



**New York State Department of Environmental Conservation
Permit Review Report**

Permit ID: 2-6005-00125/00003

Renewal Number: 1

Modification Number: 1 11/05/2013

Facility Identification Data

Name: BRONX ZOO

Address: 2300 SOUTHERN BLVD

BRONX, NY 10460

Owner/Firm

Name: WILDLIFE CONSERVATION SOCIETY

Address: 2300 SOUTHERN BLVD

BRONX, NY 10460-1099, USA

Owner Classification: Corporation/Partnership

Permit Contacts

Division of Environmental Permits:

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LONG ISLAND CITY, NY 11101-5407

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Division of Air Resources:

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Air Permitting Contact:

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Address: WILDLIFE CONSERVATION SOCIETY

2300 SOUTHERN BLVD

BRONX, NY 10460

Phone:7182207153

Permit Description

Introduction

The Title V operating air permit is intended to be a document containing only enforceable terms and conditions as well as any additional information, such as the identification of emission units, emission points, emission sources and processes, that makes the terms meaningful. 40 CFR Part 70.7(a)(5) requires that each Title V permit have an accompanying "...statement that sets forth the legal and factual basis for the draft permit conditions". The purpose for this permit review report is to satisfy the above requirement by providing pertinent details regarding the permit/application data and permit conditions in a more easily understandable format. This report will also include background narrative and explanations of regulatory decisions made by the reviewer. It should be emphasized that this permit review report, while based on information contained in the permit, is a separate document and is not itself an enforceable term and condition of the permit.

Summary Description of Proposed Project

Application for installation of one small existing sterilization unit and one new sterilization unit that will use ethylene oxide as the cleaning agent before exhausting through an EtO abator system.



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Attainment Status

BRONX ZOO is located in the town of BRONX in the county of BRONX. The attainment status for this location is provided below. (Areas classified as attainment are those that meet all ambient air quality standards for a designated criteria air pollutant.)

Criteria Pollutant	Attainment Status
Particulate Matter (PM)	ATTAINMENT
Particulate Matter < 10µ in diameter (PM10)	ATTAINMENT
Sulfur Dioxide (SO2)	ATTAINMENT
Ozone*	SEVERE NON-ATTAINMENT
Oxides of Nitrogen (NOx)**	ATTAINMENT
Carbon Monoxide (CO)	ATTAINMENT

* Ozone is regulated in terms of the emissions of volatile organic compounds (VOC) and/or oxides of nitrogen (NOx) which are ozone precursors.

** NOx has a separate ambient air quality standard in addition to being an ozone precursor.

Facility Description:

The facility is a public zoo owned by the city and operated by WCS. The facility operates a cogeneration plant, an incinerator, a microturbine plant at the Center for Global Conservaiton (CGC) building consistings of eight microturbines two small sterilization units, and numerous exempt sources, such as small boilers, emergency generators, and maintenance, laboratory and graphics operations.

Permit Structure and Description of Operations

The Title V permit for BRONX ZOO

is structured in terms of the following hierarchy: facility, emission unit, emission point, emission source and process. A facility is defined as all emission sources located at one or more adjacent or contiguous properties owned or operated by the same person or persons under common control. The facility is subdivided into one or more emission units (EU). Emission units are defined as any part or activity of a stationary facility that emits or has the potential to emit any federal or state regulated air pollutant. An emission unit is represented as a grouping of processes (defined as any activity involving one or more emission sources (ES) that emits or has the potential to emit any federal or state regulated air pollutant). An emission source is defined as any apparatus, contrivance or machine capable of causing emissions of any air contaminant to the outdoor atmosphere, including any appurtenant exhaust system or air cleaning device. [NOTE: Indirect sources of air contamination as defined in 6 NYCRR Part 203 (i.e. parking lots) are excluded from this definition]. The applicant is required to identify the principal piece of equipment (i.e., emission source) that directly results in or controls the emission of federal or state regulated air pollutants from an activity (i.e., process). Emission sources are categorized by the following types:

- combustion - devices which burn fuel to generate heat, steam or power
- incinerator - devices which burn waste material for disposal
- control - emission control devices
- process - any device or contrivance which may emit air contaminants that is not included in the above categories.



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BRONX ZOO is defined by the following emission unit(s):

Emission unit S00001 - This emission unit is comprised of two small ethylene oxide(EtO) sterilization units manufactured by Anderson Products Inc. The existing unit used a 17.6 gram ampule of EtO for each batch cycle(minimum cycle time is 24 hours). The second unit will be installed in 2013 and will have a 110-gram cartridge charge of EtO for each batch cycle which last 16 hours. The new unit will come equipped with an abator capable of greater than 99% destruction efficiency. Emissions from the smaller, existing unit are controlled which is typical for units of this size. The combined total potential EtO emissions from these units is 15 lbs per year.

Emission unit S00001 is associated with the following emission points (EP):
00008, 00009

Process: 00S is located at 1st Floor, Building AHC - This process represents the use of ethylene oxide (EtO) in the two sterilization units.

Emission unit C00001 - This emissions unit (hereinafter the "cogen plant") presently consists of four natural gas-fired (spark ignition) Endyn Cleanburn engines: Two(2) 895 bhp and and one(1) 1650 bhp and one(1) 2250 bhp.

