

## **MODULE 5 INCINERATION**

The incinerator consists of a slagging rotary kiln followed by a vertical afterburner. Combustion gases, after exiting the afterburner, pass through a spray dryer, a baghouse, a saturator, a two stage packed bed scrubber, and exit out the stack. The air pollution control train also includes a carbon injection system that delivers a weighed amount of activated carbon to the duct between the spray dryer and baghouse. The system consists of a storage bin that feeds two carbon-feeding trains. Each train has a rotary valve that periodically feeds carbon from the bin to a hopper mounted on a loss-in-weight scale. The scale feeds an eductor and piping that pneumatically conveys the weighed carbon to the crossover duct between the spray dryer and baghouse. The eductor motive airflow rate is a minimum of 80 actual cubic feet per minute (acfm) as specified by the eductor manufacturer.

### **5.A.           OPERATION AND MAINTENANCE**

- 5.A.1.           The Permittee shall maintain and operate the incineration system in accordance with the drawings and specifications contained in Attachments 10 and 11.
- 5.A.2.           Modifications to the drawings and specifications for the incineration system shall be allowed only in accordance with the permit modification requirements in Condition 1.D.
- 5.A.3.           All process monitors, required pursuant to Condition 5.E. shall be equipped with alarms operated to warn of deviation or imminent deviation from the limits specified in Condition 5.D.
- 5.A.4.           The Permittee shall maintain the incineration system so that when it is operated in accordance with the requirements in this permit, it will meet the performance standards specified in Condition 5.B.
- 5.A.5.           The Permittee shall maintain the incinerator and ancillary equipment in good repair. Routine maintenance shall be performed at sufficient frequency to ensure the incinerator remains in good repair. Malfunctions and deterioration shall be corrected as expeditiously as possible as outlined in Attachment 3.
- 5.A.6.           The Permittee shall comply with the provisions specified in the Fume Management Plan, Attachment 14.

### **5.B.           PERFORMANCE STANDARDS**

- 5.B.1.           The incinerator shall achieve a destruction and removal efficiency (DRE) of at least 99.99% for each of the principal organic hazardous constituents (POHCs) designated below.

- a. hexachloroethane
- b. monochlorobenzene
- c. polychlorinated biphenyls

The DRE shall be calculated in accordance with the formula given below.

$$DRE = \frac{W_{in} - W_{out}}{W_{in}} * 100\%$$

Where:  $W_{in}$  = mass feed rate of one POHC in the waste feeding the incinerator  
 $W_{out}$  = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere

The DRE may not be rounded up to meet the required standard of 99.99%.

- 5.B.2. The incinerator shall not emit particulate matter in excess of 28 milligrams per dry standard cubic meter (0.013 grains per dry standard cubic foot) when corrected to 7% oxygen in accordance with the formula given below.

$$PM_c = PM_m * \frac{14}{21 - Y}$$

Where:  $PM_c$  = corrected concentration of particulate matter  
 $PM_m$  = measured concentration of particulate matter  
 $Y$  = measured O<sub>2</sub> concentration (%) in the stack gas on a dry basis

- 5.B.3. The Permittee shall not emit hydrochloric acid and chlorine gas in excess of 32 parts per million by volume, combined emissions, expressed as hydrochloric acid equivalents, dry basis and corrected to 7% oxygen in accordance with the formula given below.

$$HCl_c = HCl_m * \frac{14}{21 - Y}$$

Where:  $HCl_c$  = corrected concentration of hydrochloric acid equivalents  
 $HCl_m$  = measured concentration of hydrochloric acid equivalents  
 $Y$  = measured O<sub>2</sub> concentration (%) in the stack gas on a dry basis

- 5.B.4. The Permittee shall control emissions of products of incomplete combustion from the stack so that at least one of the following two standards is met:
- a. The carbon monoxide (CO) level in the stack, corrected to 7% oxygen in accordance with the formula given below, shall not exceed 100 ppmv, dry

basis, over a one hour rolling average and shall not exceed 500 ppmv, dry basis, for more than one minute at any time.

$$CO_c = CO_m * \frac{14}{21 - Y}$$

Where:  $CO_c$  = corrected CO concentration (ppmv) on a dry basis  
 $CO_m$  = measured CO concentration (ppmv) on a dry basis  
 $Y$  = measured O<sub>2</sub> concentration (%) in the stack gas on a dry basis

