



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

Mitchell E. Daniels Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
www.idem.IN.gov

TO: Interested Parties / Applicant

DATE: September 16, 2008

RE: Reagent Chemical & Research, Inc. / 149-26484-00028

FROM: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures
FNPER.dot12/03/07



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New Source Construction and Minor Source Operating Permit OFFICE OF AIR QUALITY

**Reagent Chemical & Research, Inc.
317 Kloeckner Ave.
Knox, Indiana 46534**

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-5.1, 326 IAC 2-6.1 and 40 CFR 52.780, with conditions listed on the attached pages.

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a MSOP under 326 IAC 2-6.1.

Operation Permit No.: M149-26484-00028	
Issued by: Alfred C. Dumauval, Ph. D., Section Chief Permits Branch Office of Air Quality	Issuance Date: September 16, 2008 Expiration Date: September 16, 2013

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SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 and A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-5.1-3(c)][326 IAC 2-6.1-4(a)]

The Permittee owns and operates a stationary Railcar repair and rubber-lining facility.

Source Address:	317 Kloeckner Ave., Knox, Indiana 46534
Mailing Address:	115 US Highway 202, Ringoes, NJ 08551
General Source Phone Number:	574-772-3271
SIC Code:	4789
County Location:	Starke
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Minor Source Operating Permit Program
	Minor Source, under PSD and Emission Offset Rules
	Minor Source, Section 112 of the Clean Air Act
	Not 1 of 28 Source Categories

A.2 Emission Units and Pollution Control Equipment Summary

This stationary source consists of the following emission units and pollution control devices:

- (a) One (1) HCL Holding Tank, identified as PO10, approved for construction in 2008, with a maximum capacity 1000 gallons of hydrogen chloride solution, using one (1) Water Scrubber as control, identified as CE010 and exhausting to stack SO10.
- (b) One (1) Abrasive Blasting Unit, identified as PO11, approved for construction in 2008, with a maximum capacity of 2 railcars or 10 hours of operation per day, using one (1) Dust Collector as control, identified as CE011 and exhausting to stack SO11.
- (c) One (1) Manual Gluing Operation, identified as PO12, approved for construction in 2008, for gluing rubber lining into railcars, with a maximum capacity of 2 railcars or 10 hours of operation per day and exhausting to stack SO11.
- (d) One (1) Natural Gas Fired Boiler, identified as PO13, approved for construction in 2008, with a maximum capacity of 0.37 MMBtu/hr, and exhausting to stack SO13.

SECTION B GENERAL CONDITIONS

B.1 Definitions [326 IAC 2-1.1-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-1.1-1) shall prevail.

B.2 Revocation of Permits [326 IAC 2-1.1-9(5)]

Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.3 Affidavit of Construction [326 IAC 2-5.1-3(h)] [326 IAC 2-5.1-4]

This document shall also become the approval to operate pursuant to 326 IAC 2-5.1-4 when prior to the start of operation, the following requirements are met:

- (a) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), verifying that the emission units were constructed as proposed in the application or the permit. The emission units covered in this permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM if constructed as proposed.
- (b) If actual construction of the emission units differs from the construction proposed in the application, the source may not begin operation until the permit has been revised pursuant to 326 IAC 2 and an Operation Permit Validation Letter is issued.
- (c) The Permittee shall attach the Operation Permit Validation Letter received from the Office of Air Quality (OAQ) to this permit.

B.4 Permit Term [326 IAC 2-6.1-7(a)][326 IAC 2-1.1-9.5][IC 13-15-3-6(a)]

- (a) This permit, M149-26484-00028, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.
- (b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, until the renewal permit has been issued or denied.

B.5 Term of Conditions [326 IAC 2-1.1-9.5]

Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

- (a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or
- (b) the emission unit to which the condition pertains permanently ceases operation.

B.6 Enforceability

Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

B.7 Severability

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

B.8 Property Rights or Exclusive Privilege

This permit does not convey any property rights of any sort or any exclusive privilege.

B.9 Duty to Provide Information

- (a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1). Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit.
- (b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.10 Certification

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by an "authorized individual" of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.
- (c) An "authorized individual" is defined at 326 IAC 2-1.1-1(1).

B.11 Annual Notification [326 IAC 2-6.1-5(a)(5)]

- (a) An annual notification shall be submitted by an authorized individual to the Office of Air Quality stating whether or not the source is in operation and in compliance with the terms and conditions contained in this permit.
- (b) The annual notice shall be submitted in the format attached no later than March 1 of each year to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, IN 46204-2251
- (c) The notification shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

B.12 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, including the following information on each facility:
- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The PMP extension notification does not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5]

- (a) All terms and conditions of permits established prior to M149-26484-00028 and issued pursuant to permitting programs approved into the state implementation plan have been either:
- (1) incorporated as originally stated,
 - (2) revised, or
 - (3) deleted.
- (b) All previous registrations and permits are superseded by this permit.

B.14 Termination of Right to Operate [326 IAC 2-6.1-7(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least ninety (90) days prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-6.1-7.