Pursuant to the DEC- approved NOx RACT plan, revised and updated as of December 22, 2005, WCS and the City has replaced all four of the dual fuel engines with manufacturer rebuilt (zero operating hour) 100% natural gas fired engines. This modification to the cogen plant has reduced the level of NOx formed during the combustion process below the April 1, 2005 emission requirement of 1.5 gr/bhp-hr for this type of engine.

All these engines were ordered and purchased prior to June 12, 2006 commence construction dates, so these units are not subject to Subpart JJJJ.

Emission unit C00001 is associated with the following emission points (EP):
00108, 00208, 00312, 00416

Process: 003 is located at FIRST FLOOR, Building JWC - The cogen plant will consist of four (4) 100% natural gas-fired (spark ignition) endyn cleanburn engines - two (2) 8 cylinder engines, one 12 cylinder engine and one 16 cylinder engine and associated waste heat boilers for the production of electricity and hot water for the Bronx Zoo.

Emission unit 100001 - This emissions unit (hereinafter the "farm incinerator") is a model CT-5 incinerator manufactured by Silent Glow Corporation. The farm incinerator was installed at the facility in or around 1966 and is subject to 6 NYCRR PART 219-4. The farm incinerator has a design capacity charge rate of 300 pounds per hour and a thruput capacity of 2400 pounds per day based on an eight-hour operating day.



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primary section and re-enter the burner chamber before they are discharged through the stack. There are two temperature gauges, one is located in the primary chamber and one located in the secondary chamber. A continuous strip chart temperature recorder, Omega Engineering, Model CT7100 was installed on January 3, 2008.

Emission unit 100001 is associated with the following emission points (EP):

00001

Process: 00A is located at FARM BUILDING - YARD, Building FARM - The farm incinerator is used to dispose of animal carcasses and animal tissues, and a small amount of clear plastic bags, latex gloves and paper used during necropsy procedures (less than 5% by weight). The farm incinerator is fired and used on an "as needed basis" (which at present is approximately three times per month) and runs for approximately five hours per operation. At all other times, the farm incinerator is in shut-down mode and is not running or fired. The actual hours/days of operation and quantity of material incinerated at the farm incinerator typically are much less than its design capacity and the limitations imposed under the NYCDEP certificate of operation.

Emission unit E00001 - This emission unit has five(5) emergency generators subject to 40 CFR 60 IIII. Three were installed year 2007 or later. The combined potential NOx emissions from the five generators are 5.4 tons per year (each with 500 hours of operation per year).

Process: OEG Emergency generators on distillate oil.

Emission unit G00001 - The emission unit G-00001 consists of a total of eight(8) microturbines each rated at 60KW and a chiller/heating unit as supplied by UTC Power. All of the microturbines are Capstone Model C60. Six(6) of the microturbines are incorporated into the PureComfort Model 360M unit, and are directly connected to the chiller/heater to generate electricity as well as cooling and/or heating. Waste gases from these microturbines drive the chiller/heater at any operating level between full exhaust and complete diversion to the chiller/heater. The remaining two (2) Capstone Model C60 microturbine units are stand-alone and independent of the PureComfort Model 360M, and will provide peak electrical generation. None of the 8 microturbines are connected to the internal WCS electrical grid or Con Ed grid.

Emission unit G00001 is associated with the following emission points (EP):

00010, 00011, 00012, 00013

Process: G10 is located at Building CGC - Natural gas fueled 8 microturbines to provide heating, cooling, electricity for the CGC building.

Title V/Major Source Status

BRONX ZOO is subject to Title V requirements. This determination is based on the following information:

This is a major facility since the potential emit NOx, VOC and CO are greater than the major facility thresholds.



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Program Applicability

The following chart summarizes the applicability of BRONX ZOO with regards to the principal air pollution regulatory programs:

Regulatory Program	Applicability
PSD	NO
NSR (non-attainment)	NO
NESHAP (40 CFR Part 61)	NO
NESHAP (MACT - 40 CFR Part 63)	YES
NSPS	YES
TITLE IV	NO
TITLE V	YES
TITLE VI	NO
RACT	YES
SIP	YES

NOTES:

PSD Prevention of Significant Deterioration (40 CFR 52) - requirements which pertain to major stationary sources located in areas which are in attainment of National Ambient Air Quality Standards (NAAQS) for specified pollutants.

NSR New Source Review (6 NYCRR Part 231) - requirements which pertain to major stationary sources located in areas which are in non-attainment of National Ambient Air Quality Standards (NAAQS) for specified pollutants.

NESHAP National Emission Standards for Hazardous Air Pollutants (40 CFR 61) - contaminant and source specific emission standards established prior to the Clean Air Act Amendments of 1990 (CAAA) which were developed for 9 air contaminants (inorganic arsenic, radon, benzene, vinyl chloride, asbestos, mercury, beryllium, radionuclides, and volatile HAP's).

MACT Maximum Achievable Control Technology (40 CFR 63) - contaminant and source specific emission standards established by the 1990 CAAA. Under Section 112 of the CAAA, the US EPA is required to develop and promulgate emissions standards for new and existing sources. The standards are to be based on the best demonstrated control technology and practices in the regulated industry, otherwise known as MACT. The corresponding regulations apply to specific source types and contaminants.

NSPS New Source Performance Standards (40 CFR 60) - standards of performance for specific stationary source categories developed by the US EPA under Section 111 of the CAAA. The standards apply only to those stationary sources which have been constructed or modified after the regulations



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have been proposed by publication in the Federal Register and only to the specific contaminant(s) listed in the regulation.

