

## **FINDINGS OF FACT AND DIRECTOR'S DECISION**

### **In the Matter of the Issuance of a Title V Operating Permit To Wheelabrator Concord Company, L.P. Located in Penacook, New Hampshire Facility Identification # 3301300102; Application # FY05-0095**

The Clean Air Act Amendments of 1990 (CAAA) established a new federal permit program for the nation's largest emission sources (called "major sources"). The CAAA required states to develop and implement this program consistent with federal regulations. The state rules implementing this operating permit program, commonly called "Title V," took effect in New Hampshire on June 30, 1995. The Title V permit allows the facility to operate the devices listed in the permit according to terms and conditions specified in the permit. The Title V permits are issued for a period of 5 years.

There are typically four phases in the Title V permitting process:

1. First, the permit application undergoes an initial review by the New Hampshire Department of Environmental Services, Air Resources Division (DES) to ensure that the information submitted is complete and addresses all appropriate regulatory requirements. If so, a "completeness determination" is issued by DES.
2. After the application has been deemed administratively complete, DES undertakes an extensive review, including but not limited to facility site visits and an analysis of historical information. Once DES has completed this review and is confident that the application accurately reflects the facility's operations, DES develops a "draft Title V Operating Permit." The draft Title V Operating Permit contains all applicable regulatory requirements (both state and federal) that pertain to the facility.
3. Once the draft Title V Operating Permit is prepared, a notice is published as required by the New Hampshire Code of Administrative Rules, Env-A 622 *Permit Notice and Hearing Procedures: Title V Operating Permits* (under Env-A 622.02 *Public Notice*). The public, the United States Environmental Protection Agency (EPA), and any other interested parties are invited to submit comments on the draft Title V Operating Permit. An opportunity for a public hearing is also provided.
4. After all public comments have been received and evaluated by DES, a final determination regarding the permit is made by the Director of the Air Resources Division (Director). If the determination is favorable, the draft Title V Operating Permit is designated as "proposed" and sent to EPA for further review. A draft Title V Operating Permit may be modified as a result of comments received during the public comment period before it is sent to EPA as a proposed permit. In response to the public questions/concerns a formal document is generated to address public concerns and the changes made, if any. This document is called the "Findings of Fact and Director's Decision." The proposed permit is reviewed by EPA for up to 45 days. If EPA has no objections within this timeframe, the final permit is issued.

Any person aggrieved by the Director's decision can file an appeal with the Air Resources Council in accordance with the provisions of Env-A 622.09, *Appeals*.

## **Background**

Wheelabrator Concord Company, L.P. (Wheelabrator Concord) operates a resource recovery facility in Penacook, New Hampshire. The resource recovery facility burns municipal solid waste (MSW) in two combustors that generate steam. The steam drives a turbine generator to produce electricity for sale to the local utility. The gross generating capacity of the facility is 16 megawatts.

The MSW combustors are two identical mass-fired waterwall boilers each with a maximum heat input rate of 107.82 million British Thermal Units per hour (MMBtu/hr). Each boiler is considered to be a large Municipal Waste Combustor (MWC) unit since it is capable of combusting more than 250 tons/day of MSW. Each unit is equipped with two auxiliary propane fired burners, each burner rated at a maximum of 18 MMBtu/hr. Each unit is permitted to burn types 0, 1, 2, 3 and 6 wastes, as they are defined in Env-A 101. Pollution control equipment for each MWC unit includes selective non-catalytic reduction with urea injection (for the control of nitrogen oxides), powdered activated carbon injection system (for the control of mercury), spray dryer absorber (for the control of acid gases, namely, sulfur dioxide and hydrogen chloride) and a baghouse (for the control of particulate matter and metals). Each MWC unit stack is equipped with a continuous emissions monitoring system (CEMS) to measure nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and opacity. The quenched bottom ash is transported via a drag conveyor to an ash handling room. The ash is loaded into containers and stored under cover until it is transported to a landfill.

Wheelabrator Concord is subject to the Title V Permitting program because it is considered a major source of air emissions as defined in Env-A 101.113, and also because the two large MWC units are subject to Section 129(e) of the 1990 Clean Air Act Amendments.

