



## AIR QUALITY GENERAL CONSTRUCTION PERMIT

**PERMIT NUMBER: GCP-INC**

**Permit Name: Incinerator (controlled)**

**Project Description:** Incinerators with a maximum capacity of no more than 250 pounds per hour and maximum heat input rate of 10 MMBtu/hr.

**Typical Standard Industrial Classification Code:** Various

Pursuant to Chapter 14 of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of this proposed construction of an air contaminant source and the thirty (30) day period allowed for comments has elapsed. This general construction permit approves the construction of qualified incinerators. This permit document and the application make up the complete permit for the source.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. The permit holder, owner, and operator of the facility shall assure that the installation, operation, and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this permit on behalf of the Director under the authority of Title 129 – Nebraska Air Quality Regulations as amended July 20, 2016.

November 28, 2017  
Date

Kevin Stoner  
Kevin Stoner, Air Administrator  
Air Quality Division



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**ABBREVIATIONS, SYMBOLS, and UNITS OF MEASURE**

AP-42	Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources	NDEQ	Nebraska Department of Environmental Quality
BACT	Best Available Control Technology	NESHAP	National Emission Standards for Hazardous Air Pollutants
bhp	Brake Horsepower	NO <sub>2</sub>	Nitrogen Dioxide
BMP	Best Management Practice	NO <sub>x</sub>	Nitrogen Oxides
Btu	British Thermal Unit	NSPS	New Source Performance Standard
bu	Bushel	NSR	New Source Review
CAA	Clean Air Act	PAL	Plant-wide Applicability Limit
CE	Control Equipment	Pb	Lead (chemical abbreviation)
CEM	Continuous Emissions Monitor	PbR	Permit-by-Rule
CEMS	Continuous Emissions Monitoring System	PEMS	Parametric Emissions Monitoring System
cf	Cubic feet	PM	Particulate Matter
CFR	Code of Federal Regulations	PM <sub>10</sub>	Particulate Matter with and aerodynamic diameter equal to or less than 10 microns
CO	Carbon Monoxide	PM <sub>2.5</sub>	Particulate Matter with and aerodynamic diameter equal to or less than 2.5 microns
CO <sub>2</sub>	Carbon Dioxide	ppb	Parts per Billion
CO <sub>2</sub> e	CO <sub>2</sub> equivalent	ppm	Parts per Million
CP	Construction Permit	ppmv	Parts per Million by volume
DGS	Distiller's Grains with Solubles	ppmvd	Parts per Million by volume, dry basis
DDGS	Dry Distillers Grains with Solubles	PSD	Prevention of Significant Deterioration
dscf	Dry Standard Cubic Feet	PTE	Potential to Emit
dscfm	Dry Standard Cubic Feet per Minute	RVP	Reid Vapor Pressure
EMIS	Emergency Management Information System	RATA	Relative Accuracy Test Audit
EPA	Environmental Protection Agency	RMP	Risk Management Plan
EQC	Environmental Quality Council	RTO	Regenerative Thermal Oxidizer
EP	Emission Point	scf	Standard Cubic Feet
ESP	Electrostatic Precipitator	SIC	Standard Industrial Classification
EU	Emission Unit	SIP	State Implementation Plan
FID	Facility Identification Number	SO <sub>2</sub>	Sulfur Dioxide
FDCP	Fugitive Dust Control Plan	SO <sub>x</sub>	Sulfur Oxides
FGR	Flue Gas Recirculation	TDS	Total Dissolved Solids
FIP	Federal Implementation Plan	TO	Thermal Oxidizer
FR	Federal Register	TO/HRSG	Thermal Oxidizer with Heat Recovery Steam Generator
ft	Feet	tpy	Tons per year
FTIR	Fourier Transform Infrared	TRS	Total Reduced Sulfur
GHGs	Greenhouse Gases	TSP	Total Suspended Particulate Matter
H <sub>2</sub> S	Hydrogen Sulfide	ULNB	Ultra Low-NO <sub>x</sub> Burner
HAP	Hazardous Air Pollutant	UST	Underground Storage Tank
hp	Horsepower	UTM	Universal Transverse Mercator
hr	Hour	VHAP	Volatile Hazardous Air Pollutant
lb	Pound	VMT	Vehicle Miles Traveled
LDAR	Leak Detection and Repair	VOC	Volatile Organic Compound
LNB	Low-NO <sub>x</sub> Burner	WDGS	Wet Distiller's Grains with Solubles
MACT	Maximum Achievable Control Technology		
Mgal	One Thousand gallons		
MMBtu	One Million British Thermal Units		
MMscf	One Million Standard Cubic Feet		
MSDS	Material Safety Data Sheet		
MW	Megawatt		
NAAQS	National Ambient Air Quality Standards		

**I. GENERAL CONDITIONS**

- (A) Coverage granted under this permit is not transferable to another source or location. {Chapter 9}
- (B) Coverage under this permit does not relieve the owner or operator of the source from the responsibility to comply with all applicable portions of the Nebraska Air Quality Regulations and any other requirements under local, State, or Federal law. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action or permit revocation. {Chapter 41 and Chapter 17, Section 011}
- (C) Application for review of plans or advice furnished by the Director will not relieve the owner or operator of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations. {Chapter 37}
- (D) Any owner or operator who failed to submit any relevant facts or who submitted incorrect information in a general permit application shall, upon becoming aware of such failure or incorrect submittal, promptly reapply for coverage or submit a construction permit application under the provisions of Chapter 17. {Chapter 17, Sections 006, 007, and 008}
- (E) Approval to construct will become invalid if a continuous program of construction is not commenced within 18 months after the date of coverage granted by this general construction permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time. {Chapter 17, Section 012}
- (F) The owner or operator shall allow the NDEQ, EPA or an authorized representative, upon presentation of credentials to: {Neb. Rev. Statute §81-1504}
- (1) Enter upon the owner or operator's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted or records are kept, for the purpose of ensuring compliance with the permit or applicable requirements;
  - (2) Have access to and copy, at reasonable times, any records, for the purpose of ensuring compliance with the permit or applicable requirements;
  - (3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations, for the purpose of ensuring compliance with the permit or applicable requirements;
  - (4) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.
- (G) When requested by the NDEQ, the owner or operator shall submit completed emission inventory forms for the preceding year to the NDEQ by March 31 of each year. {Chapter 6}
- (H) Open fires are prohibited except as allowed by Chapter 30.
- (I) Particulate Matter – General Requirements: {Chapter 32}
- (1) The owner or operator shall not cause or permit the handling, transporting or storage of any material in a manner, which allows particulate matter to become airborne in such

quantities and concentrations that it remains visible in the ambient air beyond the property line.