Title IV Acid Rain Control Program (40 CFR 72 thru 78) - regulations which mandate the implementation of the acid rain control program for large stationary combustion facilities.

Title VI Stratospheric Ozone Protection (40 CFR 82, Subparts A thru G) - federal requirements that apply to sources which use a minimum quantity of CFC's (chlorofluorocarbons), HCFC's (hydrofluorocarbons) or other ozone depleting substances or regulated substitute substances in equipment such as air conditioners, refrigeration equipment or motor vehicle air conditioners or appliances.

RACT Reasonably Available Control Technology (6 NYCRR Parts 212.10, 226, 227-2, 228, 229, 230, 232, 233, 234, 235, 236) - the lowest emission limit that a specific source is capable of meeting by application of control technology that is reasonably available, considering technological and economic feasibility. RACT is a control strategy used to limit emissions of VOC's and NOx for the purpose of attaining the air quality standard for ozone. The term as it is used in the above table refers to those state air pollution control regulations which specifically regulate VOC and NOx emissions.

SIP State Implementation Plan (40 CFR 52, Subpart HH) - as per the CAAA, all states are empowered and required to devise the specific combination of controls that, when implemented, will bring about attainment of ambient air quality standards established by the federal government and the individual state. This specific combination of measures is referred to as the SIP. The term here refers to those state regulations that are approved to be included in the SIP and thus are considered federally enforceable.

Compliance Status

Facility is in compliance with all requirements.

SIC Codes

SIC or Standard Industrial Classification code is an industrial code developed by the federal Office of Management and Budget for use, among other things, in the classification of establishments by the type of activity in which they are engaged. Each operating establishment is assigned an industry code on the basis

of its primary activity, which is determined by its principal product or group of products produced or distributed, or services rendered. Larger facilities typically have more than one SIC code.

SIC Code

Description

8422

BOTANICAL AND ZOOLOGICAL GARDENS

SCC Codes

SCC or Source Classification Code is a code developed and used" by the USEPA to categorize processes which result in air emissions for the purpose of assessing emission factor information.Each SCC represents

a unique process or function within a source category logically associated with a point of air pollution emissions. Any operation that causes air pollution can be represented by one or more SCC's.

SCC Code

Description

2-03-001-07

INTERNAL COMBUSTION ENGINES -
COMMERCIAL/ INSTITUTIONAL
COMMERCIAL/INSTITUTIONAL IC ENGINE -

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2-03-002-03	DISTILLATE OIL (DIESEL) RECIPROCATING: EXHAUST INTERNAL COMBUSTION ENGINES - COMMERCIAL/INSTITUTIONAL COMMERCIAL/INSTITUTIONAL IC ENGINE - NATURAL GAS
2-03-002-04	TURBINE: COGENERATION INTERNAL COMBUSTION ENGINES - COMMERCIAL/INSTITUTIONAL COMMERCIAL/INSTITUTIONAL IC ENGINE - NATURAL GAS
3-15-020-01	COGENERATION PHOTOGRAPHIC EQUIPMENT HEALTH CARE - HOSPITALS Sterilization w/ Ethylene Oxide
5-02-001-02	SOLID WASTE DISPOSAL - COMMERCIAL/INSTITUTIONAL SOLID WASTE DISPOSAL: COMMERCIAL - INCINERATION Single Chamber

Facility Emissions Summary

In the following table, the CAS No. or Chemical Abstract Service code is an identifier assigned to every chemical compound. [NOTE: Certain CAS No.'s contain a 'NY' designation within them. These are not true CAS No.'s but rather an identification which has been developed by the department to identify groups of contaminants which ordinary CAS No.'s do not do. As an example, volatile organic compounds or VOC's are identified collectively by the NY CAS No. 0NY998-00-0.] The PTE refers to the Potential to Emit. This is defined as the maximum capacity of a facility or air contaminant source to emit any air contaminant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or air contamination source to emit any air contaminant, including air pollution control equipment and/or restrictions on the hours of operation, or on the type or amount of material combusted, stored, or processed, shall be treated as part of the design only if the limitation is contained in federally enforceable permit conditions. The PTE Range represents an emission range for a contaminant. Any PTE quantity that is displayed represents a facility-wide emission cap or limitation for that contaminant. If no PTE quantity is displayed, the PTE Range is provided to indicate the approximate magnitude of facility-wide emissions for the specified contaminant in terms of tons per year (tpy). The term 'HAP' refers to any of the hazardous air pollutants listed in section 112(b) of the Clean Air Act Amendments of 1990. Total emissions of all hazardous air pollutants are listed under the special NY CAS No. 0NY100-00-0. In addition, each individual hazardous air pollutant is also listed under its own specific CAS No. and is identified in the list below by the (HAP) designation.