## **Proposed Project Description**

On September 29, 2000, DES issued Title V Operating Permit, TV-OP-032 to Wheelabrator Concord. The Title V permit expired on September 30, 2005. Pursuant to Env-A 609.07 *Timely Application*, applications to renew Title V Operating Permits are due to DES six months prior to the expiration date of a facility's existing Title V Permit. Wheelabrator Concord submitted a Title V renewal application on March 31, 2005. DES deemed the application complete in accordance with Env-A 609.11, *Completeness Determination*.

DES conducted a technical and regulatory compliance review of the Title V application. The existing Title V Permit was reviewed and applicable regulations were updated. The existing Title V permit contains requirements from 40 CFR 62 Subpart FFF *Federal Plan Requirements for Large Municipal Waste Combustors Constructed on or Before September 20, 1994*. After the existing Title V permit was issued, DES adopted Env-A 3300 *Municipal Waste Combustion* and EPA approved the New Hampshire State Plan for Municipal Waste Combustors. So the Federal Plan is no longer applicable to the facility. Also, pursuant to 40 CFR 60.40b(k), the auxiliary propane burners are no longer subject to 40 CFR 60 Subpart Db *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* (72 FR 32742, effective June 13, 2007). In the draft Title V Permit, references to 40 CFR 62 Subpart FFF and 40 CFR 60 Subpart Db were removed and the requirements of Env-A 3300 were added.

Once DES had prepared a draft Title V Operating Permit which contained all applicable requirements identified during DES's review, DES published a public notice stating that the draft permit was available for review and comment. In accordance with Env-A 622 *Permit Notice and Hearing Procedures: Title V Operating Permits*, a notice of request for public comments and opportunity for a public hearing was published in the *Union Leader* and *Concord Monitor* on June 24, 2008. The notice invited public comment and indicated that any comments received during the public comment period would be considered in reaching a final decision. The public notice specified that the deadline for written comments was July 24, 2008.

A request for a public hearing was received prior to the July 24, 2008 deadline. In accordance with Env-A 621.05 *Requests for Public Hearing*, a hearing was scheduled for September 25, 2008, and a notice of the hearing was published in the *Union Leader* and *Concord Monitor* on August 22, 2008. The notice indicated that written comments on the draft Title V Permit would be accepted until October 2, 2008. The public hearing was held on September 25, 2008 at 6:00 p.m. at the New Hampshire Department of Health and Human Services and Environmental Services Building located at 29 Hazen Drive, Concord, New Hampshire in Rooms 110, 111, 112. The purpose of the hearing was to receive public comment on the draft Title V Permit.

During the public hearing, citizens offered testimony and comments regarding the operation of Wheelabrator Concord facility. Written comments from several individuals were received prior to the October 2, 2008 deadline. These timely written comments are addressed in the following discussion. Pursuant to Env-A 622.07 *Opportunity for Response*, copies of all comments received by DES were forwarded to Wheelabrator Concord for review. Wheelabrator Concord filed a written response to public comments on October 17, 2008. Pursuant to Env-A 622.07, the applicant may file a written response within 10 working days after the close of the public comment period. Since Wheelabrator Concord's written response was not received on or before October 16, 2008, it is not considered in the Director's Decision.

## **Discussion**

During the public comment period and at the public hearing held on September 25, 2008, comments were received expressing concern over public health and environmental issues with respect to emissions from the Wheelabrator Concord facility. It should be noted that no comments were received stating that all applicable state and federal requirements had not been included in the draft permit. The following discussion provides a detailed description of the regulatory requirements and addresses the issues presented at the public hearings and in written comments submitted to DES prior to the close of the comment period for the Title V Operating Permit.