B.15 Permit Renewal [326 IAC 2-6.1-7]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and shall include the information specified in 326 IAC 2-6.1-7. Such information shall be included in the application for each emission unit at this source. The renewal application does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

- (b) A timely renewal application is one that is:
- (1) Submitted at least ninety (90) days prior to the date of the expiration of this permit; and
 - (2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.
- (c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-6.1 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.16 Permit Amendment or Revision [326 IAC 2-5.1-3(e)(3)][326 IAC 2-6.1-6]

- (a) Permit amendments and revisions are governed by the requirements of 326 IAC 2-6.1-6 whenever the Permittee seeks to amend or modify this permit.

- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application shall be certified by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee shall notify the OAQ within thirty (30) calendar days of implementing a notice-only change. [326 IAC 2-6.1-6(d)]

B.17 Source Modification Requirement

A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2.

B.18 Inspection and Entry

[326 IAC 2-5.1-3(e)(4)(B)][326 IAC 2-6.1-5(a)(4)][IC 13-14-2-2][IC 13-17-3-2][IC 13-30-3-1]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.19 Transfer of Ownership or Operational Control [326 IAC 2-6.1-6]

- (a) The Permittee must comply with the requirements of 326 IAC 2-6.1-6 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The application which shall be submitted by the Permittee does require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (c) The Permittee may implement notice-only changes addressed in the request for a notice-only change immediately upon submittal of the request. [326 IAC 2-6.1-6(d)(3)]

B.20 Annual Fee Payment [326 IAC 2-1.1-7]

- (a) The Permittee shall pay annual fees to IDEM, OAQ within thirty (30) calendar days of receipt of a billing.

- (b) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.21 Credible Evidence [326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

C.1 Particulate Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply shall not exceed 0.551 pounds per hour.

C.2 Permit Revocation [326 IAC 2-1.1-9]

Pursuant to 326 IAC 2-1.1-9 (Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of this article.

C.3 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.4 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.5 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2.

C.6 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

C.7 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
- (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
- (2) If there is a change in the following:
- (A) Asbestos removal or demolition start date;
- (B) Removal or demolition contractor; or
- (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (e) **Procedures for Asbestos Emission Control**
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) **Demolition and Renovation**
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).
- (g) **Indiana Licensed Asbestos Inspector**
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Licensed Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Licensed Asbestos inspector is not federally enforceable.

Testing Requirements [326 IAC 2-6.1-5(a)(2)]

C.9 Performance Testing [326 IAC 3-6]

- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.10 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-6.1-5(a)(2)]

C.11 Compliance Monitoring [326 IAC 2-1.1-11]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

C.12 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60, Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

C.13 Instrument Specifications [326 IAC 2-1.1-11]

- (a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.
- (b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

Corrective Actions and Response Steps

C.14 Response to Excursions or Exceedances

- (a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:
 - (1) initial inspection and evaluation;
 - (2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or
 - (3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.

- (c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:
 - (1) monitoring results;
 - (2) review of operation and maintenance procedures and records; and/or
 - (3) inspection of the control device, associated capture system, and the process.
- (d) Failure to take reasonable response steps shall be considered a deviation from the permit.
- (e) The Permittee shall maintain the following records:
 - (1) monitoring data;
 - (2) monitor performance data, if applicable; and
 - (3) corrective actions taken.

C.15 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).

Record Keeping and Reporting Requirements [326 IAC 2-6.1-5(a)(2)]

C.16 Malfunctions Report [326 IAC 1-6-2]

Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAQ, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as

practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

C.17 General Record Keeping Requirements [326 IAC 2-6.1-5]

- (a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

C.18 General Reporting Requirements [326 IAC 2-1.1-11] [326 IAC 2-6.1-2] [IC 13-14-1-13]

- (a) Reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

- (b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.
- (c) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
- (d) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

Emissions Unit Description:

- (a) One (1) Abrasive Blasting Unit, identified as PO11, approved for construction in 2008, with a maximum capacity of 2 railcars or 10 hours of operation per day, using one (1) Dust Collector as control, identified as CE011 and exhausting to stack SO11.
- (b) One (1) Manual Gluing Operation, identified as PO12, approved for construction in 2008, for gluing rubber lining into railcars, with a maximum capacity of 2 railcars or 10 hours of operation per day and exhausting to stack SO11.
- (c) One (1) Natural Gas Fired Boiler, identified as PO13, approved for construction in 2008, with a maximum capacity of 0.37 MMBtu/hr, and exhausting to stack SO13.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-6.1-5(a)(1)]

D.1.1 Particulate Emissions Limitations for Sources of Indirect Heat [326 IAC 6-2-4]

Pursuant to 326 IAC 6-2-4, the particulate matter (PM) from the natural gas fired boiler, identified as PO13, shall not exceed 0.6 pounds per MMBtu heat input.

D.1.2 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the abrasive blasting unit, identified as PO11 shall not exceed 5.38 pounds per hour when operating at a process weight rate of 1.5 tons per hour. The pound per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

D.1.3 Preventative Maintenance Plan [326 IAC 1-6-3]

Pursuant to 326 IAC 1-6-3 a Preventative Maintenance Plan (PMP), prepared in accordance with Section B.12 of this permit, is required for the abrasive blasting unit and manual gluing operation.