Cas No.	Contaminant Name	PTE	
		lbs/yr	Range
000630-08-0	CARBON MONOXIDE		>= 100 tpy but < 250 tpy
000075-21-8	ETHYLENE OXIDE		> 0 but < 10 tpy
007439-92-1	LEAD		> 0 but < 10 tpy
0NY210-00-0	OXIDES OF NITROGEN		>= 50 tpy but < 100 tpy
0NY075-00-0	PARTICULATES		>= 2.5 tpy but < 10 tpy
0NY075-00-5	PM-10		>= 2.5 tpy but < 10 tpy
007446-09-5	SULFUR DIOXIDE		>= 2.5 tpy but < 10 tpy
0NY100-00-0	TOTAL HAP		> 0 but < 2.5 tpy
0NY998-00-0	VOC		>= 25 tpy but < 40 tpy



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tpy

NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS

Item A: Emergency Defense - 6 NYCRR 201-1.5

An emergency, as defined by subpart 201-2, constitutes an affirmative defense to penalties sought in an enforcement action brought by the Department for noncompliance with emissions limitations or permit conditions for all facilities in New York State.

(a) The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

- (1) An emergency occurred and that the facility owner or operator can identify the cause(s) of the emergency;
- (2) The equipment at the permitted facility causing the emergency was at the time being properly operated and maintained;
- (3) During the period of the emergency the facility owner or operator took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and
- (4) The facility owner or operator notified the Department within two working days after the event occurred. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

(b) In any enforcement proceeding, the facility owner or operator seeking to establish the occurrence of an emergency has the burden of proof.

(c) This provision is in addition to any emergency or upset provision contained in any applicable requirement.

Item B: Public Access to Recordkeeping for Title V Facilities - 6 NYCRR 201-1.10(b)

The Department will make available to the public any permit application, compliance plan, permit, and monitoring and compliance certification report pursuant to Section 503(e) of the Act, except for information entitled to confidential treatment pursuant to 6 NYCRR Part 616 - Public Access to records and Section 114(c) of the Act.

Item C: Timely Application for the Renewal of Title V Permits -6 NYCRR Part 201-6.2(a)(4)

Owners and/or operators of facilities having an issued Title V permit shall submit a complete application at least 180 days, but not more than eighteen months, prior to the date of permit expiration for permit renewal purposes.

Item D: Certification by a Responsible Official - 6 NYCRR Part 201-6.2(d)(12)



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Any application, form, report or compliance certification required to be submitted pursuant to the federally enforceable portions of this permit shall contain a certification of truth, accuracy and completeness by a responsible official. 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.

Item E: Requirement to Comply With All Conditions - 6 NYCRR Part 201-6.4(a)(2)

The permittee must comply with all conditions of the Title V facility permit. Any permit non-compliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

Item F: Permit Revocation, Modification, Reopening, Reissuance or Termination, and Associated Information Submission Requirements - 6 NYCRR Part 201-6.4(a)(3)

This permit may be modified, revoked, reopened and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

Item G: Cessation or Reduction of Permitted Activity Not a Defense - 6 NYCRR 201-6.4(a)(5)

It shall not be a defense for a permittee in an enforcement action to claim that a cessation or reduction in the permitted activity would have been necessary in order to maintain compliance with the conditions of this permit.

Item H: Property Rights - 6 NYCRR 201-6.4(a)(6)

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

Item I: Severability - 6 NYCRR Part 201-6.4(a)(9)

If any provisions, parts or conditions of this permit are found to be invalid or are the subject of a challenge, the remainder of this permit shall continue to be valid.

Item J: Permit Shield - 6 NYCRR Part 201-6.4(g)

All permittees granted a Title V facility permit shall be covered under the protection of a permit shield, except as provided under 6 NYCRR Subpart 201-6. Compliance with the conditions of the permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that such applicable requirements are included and are specifically identified in the permit, or the Department, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the major stationary source, and the permit includes the determination or a concise summary thereof. Nothing herein shall preclude the Department from revising or revoking the permit pursuant to 6 NYCRR Part 621 or from exercising its summary abatement authority. Nothing in this permit shall alter or affect the following:

- i. The ability of the Department to seek to bring suit on behalf of the State of New York, or the Administrator to seek to bring suit on behalf of the United States, to immediately restrain any person causing or contributing to pollution presenting an imminent and substantial endangerment to public health, welfare or



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the environment to stop the emission of air pollutants causing or contributing to such pollution;

- ii. The liability of a permittee of the Title V facility for any violation of applicable requirements prior to or at the time of permit issuance;
- iii. The applicable requirements of Title IV of the Act;
- iv. The ability of the Department or the Administrator to obtain information from the permittee concerning the ability to enter, inspect and monitor the facility.

Item K: Reopening for Cause - 6 NYCRR Part 201-6.4(i)

This Title V permit shall be reopened and revised under any of the following circumstances:

- i. If additional applicable requirements under the Act become applicable where this permit's remaining term is three or more years, a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which this permit is due to expire, unless the original permit or any of its terms and conditions has been extended by the Department pursuant to the provisions of Part 201-6.7 and Part 621.
- ii. The Department or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
- iii. The Department or the Administrator determines that the Title V permit must be revised or reopened to assure compliance with applicable requirements.
- iv. If the permitted facility is an "affected source" subject to the requirements of Title IV of the Act, and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit.

Proceedings to reopen and issue Title V facility permits shall follow the same procedures as apply to initial permit issuance but shall affect only those parts of the permit for which cause to reopen exists.

Reopenings shall not be initiated before a notice of such intent is provided to the facility by the Department at least thirty days in advance of the date that the permit is to be reopened, except that the Department may provide a shorter time period in the case of an emergency.