- b. The total hydrocarbon (THC) emissions from the stack, corrected to 7% oxygen in accordance with the formula given below, shall not exceed 10 ppmv, over a one hour rolling average.

$$THC_c = THC_m * \frac{14}{21 - Y}$$

Where:  $THC_c$  = corrected THC concentration (ppmv)  
 $THC_m$  = measured THC concentration (ppmv)  
 $Y$  = measured O<sub>2</sub> concentration (%) in the stack gas on a dry basis

- 5.B.5. The Permittee shall control metal emissions from the stack so that the rate of emission for semivolatile metals (lead and cadmium combined), low volatile metals (arsenic, beryllium, and chromium combined), and mercury, corrected to 7% oxygen in accordance with the formula given below, is no greater than the maximum allowable emission rate specified herein.

<u>Metal</u>	<u>Maximum Emission Rate (µg/dscm)</u>
Semivolatile metals	230
Low volatile metals	92
Mercury	130

$$M_c = M_m * \frac{14}{21 - Y}$$

Where:  $M_c$  = corrected concentration of metal  
 $M_m$  = measured concentration of metal  
 $Y$  = measured O<sub>2</sub> concentration (%) in the stack gas on a dry basis

- 5.B.6. The Permittee shall not emit dioxins and furans in excess of 0.40 ng TEQ/dscm corrected to 7% oxygen in accordance with the formula given below.

$$TEQ_c = TEQ_m * \frac{14}{21-Y}$$

Where:  $TEQ_c$  = corrected concentration of dioxin and furan TEQ  
 $TEQ_m$  = measured concentration of dioxin and furan TEQ  
 $Y$  = measured  $O_2$  concentration (%) in the stack gas on a dry basis

TEQ is defined in 40 CFR §63.1201

5.B.7. Compliance with the operating conditions specified in Condition 5.D. of this permit shall be regarded as compliance with the required performance standards identified in Conditions 5.B.1. through 5.B.6. However, if it is determined that compliance with the operating conditions in 5.D. is not sufficient to ensure compliance with the performance standards specified in Conditions 5.B.1. through 5.B.6., the permit may be modified, revoked, or reissued, pursuant to R315-3-4.2.

5.C. PERMITTED AND PROHIBITED WASTES

5.C.1. The Permittee may feed to the incinerator the wastes identified in Condition 2.C.1. unless prohibited in Condition 5.C.2. subject to the requirements of this permit.

5.C.2. The following shall not be fed to the incinerator at any time:

- a. Any waste or material identified in Condition 2.C.2.
- b. Waste with the codes F020, F021, F022, F023, F026, F027, and F028.

5.C.3. The Permittee may pursue approval to incinerate dioxin-listed wastes (i.e., wastes with the codes F020, F021, F022, F023, F026, F027, and F028), but any such request for approval must comply with the following:

- a. The request for approval shall be considered a class 3 permit modification subject to all applicable procedures in Condition 1.D.2.
- b. The modification request shall include a plan detailing two separate tests that must be successfully conducted before final approval to incinerate dioxin-listed wastes can be obtained.
- c. The first or DRE test shall be for the purpose of demonstrating a DRE equal to or greater than 99.9999% on all POHCs. The designated POHCs shall be those determined to be more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. The test plan must include all applicable EPA-approved trial burn test methods and procedures in effect at the time of the request.

- d. The Director may require the Permittee to demonstrate compliance with other performance standards contained in this permit when conducting this DRE test.
- e. The Director may require the Permittee to perform additional risk assessment studies based upon the measured emissions from the DRE test.
- f. The second test that must be detailed in the class 3 modification request may only be conducted if the Permittee successfully demonstrates to the Director that at least 99.9999% DRE was obtained on all of the POHCs during the DRE test burn. The purpose of the second test, the dioxin risk test, is to demonstrate that while burning dioxin-listed wastes, the dioxin/furan emissions from the incinerator are below levels that pose an unacceptable risk to human health and the environment. The Permittee may only incinerate dioxin-listed wastes for the purpose of conducting this dioxin risk test.
- g. The description of this dioxin risk test in the modification request must include at a minimum the following:

Details of all applicable EPA-approved test methods and procedures that will be used during the test.

Provisions for ensuring that the dioxin-listed wastes fed during the test are representative of the dioxin-listed wastes that the Permittee expects to feed during routine operation.

Procedures to conduct a risk assessment based upon the measured dioxin/furan emission rates as directed by the Director.