Compliance Monitoring Requirements [326 IAC 2-6.1-5(a)(2)]

D.1.4 Particulate Control

In order to comply with Condition D.1.2, the dust collector, identified as CE011, for particulate control shall be in operation and control emissions from the one (1) abrasive blasting unit, identified as PO11, at all times the one (1) abrasive blasting facility, identified as PO11 is in operation.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH**

**MINOR SOURCE OPERATING PERMIT
ANNUAL NOTIFICATION**

This form should be used to comply with the notification requirements under 326 IAC 2-6.1-5(a)(5).

Company Name:	Reagent Chemical & Research, Inc.
Address:	317 Kloeckner Ave.
City:	Knox, Indiana 46534
Phone #:	574-772-3271
MSOP #:	M149-26484-00028

I hereby certify that Reagent Chemical & Research, Inc. is still in operation.
 no longer in operation.
I hereby certify that Reagent Chemical & Research, Inc. is in compliance with the requirements of MSOP M149-26484-00028.
 not in compliance with the requirements of MSOP M149-26484-00028.

Authorized Individual (typed):
Title:
Signature:
Date:

If there are any conditions or requirements for which the source is not in compliance, provide a narrative description of how the source did or will achieve compliance and the date compliance was, or will be achieved.

Noncompliance:

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
FAX NUMBER - 317 233-6865

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE IT HAS POTENTIAL TO EMIT 25 TONS/YEAR PARTICULATE MATTER ?____, 25 TONS/YEAR SULFUR DIOXIDE ?____, 25 TONS/YEAR NITROGEN OXIDES?____, 25 TONS/YEAR VOC ?____, 25 TONS/YEAR HYDROGEN SULFIDE ?____, 25 TONS/YEAR TOTAL REDUCED SULFUR ?____, 25 TONS/YEAR REDUCED SULFUR COMPOUNDS ?____, 25 TONS/YEAR FLUORIDES ?____, 100 TONS/YEAR CARBON MONOXIDE ?____, 10 TONS/YEAR ANY SINGLE HAZARDOUS AIR POLLUTANT ?____, 25 TONS/YEAR ANY COMBINATION HAZARDOUS AIR POLLUTANT ?____, 1 TON/YEAR LEAD OR LEAD COMPOUNDS MEASURED AS ELEMENTAL LEAD ?____, OR IS A SOURCE LISTED UNDER 326 IAC 2-5.1-3(2) ?____. EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF "MALFUNCTION" AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: _____ PHONE NO. () _____
LOCATION: (CITY AND COUNTY) _____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: ____/____/20____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION: _____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE ____/____/20____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____
INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY: _____ TITLE: _____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

*SEE PAGE 2

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. This rule applies to the owner or operator of any facility required to obtain a permit under 326 IAC 2-5.1 or 326 IAC 2-6.1.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner.

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Mail to: Permit Administration & Development Section
Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Reagent Chemical & Research, Inc.
317 Kloeckner Ave.
Knox, Indiana 46534

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.
2. I hold the position of _____ for _____.
(Title) (Company Name)
3. By virtue of my position with _____, I have personal
(Company Name)
knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of _____.
(Company Name)
4. I hereby certify that Reagent Chemical & Research, Inc. 317 Kloeckner Ave., Knox, Indiana 46534, completed construction of the Railcar repair and rubber-lining facility on _____ in conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on May 2, 2008 and as permitted pursuant to New Source Construction Permit and Minor Source Operating Permit No. M149-26484-00028, Plant ID No. 149-00028 issued on _____.
5. **Permittee, please cross out the following statement if it does not apply:** Additional (operations/facilities) were constructed/substituted as described in the attachment to this document and were not made in accordance with the construction permit.

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature _____

Date _____

STATE OF INDIANA)
)SS

COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of Indiana
on this _____ day of _____, 20 _____. My Commission expires: _____.

Signature _____

Name _____ (typed or printed)

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a New Source Construction and Minor Source Operating Permit (MSOP)

Source Description and Location	
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Source Name:	Reagent Chemical & Research, Inc.
Source Location:	317 Kloeckner Ave., Knox, IN 46534
County:	Starke
SIC Code:	4789
Operation Permit No.:	M149-26484-00028
Permit Reviewer:	Brandon Snoddy

On May 2, 2008, the Office of Air Quality (OAQ) has received an application from Reagent Chemical & Research, Inc. related to the construction and operation of a new railcar repair and rubber-lining facility.

Source Definition

This company consists of the following plants:

- (a) White Flyer Targets located at 317 Kloeckner Ave., Knox, IN, Plant ID: 149-00027; and
- (b) Reagent Chemical & Research, Inc. located at 317 Kloeckner Ave., Knox, IN, Plant ID: 149-00028.

White Flyer Targets manufactures clay targets used in skeet, trap and similar sports. White Flyer Targets has applied to build a second plant on its property. The new plant will repair railroad cars. IDEM, OAQ has examined whether the current plant and the proposed plant are one major source. The term "major source" is defined at 326 IAC 2-7-1(22). In order for these plants to be considered one major source, they must meet all three of the following criteria:

- (1) the plants must be under common ownership or common control;
- (2) the plants must have the same two-digit Standard Industrial Classification (SIC) Code or one must serve as a support facility for the other; and,
- (3) the plants must be located on contiguous or adjacent properties.