- (2) The owner or operator shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but are not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.
- (J) If and when the Director declares an air pollution episode as defined in Chapter 38, Section 003.01B, 003.01C, or 003.01D, the owner or operator shall immediately take all required actions listed in Title 129, Appendix I until the Director declares the air pollution episode terminated.
- (K) This permit may be revised (reopened and reissued) or revoked for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Chapter 15, Section 006}
- (1) A determination by the Director, or the Administrator of EPA that:
    - (a) the permit must be revised to ensure compliance with the applicable requirements;
    - (b) the permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit.
  - (2) A determination by the Director that the source or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit; or
- (L) Coverage under this permit may be revoked for cause in accordance with Title 129 and Title 115. Conditions under which this permit will be revised or revoked for cause, include but are not limited to: {Title 129, Chapter 15, Section 006}
- (1) The existence at the source of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the owner or operator to agree to an enforceable schedule of compliance to resolve the noncompliance;
  - (2) The failure of the owner or operator to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the EPA;
  - (3) The submittal by the owner or operator of false, incomplete, or misleading information to the NDEQ or EPA.

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**II. SPECIFIC CONDITIONS**

- (A) The owner/operator of the source shall provide the following notifications to the NDEQ:
- (1) The date construction, reconstruction or modification commenced as defined in Chapter 1. Notification shall be postmarked no later than 30 days after such date and include a summary description and whether the requirement to commence construction was met through: {Chapter 17, Section 012}
  - (a) Initiating physical on-site construction activities of a permanent nature that meet the definition of “begin actual construction”, or
  - (b) Entering into binding agreements or contractual obligations. If this option is used, the notice shall also include a brief summary of each binding agreement or contractual obligation entered into, the date of the agreement or contract, and why it cannot be cancelled or modified without substantial loss to the owner or operator.
  - (2) The date on which the source or modification first becomes operational, postmarked within 15 days after such date. {Chapter 7, Section 002.03}
  - (3) The notification required in Condition II.(A)(1) shall also include an equipment list, if applicable, which details all equipment associated with the facility and the corresponding maximum capacities of all equipment. {Title 129, Chapter 17, Sections 006, 007, and 008}
  - (4) When an increase in actual production or operating throughput of process equipment, for which performance testing has been conducted, as follows: {Chapter 34, Sections 001 and 006}
  - (a) When there is a ten percent (10%) increase in production/throughput rate, based on the average calendar day rate, over the rate recorded during the most recent valid performance test; or,
  - (b) The above notification requirements do not apply to emission units that have been tested and use a CEMS or PEMS to demonstrate compliance.
- (B) Recordkeeping: Records of all measurements, results, inspections, and observations as required to ensure compliance with all applicable requirements shall be maintained on-site as follows:
- (1) All calculations and records required throughout this permit shall be completed no later than the fifteenth (15<sup>th</sup>) day of each calendar month and shall include all information through the previous calendar month, unless otherwise specified in this permit.
  - (2) All records required throughout this permit shall be kept for a minimum of five (5) years and shall be clear and readily accessible to NDEQ representatives, unless otherwise specified in this permit.
  - (3) Copies of all notifications, reports, test results, and plans.
  - (4) Calibration records for all operating parameter monitoring equipment.
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- (5) Operation and Maintenance manuals, or equivalent documentation, detailing proper operation and maintenance of all permitted emission units, required control equipment, and required monitoring equipment shall be kept for the life of the equipment.
  - (6) Records documenting equipment failures, malfunctions, or other variations, including date and time of occurrence, remedial action taken, and when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment.
- (C) All permitted emission units, associated emissions conveyances, required control equipment, and required monitoring equipment shall be properly installed, operated, and maintained. {Chapter 34, Section 006}
- (1) All emissions from emission units using required controls shall be captured and routed through associated emission conveyances to the required control equipment, except for:
    - (a) Uncaptured emissions due to the design of the equipment, or
    - (b) Uncaptured emissions described in the permitting documents.
- (D) When performance testing is required it shall be completed and submitted to the NDEQ as follows: {Chapter 34}
- (1) Performance tests shall be conducted while operating at maximum capacity (operating conditions producing the highest emissions or loading to the control device) within sixty (60) days after first reaching the maximum capacity, but not more than 180 days after the start-up of operations of each unit, unless otherwise specified by the NDEQ.
  - (2) Testing shall be conducted according to the methodologies found in Title 129, Chapter 34, Section 002, or other NDEQ approved methodologies.
  - (3) Performance tests shall be conducted for a minimum of three (3) one hour runs unless another run time is specified by the applicable Standard or as deemed appropriate by the NDEQ.
  - (4) The owner or operator of a source shall provide the NDEQ at least thirty (30) days written notice prior to testing to afford the NDEQ an opportunity to have an observer present. The owner or operator shall also provide the NDEQ with an emissions testing protocol at least thirty (30) days prior to testing. The NDEQ may, in writing, approve a notice of less than 30 days. If the testing is pursuant to an underlying requirement contained in a federal rule, the notice provisions of the underlying requirement apply.
  - (5) The owner or operator shall monitor and record the operating parameters for process and control equipment during the performance testing required in the permit.
  - (6) A written copy of the test results signed by the person conducting the test shall be provided to the NDEQ within sixty (60) days of completion of the test unless a different period is specified in the underlying requirements of an applicable Federal Rule and will, at a minimum, contain the following items:



- (a) A description of the source's operating parameters (e.g. production rates, firing rates of combustion equipment, fuel usage, etc.), control equipment parameters (e.g. baghouse fan speeds, scrubber liquid flow rates, etc.), and ambient conditions (e.g. weather conditions, etc.) during testing.
  - (b) Copies of all data sheets from the test run(s).
  - (c) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.
  - (d) A final conclusion section describing the outcome of the testing.
- (E) Any emissions due to malfunctions, unplanned shutdowns, and ensuing start-ups that are, or may be, in excess of applicable emission limits shall be reported to the NDEQ in accordance with Chapter 35, Section 005.