Management procedures for dioxin-listed wastes at the facility prior to incineration.

If applicable, specific incinerator operating conditions when feeding dioxin-listed wastes.

- h. No final approval to incinerate dioxin-listed wastes can be granted unless the Permittee successfully conducts both tests as described in this condition and demonstrates through approved risk assessment procedures that burning dioxin-listed wastes does not pose an unacceptable risk to human health and the environment.

#### 5.D. OPERATING REQUIREMENTS AND FEED RATE LIMITS

The Permittee shall comply with all requirements established in this permit when feeding any wastes to the incinerator, including those which may not carry an

EPA waste code (e.g., infectious waste, industrial waste, exempt hazardous waste, non-hazardous waste, etc.).

The feed rate limits established in this Condition shall include contributions from all feed sources, waste and non-waste. (For example, metals feed rates shall include contributions from sources such as shot from slag removal equipment and fluxing agents; weight limits shall include containers, fluxing agents, and other additives fed to the incinerator; etc. However, analysis of additives such as salt or glass which are not likely to have significant levels of metals will not be required.)

All operating requirements and feed rate limits described in this Condition are based upon instantaneous, unsmoothed values unless explicitly indicated otherwise. When two instruments are used to monitor a process variable, one of the instruments will be selected for compliance purposes, unless indicated otherwise below. When three instruments are used to monitor a process variable, the selected value will be the median value of the three instrument readings if all three are on-line, the average of the two if only two are on-line, or the value of the one if only one is on-line. The selected value will be the compliance point.

Where an hourly rolling average (HRA) or a 12-hour rolling average is specified, the calculations shall be in accordance with 40 CFR §63.1209(a)(6) and 40 CFR §63.1209(b)(5).

The Permittee may feed the wastes described in Condition 5.C.1. to the incinerator only under the following conditions:

- 5.D.1. The temperature of the combustion gas at the kiln exit shall not be less than 1824°F on an hourly rolling average basis. This temperature is defined as the average temperature readings of either the A and B or the A and C infrared pyrometers. Alternatively, when only one infrared pyrometer is on-line, the temperature of the combustion gas at the kiln exit, as measured by the single pyrometer, shall not be less than 1940°F on an hourly rolling average basis. The Permittee shall document in the operating record those periods when only one infrared pyrometer is on-line.
- 5.D.2. The kiln rotation shall be maintained at 0.15 rpm or greater.
- 5.D.3. The kiln secondary combustion air pressure shall be maintained at 2" W.C. or greater.
- 5.D.4. The temperature of the combustion gas at the afterburner hot duct shall not be less than 2026°F on an hourly rolling average basis.
- 5.D.5. The Permittee shall control fugitive emissions from the combustion zone of the incinerator. The pressure in the combustion zone shall not be equal to or above atmospheric pressure for more than 5 seconds.

- 5.D.6. The Permittee shall minimize the emissions from the deslagger by venting the fumes back to the afterburner chamber. The Permittee shall correct malfunctions in the venting system within 72 hours.
- 5.D.7. The concentration of oxygen in the afterburner shall not be less than 3% for more than 2 minutes or less than 2% for more than 15 seconds.
- 5.D.8. The exhaust gas temperature at the exit of the spray dryer shall not exceed 385°F on an hourly rolling average basis. The exhaust gas temperature at the exit of the spray dryer shall not exceed 520°F. The exhaust gas temperature at the exit of the spray dryer shall not be less than 250°F nor be less than 350°F for more than 15 minutes.
- 5.D.9. The brine pressure to the spray dryer upper nozzles shall not be less than 300 psi. The brine pressure to the spray dryer lower nozzles shall not be less than 300 psi.
- 5.D.10. The pressure drop across the baghouse shall be no less than 1.8 inches W.C.
- 5.D.11. The baghouse shall be operated with a minimum of seven compartments on line.
- 5.D.12. The baghouse shall be operated so that the reading from the broken bag detector (optical particle counter) does not exceed 50% of the instrument span.
- 5.D.13. The exhaust gas temperature at the exit of the saturator shall not exceed 225°F.
- 5.D.14. The liquid flowrate to the saturator shall not be less than 300 gallons per minute on an hourly rolling average basis.
- 5.D.15. The pH of the first stage scrubber liquid feed to the packed tower shall not be less than 5.99 on an hourly rolling average basis. Sodium carbonate will be used as the neutralization agent.
- 5.D.16. Scrubber liquid flowrate to the first stage of the packed tower shall not be less than 1907 gallons per minute on an hourly rolling average basis.
- 5.D.17. The pressure drop across the first stage of the packed tower shall not be less than 0.5" W.C. on an hourly rolling average basis.
- 5.D.18. The pH of the second stage scrubber liquid feed to the packed tower shall not be less than 6.25 on an hourly rolling average basis. Sodium carbonate will be used as the neutralization agent.
- 5.D.19. The pH of the scrubber effluent from the second stage of the packed tower shall not be less than 5.8 on an hourly rolling average basis.