Both plants will be commonly owned by White Flyer Targets, which itself is a subsidiary of Reagent Chemical & Research, Inc. Therefore, the two plants meet the first criteria of the definition of major source.

The existing clay target plant has the two-digit SIC code 39, for Miscellaneous Manufacturing Industries. The railroad car repair plant will have the two-digit SIC code 47, for Transportation Services. Neither plant will provide any support to the other plant. Therefore, the two plants do not meet the second criteria of the definition.

The plants will be located on the same property, so the third element of the definition is met. Since the plants do not meet all three elements of the definition, IDEM, OAQ finds that the railroad car plant will not be part of the same major source as the existing plant. The railroad car repair plant will be permitted as a

separate source.

Existing Approvals

There have been no previous approvals issued to this source.

County Attainment Status

The source is located in Starke County.

Pollutant	Designations
SO ₂	Better than national standards.
CO	Unclassifiable or attainment effective November 15, 1990.
O ₃	Unclassifiable or attainment effective June 15, 2004, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Not designated.

¹Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked effective June 15, 2005.
Unclassifiable or attainment effective April 5, 2005, for PM2.5.

- (a) **Ozone Standards**
Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Starke County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (b) Starke County has been classified as attainment for PM2.5. On May 8, 2008 U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM2.5 emissions, and the effective date of these rules was July 15th, 2008. Indiana has three years from the publication of these rules to revise its PSD rules, 326 IAC 2-2, to include those requirements. The May 8, 2008 rule revisions require IDEM to regulate PM10 emissions as a surrogate for PM2.5 emissions until 326 IAC 2-2 is revised.
- (c) **Other Criteria Pollutants**
Starke County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

- (a) The fugitive emissions of criteria pollutants and hazardous air pollutants are counted toward the determination of 326 IAC 2-6.1 (Minor Source Operating Permits) applicability.
- (b) Since this type of operation is not one of the twenty-eight (28) listed source categories under 326

IAC 2-2, 326 IAC 2-3, or 326 IAC 2-7, and there is no applicable New Source Performance Standard that was in effect on August 7, 1980, fugitive emissions are not counted toward the determination of PSD, Emission Offset, and Part 70 Permit applicability.

Background and Description of New Source Construction

The Office of Air Quality (OAQ) has reviewed an application, submitted by Reagent Chemical & Research, Inc., on May 2, 2008 to construct and operate a railcar repair and rubber-lining facility.

The following is a list of the new emission units and pollution control devices:

- (a) One (1) HCL Holding Tank, identified as PO10, approved for construction in 2008, with a maximum capacity 1000 gallons of hydrogen chloride solution, using one (1) Water Scrubber as control, identified as CE010 and exhausting to stack SO10.
- (b) One (1) Abrasive Blasting Unit, identified as PO11, approved for construction in 2008, with a maximum capacity of 2 railcars or 10 hours of operation per day, using one (1) Dust Collector as control, identified as CE011 and exhausting to stack SO11.
- (c) One (1) Manual Gluing Operation, identified as PO12, approved for construction in 2008, for gluing rubber lining into railcars, with a maximum capacity of 2 railcars or 10 hours of operation per day and exhausting to stack SO11.
- (d) One (1) Natural Gas Fired Boiler, identified as PO13, approved for construction in 2008, with a maximum capacity of 0.37 MMBtu/hr, and exhausting to stack SO13.

Enforcement Issues

There are no pending enforcement actions related to this source.

Emission Calculations

See Appendix A and B of this TSD for detailed emission calculations.

Each railcar processed takes a total of 5 hours to complete with 7 hours of downtime between each railcar. Therefore, source is limited to processing 2 railcars per day for a total of 10 hours of operation per day. As a result of this process limitation the emissions calculations for the abrasive blasting unit and the manual gluing operation are based on ten operating hours per day, 365 days per year.

Permit Level Determination – MSOP

The following table reflects the unlimited potential to emit (PTE) of the entire source before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	63.94
PM10 ⁽¹⁾	44.76
PM2.5	44.76
SO ₂	Negligible
NO _x	0.08
VOC	14.59
CO	0.14

(1) Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant".

HAPs	Potential To Emit (tons/year)
Benzene	3.403E-06
Cadmium	1.783E-06
Chromium	2.269E-06
Dichlorobenzene	1.945E-06
Ethyl Benzene	0.42
Formaldehyde	1.215E-04
Hexane	2.917E-03
Lead	8.103E-07
Maganese	6.158E-07
Nickel	3.403E-06
Toulene	8.68
Xylene	2.76
Total HAPs	11.87

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of PM, PM10 and PM2.5 are each less than 100 tons per year, but greater than 25 tons per year. The PTE of all other regulated criteria pollutants are less than twenty-five (25) tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-6.1. A Minor Source Operating Permit (MSOP) will be issued.
- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.

PTE of the Entire Source After Issuance of the MSOP

The table below summarizes the potential to emit of the entire source after issuance of this MSOP, reflecting all limits, of the emission units.