**III.(A) Specific Conditions for Incinerator**

- (1) **Permitted Emission Points:** The source is permitted to construct the emission point and associated emission unit identified in the following table. The emission unit shall be controlled by the required control equipment as indicated:

Emission Point ID#	Emission Unit ID# and Description	Required Control Equipment	Maximum Incinerator Capacity	Maximum Heat Input Rating <sup>[1]</sup>	Permitted Fuel Type
EP-1	EU-1: Incinerator	CE-1: Afterburner	250 lbs/hr	10 MMBtu/hr	No. 2 Fuel Oil, Natural Gas, or Propane

<sup>[1]</sup> Including the afterburner (secondary chamber)

- (2) **Emission Limitations and Testing Requirements:**

- (a) The emission limitations of Chapter 20, Sections 002 and 004 apply to EP-1. {Chapter 20}
- (b) The emission limitation of Chapter 22 is identified in the following table. {Chapter 22}

Emission Point ID#	Pollutant	Permitted Limit	Averaging Period	Basis for Permit Limit	Initial Performance Testing Required (Yes/No)
EP-1	PM	0.10 grains/dscf corrected to seven (7) percent oxygen	3-hr or test method average	Chapter 22	Yes

- (c) The NDEQ may waive the testing requirement of Condition III.(A)(2)(b) if the source submits valid performance test results demonstrating compliance with the emission limitation of Chapter 22, Section 002. {Chapters 17 and 34}
- (3) **Operational and Monitoring Requirements and Limitations:**
- (a) The maximum burning capacity of the incinerator (EU-1) shall not exceed 250 lbs/hr of combustible material, as guaranteed by the manufacturer. {Chapter 17}
- (b) The maximum heat input rating of the incinerator, including the afterburner, shall not exceed 10 MMBtu/hr. {Chapter 17}
- (c) Fuels allowed to be combusted in the incinerator shall be limited to Number 2 (No. 2) fuel oil, natural gas, or propane. {Chapter 17}
- (d) An afterburner control device (i.e., secondary combustion chamber) shall be installed on the incinerator. The afterburner shall be operated and controlling emissions at all times the incinerator primary chamber is in operation. {Chapter 17}
- (i) The temperature of the afterburner, as indicated by a temperature measuring device, shall not be less than the manufacturer's recommended temperature or that of a valid performance test of the unit. {Chapter 17}

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- (e) Each incinerator shall consist of a refractory lined combustion chamber utilizing a design that provides maximum combustion of the materials to be burned. {Chapter 22}
  - (f) The materials incinerated by EU-1 shall be limited to pathological waste and medical/infectious waste. {Chapter 17}
    - (i) Non-pathological waste shall not exceed ten (10) percent by weight, in aggregate, of all materials incinerated during any calendar month.
  - (g) The incineration rate shall not exceed the maximum incinerator capacity, in pounds per hour, specified by the manufacturer. The incineration period shall be at least an amount of time equivalent to the weight of the load, in pounds, divided by the manufacturer's design incineration rate in pounds per hour. {Chapter 17}
  - (h) Observations of the incinerator shall be conducted at least once each day during operation to determine whether there are visible emissions, leaks, or other indications that may necessitate corrective action. If corrective action is required, it shall occur immediately. {Chapter 17}
    - (i) The results of the observations and any corrective actions shall be recorded in a log.
  - (i) Instructions for proper operation of the incinerator and afterburner shall be posted on site. {Chapter 22}
- (4) Applicable NSPS, NESHAP, and MACT Requirements:
- The NDEQ has not identified any NSPS, NESHAP, or MACT requirements that apply to the incinerator.
- (5) Reporting and Recordkeeping Requirements:
- (a) A certification that each operator has read the operating instructions for proper operation of the incinerator and afterburner, understands them, and intends to comply with them.
  - (b) Documentation from the manufacturer consisting of stack test results, or other similar documentation that verifies the incinerator will comply with the emission limitation in Condition III.(A)(2)(b).
  - (c) A description of the contents and weight of the material incinerated each operating cycle, and the length and temperature (primary chamber and afterburner) of the incineration cycle, to demonstrate compliance with Conditions III.(A)(3)(d), (f) and (g).
  - (d) Records documenting the date, time, observations, and corrective actions taken for each day the incinerator is operated.



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**Typical Standard Industrial Classification Code:** Various

**Typical North American Industry Classification Code:** Various

**DESCRIPTION OF GENERAL CONSTRUCTION PERMIT:**

The Nebraska Department of Environmental Quality (NDEQ) has determined there are numerous similar sources in Nebraska that are subject to the same Federal and State regulatory requirements. Chapter 9 of Nebraska Administrative Code Title 129 - Air Quality Regulations allows the NDEQ to issue a general construction permit (GCP) for these sources. This GCP follows the applicable procedures of Chapters 9, 14, and 17 of Nebraska Administrative Code Title 129 - Air Quality Regulations. The owner of a source that qualifies for this GCP must apply to the NDEQ for coverage under the applicable terms of the GCP. Each application must include all information necessary to determine qualification for, and to ensure compliance with, the GCP.

The NDEQ will notify the applicant of the determination of coverage under this GCP for the source identified in the application. If the Director of the NDEQ denies coverage of the source under the GCP, the applicant may request an adjudicative hearing in accordance with the procedures established in Title 115 - Rules of Practice and Procedure. The NDEQ may issue coverage under a GCP to an individual source without repeating the notice and comment procedures required in Chapter 14 of Title 129. The NDEQ shall maintain a list of all sources covered by GCPs, which shall be available for public review.

**DESCRIPTION OF THE SOURCE GROUP:**

The types of facilities covered under this GCP utilize incinerators for veterinary or agricultural purposes to dispose of animal or livestock remains. Deceased livestock that is not suitable for resale may be incinerated at farms or other livestock operations as a way to safely dispose of the dead carcass. Incinerators may also be used as a deceased human crematorium at funeral homes.

This GCP is only applicable to incinerators with an afterburner control device, a combined heat input capacity of 10 MMBtu/hr, and a combustion capacity of 250 lbs/hr or less of incinerated material. An incinerator afterburner is typically a secondary chamber with separate fuel combustion used to reduce air pollutants contained in the exhaust gas stream (such as combustible gases and particles generated in the incinerator main chamber). The GCP allows fuel for the incinerators to be natural gas, liquefied petroleum gas (LPG, which is predominantly propane), or Number 2 (No. 2) fuel oil.

This GCP allows for the construction, installation, and operation of an incinerator that has the potential to emit (PTE) air pollutants in quantities below the Nebraska Air Quality Regulations (Title 129), Chapter 17, Section 001 CP thresholds. An incinerator GCP may be approved by the NDEQ provided it meets the emission limitations, size requirements, and will not be subject to incinerator-related Code of Federal Regulations (CFR) discussed below.

If any source covered under this GCP contains emission units other than an incinerator covered under this GCP, it is the applicant's responsibility to comply with Title 129 and obtain additional permits if required.

## **TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:**

Emissions for the incinerator were estimated using emission factors from USEPA's *Compilation of Air Pollutant Emissions Factors, 5<sup>th</sup> Edition, Volume 1 (AP-42)*; Bay Area AQMD Permit Handbook 11.6 for "Crematories" (2017); and USEPA's WebFIRE database. The potential emissions calculations with references are shown in the fact sheet attachment.