- 5.D.20. Scrubber liquid flowrate to the second stage of the packed tower shall not be less than 1972 gallons per minute on an hourly rolling average basis.
- 5.D.21. The pressure drop across the second stage of the packed tower shall not be less than 0.5" W.C. on an hourly rolling average basis.
- 5.D.22. The feed rate of activated carbon to the inlet of the baghouse shall not be less than 26.2 pounds per hour on an hourly rolling average basis.
- 5.D.23. reserved
- 5.D.24. Combustion gas velocity, measured as combustion gas flowrate at the stack, shall not exceed 77,147 acfm on an hourly rolling average basis.
- 5.D.25. Emissions shall be controlled so that at least one of the following is met:
- a. Carbon monoxide (CO) concentration in the stack exhaust gas, corrected to 7% oxygen in accordance with the formula specified in Condition 5.B.4., shall not exceed 100 ppmv, dry basis, over a one hour rolling average and shall not exceed 500 ppmv, dry basis, for more than one minute at any time.
  - b. Total hydrocarbon (THC) concentration in the stack exhaust gas, corrected to 7% oxygen in accordance with the formula specified in Condition 5.B.4., shall not exceed 10 ppmv, over a one hour rolling average.
- 5.D.26. The total feed rate of liquid wastes through burner A-104 in the kiln front wall shall not exceed 3090 pounds per hour on an hourly rolling average basis. The feed rate of liquid wastes through burner A-104 in the kiln front wall shall not exceed 90 pounds per minute for more than 15 seconds.
- 5.D.27. The feed rate of liquid waste through burner A-104 in the kiln front wall shall not be less than 1.125 gallons per minute for more than 15 seconds except during a three minute waste liquid gun startup transition period.
- 5.D.28. The feed rate of liquid wastes through the kiln direct burn lance, A-101, shall not exceed 1710 pounds per hour on an hourly rolling average basis.
- 5.D.29. The feed rate of liquid waste through the kiln aqueous waste lance, A-102, shall not exceed 1350 pounds per hour on an hourly rolling average basis. The feed rate of liquid wastes through the kiln aqueous waste lance, A-102, shall not exceed 60 pounds per minute for more than 15 seconds.
- 5.D.30. The feed rate of pumpable sludge through the kiln sludge lance, A-103, shall not exceed 2170 pounds per hour on an hourly rolling average basis. The feed rate of pumpable sludge through the kiln sludge lance, A-103, shall not exceed 200 pounds per minute for more than 15 seconds.

- 5.D.31. The feed rate of bulk solids and containerized wastes combined to the kiln shall not exceed 18,600 pounds per hour on an hourly rolling average basis.
- 5.D.32. The total feed rate of gas and liquid wastes to the afterburner burners A-106A, A-106B-1, A-106B-3, and A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content equal to or greater than 5000 Btu per pound) shall not exceed 3720 pounds per hour on an hourly rolling average basis. The feed rate of liquid wastes through burner A-106A in the afterburner shall not exceed 90 pounds per minute for more than 15 seconds. The total feed rate of gas and liquid wastes through burners A-106B-1, A-106B-3, and A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content equal to or greater than 5000 Btu per pound) in the afterburner shall not exceed 90 pounds per minute for more than 15 seconds.
- 5.D.33. The feed rate of liquid waste through burner A-106A in the afterburner shall not be less than 1.125 gallons per minute for more than 15 seconds except during a three minute waste liquid gun startup transition period.
- 5.D.34. The feed rate of liquid waste through burners A-106B-1 and A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content equal to or greater than 5000 Btu per pound) in the afterburner shall not be less than 1.125 gallons per minute for more than 15 seconds except during a three minute waste liquid gun startup transition period.
- 5.D.35. The total feed rate of liquid wastes through the afterburner aqueous waste lances, A-105A and/or A-105B, and burner A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content less than 5000 Btu per pound) shall not exceed 6440 pounds per hour on an hourly rolling average basis. The feed rate of liquid wastes through lance A-105A in the afterburner shall not exceed 60 pounds per minute for more than 15 seconds. The total feed rate of liquid wastes through lance A-105B and burner A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content less than 5000 Btu per pound) in the afterburner shall not exceed 60 pounds per minute for more than 15 seconds.
- 5.D.36. Total organic chlorine feed to the incinerator for all feed mechanisms combined shall not exceed 1775 pounds per hour on a 12-hour rolling average basis.
- 5.D.37. The maximum thermal input to the incineration system (kiln and afterburner combined) for any combination of waste, fuel, or both shall not exceed  $155.7 \times 10^6$  Btu per hour on an hourly rolling average basis.
- 5.D.38. The heat content of the liquid waste fed through burners A-104, A-106A, and A-106B-1 shall be a minimum of 5000 Btu per pound.
- 5.D.39. The heat content of aqueous waste fed through lances A-102, A-105A, and A-105B shall not exceed 5000 Btu per pound.