### ***1. NH DES must act in a precautionary mode by suspending facility's permit***

Through written comments submitted to DES, several commenters expressed opposition to the Wheelabrator Concord facility and requested DES not to issue the Title V Operating Permit. DES performs an evaluation of the application as submitted and compares it against applicable federal and state air quality standards. If the evaluation indicates that the facility can comply with all applicable air quality standards, then DES will proceed with issuing a permit. There are opportunities for interested parties to review and comment on DES's draft decisions. However, DES only has the authority to consider

comments pertinent to its regulatory review. It should be noted that DES does not have the authority to deny an air permit application for reasons other than to require compliance with air regulations. A more detailed description of the DES review process and regulatory authority is presented below.

**A. Regulatory Requirements**

Wheelabrator Concord is required to obtain a Title V Operating Permit pursuant to Section 129(e) of the CAAA and also because it is a major source of air emissions. The Wheelabrator Concord facility is subject to a variety of both federal and state regulations. EPA developed emission guidelines for existing<sup>1</sup> large MWC facilities specified in 40 CFR 60 Subpart Cb. Large MWCs are defined as those units that have a maximum design capacity greater than 250 tons of municipal solid waste per day. Wheelabrator Concord operates two large MWC units.

EPA established emission limitations for a variety of pollutants through the federal rulemaking process. Through sections 111(d) and 129 of the Clean Air Act, states are required to adopt regulations and submit a state plan that is at least as stringent as the federal requirements. New Hampshire adopted its regulation (Env-A 3300) incorporating these requirements in June 2002 and submitted the state plan to EPA on August 16, 2002. EPA approved New Hampshire's state plan on February 10, 2003 and it became effective on April 11, 2003. EPA amended 40 CFR 60 Subpart Cb on May 10, 2006. Subsequently, DES amended Env-A 3300 on February 2, 2008 in order to incorporate the new requirements of Subpart Cb. Amended rule Env-A 3300 contains even stricter emission limits for particulate matter, cadmium and lead. Below is a summary of New Hampshire's requirements for large MWCs. The only pollutant that has an emission limitation more stringent than the federal requirements is mercury. The emission limitations for mercury are consistent with requirements specified in New Hampshire law, RSA 125-M *Mercury Emissions Reduction and Control Program*.

<b>Pollutant</b>	<b>Emission Limit<sup>2</sup></b>	<b>Averaging Time</b>	<b>Method of Compliance</b>
Particulate matter	25 mg/dscm	3-run average (run duration specified in test method)	Stack test
Cadmium	0.035 mg/dscm	3-run average (run duration specified in test method)	Stack test
Lead	0.4 mg/dscm	3-run average (run duration specified in test method)	Stack test
Dioxins/furans	30 ng/dscm (total mass)	3-run average (minimum run duration is 4 hours)	Stack test
Opacity	10% (6-minute average)	30 6-minute averages	COMS
Nitrogen oxides	205 ppm <sub>dv</sub>	24-hour daily arithmetic average	CEMS
Sulfur dioxide	29 ppm <sub>dv</sub> or 25% of the potential sulfur dioxide emission concentration	24-hour daily block geometric average	CEMS

<sup>1</sup> MWC units constructed on or before 9/20/1994

<sup>2</sup> Corrected to 7% oxygen

<b>Pollutant</b>	<b>Emission Limit<sup>2</sup></b>	<b>Averaging Time</b>	<b>Method of Compliance</b>
Carbon monoxide	100 ppm <sub>dv</sub>	4-hour block arithmetic average	CEMS
Mercury	0.028 mg/dscm or 85% control efficiency	3-run average (run duration specified in test method)	Stack test
Hydrogen chloride	29 ppm <sub>dv</sub> or 5% of the potential hydrogen chloride emission concentration	3-run average (minimum run duration is 1 hour)	Stack test
Fugitive ash	No visible emissions in excess of 5% of the observation period (i.e., 9 minutes per 3-hour period).	3 1-hour observation periods	Stack test

mg/dscm - milligrams per dry standard cubic meter  
 ppm<sub>dv</sub> - parts per million dry volume  
 ng/dscm - nanograms per dry standard cubic meter  
 COMS - Continuous opacity monitoring system  
 CEMS - Continuous emissions monitoring system