The following table lists the potential emissions for any incinerator covered by this GCP:

<u>Regulated Pollutant</u>	<u>Potential Emissions (tons/year)</u>
Particulate Matter (PM)	0.89
PM smaller than or equal to 10 microns (PM <sub>10</sub> )	1.30
PM smaller than or equal to 2.5 microns (PM <sub>2.5</sub> )	1.30
Sulfur Dioxide (SO <sub>2</sub> )	2.40
Oxides of Nitrogen (NO <sub>x</sub> )	6.60
Carbon Monoxide (CO)	3.77
Volatile Organic Compounds (VOC)	1.60
Hazardous Air Pollutants (HAPs)	
Hydrogen Chloride	2.31
Total HAPs	2.50

## **APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:**

### Chapter 4 – Ambient Air Quality Standards:

Potential emissions from projects covered under this GCP, are less than the thresholds for which air dispersion modeling may be required. Therefore, modeling is not being required to support coverage under this GCP.

### Chapters 5 and 7 – Operating Permit Requirements:

After issuance of this GCP, an operating permit (OP) or OP revision is required in accordance with Title 129, Chapter 5, Section 001.02B. Either an OP or an OP revision application must be submitted within twelve (12) months of startup of the incinerator.

### Chapter 17 – Construction Permit Requirements:

The source is required to obtain a construction permit per Chapter 17, Section 001.03. The applicant chose to obtain coverage under this GCP in lieu of a standard construction permit or Permit by Rule.

The source must submit an application fee in order to apply for coverage under this GCP, in accordance with Chapter 17, Section 003.01 and Chapter 9. The NDEQ does not consider PM a regulated pollutant when determining the fee for a construction permit.

### Chapter 18 - New Source Performance Standards (NSPS):

By complying with the requirements of the GCP, the incinerator(s) covered under this GCP will not be subject to any NSPS. Potentially applicable NSPS are discussed below for informational purposes and to help identify these incinerators.

Subpart Cb - Emissions Guidelines and Compliance Times for Large Municipal Waste Combustors: This subpart, not yet adopted by reference in Title 129, Chapter 18, applies to each municipal waste combustor unit with a combustion capacity greater than 250 tons per day of municipal solid waste for which construction was commenced on or before September 20, 1994. Incinerators covered under this GCP are not subject to this subpart because they have a combustion capacity less than 250 tons per day.

Subpart Ce - Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators (HMIWI): This subpart, incorporated into Title 129, Chapter 18, Section 004.02, as required in 40 CFR 60.30e to 60.39e (Subpart Ce), applies to each individual HMIWI for which construction was commenced on, before or after June 20, 1996 but no later than December 1, 2008, or which commenced modification after March 16, 1998, but no later than April 6, 2010. Co-fired combustors are units that combust hospital waste and/or medical/infectious waste along with other wastes such as pathological waste. To be considered a co-fired combustor, an enforceable requirement limiting combustion to ten percent or less of medical/infectious waste must be in place. An incinerator covered under this GCP is not subject to this subpart because it is considered co-fired combustor.

Subpart E - Standards of Performance for Incinerators: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.30, applies to each incinerator with a charging rate of more than 50 tons per day that commences construction or modification after August 17, 1971. Incinerators covered under this GCP are not subject to this subpart because they have a maximum charging rate less than 50 tons per day.

Subpart Ea - Standards of Performance for Municipal Waste Combustors: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.31, applies to each municipal waste combustor unit with a municipal waste combustor unit capacity greater than 250 tons per day of municipal solid waste which commenced construction after December 20, 1989 and on or before September 20, 1994, or commenced reconstruction or modification after December 20, 1989 and on or before June 19, 1996. An incinerator covered under this GCP is not subject to this subpart because it has a combustion capacity less than 250 tons per day and is not considered a municipal waste combustor.

Subpart Eb - Standards of Performance for Large Municipal Waste Combustors: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.66, applies to each municipal waste combustor unit with a combustion capacity greater than 250 tons per day of municipal solid waste for which construction, modification, or reconstruction is commenced after September 20, 1994. An incinerator covered under this GCP are not subject to this subpart because it has a combustion capacity less than 250 tons per day and is not considered a municipal waste combustor.

Subpart Ec - Standards of Performance for Hospital/Medical/Infectious Waste Incinerators (HMIWI): This subpart, adopted by reference in Title 129, Chapter 18, Section 001.67, applies to each individual HMIWI for which construction commenced after June 20, 1996, but no later than December 1, 2008, or for which a modification commenced after March 16, 1998, but no later than April 6, 2010. Incinerators covered under this GCP are not considered HMIWI units, but rather co-fired combustors. Co-fired combustors are units that combust hospital waste and/or medical/infectious waste along with other wastes such as pathological waste. To be considered a co-fired combustor, an enforceable requirement limiting combustion to ten percent or less of medical/infectious waste must be in place.

Subpart AAAA - Standards of Performance for Small Municipal Waste Combustion Units: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.68, applies to each municipal waste combustion unit for which construction is commenced after August 30, 1999 or for which modification or reconstruction is commenced after June 6, 2001; the incinerator must also have the capacity to combust 35 tons per day but no more than 250 tons per day of municipal solid waste or refuse-derived fuel. An incinerator covered under this GCP is not subject to this subpart because it has a combustion capacity less than 35 tons per day and is not considered a municipal waste combustor.

Subpart BBBB - Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units: This subpart, not yet adopted by reference in Title 129, Chapter 18, applies to existing small municipal waste combustion units that commenced construction on or before August 30, 1999.

Incinerators covered under this GCP are not subject to this subpart because they are not small municipal waste combustors (MWC). A small MWC unit has the capacity to combust at least 35 tons/day of municipal solid waste, but not more than 250 tons/day of municipal solid waste or refuse-derived fuel. An incinerators covered under this GCP is capable of combusting 3 tons per day maximum and is therefore not subject.

*Subpart CCCC - Standards of Performance for Commercial and Industrial Solid Waste Incineration (CISWI) Units:* This subpart, adopted by reference into Title 129, Chapter 18, Section 001.85, applies to each CISWI unit that commenced construction after June 4, 2010 or commenced reconstruction or modification after August 7, 2013. Subpart CCCC does not apply to incinerators covered under this GCP. An incinerator covered under this GCP is not considered a CISWI unit and is exempt because it burns over 90% pathological waste. Pathological waste means waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).

The facility must notify the Administrator that the unit meets these criteria, and must keep records on a calendar quarter basis of the weight of pathological waste and non-pathological waste (e.g. medical/infectious waste) burned in the unit. The application of this GCP is considered notification and keeping records of the weight of pathological, low-level radioactive, and/or chemotherapeutic waste as well as the weight of any other non-pathological waste combusted is a condition of the GCP.