Process/ Emission Unit	Potential To Emit of the Entire Source Prior to Revision (tons/year)								
	PM	PM10	PM2.5	SO ₂	NO _x	VOC	CO	Total HAPs	Worst Single HAP
HCL Holding Tank	Negl.	Negl.	Negl.	-	-	-	-	Negl.	negl. HCL
Abrasive Blasting Unit	63.94	44.76	44.76	-	-	-	-	-	-
Manual Gluing Operation	-	-	-	-	-	14.59	-	11.86	8.68 Toluene
Natural gas Fired Boiler	Negl.	0.01	0.01	Negl.	0.08	Negl.	0.14	Negl.	Negl. Hexane
Total PTE of the Entire Source	63.95	44.77	44.77	Negl.	0.08	14.59	0.14	11.87	8.68 Toluene
Title V Major Source Thresholds	NA	100	-	100	100	100	100	25	10
PSD Major Source Thresholds	250	250	250	250	250	250	250	NA	NA

negl. = negligible
 * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant".

Federal Rule Applicability Determination

New Source Performance Standards (NSPS)

- (a) There are no New Source Performance Standards (NSPS)(40 CFR Part 60) included in the permit.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in the permit.
- (c) The requirements of the 40 CFR 63, Subpart M, NESHAP for Surface Coating of Miscellaneous Metal Parts and Products (40 CFR Part 63.3880 - 63.3981), are not included in the permit, since this source is not a major source of HAPs as defined in 40 CFR 63.2.

Compliance Assurance Monitoring (CAM)

- (d) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is not included in the permit, because the unlimited potential to emit of the source is less than the Title V major source thresholds and the source is not required to obtain a Part 70 or Part 71 permit.

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-6.1 (Minor Source Operating Permits (MSOP))
MSOP applicability is discussed under the Permit Level Determination – MSOP section above.
- (b) 326 IAC 2-2 (Prevention of Significant Deterioration(PSD))
This source is not a major stationary source, under PSD (326 IAC 2-2), because the potential to emit of all attainment regulated pollutants are less than 250 tons per year, and this source is not one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1). Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.
- (c) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.
- (d) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (e) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
 - (1) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
- (f) 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.

Abrasive Blasting Unit

- (g) 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)
Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the abrasive blasting unit shall not exceed 5.38 pounds per hour when operating at a process weight rate of 1.5 tons per hour. The pound per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

$$E = 4.10 * 1.5^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and}$$
$$E = 5.38 \quad \quad \quad P = \text{process weight rate in tons per hour}$$

In order to comply with this limitation, the dust collector shall be in operation and control particulate emissions at all times the abrasive blasting unit operation is in operation.

Manual Gluing Operation

- (h) 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities)
The manual gluing operation is not subject to the requirements of 326 IAC 8-1-6, since the unlimited VOC potential emissions from the gluing operation is less than twenty-five (25) tons per year.
- (i) 326 IAC 8-2-9 (Volatile Organic Compounds, Miscellaneous Metal Coating Operations)
Pursuant to 326 IAC 8-2-9(a)(5), the requirements of 326 IAC 8-2-9 are not applicable to metal surface coating in the manual glue operation (PO12), since the operation does not surface coat metal parts or products under the Standard Industrial Classification Code of major group #37. This source repairs and installs rubber lining into railcars under the Standard Industrial Classification Code of 4789 (major group #47).
- (j) There are no other 326 IAC 8 Rules that are applicable to the facility.

Natural Gas Combustion

- (k) 326 IAC 6-2-4 (Particulate Emissions Limitations for Sources of Indirect Heat)
Pursuant to 326 IAC 6-2-4, the particulate matter (PM) from the natural gas fired boiler shall not exceed 0.6 pounds per MMBtu heat input.

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on May 2, 2008.

The construction and operation of this source shall be subject to the conditions of the attached proposed New Source Construction and MSOP No. 149-26484-00028. The staff recommends to the Commissioner that this New Source Construction and MSOP be approved.

IDEM Contact

- (a) Questions regarding this proposed permit can be directed to Brandon Snoddy at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) (232-8217) or toll free at 1-800-451-6027 extension 2-8217.
- (b) A copy of the findings is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

**Appendix A: Emissions Calculations
Summary Sheet**

**Company Name: Reagent Chemical & Research, Inc.
Company Address: 317 Kloeckner Ave., Knox, IN 46534
Permit Number: M149-26484-00028
Reviewer: Brandon Snoddy
Date: July 14, 2008**

Uncontrolled Potential Emissions							
	PM	PM 10	SO2	VOC	CO	NOX	HAPs
Emission Unit	(tons/year)						
Abrasive Blasting	63.94	44.76	-	-	-	-	-
Surface Coating	-	-	-	14.59	-	-	11.86
Natural Gas Combustion	Negligible	0.01	Negligible	Negligible	0.14	0.08	Negligible
HCL Storage & Transfer	0.0015	0.0015	-	-	-	-	0.0015
Total	63.95	44.77	Negligible	14.59	0.14	0.08	11.87

Limited Potential Emissions							
	PM	PM 10	SO2	VOC	CO	NOX	HAPs
Emission Unit	(tons/year)						
Abrasive Blasting	6.39	4.48	-	-	-	-	-
Surface Coating	-	-	-	14.59	-	-	11.86
Natural Gas Combustion	Negligible	0.01	Negligible	Negligible	0.14	0.08	Negligible
HCL Storage & Transfer*	Negligible	Negligible	-	-	-	-	Negligible
Total	6.4	4.49	Negligible	14.59	0.14	0.08	11.87

*HCL Storage & Transfer controlled by water scrubber with 99% control efficiency.