**B. Monitoring and Stack Testing Requirements**

As required by terms and conditions in the existing and the draft Title V Operating Permits, NO<sub>x</sub>, SO<sub>2</sub>, CO and opacity from both the MWC units are monitored by a continuous emission monitoring system that meets all federal and state regulatory requirements. Additionally for each MWC unit, Wheelabrator Concord continuously monitors steam flow rate, carbon feed rate (in order to ensure proper operation of the powdered activated carbon injection system) and flue gas temperature at the inlet of each baghouse (to maximize the amount of mercury removed). The draft Title V Operating Permit requires each MWC unit to be operated such that:

- i. The steam load level does not exceed 110% of the maximum demonstrated unit load (4-hour block arithmetic average) as determined during the most recent dioxin/furan performance test, except as specified in 40 CFR 53b(b)(1) & (2);
- ii. The inlet temperature to the baghouse does not exceed 17°C (30.6°F) above the maximum temperature (4-hour block arithmetic average) measured during the most recent dioxin/furan performance test, except as provided in 40 CFR 60.53b(c)(1) & (c)(2); and
- iii. The 8-hour block average carbon feed is maintained at or above the average level established during the most recent mercury and dioxins/furans performance test, except as provided in 40 CFR 60.58b(m).

In addition to the above monitoring requirements, the draft permit requires annual compliance testing for particulate matter, cadmium, lead, dioxins/furans, mercury, hydrogen chloride, fugitive ash and ammonia<sup>3</sup>. The draft permit also requires an annual

<sup>3</sup> Unreacted ammonia from the selective non-catalytic reduction system

relative accuracy test audit (RATA) for the continuous emissions monitoring system (both gaseous and opacity).

### C. Facility Compliance Status and History

As part of the technical analysis of the application, DES reviewed the compliance history of the facility with respect to all federal and state air regulations. Wheelabrator Concord conducted stack tests to verify compliance with emission limits for particulate matter, cadmium, lead, dioxins/furans, mercury, hydrogen chloride and ammonia in accordance with Env-A 800 *Testing and Monitoring Procedures* and EPA test methods. Relative accuracy test audits were also conducted to verify the accuracy of the CEMS that measures the emissions of NO<sub>x</sub>, SO<sub>2</sub>, CO and opacity from each MWC unit. Review of the complete comprehensive stack tests and relative accuracy test audits performed since 2001 indicates compliance with all parameters. During these tests, a DES representative was on-site to confirm representative testing, and each test was reviewed in detail for technical validity. All the test reports were ultimately accepted by DES as being technically valid and representing the emissions occurring at the time of the stack test. The following two tables summarize the stack test results for both the MWC units:

<b>Pollutant</b>		2001	2002	2003	2004	2005	2006	2007	2008	<b>Emission Limit<sup>4</sup></b>
Particulate matter	mg/dscm	1.7	1.53	4.0	2.93	5.1	2.03	0.3	0.7	25
Cadmium	mg/dscm	0.0002	0.0002	0.0006	0.0011	0.0027	0.00008	0.001	0.0002	0.035
Lead	mg/dscm	0.0062	0.018	0.01	0.008	0.024	0.013	0.009	0.001	0.4
Dioxins/Furans <sup>5</sup>	ng/dscm	0.04	1.74	2.65	dnt	2.1	dnt	7.28	dnt	30
Mercury	mg/dscm	0.003	0.0023	0.011	0.008	0.006	0.0072	0.003	0.001	0.028
Hydrogen chloride	ppm	8.6	2.68	12.5	20.33	8.55	4.97	12	9.7	29
Ammonia	ppm	2.3	1.9	0.05	0.67	0.4	0.7	0.7	0.4	20