*Subpart DDDD - Emissions Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration (CISWI) Units:* This subpart, adopted by reference into Title 129, Chapter 18, Section 001.86, applies to each CISWI unit which commenced construction on or before June 4, 2010, or commenced modification or reconstruction after June 4, 2010 but no later than August 7, 2013. Subpart DDDD does not apply to incinerators covered under this GCP. An incinerators covered under this GCP is not considered a CISWI unit and is exempt because it burns over 90% pathological waste.

The facility must notify the Administrator that the unit meets these criteria, and must keep records on a calendar quarter basis of the weight of pathological waste and non-pathological waste (e.g. medical/infectious waste) burned in the unit. The application of this GCP is considered notification and keeping records of the weight of pathological, low-level radioactive, and/or chemotherapeutic waste as well as the weight of any other non-pathological waste combusted is a condition of the GCP.

*Subpart EEEE - Standards of Performance for Other Solid Waste Incineration (OSWI) Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006:* This subpart, adopted by reference in Title 129, Chapter 18, Section 001.74, applies to each OSWI unit or an air curtain incinerator that commenced construction after December 9, 2004 or reconstruction or modification on or after June 16, 2006. Incinerators covered under this GCP are not considered OSWI units and are excluded because they burn at least 90% pathological waste by weight.

*Subpart FFFF - Emission Guidelines and Compliance Times for OSWI Units That Commenced Construction On or Before December 9, 2004:* This subpart, adopted by reference in Title 129, Chapter 18, Section 001.75, applies to each facility with an OSWI unit or air curtain incinerator that commenced construction on or before December 9, 2004. An incinerator covered under this GCP is not subject to this subpart because it is not considered an OSWI unit as described in subpart FFFF. An incinerator covered under this GCP is not considered an OSWI unit and is excluded because it burns at least 90% pathological waste by weight.

The NSPS rules are subject to change. It is the applicant's obligation to comply with applicable NSPS subparts and requirements whether or not they are identified in this permitting action or Title 129. Detailed and up-to-date information related to NSPS subparts can be found on the NDEQ NSPS



Notebook located on the NDEQ website (<http://deq.ne.gov>), when selecting “Air” and “Air Grants, Planning and Outreach Program”. The NSPS Notebook is under the New Source Performance Standards (NSPS) Program. Refer to the NSPS Notebook for more updated and detailed information regarding NSPS.

#### Chapter 19 – Prevention of Significant Deterioration (PSD):

The construction authorized by coverage under this GCP does not trigger PSD applicability thresholds because it is not considered a significant modification under PSD regulations. The calculated non-fugitive PTE does not exceed the major source significant modification thresholds; therefore, the source is not subject to PSD requirements under this Chapter.

#### Chapter 20 – Particulate Matter Emissions:

##### *Section 001 – Process Weight Rate*

The incinerator covered by this GCP is not required to comply with the particulate emissions limits identified in Table 20-2 because Section 001 specifically exempts incinerators and indirect heating equipment.

##### *Section 002 – Particulate Emissions from Combustion Sources*

The incinerator covered by this GCP is subject to Section 002. The emission unit will comply through the exclusive use of natural gas, liquefied petroleum gas, or Number 2 (No. 2) fuel oil, as well as proper operation and maintenance of equipment. Detailed calculations are included in the fact sheet attachment demonstrating compliance.

##### *Section 004 – Opacity*

No person shall cause or allow emissions which are of an opacity equal to or greater than twenty percent (20%) as evaluated by an EPA-approved method, or recorded by a continuous opacity monitoring system operated and maintained pursuant to 40 CFR Part 60 Appendix B. Through the exclusive use of fuels that have low ash content, and following proper manufacturer’s instructions and practices for the incinerator, the facility will demonstrate compliance with this requirement for the incinerator covered by this GCP.

#### Chapter 22 – Incinerators:

This chapter applies to all incinerators except those listed in Chapter 22, Sections 001.01 - 001.05.

##### *Section 002- Particulate Matter Emissions*

PM emissions from the incinerator are not to exceed 0.10 grains per dry standard cubic foot (gr/dscf) of exhaust gas, corrected to 7% oxygen.

The source must conduct performance testing in accordance with Method 5 of 40 CFR 60 Appendix A-3 no later than 180 days after start-up of operation to ensure the incinerator will not emit more than 0.10 gr/dscf of exhaust gas, corrected to 7% oxygen. The NDEQ may waive the testing requirement provided documentation from the manufacturer, such as stack test results that the incinerator will comply with the limitation, is submitted.

##### *Section 003- Burning Capacity*

The maximum rated combustion capacity of an incinerator approved under this GCP may not be greater than 250 pounds per hour as guaranteed by the designer or manufacturer.

##### *Section 004- Performance Testing*

Should performance testing be required the testing will be done in accordance with Chapter 34. The waste combusted during the performance test shall be representative of the waste normally processed by the applicant at this stationary source. The maximum combustion rate of the incinerator must not exceed

the lesser of the manufacturer-rated burning capacity or the 250 pounds per hour maximum rated burning capacity of the incinerator.

*Section 005- Proper Operation*

Instructions for proper operation of the incinerator shall be posted on-site and written certification that each operator has read these instructions, understands them, and intends to comply, shall be kept on record by the owner for the life of the unit.

*Section 006- Proper Design*

The incinerator must be a refractory lined combustion furnace that is designed for the maximum combustion of materials placed in the incinerator. Each incinerator must vent the combustion emissions through a stack, duct, or chimney that is adequate for that particular incinerator.

Chapter 27 – Hazardous Air Pollutants:

The construction covered under this GCP is not subject to the requirements of this chapter for this project because the PTE of any single HAP is less than the 2.5 tons per year threshold and total HAPs are less than the 10 tons per year threshold listed in Section 002.

Chapter 28 - National Emission Standards for Hazardous Air Pollutants (NESHAP):

By complying with the requirements of the GCP, the incinerator(s) covered under this GCP will not be subject to any NESHAP. Potentially applicable NESHAP are discussed below for informational purposes and to help identify these incinerators.

Subpart EEE - National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.60, applies to all hazardous waste combustors: hazardous waste incinerators, hazardous waste cement kilns, hazardous waste lightweight aggregate kilns, hazardous waste solid fuel boilers, hazardous waste liquid fuel boilers, and hazardous waste hydrochloric acid production furnaces. An incinerator covered under this GCP is not subject to this subpart because it does not combust hazardous waste.

There are no potentially applicable NESHAP subparts identified in the application. It is the applicant's responsibility to be aware of and comply with applicable NESHAP subparts and requirements whether or not they are identified in this permitting action or Title 129. The NESHAP rules are subject to change. Information regarding NESHAP can be found on the NDEQ Air Toxics Notebook. This page can be found on the NDEQ website <http://deq.ne.gov> when selecting "Air" and "Air Grants, Planning and Outreach Program". The Air Toxics Notebook is under the Air Toxics Program. Refer to the Air Toxics Notebook for more updated and detailed information regarding NESHAP.