- 5.D.40. The viscosity of liquid waste as fed to the kiln burner (A-104) shall not exceed 100 centipoise (cp). The viscosity of liquid waste as fed to the afterburner burners (A-106A, A-106B-1, and A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content equal to or greater than 5000 Btu per pound)) shall not exceed 50 centipoise (cp).
- 5.D.41. The viscosity of pumpable sludge as fed to the kiln shall not exceed 1500 cp. The viscosity of liquid wastes as fed to the kiln through the direct burn lance (A-101) shall not exceed 1500 cp.
- 5.D.42. The differential pressure (atomizing air to waste liquid) for guns A-104, A-106A, and A-106B-1 shall be maintained at or above 10 psid.
- 5.D.43. Atomizing air pressure to the aqueous waste lances (A-102, A-105A, and A-105B) shall be maintained at or above 30 psig. Atomizing air pressure to the corrosive waste port (A-106B-5) shall be maintained at or above 30 psig. Atomizing air pressure to the sludge lance (A-103) and the direct burn lance (A-101) shall be maintained at or above 5 psig.
- 5.D.44. The waste liquid pressure immediately upstream of the block valve/control valve to A-102, A-104, A-105A, A-105B, A-106A, A-106B-1, and A-106B-5 (when the waste being fed from the drive through corrosive direct burn system has a heat content equal to or greater than 5000 Btu per pound) shall be maintained at or above 15 psig.
- 5.D.45. The cylinder eductor nitrogen pressure shall be maintained at or above 50 psig.
- 5.D.46. The glove box eductor nitrogen pressure shall be maintained at or above 15 psig.
- 5.D.47. The Permittee shall not exceed the maximum metal feed rates to the incinerator as specified herein. Compliance with these metals feed limitations shall be demonstrated through waste analysis of the incinerator feed in accordance with Conditions 2.D. and 5.D.

<u>Metal</u>	<u>Maximum feed rate (lb/hr on a 12-hour rolling average basis)</u>
Semivolatile metals (lead and cadmium combined)	4370
Low volatile metals (arsenic, beryllium, and chromium combined)	964
Mercury	1.29

- 5.D.48. The Permittee shall operate the incinerator in such a way as to minimize opening the emergency vent.

- 5.D.49. The Permittee shall operate the incinerator in such a way as to minimize bypassing the baghouse.
- 5.D.50. The Permittee shall operate the incinerator in such a way as to minimize the activation of the emergency stop button.
- 5.D.51. Throughout operation, the Permittee shall conduct sufficient analysis of the feed, in accordance with the waste analysis requirements of Conditions 2.D. and 5.D., to verify that the waste fed to the incinerator is within the physical and chemical composition limits specified in this permit.