<b>Pollutant</b>		2001	2002	2003	2004	2005	2006	2007	2008	<b>Emission Limit<sup>6</sup></b>
Particulate matter	mg/dscm	3.93	2.17	24.9	6.1	1.4	1.73	1.51	1.3	25
Cadmium	mg/dscm	0.0004	0.0003	0.0098	0.0001	0.0017	0.0012	0.0006	0.0007	0.035
Lead	mg/dscm	0.01	0.019	0.14	0.001	0.025	0.0092	0.0027	0.0055	0.4
Dioxins/Furans <sup>7</sup>	ng/dscm	0.89	1.82	dnt	0.25	dnt	2.04	dnt	3.61	30
Mercury	mg/dscm	0.003	0.008	0.016	0.007	0.01	0.01	0.004	0.0027	0.028
Hydrogen chloride	ppm	2.7	5.6	12.6	6.43	12.7	17.5	16.8	10.5	29
Ammonia	ppm	2.6	1.8	0.2	0.43	0.4	0.6	2.9	0.3	20

<sup>4,6</sup> Corrected to 7% Oxygen

<sup>5,7</sup> Pursuant to 40 CFR 60.38b(b), Wheelabrator Concord may elect to conduct annual performance tests for one MWC unit per year when all performance tests over a 2-year period indicate that dioxin/furan emissions are less or equal to 15 ng/dscm for both the MWC units.

mg/dscm - milligrams/dry standard cubic meter  
ng/dscm - nanograms/dry standard cubic meter  
ppm - parts per million  
dnt - did not test

DES and EPA performed the following compliance inspections of the Wheelabrator Concord facility. Each inspection revealed the facility was in compliance with the applicable standards.

<b>Date</b>	<b>Inspection type</b>	<b>Organization</b>	<b>Findings</b>
9/27/07	Full Compliance Evaluation	DES	Facility in compliance
5/17/05	Full Compliance Evaluation	DES	Facility in compliance
7/29/03	Off-site Compliance Evaluation	DES	Facility in compliance
9/7/94	Compliance Inspection	EPA Region I	Facility in compliance

#### **D. Air Quality Impact Analysis**

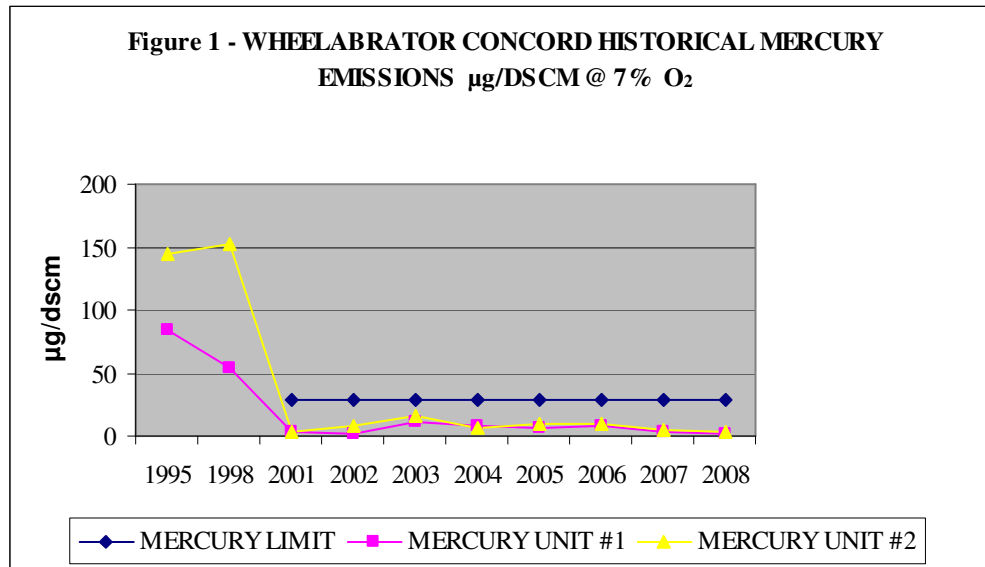
In January 2000, DES conducted an air quality impact analysis (i.e., air dispersion modeling) to determine the impacts of criteria pollutants and regulated toxic air pollutants (RTAPs) on ambient air quality. The results of air dispersion modeling showed compliance with both National Ambient Air Quality Standards (NAAQS) for criteria pollutants (i.e., particulate matter, sulfur dioxide, nitrogen dioxide and carbon monoxide) and New Hampshire Ambient Air Limits (AALs) for all regulated toxic air pollutants. The RTAPs that are emitted from the facility include mercury, lead, cadmium, hydrogen chloride, ammonia and 2,3,7,8 Tetrachlorodibenzeno p-Dioxin. The AALs are updated annually to assure that they represent the most current scientific human health effects data for each chemical. Stack parameters such as the discharge height above ground level, stack inside diameter, exhaust flow from the stack and exhaust temperature of the flue gases that were used in the 2000 modeling analysis and the facility operations have remained consistent. Therefore, during the technical review for the current Title V application, DES used the modeling results from the 2000 analysis and the potential emission rates to calculate the impacts of RTAPs. These impacts were compared to the 24-hour and annual AALs for the RTAPs. The results of this analysis showed that the impacts of RTAPs are below the current AALs.