**Permit conditions specific to the proposed permit are discussed as follows:**

- II.(A) When a source undertakes a program of construction, reconstruction, or modification they are required to notify the NDEQ when they begin construction/reconstruction/modification and when the source or modification becomes operational. These notifications help the NDEQ and source determine when an operating permit application (or revision to an existing operating permit) may be necessary and also whether some emission increases or decreases are within the contemporaneous period. This notification is either for initial operation of the source as a whole (if constructing a new source) or initial operation of the completed project (if modifying an existing source), not individual emission units. Individual emission units subject to specific NSPS or NESHAP standards may have additional notification requirements specific to those federal standards that are independent of this requirement. Startup of individual emission units (such as a boiler subject to an NSPS) does not necessarily mean the source or project has begun operations. (3) The purpose of this condition is to require notifications when previous testing may no longer be representative of the current operation of the emission unit or control equipment due to changes. The changes could be any that impact emissions. Some changes would include, but are not limited to, increasing the capacity of an emission unit (e.g., increasing the hourly throughput of grain received, increasing the production rates, etc.) or changes to the operational parameters of control equipment that potentially make the control equipment less efficient (e.g., using less scrubbing liquid, using less chemical addition, or scrubbing liquid with higher temperature than previous testing). The NDEQ may require additional testing to verify the source remains in compliance with the emission limitation after the change is made. (4) This condition requires the source to notify the NDEQ when actual production/throughput of equipment increases by set percentages based on data obtained from previous tests. Increasing production or throughput of equipment can render previous testing not representative of current operations, therefore triggering an assessment by the NDEQ as to whether additional testing is necessary. Examples include heat input or steam generation for a boiler, or the beer feed rate at an ethanol plant. Once the source notifies the NDEQ of the first 10% increase, they do not have to provide notification of any subsequent 10% increases. Once additional performance testing is completed, this condition 'resets' and notification of the 10% increase is based from the most recent test data.
- II.(B) This condition contains general recordkeeping and reporting requirements that apply to all permitted emission units, control equipment, and monitoring devices. Requirements include: a completion date when records must be completed, how long records need to be maintained, and the identification of specific types of records that must be maintained. Records are required to be maintained to ensure compliance with all applicable requirements, specifically those required in this permit. However, additional recordkeeping requirements may be established in the future to better ensure compliance. Documentation detailing operation and maintenance can be operational and maintenance manuals provided by the manufacturer. If manufacturer manuals are not available, the owner or operator must develop a document containing proper operation and maintenance requirements for each permitted emission unit and piece of required control equipment.
- II.(C) This condition requires all permitted emission units, associated emissions conveyances, required control equipment, and required monitoring equipment to be properly installed, operated, and maintained. In addition, this condition requires that all emissions from emission units using controls shall be captured and routed through associated emission conveyances to the control equipment, except for uncaptured emissions due to the design of the equipment, or uncaptured emissions described in the permit application or any additional information submitted prior to permit issuance. This condition addresses any uncaptured emissions known and identified prior to permit issuance. If the permittee becomes aware of additional uncaptured emissions after

issuance of this permit, the permittee should report the uncaptured emissions to the NDEQ in accordance with General Condition I.(D).

Associated emissions conveyance (s) is physical equipment (including but not limited to: ductwork, pipes, conduits, vessels, etc.) that route emissions from an emission unit to control equipment. It is expected that the installation, operation, and maintenance conducted will be similar to the items contained in the documents detailing proper operation, inspection, and maintenance of the equipment (required in Specific Condition II.(B)(5)). It is very important that permitted and required equipment is operating properly and maintained since poorly maintained equipment may emit greater amounts of pollution into the atmosphere or monitor information incorrectly or inaccurately. Emission estimates for this permitting action are based on the requirement that all equipment is operating properly and being properly maintained.

- II.(D) General performance testing requirements. When performance testing is required, it is intended to demonstrate and ensure the source will be in compliance on a continuous basis. As such, testing is generally required to be conducted under conditions producing the highest emissions or loading to a control device. This typically is done at the maximum capacity, which at that level would not create an unsafe condition, and the facility will operate at that level at least some of the time. For a comprehensive evaluation on representative testing conditions, please review the NDEQ guidance on stack testing available on our web site or the national stack testing guidance document found on EPA's web site. All performance tests required throughout this permit are required to be conducted in accordance with these conditions. The owner or operator must provide a testing protocol and written (i.e. hard copy, not electronic or verbal) notice prior to testing to ensure the NDEQ has the opportunity to witness the testing and review the proposed testing plan. Operating parameters are monitored and recorded to document the conditions under which the testing was conducted. Subsequent monitoring of these parameters can indicate whether additional testing may be necessary because previous testing is not representative of current operations.
- II.(E) This condition requires any emissions resulting from equipment failures, malfunctions, or other variations in control or process equipment performance that are, or may be, in excess of the applicable emission control regulations to be reported to the NDEQ in accordance with Title 129, Chapter 35, Section 005. The NDEQ must be notified when excess emissions have, or may have occurred along with the cause of the emissions.

### **III.(A) Specific Conditions for Incinerator**

- (1) This condition identifies each incinerator emission unit authorized for coverage under this GCP. A maximum 250 pound-per-hour rating and maximum heat input rate of 10 MMBtu/hr rating was utilized in the GCP development to ensure NDEQ modeling thresholds are not exceeded. Liquid fuels are limited to Number 2 (No. 2) fuel oil. Gaseous fuels are limited to utility grade natural gas (primarily methane, CH<sub>4</sub>) and LPG, which is commonly referred to as “propane.”
- (2) This condition specifies that the incinerator is subject to the requirements of Chapter 20, Sections 002 and 004. Compliance with Section 002 is demonstrated through the use of fuel types, as limited by the GCP. Section 004 limits the opacity of visible emissions from the incinerator to less than 20%. The table contains an emission limitation from Chapter 22, Section 002 which applies to emissions resulting from both the fuel and materials being incinerated. Performance testing of the incinerator for the Chapter 22 PM emission limit using EPA Method 5 is required no later than 180 days after start-up. The NDEQ may waive this test requirement if the emission limitation in Condition III.(A)(2)(b) is certified by the manufacturer or permit holder using valid performance test results.
- (3) This condition identifies the operational and monitoring requirements associated with the incinerator. A 250 pound per hour limit on processing throughput (by way of the limit on the rated capacity of the incinerator) and 10 MMBtu/hr maximum heat input rating is necessary to prevent the source from exceeding the emission limits established by the NDEQ modeling thresholds. Limitations on the types of materials that may be combusted are necessary to avoid applicability of Federal Standards. Instructions for the proper operation of each incinerator must be posted and written certification that each operator has read them and intends to follow them. Observations of the incinerator must be conducted each day of operation, and corrective action must be taken immediately if problems such as visible emissions are occurring.
- (4) This condition clarifies that there are no Federal NSPS, NESHAP, or MACT requirements applicable to the incinerator covered under this GCP. As discussed in the Chapter 18 and 28 discussions above, there are applicable Federal requirements for certain other incinerator types that do not qualify for coverage under this GCP (e.g. medical waste, hazardous waste, or large municipal waste incinerators).
- (5) This condition specifies recordkeeping and reporting requirements as well as other documentation for the incinerator. The recordkeeping includes instructions for proper operation being posted and read by the operators, manufacturer specifications and emission certifications, and records of the weight and type of material combusted each month, as well as the length and temperature of each incineration cycle. There are also records required for observations made to detect anything unusual during operation that may indicate the incinerator is not functioning properly and requires maintenance or other corrective action to resolve a problem.