Item L: Permit Exclusion - ECL 19-0305

The issuance of this permit by the Department and the receipt thereof by the Applicant does not and shall not be construed as barring, diminishing, adjudicating or in any way affecting any legal, administrative or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against the Applicant for violations based on facts and circumstances alleged to have occurred or existed prior to the effective date of this permit, including, but not limited to, any enforcement action authorized pursuant to the provisions of applicable federal law, the Environmental Conservation Law of the State of New York (ECL) and Chapter III of the Official



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Compilation of the Codes, Rules and Regulations of the State of New York (NYCRR). The issuance of this permit also shall not in any way affect pending or future enforcement actions under the Clean Air Act brought by the United States or any person.

Item M: Federally Enforceable Requirements - 40 CFR 70.6(b)

All terms and conditions in this permit required by the Act or any applicable requirement, including any provisions designed to limit a facility's potential to emit, are enforceable by the Administrator and citizens under the Act. The Department has, in this permit, specifically designated any terms and conditions that are not required under the Act or under any of its applicable requirements as being enforceable under only state regulations.

NOTIFICATION OF GENERAL PERMITTEE OBLIGATIONS

**Item A: General Provisions for State Enforceable Permit Terms and Condition - 6
NYCRR Part 201-5**

Any person who owns and/or operates stationary sources shall operate and maintain all emission units and any required emission control devices in compliance with all applicable Parts of this Chapter and existing laws, and shall operate the facility in accordance with all criteria, emission limits, terms, conditions, and standards in this permit. Failure of such person to properly operate and maintain the effectiveness of such emission units and emission control devices may be sufficient reason for the Department to revoke or deny a permit.

The owner or operator of the permitted facility must maintain all required records on-site for a period of five years and make them available to representatives of the Department upon request. Department representatives must be granted access to any facility regulated by this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations or law.

Regulatory Analysis

Location Facility/EU/EP/Process/ES	Regulation	Condition	Short Description
-- FACILITY	ECL 19-0301	42	Powers and Duties of the Department with respect to air pollution control
E-00001	40CFR 60-IIII.4205(b)	39	Emission Standards - 2007 or later Emergency Non Fire Pump Stationary CI-IC Engines Displacing < 30 liters/cylinder
FACILITY	40CFR 60-IIII.4207(b)	27, 28	Stationary Compression Ignition IC Engines - Fuel Requirements beginning October 1, 2010
FACILITY	40CFR 60-IIII.4209(a)	29	Monitoring



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FACILITY	40CFR 60-IIII.4211(c)	30		requirement - Emergency stationary CI-IC engine
FACILITY	40CFR 60-IIII.4211(e)	31		Stationary Compression Ignition Engines - Compliance Demonstration
S-00001	40CFR 63-WWWW.10390	1	-15	Stationary Compression Ignition IC Engines - compliance demonstration
S-00001	40CFR 63-WWWW.10420	1	-16	Area Source NESHAP for Hospital Ethylene Oxide Sterilizers - Standards
S-00001	40CFR 63-WWWW.10432	1	-17	Area Source NESHAP for Hospital Ethylene Oxide Sterilizers - Continuous Compliance
FACILITY	40CFR 68		20	Area Source NESHAP for Hospital Ethylene Oxide Sterilizers - Recordkeeping
FACILITY	40CFR 82-F		21	Chemical accident prevention provisions
FACILITY	6NYCRR 200.6		1	Protection of Stratospheric Ozone - recycling and emissions reduction
FACILITY	6NYCRR 200.7		10	Acceptable ambient air quality.
FACILITY	6NYCRR 201-1.4		1 -19	Maintenance of equipment.
FACILITY	6NYCRR 201-1.7		1 -6	Unavoidable noncompliance and violations
FACILITY	6NYCRR 201-1.8		12	Recycling and Salvage
FACILITY	6NYCRR 201-3.2(a)		1 -7, 1 -8	Prohibition of reintroduction of collected contaminants to the air
FACILITY	6NYCRR 201-3.3(a)		1 -9	Exempt Activities - Proof of eligibility
FACILITY	6NYCRR 201-6		23, 32, 33	Trivial Activities - proof of eligibility
FACILITY	6NYCRR 201-6.4(a)(4)		1 -10	Title V Permits and the Associated Permit Conditions
FACILITY	6NYCRR 201-6.4(a)(7)		1 -1	General Conditions - Requirement to Provide Information
FACILITY	6NYCRR 201-6.4(a)(8)		1 -11	General Conditions - Fees
FACILITY	6NYCRR 201-6.4(c)		1 -2	General Conditions - Right to Inspect
FACILITY	6NYCRR 201-6.4(c)(2)		1 -3	Recordkeeping and Reporting of Compliance Monitoring Records of Monitoring, Sampling and Measurement
FACILITY	6NYCRR 201-		1 -4	Reporting