Each railcar processed takes a total of 5 hours to complete with 7 hours of downtime between each railcar.

Therefore, source is limited to processing 2 railcars per day for a total of 10 hours of operation per day. As a result of this process limitation the emissions calculations for the abrasive blasting unit and the manual gluing operation are based on ten operating hours per day, 365 days per year.

**Appendix A: Emission Calculations
Abrasive Blasting - Confined**

Company Name: Reagent Chemical & Research, Inc.
Address City IN Zip: 317 Kloeckner Ave., Knox, IN 46534
Permit Number: M149-26484-00028
Plt ID: Brandon Snoddy
Reviewer: July 14, 2008

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor (EF)	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate (FR1) of sand through a blasting nozzle as a function of nozzle pressure and internal diameter (ID1)

Nozzle Type (diameter)	Internal diameter, in	Nozzle Pressure (psig)							
		30	40	50	60	70	80	90	100
No. 2 (1/8 inch)	0.125	28	35	42	49	55	63	70	77
No. 3 (3/16 inch)	0.1875	65	80	94	107	122	135	149	165
No. 4 (1/4 inch)	0.25	109	138	168	195	221	255	280	309
No. 5 (5/16 inch)	0.3125	205	247	292	354	377	420	462	507
No. 6 (3/8 inch)	0.375	285	355	417	477	540	600	657	720
No. 7 (7/16 inch)	0.4375	385	472	560	645	755	820	905	940
No. 8 (1/2 inch)	0.5	503	615	725	835	945	1050	1160	1265
No. 10 (5/8 inch)	0.625	820	990	1170	1336	1510	1680	1850	2030
No. 12 (3/4 inch)	0.75	1140	1420	1670	1915	2160	2400	2630	2880
No. 16 (1 inch)	1	2030	2460	2900	3340	3780	4200	4640	5060

CALCULATIONS

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters	
Flow Rate (FR) = Abrasive flow rate (lb/hr) of abrasive at nozzle pressure and internal nozzle diameter (ID)	
D1 = Density of sand from Table 2 =	99 lb/ft3
ID1 = Internal diameter of nozzle for sand blasting from Table 3 =	0.4375 inch
FR1 = Sand flow rate at nozzle pressure and internal diameter (ID1) from Table 3 =	940 lb/hr
D = Density of actual abrasive =	90 lb/ft3
ID = internal diameter of actual nozzle =	0.4375 inch
FR = Flow rate of actual abrasive (lb/hr) =	854.5 lb/hr (per nozzle)

Potential to Emit Before Control	
FR = Flow rate of actual abrasive (lb/hr) =	854.5 lb/hr (per nozzle)
w = fraction of time of wet blasting =	0 %
N = number of nozzles =	1
EF = PM emission factor for actual abrasive from Table 1 =	0.041 lb PM/ lb abrasive
PM10 emission factor ratio for actual abrasive from Table 1 =	0.70 lb PM10 / lb PM
Potential to Emit (before control) =	35.036 lb/hr
=	350.364 lb/day
=	63.941 ton/yr
	PM PM10
	35.036 24.525
	350.364 245.255
	63.941 44.759

Potential to Emit After Control	
Emission Control Device Efficiency =	90.0% 90.0%
Potential to Emit (after control) =	3.504 2.453 lb/hr
=	35.036 24.525 lb/day
=	6.394 4.476 ton/yr
	PM PM10
	3.504 2.453
	35.036 24.525
	6.394 4.476

METHODOLOGY

Emission Factors from STAPPA/ALAPCO "Air Quality Permits", Vol. I, Section 3 "Abrasive Blasting" (1991 edition)
 Flow rate of actual abrasive (FR) (lb/hr) = FR1 x (ID/ID1)² x (D/D1)
 Potential to Emit (before control) = EF x FR x (1 - w/200) x N (where w should be entered in as a whole number (if w is 50%, enter 50))
 Potential to Emit (after control) = [Potential to Emit (before control)] * [1 - control efficiency]
 Potential to Emit (tons/year) = [Potential to Emit (lbs/hour)] x [3650 hours/year] x [ton/2000 lbs]
 Calculations based on 10 hours operating per day or 3650 hours per year due to process limitations

Appendix A: Emission Calculations

HAP Emission Calculations

Company Name: Reagent Chemical & Research, Inc.
Address City IN Zip: 317 Kloeckner Ave., Knox, IN 46534
Permit Number: M149-26484-00028
Permit Reviewer: Brandon Snoddy
Date: July 14, 2008