### **STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:**

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended July 20, 2016.

### **FINAL DETERMINATION OF GENERAL CONSTRUCTION PERMIT:**

The public notice, required by Title 129 Chapter 14, shall be published on Saturday, October 21, 2017 in the Omaha World Herald newspaper and at <http://deq.ne.gov/> under "Public Notices." Persons or groups shall have 30 days after the public notice {Tuesday, November 21, 2017} to provide the NDEQ with written comments concerning the proposed permit action or to request a public hearing, in accordance with Title 129 Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing. The Director may issue the permit following the close of the public comment period and, if one is held, any public hearing.

To request additional information, submit written comments, or to request a public hearing (either electronically or through hardcopy letter) contact:

Gary Buttermore, P.E.  
Air Permitting Section Supervisor  
NDEQ Air Quality Division  
P.O. Box 98922  
Lincoln, NE 68509-8922  
Email: [ndeq.airquality@nebraska.gov](mailto:ndeq.airquality@nebraska.gov)

**Telephone inquiries may be made at: (402) 471-2186**

**TDD users should call (800) 833-7352 and ask the relay operator to call the Department at (402) 471-2186.**

Attachments:  
Fact Sheet Attachment

**Fact Sheet Attachment**  
**Potential Emissions Summary**

<b>Pollutant</b>	<b>Process Emissions</b>	<b>Combustion Emissions</b>	<b>Total Worst Case Emissions</b>
	<b>(tpy)</b>	<b>(tpy)</b>	<b>(tpy)</b>
PM	0.26	0.63	0.89
PM <sub>10</sub> <sup>[1]</sup>	0.26	1.05	1.30
PM <sub>2.5</sub> <sup>[1]</sup>	0.26	1.05	1.30
SO <sub>2</sub>	0.12	2.29	2.40
NO <sub>x</sub>	0.26	6.35	6.60
CO	0.16	3.61	3.77
VOC	0.02	1.59	1.60
<b>HAPS</b>			
HCl	2.31	-	2.31
Total HAPS	2.42	0.08	2.50

<sup>[1]</sup> For conservatism, PM<sub>10</sub> and PM<sub>2.5</sub> emission are assumed equal to Total PM process emissions.





## Fact Sheet Attachment

### Incineration Process Emissions (EP-1)

Human Cremation	Emission Factor (1)		Emission Factor (2)		Human Cremation	Emission Factor (3)		Emission Factor (2)		Medical Waste Incineration	Emission Factor (5)	
	lb/body	lb/ton	lb/body	lb/ton		lb/body	lb/ton	lb/ton	lb/ton			
Acetaldehyde	1.30E-04	1.73E-03	Antimony		3.02E-05	4.03E-04	Antimony		0.01			
Dibenzofurans	1.40E-09	1.87E-08	Arsenic		3.00E-05	4.00E-04	Arsenic		2.42E-04			
Formaldehyde	3.40E-05	4.53E-04	Beryllium		1.37E-06	1.83E-05	Beryllium		6.25E-06			
Mercury	1.30E-02	1.73E-01	Cadmium		1.11E-05	1.48E-04	Cadmium		5.48E-03			
			Chromium [4]		4.34E-05	5.79E-04	Chromium		7.75E-04			
			Cobalt		1.75E-06	2.33E-05	Chlorine		0.11			
			Hydrogen chloride		0.07	9.60E-01	Hydrogen fluoride		0.15			
			Hydrogen fluoride		6.55E-04	0.01	HCl		33.5			
			Lead		6.62E-05	8.83E-04	Polychlorinated Biphenyls		4.65E-05			
			Mercury		3.29E-03	0.04	Manganese		5.67E-04			
			Nickel		3.82E-05	5.09E-04	Mercury		0.11			
			Polycyclic aromatic hydrocarbons		3.76E-06	5.01E-05	Nickel		5.90E-04			
			Selenium		4.36E-05	5.81E-04	Nox		4.67			
							CO		2.95			
							SOx		2.17			
							PM		4.67			
							VOC		0.30			

[1] Emission Factors from the Bay Area Air Quality Management District (BAAQD) Permit Handbook (2017).

[2] Average body weight assumed to be 150 pounds. This is equivalent to 13.33 bodies per ton.

[3] Emission factors from EPA's Webfire database.

[4] Includes the emission factor for Chromium Dioxide (Chromium IV)

[5] Emission Factors from AP-42 Tables 2.3-1 through 2.3-10



## Fact Sheet Attachment

### Incineration Process Emissions (EP-1)

Permitted Incineration Limit  
Permitted Incineration Limit

250 lb/hr  
0.125 ton/hr

Maximum Values	Emission Factor	Emissions	Emissions
	lb/ton	lb/hr	tpy
Antimony <sup>[1]</sup>	1.64E-03	2.05E-04	8.99E-04
Arsenic <sup>[1]</sup>	4.00E-04	5.00E-05	2.19E-04
Beryllium <sup>[1]</sup>	1.83E-05	2.28E-06	1.00E-05
Cadmium <sup>[1]</sup>	6.81E-04	8.51E-05	3.73E-04
Chlorine <sup>[2]</sup>	0.11	1.31E-03	0.01
Chromium <sup>[1]</sup>	5.98E-04	7.48E-05	3.28E-04
Cobalt	2.33E-05	2.92E-06	1.28E-05
Dibenzofurans	1.87E-08	2.33E-09	1.02E-08
hydrogen chloride <sup>[1]</sup>	4.21	0.53	2.31
hydrogen fluoride <sup>[1]</sup>	0.02	2.84E-03	0.01
Lead	8.83E-04	1.10E-04	4.83E-04
Manganese <sup>[2]</sup>	5.67E-04	7.09E-06	3.10E-05
Mercury <sup>[1]</sup>	0.17	0.02	0.09
Nickel <sup>[1]</sup>	5.17E-04	6.47E-05	2.83E-04
Polycyclic aromatic Hydrocarbons	5.01E-05	6.27E-06	2.74E-05
Polychlorinated Biphenyls <sup>[2]</sup>	4.65E-05	5.81E-07	2.55E-06
Selenium	5.81E-04	7.27E-05	3.18E-04
PM <sup>[2]</sup>	4.67	0.06	0.26
CO <sup>[2]</sup>	2.95	0.04	0.16
NOx <sup>[2]</sup>	4.67	0.06	0.26
SOx <sup>[2]</sup>	2.17	0.03	0.12
VOC <sup>[2]</sup>	0.30	3.74E-03	0.02