In summary, DES evaluated the Title V application against all applicable state and federal requirements. Through technical and regulatory reviews, DES has determined that Wheelabrator Concord meets all air regulations including NAAQS for criteria pollutants and AALs for all regulated toxic air pollutants. In order to ensure continued compliance with all applicable requirements, the Title V Permit requires continuous monitoring of emissions/operating parameters and periodic compliance stack testing. The Title V Permit also includes recordkeeping and reporting requirements. Based on the above discussion, DES has no basis to deny the Title V Operating Permit to Wheelabrator Concord facility.

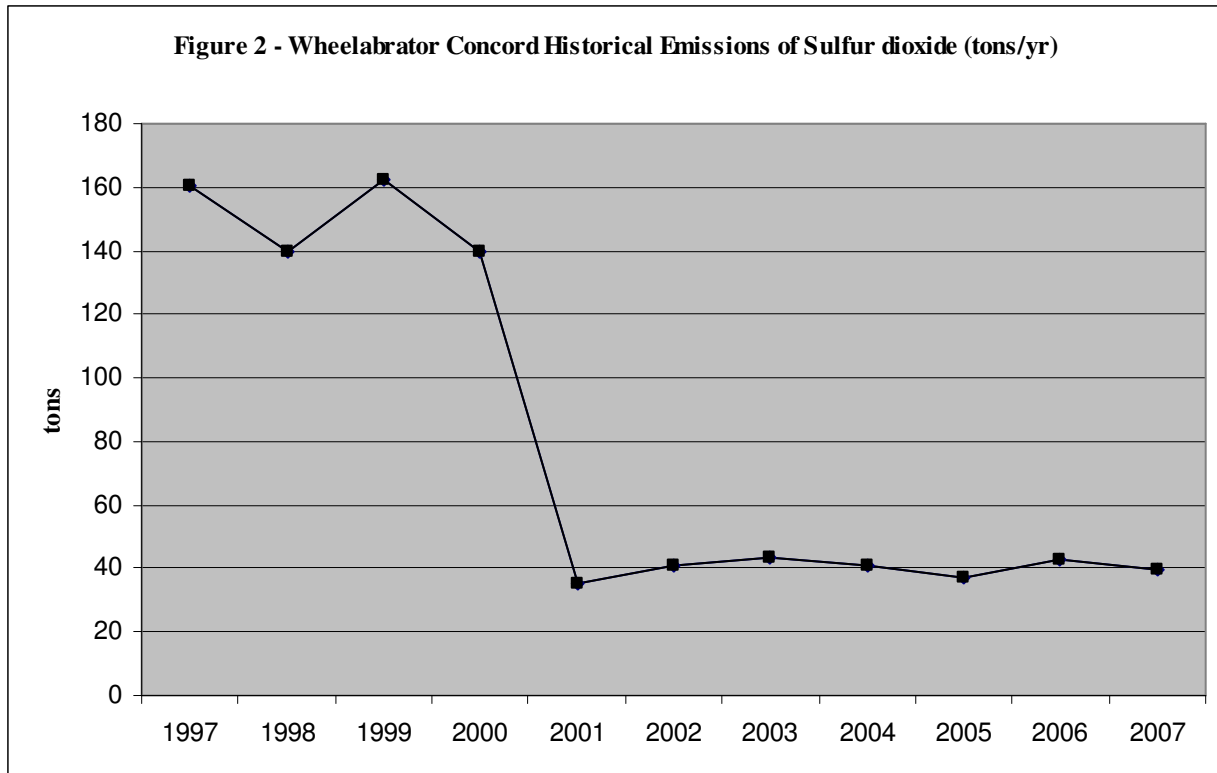
**2. Penacook facility's air emissions have continued to climb to unacceptably dangerous levels**