5.E. MONITORING, RECORDKEEPING, AND CALIBRATION REQUIREMENTS

- 5.E.1. Hazardous wastes may be fed to the incinerator only when all instruments required by this condition are on-line and operating properly.
- 5.E.2. The Permittee shall maintain and operate the monitoring and recording equipment specified in Attachment 16 while incinerating hazardous waste. The data shall be monitored and recorded in accordance with Attachment 16. The monitoring equipment specified in Attachment 16 shall provide accurate data.
- 5.E.3. Alarms generated by the plant control system shall be recorded and made available for review by the Director.
- 5.E.4. The Permittee shall record the date and time of all automatic waste feed cut-offs, including the initiating triggering parameter(s), reason for the cut-off, and corrective action taken.
- 5.E.5. The monitoring instruments shall be calibrated in accordance with Attachment 13.
- 5.E.6. The Permittee shall comply with 40 CFR 266 Appendix IX, Section 2.1, which is incorporated by reference in R315-14-7, and the Quality Assurance and Calibration Procedures Plan for CO and O<sub>2</sub> Continuous Emission Monitors in Attachment 15.
- 5.E.7. The Permittee shall provide access to the data archiving system (Wonderware) for the Director to review. This shall be accomplished by making available a remote link to the computer system and the appropriate query system for accessing the required data. Data to be accessible include the data required to be maintained in Attachment 16.
- 5.E.8. All wastes or materials processed in the incinerator shall be tracked in accordance with the waste tracking provisions of Attachment 8. The Permittee shall provide access to the electronic waste tracking system portion of the operating record for

the Director to review. This shall be accomplished by making available a remote link to the computer system and the appropriate query system for accessing the required data. Data to be accessible include manifest information, load sample analyses, weights, current locations, movement histories, and the dates/times incinerated or transferred off-site.

5.F. WASTE FEED CUT-OFF REQUIREMENTS

All waste feed cut-off requirements described in Condition 5.F. are based upon instantaneous, unsmoothed values unless explicitly indicated otherwise.

The Permittee shall maintain systems to automatically cut off the hazardous waste feed to the incinerator as identified in Attachment 10 and under any of the following conditions:

PARAMETER	TYPE OF WFCO*	IMMEDIATE CUTOFF LIMIT	DELAYED CUTOFF LIMIT	DELAY PERIOD
1. Kiln exit gas temperature ((a) average of two infrared pyrometers or (b) reading from one infrared pyrometer)	2	(a)<1824°F HRA (b)<1940°F HRA	N/A	N/A
2. Kiln rotation	2	<0.15 rpm	N/A	N/A
3. Kiln secondary combustion air pressure	3	<2" W.C.	N/A	N/A
4. Afterburner exit gas temperature	1	<2026°F HRA	N/A	N/A
5. Afterburner chamber differential pressure	1	N/A	≥0.0" W.C.	5 seconds
6. Afterburner oxygen concentration	1	N/A	<3%	2 minutes
7. Afterburner oxygen concentration	1	N/A	<2%	15 seconds
8. Spray dryer outlet gas temperature	1	>385°F HRA	N/A	N/A
9. Spray dryer outlet gas temperature	1	>520°F	N/A	N/A
10. Spray dryer outlet gas temperature	1	<250°F	<350°F	15 minutes
11. Spray dryer upper brine pressure	1	<300 psi	N/A	N/A
12. Spray dryer lower brine pressure	1	<300 psi	N/A	N/A
13. Pressure drop across the baghouse	1	<1.8" W.C.	N/A	N/A
14. Baghouse compartments on-line	1	<7 compartments	N/A	N/A
15. Baghouse broken bag detector	1	>50% of span	N/A	N/A
16. Saturator outlet gas temperature	1	>225°F	N/A	N/A
17. Saturator brine flow rate	1	<300 gpm HRA	N/A	N/A
18. 1st stage packed tower liquid feed pH	1	<5.99 HRA	N/A	N/A
19. 1st stage packed tower brine flow rate	1	<1907 gpm HRA	N/A	N/A
20. 1st stage packed tower pressure drop	1	<0.5" W.C. HRA	N/A	N/A
21. 2nd stage packed tower liquid feed pH	1	<6.25 HRA	N/A	N/A
22. 2nd stage packed tower liquid effluent pH	1	<5.8 HRA	N/A	N/A
23. 2nd stage packed tower brine flow rate	1	<1972 gpm HRA	N/A	N/A
24. 2nd stage packed tower pressure drop	1	<0.5" W.C. HRA	N/A	N/A
25. Feed rate of activated carbon	1	<26.2 lb/hr HRA	N/A	N/A
26. reserved	N/A	N/A	N/A	N/A