Material	Density (Lb/Gal)	Gallons of Material (gal/unit)	Maximum (unit/hour)	Weight % Xylene	Weight % Toluene	Weight % Formaldehyde	Weight % Ethyl Benzene	Weight % Methanol	Xylene Emissions (ton/yr)	Toluene Emissions (ton/yr)	Formaldehyde Emissions (ton/yr)	Ethyl Benzene Emissions (ton/yr)	Methanol Emissions (ton/yr)
Chemlok 289 Primer	7.8	1.47400	0.250	32.43%	0.71%	0.01%	7.63%	0.00%	1.70	0.04	0.00	0.40	0.00
Chemlok 290 Covercoat	7.30	0.73700	0.250	43.00%	15.00%	0.00%	1.00%	0.00%	1.06	0.37	0.00	0.02	0.00
Chemlok 286 Tacky tie Ceme	7.40	2.88400	0.250	0.00%	84.97%	0.00%	0.00%	0.00%	0.00	8.27	0.00	0.00	0.00
METHODOLOGY									"Worst Case" Individual HAP				
									"Worst Case" Total HAPs				
									2.76				
									8.68				
									0.00				
									0.42				
									0.00				

Total State Potential Emissions

METHODOLOGY

HAPS emission rate (tons/yr) = Density (lb/gal) * Gal of Material (gal/unit) * Maximum (unit/hr) * Weight % HAP * 3650 hrs/yr * 1 ton/2
 Calculations based on 10 hours operating per day or 3650 hours per year due to process limitations

**Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100**

Company Name: Reagent Chemical & Research, Inc.
Address City IN Zip: 317 Kloeckner Ave., Knox, IN 46534
Permit Number: M149-26484-00028
Reviewer: Brandon Snoddy
Date: July 14, 2008

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

0.4

3.2

Emission Factor in lb/MMCF	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
	1.9	7.6	0.6	50.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.003	0.012	0.001	0.081	0.009	0.136

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

See page 2 for HAPs emissions calculations.

**Appendix A: Emissions Calculations
 Natural Gas Combustion Only
 MM BTU/HR <100
 HAPs Emissions**

Company Name: Reagent Chemical & Research, Inc.
Address City IN Zip: 317 Kloeckner Ave., Knox, IN 46534
Permit Number: M149-26484-00028
Reviewer: Brandon Snoddy
Date: July 14, 2008

	HAPs - Organics				
Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	3.403E-06	1.945E-06	1.215E-04	2.917E-03	5.510E-06

	HAPs - Metals				
Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	8.103E-07	1.783E-06	2.269E-06	6.158E-07	3.403E-06

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
 Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Technical Support Document (TSD)

Appendix B

POTENTIAL SOURCE EMISSIONS

Purpose: This document provides a conservative estimate of the potential untreated emissions from various sources at a HCL Storage and Transfer Facility prior to treatment by engineering controls (packed absorption tower). This document is site specific due to the effect of climatic conditions on storage tank breathing losses.

Location:

Facility Description: Existing 22° Baume (35.5%) HCL storage facility

Source Operations	Discharge	Engineering Controls
Storage tank breathing	Section I	HCL-Water Absorber

SECTION I- STORAGE TANK BREATHING

<u>Basis for Storage Tank Breathing Losses</u>		<u>Example</u>	<u>Site Spec</u>
Operation	Daylight		
Ambient Heatup	Hours/cycle, (θ)	8	8
	Cycles/day	1	1
	Days/yr	365	365
Winter- min. temperature between 6:00 AM and 8:00 AM ¹⁾			
Summer- max. temperature between 2:00 PM and 4:00 PM ¹⁾			
Worse Case Scenario	Percent vapor space (empty)	100	100

1) 1989 ASHRAE Handbook- Fundamentals, I-P Ed., American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc., Atlanta, GA. 1989

POTENTIAL SOURCE EMISSIONS

SECTION I- STORAGE TANK BREATHING

HCL Storage Tanks

N_{tanks}	Number of storage tanks	2	1
$V_{\text{tank, gal}}$	Volume per storage tank	30,000	1000
$V_{\text{total, gal}}$	Total storage tank volume	60,000	1000
$^{\circ}\text{Be}$	HCL concentration, $^{\circ}\text{Be}$	22	22
$W_1, \%$	Wt.% HCL corresponding to $^{\circ}\text{Be}$	35.5	35.5
P_1, psig	Storage tank pressure	0	0

Dry bulb, mean daily range, and median annual extreme temperatures for Specific Site from Table 1 of the ASHRAE Handbook¹⁾

$t_{\text{db}}, ^{\circ}\text{F}$	Dry bulb temperature equalled or exceeded by 2.5% of the total hours June-Sept (2928 hrs total)	101	101
$\Delta t_{\text{mr}}, \text{F}^{\circ}$	Mean daily range (difference between the ave. daily max. and ave. daily min. temperatures in the warmest month)	32	20.5
$t_{\text{extr}}, ^{\circ}\text{F}$	Median of annual extreme (max.- Summer)	109.8	95
$t_{\text{extr}}, ^{\circ}\text{C}$	Median of annual extreme (max.- Summer)	43.22	35

Calculated ave. daily minimum temperature based on dry bulb and mean daily range

$t_{\text{min}}, ^{\circ}\text{F}$	Calculated ave. daily minimum temperature in the warmest month	69	80.5
------------------------------------	--	----	------