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	6.4 (c) (3) (ii)				Requirements - Deviations and Noncompliance
FACILITY	6NYCRR 201-6.4 (d) (4)	1	-13		Compliance Schedules - Progress Reports
FACILITY	6NYCRR 201-6.4 (e)	1	-5		Compliance Certification
FACILITY	6NYCRR 201-6.4 (f) (6)	1	-12		Off Permit Changes
FACILITY	6NYCRR 201-7	34			Federally Enforceable Emissions Caps
C-00001	6NYCRR 201-7	36			Federally Enforceable Emissions Caps
E-00001	6NYCRR 201-7	38			Federally Enforceable Emissions Caps
G-00001/-/G10	6NYCRR 201-7	40			Federally Enforceable Emissions Caps
FACILITY	6NYCRR 202-1.1	19			Required emissions tests.
FACILITY	6NYCRR 202-2.1	7			Emission Statements - Applicability
FACILITY	6NYCRR 202-2.5	8			Emission Statements - record keeping requirements.
FACILITY	6NYCRR 211.1	24			General Prohibitions - air pollution prohibited
S-00001/-/00S/STER2	6NYCRR 212.4	1	-18		General Process Emission Sources - emissions from new sources and/or modifications
S-00001	6NYCRR 212.6 (a)	1	-14		General Process Emission Sources - opacity of emissions limited
FACILITY	6NYCRR 215.2	9			Open Fires - Prohibitions
1-00001	6NYCRR 219-4.10	49			Operator training and certification.
1-00001	6NYCRR 219-4.3	45			Particulate emissions.
1-00001	6NYCRR 219-4.5 (a)	46			Operating requirements.
1-00001	6NYCRR 219-4.5 (b)	47			Operating requirements.
1-00001/-/00A/00001	6NYCRR 219-4.5 (b)	50, 51			Operating requirements.
1-00001	6NYCRR 219-4.6	48			Other wastes.
FACILITY	6NYCRR 225.1 (a) (3)	25			Sulfur in Fuel Limitations (SIP)
FACILITY	6NYCRR 225.7 (a)	26			Reports, Sampling and Analysis
C-00001	6NYCRR 227-1.3 (a)	37			Smoke Emission Limitations.
G-00001	6NYCRR 227-1.3 (a)	41			Smoke Emission Limitations.
G-00001/-/G10	6NYCRR 227-2.4 (d)	53			Small boilers, small combustion turbines, and small stationary internal combustion engines.
C-00001	6NYCRR 227-2.4 (f) (1)	52			Emission limit for natural gas fired engines.



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FACILITY	6NYCRR 230.2 (b)	35	New tanks after 1/1/79 in NYCMA require Stage I
FACILITY	6NYCRR 231-1.5	44	Emission offsets
C-00001	6NYCRR 231-2	36	New Source Review in Nonattainment Areas and Ozone Transport Region
E-00001	6NYCRR 231-6.1	38	Applicability
G-00001/-/G10	6NYCRR 231-6.1	40	Applicability

Applicability Discussion:

Mandatory Requirements: The following facility-wide regulations are included in all Title V permits:

ECL 19-0301

This section of the Environmental Conservation Law establishes the powers and duties assigned to the Department with regard to administering the air pollution control program for New York State.

6 NYCRR 200.6

Acceptable ambient air quality - prohibits contravention of ambient air quality standards without mitigating measures

6 NYCRR 200.7

Anyone owning or operating an air contamination source which is equipped with an emission control device must operate the control consistent with ordinary and necessary practices, standards and procedures, as per manufacturer's specifications and keep it in a satisfactory state of maintenance and repair so that it operates effectively

6 NYCRR 201-1.4

This regulation specifies the actions and recordkeeping and reporting requirements for any violation of an applicable state enforceable emission standard that results from a necessary scheduled equipment maintenance, start-up, shutdown, malfunction or upset in the event that these are unavoidable.

6 NYCRR 201-1.7

Requires the recycle and salvage of collected air contaminants where practical

6 NYCRR 201-1.8

Prohibits the reintroduction of collected air contaminants to the outside air

6 NYCRR 201-3.2 (a)

An owner and/or operator of an exempt emission source or unit may be required to certify that it operates within the specific criteria described in this Subpart. All required records must be maintained on-site for a period of 5 years and made available to department representatives upon request. In addition, department representatives must be granted access to any facility which contains exempt emission sources or units, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

6 NYCRR 201-3.3 (a)

The owner and/or operator of a trivial emission source or unit may be required to certify that it operates within the specific criteria described in this Subpart. All required records must be maintained on-site for a period of 5 years and made available to department representatives upon request. In addition,



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department representatives must be granted access to any facility which contains trivial emission sources or units subject to this Subpart, during normal operating hours, for the purpose of determining compliance with this and any other state and federal air pollution control requirements, regulations, or law.

6 NYCRR Subpart 201-6

This regulation applies to those terms and conditions which are subject to Title V permitting. It establishes the applicability criteria for Title V permits, the information to be included in all Title V permit applications as well as the permit content and terms of permit issuance. This rule also specifies the compliance, monitoring, recordkeeping, reporting, fee, and procedural requirements that need to be met to obtain a Title V permit, modify the permit and demonstrate conformity with applicable requirements as listed in the Title V permit. For permitting purposes, this rule specifies the need to identify and describe all emission units, processes and products in the permit application as well as providing the Department the authority to include this and any other information that it deems necessary to determine the compliance status of the facility.

6 NYCRR 201-6.4 (a) (4)

This mandatory requirement applies to all Title V facilities. It requires the permittee to provide information that the Department may request in writing, within a reasonable time, in order to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. The request may include copies of records required to be kept by the permit.

6 NYCRR 201-6.4 (a) (7)

This is a mandatory condition that requires the owner or operator of a facility subject to Title V requirements to pay all applicable fees associated with the emissions from their facility.

6 NYCRR 201-6.4 (a) (8)

This is a mandatory condition for all facilities subject to Title V requirements. It allows the Department to inspect the facility to determine compliance with this permit, including copying records, sampling and monitoring, as necessary.