One commenter wrote that, despite a major retrofit of scrubbers to its smokestacks in 2000 in order to comply with Clean Air Act standards for large waste to energy plants, the Penacook facility's air emissions have continued to climb to unacceptably dangerous levels. During October-December 2000, Wheelabrator Concord completed the installation of a powdered activated carbon injection system (PACIS), selective non-catalytic reduction system (SNCR) and spray dryer absorber (SDA) in order to comply with the requirements of 40 CFR 60 Subpart Cb.

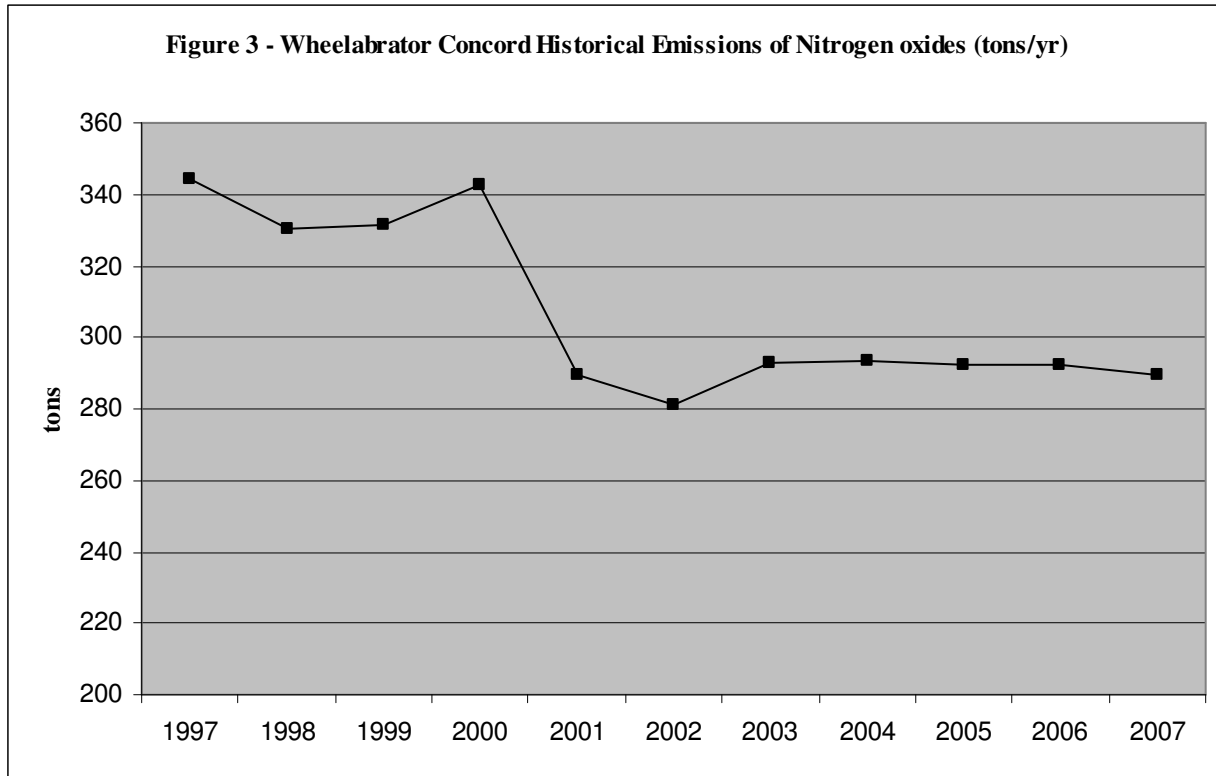
The purpose of injecting activated carbon is to remove mercury from the flue gases from the MWC units. For each MWC unit, powdered activated carbon is delivered pneumatically to the economizer outlet using bulk bag feeder/eductor systems. A separate bulk bag system serves each boiler. Powdered carbon binds with mercury in the flue gases. Mercury-containing activated carbon is finally captured in the baghouse. Carbon feed rate and the inlet temperature to the baghouse are monitored in order to ensure maximum removal of mercury from the flue gases. Figure 1 below, which summarizes historic stack test data, shows a decrease in mercury emissions since the installation of the PACIS.