Average Temperature in the Warmest Month from National Weather Service²⁾
This information is for reference only for comparison to $t_{\text{ave est}}$

$t_{\text{ave}}, ^{\circ}\text{F}$	Average temperature in the warmest month (1961-1990)	84.1 (July)	82
------------------------------------	--	-------------	----

Estimated ave. daily temperature based on dry bulb and ave. daily minimum temperature

$t_{\text{ave est}}, ^{\circ}\text{F}$	Estimated average daily temperature in the warmest month	85	83
--	--	----	----

Partial Pressure of HCL over Aqueous Solutions of HCL from Table 3-11 of the Chemical Engineers' Handbook³⁾

$P_{\text{HCL}}, \text{mmHg}$	Partial pressure of HCL over a $W_1, \%$ aqueous solution of HCL at $t_{\text{ave est}}, ^{\circ}\text{F}$ for annual calculations	183	78
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1) 1989 ASHRAE Handbook- Fundamentals, I-P Ed., American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc., Atlanta, GA, 1989
 2) National Weather Service @ www.nws.mbay.net/normaltemp.html

POTENTIAL SOURCE EMISSIONS

SECTION I- STORAGE TANK BREATHING

3) Perry C.H. & Chilton, C.H., Chemical Engineers' Handbook, 5th Ed., McGraw-Hill Book Company, NY, NY, 1973, Pg. 3-63

P_{HCL} , mmHg Partial pressure of HCL over a W_1 , % aqueous solution of HCL at t_{extr} , °F for hourly calculations 383

367

<u>Basis for Storage Tank Breathing</u>		Annual
t_{min} , °F	Average daily minimum temperature in the warmest month	69
Δt_{mr} , F°	Mean daily range	32
Ambient Heatup	Hours/cycle	8
	Cycles/day	1
$t_{ave est}$, °F	Estimated average daily temperature in the warmest month	85

Annual
62
20.5
8
1
83

Volume change (ΔV) due to breathing:

$$\Delta V_{breathing} = V_2 - V_1 \quad \text{where: } V_1 = \text{initial volume, ft}^3$$

$$V_2 = \text{final volume (due to thermal expansion), ft}^3$$

For isobaric thermal expansion, the initial and final volumes are related by Charles Law:

$$\frac{V_1}{V_2} = \frac{T_1}{T_2} \quad (P = \text{constant}) \Rightarrow V_2 = V_1 \times \frac{T_2}{T_1} \quad \text{where } T_1 = \text{initial temperature (absolute), } ^\circ R$$

$$T_2 = \text{final temperature (absolute), } ^\circ R$$

Substituting V_2 and simplifying:

$$\Delta V_{breathing} = V_1 \times \frac{T_2}{T_1} - V_1$$

$$\Delta V_{breathing} = V_1 \left[\frac{T_2}{T_1} - 1 \right]$$

Calculate initial tank volume

V_1 , ft³ Initial tank volume 8,021

20

Calculate initial temperature (absolute) and final temperature (absolute):

		Annual
T_1 , °R	Initial temperature (absolute)	529.0
T_2 , °R	Final temperature (absolute)	561.0

Annual
522
543

Volume change due tank breathing:

POTENTIAL SOURCE EMISSIONS

SECTION I- STORAGE TANK BREATHING

$\Delta V_{\text{breathing}}$ ft³

Volume change per cycle

485

0.8

POTENTIAL SOURCE EMISSIONS

SECTION I- STORAGE TANK BREATHING

$\Delta V_{\text{breathing}}$, ft³/day Volume displaced per day 485

0.8

Volumetric flow for volume displaced over heatup cycle time, (q) hrs:

q, ft³/min Volumetric flowrate 1.0

0.0017

Potential emission rate from storage due to breathing:

$$\dot{m}_{\text{HCL}} = \frac{P_{\text{HCL}}}{P_T} \times \frac{MW_{\text{HCL}}}{\tilde{V}} \times q$$

where: P_{HCL} = vapor pressure of HCL vapor over aqueous HCL, mmHg

P_T = total pressure, mmHg

MW_{HCL} = molecular weight of HCL

\tilde{V}_{HCL} = molal volume of HCL vapor at $t_{\text{ave est}}$ or t_{extr}

P_{HCL} , mmHg	Partial pressure of HCL vapor over aqueous HCL at $t_{\text{ave est}}$, °F	Annual 183	Annual 78
P_T , mmHg	Total pressure (tank pressure)	760	760
MW_{HCL}	Molecular weight of HCL	36.5	36.5
\tilde{V}_{HCL} , ft ³ / lbmole HCL	Molal volume of HCL vapor at $t_{\text{ave est}}$ for annual and t_{extr} for hourly	398	396
\dot{m}_{HCL} , lb/hr	Potential emission rate from storage due to breathing	1.3	0.001
Potential emission cycle due to Storage Tank breathing:			
m_{HCL} , lb/cycle	Potential HCL emission based on tank breathing cycle	11	0.008
Annual potential emission due to Storage Tank breathing:			
\dot{m}_{HCL} , lb/yr	Annual potential HCL emission	3,914	2.92
\dot{m}_{HCL} , tons/yr	Annual potential HCL emission	2.0	0.0015