6 NYCRR 201-6.4 (c)

This requirement specifies, in general terms, what information must be contained in any required compliance monitoring records and reports. This includes the date, time and place of any sampling, measurements and analyses; who performed the analyses; analytical techniques and methods used as well as any required QA/QC procedures; results of the analyses; the operating conditions at the time of sampling or measurement and the identification of any permit deviations. All such reports must also be certified by the designated responsible official of the facility.

6 NYCRR 201-6.4 (c) (2)

This requirement specifies that all compliance monitoring and recordkeeping is to be conducted according to the terms and conditions of the permit and follow all QA requirements found in applicable regulations. It also requires monitoring records and supporting information to be retained for at least 5 years from the time of sampling, measurement, report or application. Support information is defined as including all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

6 NYCRR 201-6.4 (c) (3) (ii)

This regulation specifies any reporting requirements incorporated into the permit must include provisions regarding the notification and reporting of permit deviations and incidences of noncompliance stating the probable cause of such deviations, and any corrective actions or preventive measures taken.



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6 NYCRR 201-6.4 (d) (5)

This condition applies to every Title V facility subject to a compliance schedule. It requires that reports, detailing the status of progress on achieving compliance with emission standards, be submitted semiannually.

6 NYCRR 201-6.4 (e)

Sets forth the general requirements for compliance certification content; specifies an annual submittal frequency; and identifies the EPA and appropriate regional office address where the reports are to be sent.

6 NYCRR 201-6.4 (f) (6)

This condition allows changes to be made at the facility, without modifying the permit, provided the changes do not cause an emission limit contained in this permit to be exceeded. The owner or operator of the facility must notify the Department of the change. It is applicable to all Title V permits which may be subject to an off permit change.

6 NYCRR 202-1.1

This regulation allows the department the discretion to require an emission test for the purpose of determining compliance. Furthermore, the cost of the test, including the preparation of the report are to be borne by the owner/operator of the source.

6 NYCRR 202-2.1

Requires that emission statements shall be submitted on or before April 15th each year for emissions of the previous calENdAr year.

6 NYCRR 202-2.5

This rule specifies that each facility required to submit an emission statement must retain a copy of the statement and supporting documentation for at least 5 years and must make the information available to department representatives.

6 NYCRR 215.2

Except as allowed by section 215.3 of 6 NYCRR Part 215, no person shall burn, cause, suffer, allow or permit the burning of any materials in an open fire.

40 CFR Part 68

This Part lists the regulated substances and there applicability thresholds and sets the requirements for stationary sources concerning the prevention of accidental releases of these substances.

40 CFR Part 82, Subpart F

Subpart F requires the reduction of emissions of class I and class II refrigerants to the lowest achievable level during the service, maintenance, repair, and disposal of appliances in accordance with section 608 of the Clean Air Act AmENDments of 1990. This subpart applies to any person servicing, maintaining, or repairing appliances except for motor vehicle air conditioners. It also applies to persons disposing of appliances, including motor vehicle air conditioners, refrigerant reclaimers, appliance owners, and manufacturers of appliances and recycling and recovery equipment. Those individuals, operations, or activities affected by this rule, may be required to comply with specified disposal, recycling, or recovery practices, leak repair practices, recordkeeping and/or technician certification requirements.

Facility Specific Requirements

In addition to Title V, BRONX ZOO has been determined to be subject to the following regulations:



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40 CFR 60.4205 (b)

This requirement applies to owners and operators of 2007 model year and later emergency stationary CI IC engines with a displacement less than 30 liters/cylinder that are not fire pump engines. An applicable source must comply with the emission standards for new nonroad CI engines for all pollutants (HC, PM, NOx, NMHC + NOx and CO) for the same model year and maximum engine power as per 40 CFR 60.4202.

40 CFR 60.4207 (b)

This condition specifies the fuel requirements for engines subject to this regulation.

40 CFR 60.4209 (a)

The owner and/or operator of an emergency stationary compression ignition internal combustion engine subject to this subpart is required to install a non-resettable hour meter.

40 CFR 60.4211 (c)

This condition specifies the emission standards and reporting requirements that the 2007 model year and later stationary CI internal combustion engine Owners or operators shall comply with .

40 CFR 60.4211 (e)

This regulation states that an emergency stationary internal combustion engine can be run, for maintenance checks, no more than 100 hours per year.

40 CFR 63.10390

This condition specifies the management practice standard that each facility shall meet.

40 CFR 63.10420

This condition specifies how the facility should demonstrate continuous compliance.

40 CFR 63.10432

This condition specifies the recordkeeping requirements.

6 NYCRR 211.1

This regulation requires that no person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property.



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6 NYCRR 212.4

This rule requires compliance with the degree of control specified in Tables 2, 3 and 4 for new (after July 1, 1973) process emission sources.

6 NYCRR 212.6 (a)

This rule specifies an opacity limitation of less than 20% for any six consecutive minute period for all process emission sources.

6 NYCRR 219-4.10

This section sets forth the operator training and certification requirements which prohibit the operation of crematories except under the onsite direction of a person possessing an appropriate incinerator operator certification issued by the commissioner. The section further indicates that persons operating this facility must be certified in writing by the holder of an incinerator operator certification, relative to:

- (1) proper operation and maintenance of equipment at that facility; and
- (2) knowledge of environmental permit conditions and the impact of plant operation on emissions for that facility.