<sup>[1]</sup> For common pollutants between Human Cremation (Webfire and BAAQD) emission factors and Medical Waste Incineration (AP-42) emission factors, a ratio of 9:1 was applied respectively. This is consistent with the permit condition that limits the incineration of medical waste to 10% by weight.

<sup>[2]</sup> For pollutants specific to medical incineration, it was assumed only 10% by weight is incinerated. This is based on the permit condition that limits the incineration of medical waste to 10% by weight.



## **Fact Sheet Attachment**

### **External Combustion if Natural Gas-Fired**

Maximum Incinerator(s) Capacity	10.0	MMBtu/hr
Combustion Total	87,600	MMBtu/year
Natural Gas Heating Value	1,020	MMBtu/10 <sup>6</sup> SCF
Annual Natural Gas Use <sup>[1]</sup>	85.88	10 <sup>6</sup> SCF/year

#### *External combustion emissions (natural gas)*

<b>Pollutant</b>	<b>Emission Factor<sup>[2]</sup> (lb/10<sup>6</sup> SCF)</b>	<b>PTE (tons/year)</b>
PM	1.9	0.08
PM <sub>10</sub>	7.6	0.33
PM <sub>2.5</sub>	7.6	0.33
SO <sub>2</sub>	0.6	0.03
NO <sub>x</sub>	100	4.29
CO	84	3.61
VOC	5.5	0.24
<b>Hazardous Air Pollutants (HAPs)</b>		
Benzene	2.10E-03	9.02E-05
Dichlorobenzene	1.20E-03	5.15E-05
Formaldehyde	7.50E-02	3.22E-03
Hexane	1.80	7.73E-02
Lead Compounds	5.00E-04	2.15E-05
Polycyclic Organic Matter	6.98E-04	3.00E-05
Toluene	3.40E-03	1.46E-04
Arsenic Compounds	2.00E-04	8.59E-06
Beryllium Compounds	1.20E-05	5.15E-07
Cadmium Compounds	1.10E-03	4.72E-05
Chromium Compounds	1.40E-03	6.01E-05
Cobalt Compounds	8.40E-05	3.61E-06
Manganese Compounds	3.80E-04	1.63E-05
Mercury Compounds	2.60E-04	1.12E-05
Nickel Compounds	2.10E-03	9.02E-05
Selenium Compounds	2.40E-05	1.03E-06
Total HAPs		8.11E-02

<sup>[1]</sup>Based upon operating 8,760 hours

<sup>[2]</sup>AP-42 Tables 1.4-1, 1.4-2, 1.4-3, and 1.4-4 (6/1998)



## **Fact Sheet Attachment**

### **External Combustion if LPG-Fired**

Total Boiler Capacity	10.0 MMBtu/hr
LPG Heat Content	92 MMBtu/10 <sup>3</sup> gal
LPG Heat Input	87,600 MMBtu/yr
Maximum LPG Use	952 10 <sup>3</sup> gal/year
LPG Sulfur Content <sup>[1], [2]</sup>	185 ppmw
	16.19 gr/100 ft <sup>3</sup>

#### *External combustion emissions (LPG)*

<b>Pollutant</b>	<b>Emission Factor<sup>[2]</sup> (lb/10<sup>3</sup> gal)</b>	<b>LPG PTE (tpy)</b>
PM	0.2	0.10
PM <sub>10</sub>	0.7	0.33
PM <sub>2.5</sub>	0.7	0.33
SO <sub>2</sub>	1.62	0.77
NO <sub>x</sub>	13	6.19
CO	7.5	3.57
VOC	0.8	0.38
Hazardous Air Pollutants <sup>[3]</sup>		0.08

<sup>[1]</sup>LPG sulfur content assumed 185 ppmw based upon data from Gas Producer's Association Standard 2140-92. Based upon a density of 0.125 lb/ft<sup>3</sup> from Marathon Technical Service, <http://www.marathontech.ca/assets/reference-material/fueltbl.pdf>.

<sup>[2]</sup>AP-42 Table 1.5-1 (7/08) for all emission factors except HAPs.

<sup>[3]</sup>It is assumed HAP emissions are the same as natural gas.





## Fact Sheet Attachment

### External Combustion if Distillate Oil Fired

Maximum Combined Capacity	10.0	MMBtu/hr
Annual Diesel Use <sup>[1]</sup>	635	10 <sup>3</sup> gal/year

#### *External combustion emissions (distillate oil)*

Pollutant	Emission Factor <sup>[2]</sup> (lb/10 <sup>3</sup> gal)	PTE (tons/year)
PM	2	0.63
PM <sub>10</sub>	3.3	1.05
PM <sub>2.5</sub>	3.3	1.05
SO <sub>2</sub>	7.2	2.29
NO <sub>x</sub>	20	6.35
CO	5	1.59
VOC	0.34	0.11
<b>Organic Hazardous Air Pollutants (HAPs)</b>		
Benzene	2.14E-04	6.79E-05
Ethylbenzene	6.36E-05	2.02E-05
Formaldehyde	3.30E-02	1.05E-02
Polycyclic Organic Matter	1.19E-03	3.78E-04
1,1,1-Trichloroethane	2.36E-04	7.49E-05
Toluene	6.20E-03	1.97E-03
o-Xylene	1.09E-04	3.46E-05
<b>Metallic HAPs (lb/10<sup>12</sup> Btu)</b>		
Arsenic	4	1.75E-04
Beryllium	3	1.31E-04
Cadmium	3	1.31E-04
Chromium	3	1.31E-04
Lead	9	3.94E-04
Manganese	6	2.63E-04
Mercury	3	1.31E-04
Nickel	3	1.31E-04
Selenium	15	6.57E-04
Total HAPs		1.52E-02

<sup>[1]</sup>Based upon operating 8,760 hours and 138 MMBtu/10<sup>3</sup> gal.

<sup>[2]</sup>AP-42 Tables 1.3-1, 1.3-2, 1.3-3, 1.3-9, and 1.3-10 (5/10)