PARAMETER	TYPE OF WFCO*	IMMEDIATE CUTOFF LIMIT	DELAYED CUTOFF LIMIT	DELAY PERIOD
27. Combustion gas flowrate as measured at the stack	1	>77,147 acfm HRA	N/A	N/A
28. a. CO concentration in the stack (corrected to 7% oxygen, dry basis), OR b. THC concentration in the stack (corrected to 7% oxygen)	1	>100 ppmv HRA	>500 ppmv	60 seconds
	1	>10 ppmv HRA	N/A	N/A
29. Feed rate of liquid waste through the waste liquid gun of burner A-104	5	>3090 lb/hr HRA	>90 lb/min	15 seconds
30. Feed rate of liquid waste through the waste liquid gun of burner A-104 (except during 3 minute gun startup)	5	N/A	<1.125 gpm	15 seconds
31. Feed rate of liquid waste through the kiln direct burn lance A-101	5	>1710 lb/hr HRA	N/A	N/A
32. Feed rate of liquid waste through the kiln aqueous lance A-102	5	>1350 lb/hr HRA	>60 lb/min	15 seconds
33. Feed rate of pumpable sludge through the kiln sludge lance A-103	5	>2170 lb/hr HRA	>200 lb/min	15 seconds
34. Feed rate of bulk solids and containerized wastes combined	4	>18,600 lb/hr HRA	N/A	N/A
35. Total feed rate of gas and liquid waste to the afterburner through the waste liquid guns of burners A-106A, A-106B-1, A-106B-3, and A-106B-5 (when corrosive direct burn feed heat content $\geq$ 5000 Btu/lb)	6	>3720 lb/hr HRA	N/A	N/A
36. Feed rate of liquid waste to the afterburner through burner A-106A	5	N/A	>90 lb/min	15 seconds
37. Total feed rate of gas and liquid waste to the afterburner through burners A-106B-1, A-106B-3, and A-106B-5 (when corrosive direct burn feed heat content $\geq$ 5000 Btu/lb)	8	N/A	>90 lb/min	15 seconds
38. Feed rate of liquid waste through the waste liquid gun of burner A-106A (except during 3 minute gun startup)	5	N/A	<1.125 gpm	15 seconds
39. Feed rate of liquid waste through the waste liquid gun of burners A-106B-1 and A-106B-5 (when corrosive direct burn feed heat content $\geq$ 5000 Btu/lb) (except during 3 minute gun startup)	9	N/A	<1.125 gpm	15 seconds
40. Total feed rate of liquid waste to the afterburner through the aqueous waste lances A-105A, A-105B, and burner A-106B-5 (when corrosive direct burn feed heat content < 5000 Btu/lb)	7	>6440 lb/hr HRA	N/A	N/A
41. Feed rate of liquid waste to the afterburner through the aqueous lance A-105A	5	N/A	>60 lb/min	15 seconds
42. Total feed rate of liquid waste to the afterburner through the aqueous lance A-105B and burner A-106B-5 (when corrosive direct burn feed heat content < 5000 Btu/lb)	10	N/A	>60 lb/min	15 seconds

PARAMETER	TYPE OF WFCO*	IMMEDIATE CUTOFF LIMIT	DELAYED CUTOFF LIMIT	DELAY PERIOD
43. Atomizing air to the direct burn lance A-101	5	<5 psig	N/A	N/A
44. Atomizing air pressure to kiln aqueous lance A-102	5	<30 psig	N/A	N/A
45. Atomizing air pressure to sludge lance A-103	5	<5 psig	N/A	N/A
46. Atomizing air to waste liquid differential pressure for gun A-104	5	<10 psid	N/A	N/A
47. Atomizing air to waste liquid differential pressure for gun A-106A	5	<10 psid	N/A	N/A
48. Atomizing air to waste liquid differential pressure for gun A-106B-1	5	<10 psid	N/A	N/A
49. Atomization air pressure to burner A-106B-5	5	<30 psig	N/A	N/A
50. Atomization air pressure to lance A-105A	5	<30 psig	N/A	N/A
51. Atomization air pressure to lance A-105B	5	<30 psig	N/A	N/A
52. Waste liquid pressure to lance A-102	5	<15 psig	N/A	N/A
53. Waste liquid pressure to gun A-104	5	<15 psig	N/A	N/A
54. Waste liquid pressure to gun A-106A	5	<15 psig	N/A	N/A
55. Waste liquid pressure to gun A-106B-1	5	<15 psig	N/A	N/A
56. Waste liquid pressure to gun A-106B-5 (when corrosive direct burn feed heat content $\geq$ 5000 Btu/lb)	5	<15 psig	N/A	N/A
57. Waste liquid pressure to lance A-105A	5	<15 psig	N/A	N/A
58. Waste liquid pressure to lance A-105B	5	<15 psig	N/A	N/A
59. Cylinder eductor nitrogen pressure	5	<50 psig	N/A	N/A
60. Shutdown of the A-104 burner management system (BMS)	2	shutdown**	N/A	N/A
61. Shutdown of the A-106A burner management system (BMS)	5	shutdown**	N/A	N/A
62. Shutdown of the A-106B burner management system (BMS)	5	shutdown**	N/A	N/A
63. Shutdown of the A-106A and A-106B burner management systems (BMS)	1	shutdown**	N/A	N/A
64. Emergency stop button	1	activated	N/A	N/A
65. Manual waste feed cutoff button	1	activated	N/A	N/A
66. Utility power failure	1	power failure	N/A	N/A
67. Emergency vent opening	1	vent open	N/A	N/A
68. Baghouse on bypass	1	baghouse bypass	N/A	N/A
69. reserved	N/A	N/A	N/A	N/A
70. ID fan off	1	fan off	N/A	N/A