6 NYCRR 219-4.3

This section sets forth the emission standards of particulates for the crematories, which is 0.08 grains per dry standard cubic foot of flue gas, corrected to seven percent oxygen.

6 NYCRR 219-4.5 (a)

This section sets forth the emission standards of six-minute average opacity for the crematories, which is less than 10 percent.

6 NYCRR 219-4.5 (b)

This section sets forth the primary combustion chamber temperature of the crematories and pathological incinerator(s), which is described in section 219-4.4 of this subpart.

6 NYCRR 219-4.6

This section sets forth the requirements of not to burn other wastes such as municipal solid waste, infectious waste (in excess of 5 percent of the total permitted hourly charging rate), radioactive waste, and hazardous waste, in the crematories.

6 NYCRR 225.1 (a) (3)

This regulation limits the amount of sulfur that can be in fuel burned at a stationary source. It references Table 1 of the 1979 version of the sulfur in fuel limitations expressed in terms of percent by weight for fuel oil and pounds per million Btu gross heat content for solid fuel. **NOTE: This citation has been replaced by requirements cited under 225-1.2(a)(2) and is no longer part of current State**



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regulations, however, it remains part of New York State's approved State Implementation Plan (SIP).

6 NYCRR 225.7 (a)

The commissioner may require an owner of an air contamination source to retain for up to three years, and to submit to him, fuel analyses, information on the quantity of fuel received, burned or sold, and results of stack sampling, stack monitoring and other procedures to ensure compliance with the provisions of the Part. **NOTE: This citation has been replaced by requirements cited under 225-1.8(a) and is no longer a part of current State regulations, however, it remains as part of New York State's approved State Implementation Plan (SIP).**

6 NYCRR 227-1.3 (a)

This regulation prohibits any person from operating a stationary combustion installation which emits smoke equal to or greater than 20% opacity except for one six-minute period per hour of not more than 27% opacity.

6 NYCRR 227-2.4 (d)

This section includes NO_x RACT requirements for small boilers, small combustion turbines, and small stationary internal combustion engines.

6 NYCRR 227-2.4 (f) (1)

Presumptive NO_x RACT emission limit for natural gas fired stationary internal combustion engines.

6 NYCRR 230.2 (b)

This regulation requires gasoline tanks greater than or equal to 250 gallons and installed after January 1, 1979 to install Stage I vapor collection systems in the New York City Metropolitan Area.

6 NYCRR 231-1.5

This condition specifies the ERCs facility received.

6 NYCRR 231-6.1

This section outlines the applicability of this Subpart.

6 NYCRR Subpart 201-7



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This regulation sets forth an emission cap that cannot be exceeded by the facility.

6 NYCRR Subpart 231-2

The provisions of Subpart 231-2 apply to new or modified major facilities. The contaminants of concern state-wide are nitrogen oxides and volatile organic compounds since New York State is located in the ozone transport region and because there are ozone non-attainment areas within the state. In addition, particulate matter less than 10 microns in size (PM-10) is a non-attainment contaminant in Manhattan County.

Compliance Certification

Summary of monitoring activities at BRONX ZOO:

Location Facility/EU/EP/Process/ES	Cond No.	Type of Monitoring

E-00001	39	record keeping/maintenance procedures
FACILITY	27	record keeping/maintenance procedures
FACILITY	28	record keeping/maintenance procedures
FACILITY	29	record keeping/maintenance procedures
FACILITY	30	record keeping/maintenance procedures
FACILITY	31	record keeping/maintenance procedures
S-00001	1-16	record keeping/maintenance procedures
S-00001	1-17	record keeping/maintenance procedures
FACILITY	1-8	work practice involving specific operations
FACILITY	1-4	record keeping/maintenance procedures
FACILITY	1-5	record keeping/maintenance procedures
C-00001	36	work practice involving specific operations
E-00001	38	record keeping/maintenance procedures
G-00001/-/G10	40	record keeping/maintenance procedures
FACILITY	7	record keeping/maintenance procedures
S-00001/-/00S/STER2	1-18	record keeping/maintenance procedures
S-00001	1-14	record keeping/maintenance procedures
1-00001	45	monitoring of process or control device parameters as surrogate
1-00001	46	record keeping/maintenance procedures
1-00001	47	record keeping/maintenance procedures
1-00001/-/00A/00001	50	continuous emission monitoring (cem)
1-00001/-/00A/00001	51	continuous emission monitoring (cem)
FACILITY	25	work practice involving specific operations
FACILITY	26	record keeping/maintenance procedures
C-00001	37	monitoring of process or control device parameters as surrogate
G-00001	41	monitoring of process or control device parameters as surrogate
G-00001/-/G10	53	record keeping/maintenance procedures
C-00001	52	intermittent emission testing
FACILITY	44	record keeping/maintenance procedures

Basis for Monitoring



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This application is for the installation of one small sterilization unit (STER1) and one new sterilization unit (STER2) with an EtO abator system. These units are subject to 6 NYCRR part 212 and 40 CFR 63 Subpart WWWW, NESHAP requirements. STER1 is a small unit with an ERP EtO of 17.7 gram/day. The unit STER2 has a 110-gram cartridge charge of EtO for each batch that lasts 16 hours, and equipped with an EtO abator system of 99% destruction efficiency.