Prior to the installation of SDA, acid gases (sulfur dioxide and hydrogen chloride) were controlled by a dry lime injection scrubber (DLIS). In 2000, Wheelabrator Concord replaced the DLIS with SDA. In the SDA, lime slurry is sprayed into the flue gases. The lime slurry absorbs sulfur dioxide and hydrogen chloride. SO<sub>2</sub> emissions from each MWC unit are continuously monitored by a certified CEMS. Figure 2 below shows a significant decrease in the total emissions of sulfur dioxide after the installation of the SDA. In the case of hydrogen chloride, compliance stack tests showed no further decrease in the emissions after the replacement of DLIS with SDA. As noted in Tables 2 and 3 above, the emissions of hydrogen chloride are still below the permitted level.



Emissions of nitrogen dioxides are controlled using the SNCR system. The SNCR process involves the injection of aqueous urea solution into the furnace. Injection nozzles are strategically located at various levels in the opposing walls of each furnace to inject the reagent into the proper temperature zones (1,600 to 2000°F). When the reagent is injected into the furnace, the urea quickly decomposes to ammonia that reacts with the NO<sub>x</sub> to form molecular nitrogen and water. NO<sub>x</sub> emissions from each MWC unit are continuously monitored by a certified CEMS. Figure 3 below shows a significant decrease in the total emissions of nitrogen oxides after the installation of SNCR.



### **Findings of Fact**

DES has based its decision with respect to the application for renewal of the Title V Permit for Wheelabrator Concord on the following findings of fact:

1. Wheelabrator Concord filed an application for renewal of its existing Title V Permit on March 31, 2005, in accordance with the requirements of Env-A 609.18 *Criteria for Permit Renewal*. The application was filed in a timely manner and it was deemed complete.
2. DES conducted a comprehensive review of the proposed project and the compliance history of the facility. In addition, DES considered public comments provided during the public hearing and submitted in writing to DES during the public comment period. Based on its review and considerations, DES determined that Wheelabrator Concord meets all state and federal air regulations including the

National Ambient Air Quality Standards for criteria pollutants and the New Hampshire Ambient Air Limits for all regulated toxic air pollutants.

3. In order to ensure compliance with all applicable requirements, various monitoring, recordkeeping and reporting conditions have been included in the Title V Operating Permit. These include requirements for continuous emissions monitors, periodic compliance stack tests and monitoring of parameters such as steam load, carbon feed rate and flue gas temperature at the inlet to each baghouse.

### **Director's Decision**

After consideration of the Title V Operating Permit Application and all public comments, the application is approved and a Proposed Title V Operating Permit is hereby issued.

Pursuant to New Hampshire Revised Statutes Annotated 125-C:12, III and Env-A 622.09, *Appeals*, any person aggrieved by this action may file a petition for appeal with the Air Resources Council which shall be received within 10 days of the date below. Such appeal and 15 copies shall be filed in accordance with the provisions of Env-AC 200, *Procedural Rules* and forwarded to the Chair of the Air Resources Council at the address below:

Air Resources Council  
Attn: Appeals Clerk  
C/o DES, Legal Unit  
29 Hazen Drive, P.O. Box 95  
Concord, NH 03302-0095

If no petition is filed within the 10-day period, this decision will become final.



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Robert R. Scott  
Director  
Air Resources Division

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Date

cc: City of Concord  
Public Hearing Attendees/Public Commenters  
Ida McDonnell, USEPA Region I