- \* 1 -- total waste feed cutoff  
2 -- total kiln waste feed cutoff only  
3 -- containers, solids, and sludge cutoff only  
4 -- combined bulk solids and containers waste feed cutoff only  
5 -- waste feed cutoff to the affected gun/lance/feed mechanism only

- 6 -- combined A-106A, A-106B-1, A-106B-3, and A-106B-5 (when corrosive direct burn feed heat content  $\geq$  5000 Btu/lb) waste feed cutoff only
- 7 -- combined A-105A, A-105B, and A-106B-5 (when corrosive direct burn feed heat content  $<$  5000 Btu/lb) waste feed cutoff only
- 8 -- combined A-106B-1, A-106B-3, and A-106B-5 (when corrosive direct burn feed heat content  $\geq$  5000 Btu/lb) waste feed cutoff only
- 9 -- combined A-106B-1 and A-106B-5 (when corrosive direct burn feed heat content  $\geq$  5000 Btu/lb) waste feed cutoff only
- 10 -- combined A-105B and A-106B-5 (when corrosive direct burn feed heat content  $<$  5000 Btu/lb) waste feed cutoff only

- \*\* shutdown of the burner management system (BMS) for any of the following:
- i) Flameout;
  - ii) Loss of burner combustion air pressure;
  - iii) Loss of pressure on all enabled fuel and waste liquid lines;
  - iv) Loss of atomizing air pressure on all enabled fuel and waste liquid lines;
  - v) Disabling all fuels and waste liquids;
  - vi) Manual shutdown of BMS;

- 5.F.69. In the case of a malfunction of the automatic waste feed cut-off system, the Permittee shall immediately initiate manual waste feed cut-off. The Permittee shall not restart feed to the incinerator until the problem causing the malfunction has been identified and corrected.
- 5.F.70. The Permittee shall test the emergency waste feed cut-off systems and associated alarms at least on a weekly basis (once every 168 hours on waste) in accordance with Attachment 12 to verify operability.
- 5.F.71. For certain feed parameters that require analysis of the waste in addition to a feed rate in order to comply with feed limitations (i.e., metals, chlorine, thermal input), the control system shall be programmed to evaluate the impact of feeding the next incremental unit of waste and forecast if the permit limits would still be met. If feeding that particular waste would cause the permit limits to be exceeded, the system shall not allow the material to be fed.

5.G. TESTING REQUIREMENTS

- 5.G.1. The Permittee shall conduct periodic sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards or a subset of the performance standards as approved by the Director in the test plan. This sampling and analysis or subsequent performance testing shall be performed at a minimum of every 30 months in accordance with the MACT Confirmatory and Comprehensive Performance Testing Schedule or more often if requested in writing by the Director. The performance testing, as required by this condition, is not for the purpose of establishing new permit limits. The Permittee must follow the

modification procedures in Condition 1.D. and conduct a trial burn for establishing new limits.

- 5.G.2. At least six months prior to a scheduled performance test, the Permittee shall submit a test plan describing the parameters to be tested for, the sampling and analytical methods to be used, the quality assurance/quality control procedures to be followed, and any other necessary information for approval from the Director. Within 90 days of the conclusion of the performance test (defined as the last day that samples were collected at the site) a report shall be submitted to the Director. The report will include a copy of all data collected during the performance test and calculations and determinations to show whether the applicable performance standards outlined in Condition 5.B. were met. The calculations and supporting data shall also be submitted electronically.