89</td>
<td>5.97</td>
<td>N/A</td>
</tr>
<tr>
<td>NOx</td>
<td>40.0</td>
<td>Major</td>
<td>106.93</td>
<td>37.84</td>
<td>N/A</td>
</tr>
<tr>
<td>VOC</td>
<td>40.0</td>
<td>Major</td>
<td>45.20</td>
<td>1.06</td>
<td>N/A</td>
</tr>
<tr>
<td>CO</td>
<td>100.0</td>
<td>Major</td>
<td>110.52</td>
<td>10.05</td>
<td>N/A</td>
</tr>
<tr>
<td>HAPs</td>
<td>10.0/25.0</td>
<td>Major</td>
<td>16.26</td>
<td>0.05</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*N/A = Not Applicable; N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (5) of Missouri State Rule 10 CSR 10-6.060, Construction Permits Required. Potential emissions of all criteria pollutants are below de minimis levels.

APPLICABLE REQUIREMENTS

Mallinckrodt Chemical, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- Submission of Emission Data, Emission Fees and Process Information, 10 CSR 10-6.110
  The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
• Operating Permits, 10 CSR 10-6.065

• Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin, 10 CSR 10-6.170

• Restriction of Emission of Visible Air Contaminants, 10 CSR 10-6.220

• Control of Odors in the Ambient Air, 10 CSR 10-5.160

SPECIFIC REQUIREMENTS

• Restriction of Emission of Particulate Matter From Industrial Processes, 10 CSR 10-6.400

• Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260

AMBIENT AIR QUALITY IMPACT ANALYSIS

• Ambient air quality modeling was not performed since potential emissions of the application are below de minimis levels.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (5), Missouri State Rule 10 CSR 10-6.060, Construction Permits Required, I recommend this permit be granted with special conditions.

Maurice Chemweno
Environmental Engineer

Date
PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- City of St. Louis, Application for Construction or Modification, prior to operation, of an air pollution source within the City of St. Louis form, dated November 8, 2006, received November 22, 2006, designating Mallinckrodt Inc. as the owner and operator of the installation.

Mr. Jeff DeWald  
Sr. EHS Engineer  
Mallinckrodt Inc.  
3600 N Second Street  
PO Box 5439  
St. Louis, MO 63147

RE: New Source Review Permit - Project Number: 2006-11-098

Dear Mr. DeWald:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your amended operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact me at (573) 751-4817, or you may write to me at the Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102.

Thank you,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale  
New Source Review Unit Chief

KBH:mcl

Enclosures

c: Permitting Section, City of St. Louis Air Pollution Control Program  
PAMS File 2006-11-098

Permit Number: