

ATTACHMENT G

**CONSOLIDATED INCINERATION FACILITY
RADIOACTIVE MIXED WASTE INCINERATION PERMIT**

(78 Sheets)

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MODULE III, SECTION E, PART 3

ASH SOLIDIFICATION SYSTEM

IIIEC.A. HIGHLIGHTS

The conditions of Module III, Section E, Part 3 apply to the treatment (ash solidification) of wet ash from the rotary kiln in drums within the ashcrete processing enclosure. Ash that is generated following combustion of solid and liquid wastes in the rotary kiln is deposited in an ash receiving trough filled with water which is located beneath the rotary kiln at the discharge end. The water quenches the ash such that it can subsequently be loaded into 55 gallon, open-top, U.S. Department of Transportation (DOT) drums and processed into ashcrete.

A hydraulic-powered backhoe-type ash scoop will remove wet ash from the ash receiver trough, pausing a moment for dewatering the ash, then depositing it into a 55-gallon drum. This cycle is repeated until the drum has been filled to the correct amount. The hydraulic-powered backhoe-type ash scoop is enclosed in the ash receiver/hood assembly. This receiver/hood assembly is completely sealed and directly connected to the rotary kiln ash discharge head. When the desired weight of ash has been deposited in a drum, the drum is positioned on the ashcrete car and transported to the automatic ashcrete unit.

In the ashcrete unit, water (if required) and cement are added in predetermined quantities to the drum of wet ash to produce ashcrete. After each addition, the drum is capped and tumbled end over end to thoroughly mix the drum contents. After the drum is capped the final time, the spray decontamination system is activated. After successful decontamination is completed, each drum will be labeled in accordance with R.61-79.264.173 (Management of Containers), securely placed on pallets, and transported to storage and disposal. The ashcrete will be tested and certified to pass the appropriate test as required by 40 CFR 268 for land disposal before being sent to a RCRA-permitted storage or disposal facility.

Offgas scrubber blowdown will also be solidified to meet LDR treatment standards in the ashcrete unit. Blowdown will be pumped from a blowdown hold tank via a recirculation piping system to the ashcrete unit. A predetermined quantity of blowdown will be metered into an empty drum. The partially filled drum will then be processed in the same manner as a drum that is partially full of ash.

IIIE3.B. WASTE SOLIDIFICATION IN CONTAINERS

The Permittee shall test (after treatment is completed) solidified ashcrete and blowdown produced in the ashcrete processing enclosure using the Paint Filter Test (Method Land Disposal 9095 (SW-346)) and all other tests indicated in Volume X, Table C-7 of the approved permit application for the ashcrete and solidified blowdown. The frequency of analysis described in the Waste Analysis Plan (Volume X, Section C-2) of the approved permit application shall be strictly adhered to until such time as new data is submitted to the Department which shows less frequent testing will assure compliance with R.61-79.264.314 and the Department approves such a change to the Waste Analysis Plan.

IIIE3.C. CONTAINMENT

The Permittee shall construct and/or maintain the containment system for the container storage and processing units in accordance with the requirements of R.61-79.264.175 and as specified in the plans, schedule, and specifications included in Volume X of the approved permit application.

IIIE3.D. INSPECTIONS

The Permittee shall inspect areas where containers are stored or handled to detect leaking containers and deterioration of containers and containment systems as specified in Volume X, Table F-1 (CIF General Inspection Schedule) of the approved permit application.

IIIE3.E. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

The Permittee shall not locate or treat containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line, as required by R.61-79.264.176.

IIIE3.F. SPECIAL REQUIREMENTS FOR INCOMPATIBLE WASTE

IIIE3.F.1. Prior to placing incompatible wastes or incompatible materials in the same container, the Permittee shall comply with R.61-79.264.17(b) and procedures specified in Volume X of the approved permit application.

IIIE3.F.2. The Permittee shall not place hazardous waste in an uncleaned container that previously held an incompatible waste or material.

IIIE3.F.3. The Permittee must document compliance with Conditions IIIE3.F.1. and IIIE3.F.2. as required by R.61-79.264.17(c) and place this documentation in the operating record. (Condition II.K.1.).

IIIE3.F.4. The Permittee shall separate containers of incompatible wastes as required by R.61-79.264.177(c) and as indicated in Volume X of the approved permit application. The Permittee shall not store containers of identified incompatible wastes within the same containment area.

IIIE3.F.5. The Permittee shall not manage containers of incompatible waste in the same batch through the ashcrete processing enclosure.

IIIE3.G. CLOSURE

At closure, the owner or operator must remove all hazardous waste and hazardous waste residues from the ash solidification system. The Permittee shall close the ashcrete container storage areas and ashcrete processing units in accordance with the requirements of R.61-79.264.112 and 264.178 and the Closure Plan in Volume X of the approved permit application.

If the Permittee demonstrates that not all contaminated soils can be practically removed or decontaminated, in accordance with the approved Closure Plan, then the Permittee shall close the ash solidification area(s) and perform post-closure care in accordance with R.61-79.264.310.

MODULE III, SECTION E, PART 4

INCINERATION

IIIE4.A. HIGHLIGHTS

Module III, Section E, Part 4, plus Module III, Section E, Part 5 for Short-Term Incineration, covers the four major phases of incineration operation: (1) shakedown period, (2) trial burn period, (3) post-trial burn period, and (4) final operation. IIIE Part 4 provides the conditions for construction and final operation of the new incinerator. IIIE Part 5, for Short-Term Incineration, covers the shakedown, trial-burn and post trial burn operating periods for the new incinerator. For the new incinerator, some permit conditions will initially be tentative and will need to be finalized after the trial burn results have been evaluated. In IIIE Part 4, the conditions that may be subject to change for the new incinerator are marked with an asterisk (*).

The conditions of IIIE Part 4, as well as IIIE Part 5, apply to the incineration system at the CIF. The incineration system at the CIF primarily consists of the following processes:

1. Waste Feed Systems
2. Auxiliary Fuel Feed System
3. Incineration System
4. Air Pollution Control System
5. Container Storage Facilities (IIIE Part 1)
6. Storage/Treatment in Tanks (IIIE Part 2)
7. Ash Solidification System (IIIE Part 3)

The incinerator is designed to process two distinct types of waste feeds: Liquid waste feeds and Solid waste feeds. Liquid wastes will be fed from storage/blend tanks to the burner systems located in the Primary Combustion Chamber (PCC) and directly from the organic waste storage tank (OWST) at the Defense Waste Processing Facility (DWPF) to the Secondary Combustion Chamber (SCC). The Solid waste feed system consists of a conveyor system and a ram feeder system. When received at the CIF, all solid wastes will be in combustible containers.

The auxiliary fuel available to the incinerator is No. 2 fuel oil, which will be stored in an above ground 12,600 gallon tank. The auxiliary fuel oil will be utilized when needed to ensure that proper combustion temperatures are maintained within the incineration system at all times.

The incineration system includes a primary and secondary combustion chamber. The PCC is a rotary kiln. The approximate dimensions of the rotary kiln are 3 ft. inside diameter x 25 ft. in length. The SCC is a high temperature, refractory-lined vessel. The approximate dimensions of the SCC are 7 ft. inside diameter x 21 ft. in length. The SCC is followed by a refractory lined extension duct. The SCC and its extension duct are designed to jointly provide approximately 2 seconds gas residence time.

The offgas air pollution control system primarily consists of an adiabatic quench chamber, a steam atomized free-jet scrubber, a cyclone separator, a mist eliminator, a reheater, and a high efficiency particulate air (HEPA) filter (included for radiological control purposes only).

The ash from the rotary kiln will empty into a water trough, which will provide a vacuum seal with the rotary kiln. Large pieces of ash and a majority of ash fines will be removed from the ash trough using a device similar to a backhoe and deposited into a 55 gallon drum. When the desired weight of ash has been deposited into a drum, the drum is positioned on the ashcrete car and transported to the automatic ashcrete unit. Cement and, as needed, water will be added in controlled amounts to the drum. The drum will be mixed by tumbling action to produce a solidified waste product. Water containing the remaining ash fines will be transferred from the ash trough to one of two 6000 gallon agitated fiberglass reinforced blowdown holding tanks. The ash-out and drum mixing operation will be contained in a HEPA-filtered enclosure to prevent the release of radioactivity to the environment.

Blowdown from the quench recirculation line will pass through a cross-flow filter system to concentrate suspended solids up to 10 percent by weight. The stream containing concentrated solids will be pumped to one of two 6,000-gallon agitated fiberglass-reinforced holding tanks. While in storage the blowdown will be treated as necessary to convert any soluble hazardous metal species to an insoluble form to improve the leaching resistance of the metals in the solidified blowdown product. Appropriate chemical additives will be pumped from drums into the blowdown tank and be mixed with the blowdown by the tank agitator. Blowdown waste will then be transferred to the ashcrete unit for solidification in drums.

IIIE4.B. CONSTRUCTION

- IIIE4.B.1. The Permittee shall construct and maintain the incinerator in accordance with the design plans and specifications contained in Volume X of the approved permit application and in accordance with all applicable requirements of the South Carolina Hazardous Waste Management Regulations. The Permittee shall not feed hazardous wastes to the incinerator until Condition IIIE4.B.2. has been satisfied.
- IIIE4.B.2. The Permittee shall not commence storage, treatment, or incineration of hazardous waste at the CIF until the Permittee has submitted to the Department by certified mail or hand delivery, a letter signed by the Permittee and a registered professional engineer stating that the CIF has been constructed or modified in compliance with the permit; and
- a) The Department, or an authorized representative, has inspected the modified or newly constructed CIF and finds it is in compliance with the conditions of this permit; or
 - b) The Department has either waived the inspection or has not notified within fifteen (15) days the Permittee of its intent to inspect.
- IIIE4.B.3. The Permittee shall not commence storage, treatment or incineration of any hazardous waste at the CIF until the Permittee certifies that proper waste management facilities permitted by the Department have been constructed and are prepared to manage all of the residual waste streams that will be generated from startup and operation of the CIF (i.e., scrubber blowdown wastes, quench chamber blowdown, ash trough blowdown, solidified ash and blowdown from the ashcrete processing enclosure, spent HEPA filters, etc.). Management of these residual hazardous waste streams shall satisfy all applicable Land Disposal Restrictions (LDR) requirements.

- IIIE4.B.4. Within one hundred twenty (120) days following mechanical completion of the CIF, the Permittee shall submit final "as built" engineering drawings and figures to replace those submitted as a part of the permit application. Mechanical completion is the point after the shakedown period at which all modifications and adjustments made necessary during the shakedown period have been completed.
- IIIE4.B.5. As specified in the approved permit application (Volume X, Section G-4: Emergency Response Procedures), the Permittee shall develop and submit the emergency notification procedures to the Department for review and approval at least four months (120 days) prior to startup of any portion of the CIF. Startup is defined as the first time storage, treatment, or incineration of hazardous waste occurs at the CIF.
- IIIE4.B.6. The Permittee shall install and test all instrumentation in accordance with the design plans, performance specifications, and maintenance procedures contained in Volume X of the approved permit application prior to handling hazardous wastes in the incinerator system.

IIIE4.C. PERFORMANCE STANDARD

The Permittee shall construct and maintain the incinerator so that, when operated in accordance with the operating requirements specified in this permit, it will meet the following performance standards specified in permit Conditions IIIE4.C.1. through IIIE4.C.4. (R.61-79.264.343).

- IIIE4.C.1. The incinerator must achieve a destruction removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated in this permit for each waste feed. DRE shall be determined using the method specified in R.61-79.264.343(a). The principal organic hazardous constituents specified in accordance with R.61-79.264.342(b) are:

<u>Waste Feed</u>	<u>POHC's</u>
High Heat Value (HHV) Liquid to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
High Heat Value (HHV) Liquid to SCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
Low Heat Value (LHV) Liquid to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
Solid Waste Feed to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl, C ₂ Cl ₆ , C ₁₀ H ₈

Notes: C₂Cl₄ = Tetrachloroethylene (Liquid)
C₆H₅Cl = Chlorobenzene (Liquid)
C₂Cl₆ = Hexachloroethane (Solid)
C₁₀H₈ = Naphthalene (Solid)

IIIE4.C.2. The Permittee must control hydrogen chloride (HCl) emission, such that the rate of emission is no greater than the larger of either 1.8 kg/hr (4 pounds/hour) or 1% of the HCl in the stack gas prior to entering any pollution control equipment. (R.61.79.264.343(b)).

IIIE4.C.3. The incinerator must not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) when corrected for the amount of oxygen in the stack gas in accordance with the formula specified in R.61-79.264.343(c).

IIIE4.C.4. Compliance with the operating conditions specified in this permit will be regarded as compliance with the above performance standards. However, evidence that compliance with such permit conditions is insufficient to ensure compliance with the above performance standards may be "information" justifying modification, revocation or reissuance of the permit pursuant to R.61-79.270.41. (R.61-79.264.343(d)).

IIIE4.D. LIMITATION OF WASTES

Except during the periods specified in the permit conditions for Short-Term Incineration under the Shakedown Period (IIIE5.B.), Trial Burn Period (IIIE5.C.), and Post-Trial Burn Period (IIIE5.D.), the Permittee shall comply with the following conditions.

IIIE4.D.1.

WASTE FEED IDENTIFICATION

The Permittee shall incinerate only those wastes identified in Volume X, Table D-1 of the approved permit application and in accordance with the terms of the approved permit application and the conditions of this permit.

The CIF and its ancillary facilities shall only manage hazardous wastes, mixed wastes and low-level radioactive wastes that are generated on-site at the U.S. DOE/SRS. No off-site generated hazardous wastes shall be accepted or managed at the CIF or any ancillary facilities at any time.

The Permittee shall conduct sufficient analysis in accordance with the Waste Analysis Plan in Volume X, Section C-2 of the approved permit application to verify that waste fed to the incinerator is within the physical and chemical composition limits specified in this permit and to demonstrate compliance with all applicable portions of the Land Disposal Restrictions (LDR).

IIIE4.D.2.

WASTE FEED LIMITATIONS

IIIE4.D.2.a.

The hourly rolling average of the total waste feed rate to the incinerator shall be no greater than 2426 lb/hr measured as specified in Condition IIIE4.G.*

IIIE4.D.2.b.

The Permittee shall be limited to the following waste feed rates in the following locations:*

- (1) Maximum HHV liquid waste feed rate to PCC of 385 lb/hr.
- (2) Maximum LHV liquid waste feed rate to PCC of 950 lb/hr.
- (3) Maximum solid waste feed rate to PCC of 900 lb/hr.
- (4) Maximum HHV liquid waste feed rate to SCC of 191 lb/hr.
- (5) The size of solid waste containers fed to the PCC shall not exceed 21 inch cubes (approximately 40 gallons). No individual solid waste container shall weigh more than 75 lbs. The charging rate to the rotary kiln solids feed system shall not exceed three containers per charge and the maximum allowable weight per charge is 135 lbs. Charges shall not be fed at less than 4 minute intervals.

The waste feed rates shall be evaluated on an hourly rolling average basis. The hourly rolling average is,

defined as the arithmetic mean of the 60 most recent 1 minute average values recorded by the continuous monitoring system. The liquid waste feed rate hourly rolling average shall be updated at least every minute. The solid waste feed rate hourly rolling average shall be updated at least within one minute following every charge.

- IIIE4.D.2.c. The ash content of the organic and aqueous liquid waste feeds shall not exceed 5% and 10% by weight, respectively, nor shall the ash content exceed 10 lb/hr maximum total for all liquid waste feed streams. The ash content of the liquid waste feeds shall be based on an hourly rolling average which is the sum of the hourly rolling averages of the ash content of each individual liquid feedstream. The ash content of the solid waste feed shall not exceed ~~99%~~ by weight, nor shall the solid waste ash content ~~feedrate~~ exceed 891 lb/hr based on an hourly rolling average.*
- IIIE4.D.2.d. The viscosity of the liquid waste feeds shall not exceed:
- | | |
|---|-----------------|
| HHV Liquid Waste to PCC | 45.0 centipoise |
| LHV Liquid Waste to PCC | 45.0 centipoise |
| Rad. Organic Liquid Waste
from DWPF to SCC | 45.0 centipoise |
- IIIE4.D.2.e. The maximum chlorine content of the waste feed or combination of wastes as fed to the incinerator shall not exceed 219 pounds per hour based on an hourly rolling average.*
- IIIE4.D.2.f. The Permittee shall not incinerate any Appendix VIII hazardous constituents in the organic liquid, aqueous, or solid waste feed ranked in a higher class (as per the U.S. Environmental Protection Agency (EPA) Thermal Stability Index) than the group of experimentally evaluated principal organic hazardous constituents (POHCs) for which the Permittee has demonstrated 99.99% destruction removal efficiency (DRE). NOTE: EPA's Thermal Stability Index is divided into classes 1 - 7, with class 1 being the highest class and containing the most thermally stable compounds.
- IIIE4.D.2.g. No waste identified as F020, F021, F022, F023, F026, F027 or F028 in R.61-79.261.33(e) shall be received, stored or treated at any time at the CIF. The CIF shall not accept any PCB wastes.
- IIIE4.D.2.h. The Permittee shall continuously monitor and record the feed pressure of the:
- Rad. Organic Liquid Waste from DWPF to SCC

IIIE4.E. OPERATING CONDITIONS

Except during the periods specified in the permit conditions for Short-Term Incineration under the Shakedown Period (IIIE5.B), Trial Burn Period (IIIE5.C.), and Post-Trial Burn Period (IIIE5.D.), the Permittee shall comply with the following conditions.

IIIE4.E.1. The combustion temperature shall be monitored as specified in permit Condition IIIE4.G. and shall be maintained as follows:

- a. Minimum outlet temperature from the PCC (rotary kiln) shall be maintained at 1500°F or higher based on an hourly rolling average.*
- b. Minimum outlet temperature from the SCC shall be maintained at 1800°F or higher based on an hourly rolling average.*

IIIE4.E.2. The maximum thermal release rate for the PCC shall not exceed 22.43 million BTU/hr. The maximum thermal release rate for the SCC shall not exceed 16.83 million BTU/hr. The total maximum thermal release rate for the incineration system shall not exceed 39.26 million BTU/hr. The thermal release rates shall be evaluated on an hourly rolling average basis. (X) remove asterick

IIIE4.E.3. The stack gas hourly rolling average concentration of carbon monoxide, monitored as specified in permit Condition IIIE4.G., and corrected for the amount of oxygen in the stack gas, shall not exceed 100 ppm over a one hour rolling average corrected to a dry basis and 7% oxygen. (X) remove X

IIIE4.E.4. The combustion gas volumetric flow rate at the point of measurement located in the offgas duct downstream of the ID fans and prior to entry into the stack for all waste feed types, monitored as specified in permit Condition IIIE4.G., shall not exceed 22,038 acfm or a velocity of 52 ft./sec. based on an hourly rolling average.*

IIIE4.E.5. Steam atomization pressure shall be maintained as follows: (X) remove X

PCC
HHV Liquid Burner - a minimum of 80 psig.
LHV Liquid Nozzle - a minimum of 80 psig.

SCC

Rad. Organic Burner - a minimum of 20 psig above Rad. Organic Waste feed pressure.

IIIE4.E.6. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining a negative pressure in both the primary and secondary combustion chambers, monitored as specified in permit Condition IIIE4.G.

IIIE4.E.7. The turndown ratio for the waste burners shall be no greater than: ~~10~~ remove *

HHV Liquid Waste Burner in PCC - 4 to 1 (automatic)
LHV Liquid Waste Nozzle in PCC - 10 to 1
Rad. Organic Waste Burner in SCC - 4 to 1 (automatic)

IIIE4.E.8. The total quench liquid flowrate, monitored as specified in permit Condition IIIE4.G., shall not be less than a minimum of 150 gallons per minute (gpm). ~~150~~ remove *

IIIE4.E.9. The atomized free jet scrubber effluent pH, monitored as specified in permit Condition IIIE4.G., shall be maintained at a minimum pH of 4.5, nor shall the pH exceed 9.0 at any time. ~~9.0~~ remove *

IIIE4.E.10.
The atomizing free-jet scrubber steam flow rate, monitored as specified in permit Condition IIIE4.G., shall be maintained at a minimum of 6000 lb/hr.*

IIIE4.E.11. The free jet scrubber liquid flowrate shall not be less than an amount determined by multiplying a factor of 0.56 by the scrubber gas flowrate. The scrubber gas flowrate shall be calculated and recorded at least once every 1 minute.

IIIE4.E.12. The maximum outlet temperature from the quench chamber shall be 210°F, monitored as specified in permit Condition IIIE4.G. ~~210~~ remove *

IIIE4.E.13. The total dissolved solids in the liquid provided to the quench and free jet scrubber shall not be greater than 10% by weight. The total suspended solids in the liquid provided to the quench and free jet scrubber shall not be greater than 3% by weight.*

- IIIE4.E.14. The Permittee shall retain solid wastes in the PCC (rotary kiln) for at least a minimum of 30 minutes. Therefore, the rotational velocity of the rotary kiln shall not exceed .55 revolutions per minute.*
- IIIE4.E.15. During start-up and shut-down of the incinerator, hazardous wastes must not be introduced into the incinerator unless the incinerator is operating within the conditions specified in permit Condition IIIE4.E. (Operating Conditions).
- IIIE4.E.16. All combustion gases must be routed through the air pollution control system.

IIIE4.F. INSPECTION REQUIREMENTS

The Permittee shall inspect the incineration facility in accordance with the CIF General Inspection Schedule (Volume X, Table F-1, Section F-2) provided in the approved permit application, and shall complete the following as part of the inspections:

- IIIE4.F.1. The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be subjected to thorough visual inspections, at least daily, for leaks, spills, fugitive emissions, and signs of tampering per R.61-79.264.347(b).
- IIIE4.F.2. The Permittee shall visually inspect the instrumentation for out-of-tolerance monitored and/or recorded operational data on a daily basis. In this condition the term "out of tolerance" is defined as out of the acceptable range of variation from an expected, probable value.
- IIIE4.F.3. The Permittee shall test the emergency waste feed cut-off system and associated alarms at least weekly (unless otherwise specified in Appendix IIIE-A) to verify operability, as specified in permit Condition IIIE4.H. (Waste Feed Cut-Off Requirements) per R.61-79.264.347(c).
- IIIE4.F.4. Inspection log forms shall be developed and furnished to the Department for review and approval at least four months (120 days) prior to startup of the CIF. Startup is defined as the first time storage, treatment, or incineration of hazardous waste occurs at the CIF. The inspection log forms shall, at a minimum, include all equipment shown in Tables F-1 and F-2 of Volume X of the approved permit application. At a minimum, the headings on the Inspection Log Forms shall include:

- (i) Dates and times of the inspections
- (ii) Name and title of inspectors
- (iii) Space for inspectors signature
- (iv) All observations made
- (v) Dates and nature of all repairs or corrective actions taken.

IIIE4.G. MONITORING REQUIREMENTS

- IIIE4.G.1. The Permittee shall maintain, calibrate, test and operate all monitoring equipment/monitoring systems identified in Appendix IIIE-A and record the data while incinerating hazardous waste, as specified in Volume X of the approved permit application.
- IIIE4.G.2. Upon request of the Department, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards. (R.61-79.264.347(a)(3)).
- IIIE4.G.3. The Permittee shall record and maintain the monitoring and inspection data as required by R.61-79.264.347(d).
- IIIE4.G.4. The Permittee must cease waste feed when changes in waste feed or operating conditions exceed established limits designated in Volume X of the approved permit application or the conditions of this permit.
- IIIE4.G.5. The Permittee shall ensure that all continuous monitoring systems are properly installed and operational prior to the introduction of hazardous waste into the incinerator.

IIIE4.H. WASTE FEED CUT-OFF REQUIREMENTS

- IIIE4.H.1. The Permittee shall construct, maintain and operate the systems identified in Volume X, Table D-5.1a. of the approved permit application and Appendix IIIE-A of this permit to automatically cut-off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
PCC temperature	1500 °F minimum	off	off	off	
SCC temperature	1800 °F minimum	off	off	off	off
PCC & SCC pressure	-.1 inches of water maximum	off	off	off	off
PCC Waste Burner	flameout	off			
SCC Waste Burner	flameout			off	
Quench outlet temperature	210 °F maximum	off	off	off	off
Quench liquid flowrate	150 gpm minimum	off	off	off	off
Scrubber steam flowrate	6,000 lb/hr minimum	off	off	off	off
Scrubber liquid flowrate	56% of scrubber gas flowrate minimum	off	off	off	off
Scrubber effluent pH	pH<4.5 or pH>9.0	off	off	off	off
Combustion gas flowrate	22,038 acfm maximum	off	off	off	off
CO stack concentration one hour rolling average	100 ppm maximum	off	off	off	off
Induced draft fan	failure of two out of three fans	off	off	off	off
Power	failure	off	off	off	off

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
HHV liquid waste feed rate to PCC	385 lb/hr maximum	off			
LHV liquid waste feed rate to PCC	950 lb/hr maximum		off		
Solid waste feed rate to PCC	900 lb/hr maximum			off	
HHV liquid waste feed rate to SCC	191 lb/hr maximum				off

Routine testing may be accomplished by the Permittee without actually shutting down the incineration systems, if the testing procedures test all parts of the system except operation of the final electrical devices which would shut down the unit or portions thereof. At a frequency specified in Appendix III E-A the Permittee must demonstrate operability of the systems by:

- a. Causing a waste feed outage through the successful operation of an appropriate cut-off device, and
- b. Causing single waste outages through the successful operation of one of the appropriate cut-off devices for each waste.

III E4.H.2. In accordance with the approved permit application for Waste Feed Cutoff Testing (Volume X, Section D.5.2.5) the following parts of the emergency waste feed cutoff system and associated alarms and sensors shall be tested on a weekly basis: waste feed flows, combustion gas velocity indicator, and concentration of carbon monoxide (CO) in the stack gas.

III E4.H.3. In case of a malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut downs in accordance with the procedures in Volume X of the approved permit application. The Permittee shall not restart the incinerator until the problem causing the malfunction has been located and corrected.

IIIE4.I. RECORDKEEPING

IIIE4.I.1. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled under the requirements of this permit and as required by R.61-79.264.347(d) and R.61-79.264.70.

IIIE4.I.2. The Permittee shall record in the operating record for this permit the date and time of all manual and automatic waste feed shut-offs, including the triggering parameters, reason for the shut-off, and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed shut-offs to function properly and corrective actions taken.

IIIE4.J. CLOSURE

At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters and scrubber sludges) from the incinerator site per R.61-79.264.351. The Permittee shall follow the procedures in the Closure Plan in Volume X of the approved permit application.

If the Permittee demonstrates that not all contaminated soils can be practically removed or decontaminated, in accordance with the approved Closure Plan, then the Permittee shall close the incineration system and perform post-closure care in accordance with R.61-79.264.310.

IIIE4.K. INSTANTANEOUS VALUES

The Permittee may evaluate compliance with the following conditions on an instantaneous value basis instead of an hourly rolling average basis:

IIIE4.D.2.a.,
IIIE4.D.2.b. (except for IIIE4.D.2.b.(3), maximum solid waste feed rate),
IIIE4.D.2.c.,
IIIE4.D.2.e.,
IIIE4.E.1., and
IIIE4.E.2.

IIIE4.K.1. If the Permittee chooses to use instantaneous values rather than hourly rolling average values for the regulated parameters in the conditions identified in IIIE4.K., the Permittee must notify the Department in writing at least 15 days prior to actual use of the instantaneous value basis. If the Permittee chooses to change from instantaneous values to hourly rolling

average values, the Permittee must notify the Department in writing at least 15 days prior to actual use of the hourly rolling average basis.

III B4.K.2. If the Permittee chooses to employ the instantaneous value basis, then

- (a) The value of the regulated parameter must be continuously monitored and recorded. The time period between evaluations of the parameter value must not be greater than 1 minute. The time period between recordings of the parameter value must not be greater than 1 minute.
- (b) The instantaneous value of the regulated parameter must never exceed the maximum limit or fall below the minimum limit established in the permit condition.

MODULE III, SECTION E, PART 5

SHORT-TERM INCINERATION

IIIE5.A. HIGHLIGHTS

Module III, Section E, Part 5 (Short-Term Incineration) is applicable to facilities that perform a trial burn and presents conditions that, during the periods specified, supersede certain conditions found in IIIE Part 4. R.61-79.270.62 and R.61-79.264.344(c) require that a permit establish conditions necessary to meet the requirements of R.61-79.264.345 during the shakedown, trial burn and post-trial burn periods.

The purpose of IIIE Part 5 is to provide permit conditions for the operation of a new incineration unit prior to the final operation period (as specified in IIIE Part 4) in order to:

1. Determine operational readiness following completion of physical construction,
2. Test compliance with the performance standards,
3. Determine adequate operating conditions to ensure that the performance standards will be maintained; and
4. Control operating conditions after the trial burn and prior to any final modifications of the operating conditions in the long-term portion of the permit to reflect the results of the trial burn.

IIIE5.B. SHAKEDOWN PERIOD

During the shakedown period (the period beginning with the initial introduction of hazardous wastes into the incinerator and ending with the start of the trial burn) the Permittee shall comply with the following conditions.

The Permittee shall not commence storage, treatment or incineration of any hazardous waste at the CIF until the Permittee certifies that proper waste management facilities permitted by the Department have been constructed and are prepared to manage all of the residual waste streams that will be generated from startup and operation of the CIF (i.e., scrubber blowdown wastes, quench chamber blowdown, ash trough blowdown, solidified ash and blowdown from the ashcrete processing enclosure, spent HEPA filters, etc.). Management of these residual hazardous waste streams shall satisfy all applicable Land Disposal Restrictions (LDR) requirements.

IIIES.B.1. DURATION OF THE SHAKEDOWN PERIOD
The shakedown period shall not exceed 720 hours of operation when burning hazardous wastes. The Permittee may petition the Department for one extension of the shakedown period for up to 720 additional hours. The Department may grant the extension when good cause is demonstrated in the petition in accordance with R.61-79.264.344(c)(1).

IIIES.B.2. LIMITATION OF WASTES DURING SHAKEDOWN PERIOD
Except during the operating period specified in the permit conditions for final operation of the incineration system (IIIE4), the trial burn period (IIIES.C) and the post trial burn period (IIIES.D), the Permittee shall comply with the following conditions during the shakedown period:

IIIES.B.2.a. WASTE FEED IDENTIFICATION
During the shakedown period, the Permittee may incinerate only those wastes identified in Table D-1 in Volume X of the approved permit application and in accordance with the terms of the approved permit application and the conditions of this permit.

The CIF and its ancillary facilities shall only manage hazardous wastes, mixed wastes and low-level radioactive wastes that are generated on-site at the U.S. DOE/SRS. No off-site generated hazardous wastes shall be accepted or managed at the CIF or any ancillary facilities at any time.

The Permittee shall conduct sufficient analysis in accordance with the Waste Analysis Plan in Volume X, Section C-2 of the approved permit application to verify that waste fed to the incinerator is within the physical and chemical composition limits specified in this permit and to demonstrate compliance with all applicable portions of the Land Disposal Restrictions (LDR).

IIIES.B.2.b. WASTE FEED LIMITATIONS

IIIES.B.2.b.(i) The hourly rolling average of the total waste feed rate to the incinerator shall be no greater than 2486 lb/hr measured as specified in Condition IIIES.B.5.

IIIES.B.2.b.(ii) The Permittee shall be limited to the following waste feed rates to the incineration system during the shakedown period in the following locations:

- (1) Maximum HHV liquid waste feed rate to PCC of 385 lb/hr.
- (2) Maximum LHV liquid waste feed rate to PCC of 980 lb/hr.
- (3) Maximum solid waste feed rate to PCC of 960 lb/hr.
- (4) Maximum HHV liquid waste feed rate to SCC of 191 lb/hr.
- (5) The size of solid waste containers fed to the PCC shall not exceed 21 inch cubes (approximately 40 gallons). The charging rate to the rotary kiln solid feeds system shall not exceed three containers per charge and the maximum allowable weight per charge is 135 lbs. No individual solid waste container shall weigh more than 75lbs.

The waste feed rates shall be evaluated on an hourly rolling average basis. The hourly rolling average is defined as the arithmetic mean of the 60 most recent 1 minute average values recorded by the continuous monitoring system. The liquid waste feed rate hourly rolling average shall be updated at least every minute. The solid waste feed rate hourly rolling average shall be updated at least within 1 minute following every charge.

IIIES.B.2.b.(iii) The ash content of the organic and aqueous liquid waste feeds shall not exceed 5% and 10% by weight, respectively, nor shall the ash content exceed 30 lb/hr maximum total for all liquid waste feed streams. The ash content of the liquid waste feeds shall be based on an hourly rolling average which is the sum of the hourly rolling averages of the ash content of each individual liquid feedstream.

IIIES.B.2.b.(iv) The viscosity of the liquid waste feeds shall not exceed:

HHV Liquid Waste to PCC	45.0 centipoise
LHV Liquid Waste to PCC	45.0 centipoise
Rad. Organic Waste from DWPf to SCC	45.0 centipoise

IIIES.B.2.b.(v) The maximum chlorine content of the waste feed or combination of wastes as fed to the incinerator shall not exceed 219 pounds per hour based on an hourly rolling average.

IIIIE5.B.2.b.(vi) The Permittee shall not incinerate any Appendix VIII hazardous constituents in the organic liquid, aqueous, or solid waste feed ranked in a higher class (as per the U.S. Environmental Protection Agency (EPA) Thermal Stability Index) than the group of experimentally evaluated principal organic hazardous constituents (POHCs) for which the Permittee has demonstrated 99.99% destruction removal efficiency (DRE). NOTE: EPA's Thermal Stability Index is divided into classes 1 - 7, with class 1 being the highest class and containing the most thermally stable compounds.

IIIIE5.B.2.b.(vii) No waste identified as F020, F021, F022, F023, F026, F027 or F028 in R.61-79.261.33(e) shall be received, stored or treated at any time at the CIF. The CIF shall not accept any PCB wastes.

IIIIE5.B.2.b.(viii) The Permittee shall continuously monitor and record the feed pressure of the:

Rad. Organic Liquid Waste from DWPF to SCC

IIIIE5.B.3. OPERATING CONDITIONS DURING SHUTDOWN PERIOD
During the shutdown period, the Permittee shall feed only the wastes described in permit Condition IIIIE5.B.2. (Limitation of Wastes) to the incinerator only under the following conditions.

IIIIE5.B.3.a. The combustion temperature shall be monitored as specified in permit Condition IIIIE5.B.5. and shall be maintained as follows:

- (1) Minimum outlet temperature from the PCC (rotary kiln) shall be maintained at 1400°F or higher based on an hourly rolling average.
- (2) Minimum outlet temperature from the SCC shall be maintained at 1600°F or higher based on an hourly rolling average.

IIIIE5.B.3.b. The maximum thermal release rate for the PCC shall not exceed 22.43 million BTU/hr. The maximum thermal release rate for the SCC shall not exceed 16.83 million BTU/hr. The total maximum thermal release rate for the incineration system shall not exceed 39.26 million BTU/hr. The thermal release rates shall be evaluated on an hourly rolling average basis.

IIIIE5.B.3.c. The stack gas hourly rolling average concentration of carbon monoxide, monitored as specified in permit Condition IIIIE5.B.5., and corrected for the amount of oxygen in the stack gas, shall not exceed 100 ppm over a one hour rolling average corrected to a dry basis and 7% oxygen.

IIIES.B.3.d. The combustion gas volumetric flow rate at the point of measurement located in the offgas duct downstream of the ID fans and prior to entry into the stack for all waste feed types, monitored as specified in permit Condition IIIES.B.5. shall not exceed 22,038 acfm or a velocity of 52 ft./sec. based on an hourly rolling average.

IIIES.B.3.e. Steam atomization pressure shall be maintained as follows:

PCC

HHV Liquid Burner - a minimum of 80 psig.
LHV Liquid Nozzle - a minimum of 80 psig.

SCC

Rad. Organic Burner - a minimum of 20 psig above Rad. Organic Waste feed pressure.

IIIES.B.3.f. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining a negative pressure in both the primary and secondary combustion chambers, monitored as specified in permit condition IIIES.B.5.

IIIES.B.3.g. The turndown ratio for the waste burners shall be no greater than:

HHV Liquid Waste Burner in PCC - 4 to 1 (automatic)
LHV Liquid Waste Nozzle in PCC - 10 to 1
Rad. Organic Waste Burner in SCC - 4 to 1 (automatic)

IIIES.B.3.h. The total quench liquid flowrate, monitored as specified in permit Condition IIIES.B.5., shall not be less than a minimum of 150 gpm.

IIIES.B.3.i. The atomized free jet scrubber effluent pH, monitored as specified in permit Condition IIIES.B.5., shall be maintained at a minimum pH of 4.5, nor shall the pH exceed 9.0 at any time.

IIIES.B.3.j. The atomizing free jet scrubber steam flow rate, monitored as specified in permit Condition IIIES.B.5., shall be maintained at a minimum of 6000 lb/hr.

IIIES.B.3.k. The liquid/gas (L/G) ratio for the free jet scrubber liquid flow shall be a minimum of 0.56.

IIIES.B.3.l. The maximum outlet temperature from the quench chamber shall be 210°F, monitored as specified in permit Condition IIIES.B.5.

- IIIIES.B.3.m.(i). For 540 hours (75%) of the shakedown period, the Permittee shall retain solid wastes in the PCC (rotary kiln) for at least a minimum of 30 minutes. During the 540 hours the rotational velocity of the rotary kiln shall not exceed .55 revolutions per minute.
- IIIIES.B.3.m.(ii). For 180 hours (25%) of the shakedown period, the Permittee shall not exceed a kiln rotational velocity of 2 revolutions per minute.
- IIIIES.B.3.m.(iii). The Permittee shall maintain a record of kiln rotational velocity in relation to time.
- IIIIES.B.3.n. During start-up and shut-down of the incinerator, hazardous wastes must not be introduced into the incinerator unless the incinerator is operating within the conditions specified in Condition IIIIES.B.3. (Operating Conditions During Shakedown Period).
- IIIIES.B.3.o. Compliance with the operating conditions specified in permit Condition IIIIES.B.3 will be regarded as compliance with the required performance standards of R.61-79.264.343. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, may be "information" justifying modification, revocation or reissuance of this permit pursuant to R.61-79.270.41 and R.61-79.264.343(d).
- IIIIES.B.3.p. All combustion gases must be routed through the air pollution control system.
- IIIIES.B.4. INSPECTION REQUIREMENTS DURING SHAKEDOWN PERIOD
The Permittee shall inspect the incineration unit in accordance with the CIF General Inspection Schedule (Volume X, Table F-1, Section F-2) provided in the approved permit application and shall complete the following as part of these inspections:
- IIIIES.B.4.a. The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be subjected to thorough visual inspections, at least daily, for leaks, spills, fugitive emissions, and signs of tampering per R.61-79.264.347(b).
- IIIIES.B.4.b. The Permittee shall visually inspect the instrumentation for out of tolerance monitored and/or recorded operational data on a daily basis.

- IIIES.B.4.c. The Permittee shall test the emergency waste feed cut-off system and associated alarms at least weekly to verify operability, as specified in permit Condition IIIES.B.6. per R.61-79.264.347(c).
- IIIES.B.4.d. Inspection log forms shall be developed and furnished to the Department for review and approval at least four months (120 days) prior to startup of the CIF. Startup is defined as the first time storage, treatment, or incineration of hazardous waste occurs at the CIF. The inspection log forms shall, at a minimum, include all equipment shown in Tables F-1 and F-2 in Volume X of the approved permit application. At a minimum, the headings on the Inspection Log Forms shall include:
- (i) Dates and times of the inspections
 - (ii) Names and titles of inspectors
 - (iii) Space for inspectors signature
 - (iv) All observations made
 - (v) Dates and nature of all repairs or corrective actions taken.
- IIIES.B.5. MONITORING REQUIREMENTS DURING SHAKEDOWN PERIOD
- IIIES.B.5.a. The Permittee shall maintain, calibrate, test and operate all monitoring equipment/monitoring systems identified in Tables D-5.2 and D-5.2a in Volume X of the approved permit application and record the data while incinerating hazardous waste, as specified in the approved permit application.
- IIIES.B.5.b. Upon request by the Department, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards (R.61-79.264.347(a)(3)).
- IIIES.B.5.c. The Permittee shall record and maintain the monitoring and inspection data as required by R.61-79.264.347(d).
- IIIES.B.5.d. The Permittee must cease operation when changes in waste feed or operating conditions exceed established limits designated in Volume X of the approved permit application or the conditions of this permit.
- IIIES.B.5.e. The Permittee shall ensure that all continuous monitoring systems are properly installed and operational prior to

the introduction of hazardous waste into the incinerator.

IIIEE.3.5. WASTE FEED CUT OFF REQUIREMENTS DURING SHUTDOWN PERIOD

IIIEE.3.5.a. The Permittee shall construct, maintain, and operate the systems identified in Volume X, Table D-5.1a of the approved permit application and Appendix IIIE-A of this permit to automatically cut-off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
PCC temperature	1400 °F minimum	off	off	off	
SCC temperature	1600 °F minimum	off	off	off	off
PCC & SCC pressure	-.1 inches of water maximum	off	off	off	off
PCC Waste Burner	flameout	off			
SCC Waste Burner	flameout				off
Quench outlet temperature	210 °F maximum	off	off	off	off
Quench liquid flowrate	150 gpm minimum	off	off	off	off
Scrubber steam flowrate	6,000 lb/hr minimum	off	off	off	off

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
Scrubber liquid flowrate	56% of gas mass flowrate minimum	off	off	off	off
Scrubber effluent pH	pH<4.5 or pH>9.0	off	off	off	off
Combustion gas flowrate	22,038 acfm maximum	off	off	off	off
CO stack concentration one hour rolling average	100 ppm maximum	off	off	off	off
Induced draft fan	failure of two out of three fans	off	off	off	off
Power	failure	off	off	off	off
HHV liquid waste feed rate to PCC	385 lb/hr maximum	off			
LHV liquid waste feed rate to PCC	950 lb/hr maximum		off		
Solid waste feed rate to PCC	960 lb/hr maximum			off	
HHV liquid waste feed rate to SCC	191 lb/hr maximum				off

Routine testing may be accomplished by the Permittee without actually shutting down the incineration systems, if the testing procedures test all parts of the system except operation of the final electrical devices which would shut down the unit or portions thereof. At a frequency specified in Appendix III-E-A the Permittee must demonstrate operability of the systems by:

- a. Causing a waste feed outage through the successful operation of an appropriate cut-off device, and

- b. Causing single waste outages through the successful operation of one of the appropriate cut-off devices for each waste.

IIIES.B.6.b. In accordance with the approved permit application for Waste Feed Cutoff Testing (Volume X, Section 1.5), the following parts of the emergency waste feed cutoff system and associated alarms and sensors shall be tested on a weekly basis: waste feed flows, waste feed gas velocity indicator, and concentration of carbon monoxide (CO) in the stack gas.

IIIES.B.6.c. In case of a malfunction of the automatic waste feed cutoff systems, the Permittee shall perform manual shut downs in accordance with the approved procedures in Volume X of the approved permit application. The Permittee shall not restart the generator until the malfunction causing the malfunction has been located and corrected.

IIIES.B.7. RECORDKEEPING DURING PERMIT TEST PERIOD

IIIES.B.7.a. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled up to the requirements of this permit. (R.6 264.72 79.264.347(d)).

IIIES.B.7.b. The Permittee shall record in the operating record for this permit the date and time of all automatic waste feed shut-offs, including the triggering parameters, reason for shut-off, and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed cutoffs to function properly and corrective actions taken.

IIIES.B.8. INSTANTANEOUS VALUES

The Permittee may evaluate compliance with the following conditions on an instantaneous value basis instead of an hourly rolling average basis:

- IIIES.B.2.b.(i),
- IIIES.B.2.b.(ii) (except for IIIES.B.2.b.(ii)(3), maximum solid waste feed rate),
- IIIES.B.2.b.(iii),
- IIIES.B.2.b.(v),
- IIIES.B.3.a., and
- IIIES.B.3.b.

III25.B.3.a. If the Permittee chooses to use instantaneous values rather than hourly rolling average values for the regulated parameters in the conditions identified in III25.B.3., the Permittee must notify the Department in writing at least 15 days prior to actual use of the instantaneous value basis. If the Permittee chooses to change from instantaneous values to hourly rolling average values, the Permittee must notify the Department in writing at least 15 days prior to actual use of the hourly rolling average basis.

III25.B.3.b. If the Permittee chooses to employ the instantaneous value basis, then

- (i) The value of the regulated parameter must be continuously monitored and recorded. The time period between evaluations of the parameter value must not be greater than 1 minute. The time period between recordings of the parameter value must not be greater than 1 minute.
- (ii) The instantaneous value of the regulated parameter must never exceed the maximum limit or fall below the minimum limit established in the permit condition.

IIIES.C. TRIAL BURN PERIOD

IIIES.C.1.a. The Permittee shall operate and monitor the incinerator during the trial burn period as specified in the Trial Burn Plan in Volume X of the approved permit application.

IIIES.C.1.b. The Trial Burn Plan shall be revised and resubmitted to the Department by the Permittee at least six (6) months prior to conducting the trial burn. The revised Trial Burn Plan must include all applicable EPA approved test methods and procedures in effect at the time of the resubmittal.

IIIES.C.1.c. The Permittee shall assess the volume and character of hazardous waste to be incinerated at the CIF. At least nine (9) months prior to conducting the trial burn, the Permittee shall submit to the Department a report of the assessment which includes the following:

- (i) The volume of existing on-site hazardous waste to be incinerated;
- (ii) The annual volume of SRS generated hazardous waste to be incinerated;
- (iii) The necessary incinerator waste feed rates for the existing and annually generated hazardous waste;
- (iv) An explanation of how the necessary waste feed rates for the incinerator were determined; and
- (v) Any changes in waste character from the description of the waste to be incinerated given in Volume X of the permit application.

IIIES.C.1.d. The updated waste feed assessment report of hazardous waste volume and character as required in condition IIIES.C.1.c. shall be revised by the Permittee according to comments from the Department. The assessment report must be approved by the Department before the Permittee may conduct the Trial Burn. The incinerator waste feed rates for the Trial Burn will be the waste feed rates found in the approved assessment report.

IIIES.C.2. TRIAL POHC'S

The Trial Principal Organic Hazardous Constituents (POHC's) for which Destruction Removal Efficiencies (DRE's) must be determined are:

<u>Waste Feed</u>	<u>POHC's</u>
High Heat Value (HHV) Liquid to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
High Heat Value (HHV) Liquid to SCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
Low Heat Value (LHV) Liquid to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl
Solid Waste Feed to PCC	C ₂ Cl ₄ , C ₆ H ₅ Cl, C ₂ Cl ₆ , C ₁₀ H ₈

Notes: C₂Cl₄ - Tetrachloroethylene (Liquid)
C₆H₅Cl - Chlorobenzene (Liquid)
C₂Cl₆ - Hexachloroethane (Solid)
C₁₀H₈ - Naphthalene (Solid)

III.E5.C.3. TRIAL BURN DETERMINATIONS

During each approved trial burn (or as soon after the burn as practicable), the Permittee must make the following determinations required by R.61-79.270.62(6)(i)-(ix):

- III.E5.C.3.a. A quantitative analysis of the trial POHC's in the waste feed to the incinerator.
- III.E5.C.3.b. A quantitative analysis of the exhaust gas for the concentration and mass emissions of the trial POHC's, oxygen (O₂), and hydrogen chloride (HCl).
- III.E5.C.3.c. A quantitative analysis of the scrubber water, ash residues and all other residues for the purpose of estimating the fate of the trial POHC's.
- III.E5.C.3.d. A computation of destruction and removal efficiency (DRE), in accordance with the DRE formula specified in R.61-79.264.343(a).
- III.E5.C.3.e. If the HCl emission rate exceeds 1.8 kilograms of HCl per hour (4 pounds per hour), a computation of HCl removal efficiency in accordance with R.61-79.264.343(b).
- III.E5.C.3.f. A computation of particulate emissions, in accordance with R.61-79.264.343(c).
- III.E5.C.3.g. An identification of sources of fugitive emissions and their means of control.
- III.E5.C.3.h. A measurement of average, maximum and minimum temperatures and combustion gas velocity.
- III.E5.C.3.i. A continuous measurement of carbon monoxide (CO) in the exhaust gas.

IIIIE5.C.4.

TRIAL BURN SUBMISSIONS AND CERTIFICATIONS

The Permittee shall submit a copy of all data collected during the trial burn to the Department upon completion of the burn. The Permittee shall submit to the Department the results of the determinations required by Condition IIIIE5.C.3. (Trial Burn Determinations) within ninety (90) days of the completion of the trial burn. All submissions must be certified in accordance with R.61-79.270.11.

IIIIE5.D. POST TRIAL BURN PERIOD

During the post-trial burn period and for the minimum period sufficient for the Permittee to analyze samples, compute data, and submit trial burn results, and for the Department to review the trial burn results and make any modifications necessary to the permit, the Permittee shall comply with the following conditions.

IIIIE5.D.1.

DURATION OF POST TRIAL BURN PERIOD

The Post Trial Burn Period shall start immediately following the completion of the trial burn and shall end when the final operating permit is effective.

IIIIE5.D.2.

LIMITATION OF WASTES DURING POST TRIAL BURN PERIOD

Except during the operating period specified in the permit conditions for final operation of the incineration system (IIIIE4), the shakedown period (IIIIE5.B), and the trial burn period (IIIIE5.C), the Permittee shall comply with the following conditions during the post trial burn period.

IIIIE5.D.2.a.

WASTE FEED IDENTIFICATION

During the post trial burn period, the Permittee may feed only those wastes identified in Volume X, Table D-1 of the approved permit application and in accordance with the terms of the approved permit application and the conditions of this permit.

The CIF and its ancillary facilities shall only manage hazardous wastes, mixed wastes and low-level radioactive wastes that are generated on-site at the U.S. DOE/SRS. No off-site generated hazardous wastes shall be accepted or managed at the CIF or any ancillary facilities at any time.

The Permittee shall conduct sufficient analysis in accordance with the Waste Analysis Plan in Volume X, Section C-2 of the approved permit application to verify that waste fed to the incinerator is within the physical and chemical composition limits specified in this permit and to demonstrate compliance with all applicable portions of the Land Disposal Restrictions (LDR).

IIIES.D.2.b. WASTE FEED LIMITATIONS

IIIES.D.2.b.(i). The hourly rolling average of the total waste feed rate to the incinerator shall be no greater than 2426 lb/hr measured as specified in Condition IIIES.D.5.

IIIES.D.2.b.(ii). The Permittee shall be limited to the following waste feed rates to the incineration system during the post trial burn period in the following locations:

- (1) Maximum HHV liquid waste feed rate to PCC of 385 lb/hr.
- (2) Maximum LHV liquid waste feed rate to PCC of 950 lb/hr.
- (3) Maximum solid waste feed rate to PCC of 900 lb/hr.
- (4) Maximum HHV liquid waste feed rate to SCC of 191 lb/hr.
- (5) The size of solid waste containers fed to the PCC shall not exceed 21 inch cubes (approximately 40 gallons). No individual solid waste container shall weigh more than 75 lbs. The charging rate to the rotary kiln solids feed system shall not exceed three containers per charge and the maximum allowable weight per charge is 135 lbs. Charges shall not be fed at less than 4 minute intervals.

The waste feed rates shall be evaluated on an hourly rolling average basis. The hourly rolling average is defined as the arithmetic mean of the 60 most recent 1 minute average values recorded by the continuous monitoring system. The liquid waste feed rate hourly rolling average shall be updated at least every minute. The solid waste feed rate hourly rolling average shall be updated at least within 1 minute following every charge.

IIIES.D.2.b.(iii). The ash content of the organic and aqueous liquid waste feeds shall not exceed 5% and 10% by weight, respectively, nor shall the ash content exceed 30 lb/hr maximum total for all liquid waste feed streams. The ash content of the liquid waste feeds shall be based on an hourly rolling average which is the sum of the hourly rolling averages of the ash content of each individual liquid feedstream. The ash content of the solid waste feed shall not exceed 99% by weight, nor shall the solid waste ash content feedrate exceed 891 lb/hr based on an hourly rolling average.

IIIES.D.2.b.(iv). The viscosity of the liquid waste feeds shall not exceed:

HHV Liquid Waste to PCC	45.0 centipoise
LHV Liquid Waste to PCC	45.0 centipoise
Rad. Organic Waste from DWPF to SCC	45.0 centipoise

IIIES.D.2.b.(v). The maximum chlorine content of the waste feed or combination of wastes as fed to the incinerator shall not exceed 219 pounds per hour based on an hourly rolling average.

IIIES.D.2.b.(vi). The Permittee shall not incinerate any Appendix VIII hazardous constituents in the organic liquid, aqueous, or solid waste feed ranked in a higher class (as per the U.S. Environmental Protection Agency (EPA) Thermal Stability Index) than the group of experimentally evaluated principal organic hazardous constituents (POHCs) for which the Permittee has demonstrated 99.99% destruction removal efficiency (DRE). NOTE: EPA's Thermal Stability Index is divided into classes 1 - 7, with class 1 being the highest class and containing the most thermally stable compounds.

IIIES.D.2.b.(vii). No waste identified as F020, F021, F022, F023, F026, F027 or F028 in R.61-79.261.33(e) shall be received, stored or treated at any time at the CIF. The CIF shall not accept any PCB wastes.

IIIES.D.2.b.(viii). The Permittee shall continuously monitor and record the feed pressure of the:

Rad. Organic Liquid Waste from DWPF to SCC

IIIES.D.3. OPERATING CONDITIONS DURING POST TRIAL BURN PERIOD
During the Post Trial Burn period, the Permittee shall feed only the wastes described in permit Condition IIIES.D.2. (Limitation of Wastes) to the incinerator only under the following conditions.

IIIES.D.3.a. The combustion temperature shall be monitored as specified in permit Condition IIIES.D.5. and shall be maintained as follows:

- (1) Minimum outlet temperature from the PCC (rotary kiln) shall be maintained at 1500°F or higher based on an hourly rolling average.
- (2) Minimum outlet temperature from the SCC shall be maintained at 1800°F or higher based on an hourly rolling average.

- IIIE5.D.3.b. The maximum thermal release rate for the PCC shall not exceed 22.43 million BTU/hr. The maximum thermal release rate for the SCC shall not exceed 16.33 million BTU/hr. The total maximum thermal release rate for the incineration system shall not exceed 39.26 million BTU/hr. The thermal release rates shall be evaluated on an hourly rolling average basis.
- IIIE5.D.3.c. The stack gas hourly rolling average concentration of carbon monoxide, monitored as specified in permit Condition IIIE5.D.5., and corrected for the amount of oxygen in the stack gas, shall not exceed 100 ppm over a one hour rolling average corrected to a dry basis and 7% oxygen.
- IIIE5.D.3.d. The combustion gas volumetric flow rate at the point of measurement in the offgas duct downstream of the ID fans and prior to entry into the stack for all waste feed types, monitored as specified in permit Condition IIIE5.D.5. shall not exceed 22,038 acfm or a velocity of 52 ft./sec. based on an hourly rolling average basis.
- IIIE5.D.3.e. Steam atomization pressure shall be maintained as follows:
- | | |
|---------------------|--|
| <u>PCC</u> | |
| HHV Liquid Burner | - a minimum of 80 psig. |
| LHV Liquid Nozzle | - a minimum of 80 psig. |
| <u>SCC</u> | |
| Rad. Organic Burner | - a minimum of 20 psig above Rad. Organic Waste feed pressure. |
- IIIE5.D.3.f. The Permittee shall control fugitive emissions from the combustion zone of the incinerator by maintaining a negative pressure in both the primary and secondary combustion chambers, monitored as specified in permit Condition IIIE5.D.5.
- IIIE5.D.3.g. The turndown ratio for the waste burners shall be no greater than:
- | | |
|----------------------------------|----------------------|
| HHV Liquid Waste Burner in PCC | - 4 to 1 (automatic) |
| LHV Liquid Waste Nozzle in PCC | - 10 to 1 |
| Rad. Organic Waste Burner in SCC | - 4 to 1 (automatic) |

- IIIES.D.3.h. The total quench liquid flowrate, monitored as specified in permit Condition IIIES.D.5., shall not be less than a minimum of 150 gallons per minute (gpm).
- IIIES.D.3.i. The atomized free jet scrubber effluent pH, monitored as specified in permit Condition IIIES.D.5., shall be maintained at a minimum pH of 4.5, nor shall the pH exceed 9.0 at any time.
- IIIES.D.3.j. The atomizing free jet scrubber steam flow rate, monitored as specified in permit Condition IIIES.D.5., shall be maintained at a minimum of 6000 lb/hr.
- IIIES.D.3.k. The free jet scrubber liquid flowrate shall not be less than an amount determined by multiplying a factor of 0.56 by the scrubber gas flowrate. The scrubber gas flowrate shall be calculated and recorded at least once every 1 minute.
- IIIES.D.3.l. The maximum outlet temperature from the quench chamber shall be 210°F, monitored as specified in permit Condition IIIES.D.5.
- IIIES.D.3.m. The total dissolved solids in the liquid provided to the quench and free jet scrubber shall not be greater than 10% by weight. The total suspended solids in the liquid provided to the quench and free jet scrubber shall not be greater than 3% by weight.
- IIIES.D.3.n. The Permittee shall retain solid wastes in the PCC (rotary kiln) for at least a minimum of 30 minutes. Therefore, the rotational velocity of the rotary kiln shall not exceed .55 revolutions per minute.
- IIIES.D.3.o. During start-up and shut-down of the incinerator, hazardous wastes must not be introduced into the incinerator unless the incinerator is operating within the conditions specified in Condition IIIES.D.3. (Operating Conditions During Post Trial Burn Period).

- IIIE5.D.3.p. Compliance with the operating conditions specified in permit Condition IIIE5.D.3. will be regarded as compliance with the required performance standards of R.61-79.264.343. However, evidence that compliance with these operating conditions is insufficient to ensure compliance with the performance standards, may be "information" justifying modification, revocation or reissuance of this permit pursuant to R.61-79.270.41 and R.61-79.264.343(d).
- IIIE5.D.3.g. All combustion gases must be routed through the air pollution control system.
- IIIE5.D.4. INSPECTION REQUIREMENTS DURING POST TRIAL BURN PERIOD
The Permittee shall inspect the incineration unit in accordance with the CIF General Inspection Schedule (Volume X, Table F-1, Section F-2) provided in the approved permit application and shall complete the following as part of these inspections:
- IIIE5.D.4.a. The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be subjected to thorough visual inspections, at least daily, for leaks, spills, fugitive emissions, and signs of tampering per R.61-79.264.347(b).
- IIIE5.D.4.b. The Permittee shall visually inspect the instrumentation for out of tolerance monitored and/or recorded operational data on a daily basis.
- IIIE5.D.4.c. The Permittee shall test the emergency waste feed cut-off system and associated alarms at least weekly to verify operability, as specified in permit Condition IIIE5.D.6. per R.61-79.264.347(c).
- IIIE5.D.5. MONITORING REQUIREMENTS DURING POST TRIAL BURN PERIOD
- IIIE5.D.5.a. The Permittee shall maintain, calibrate, test and operate all monitoring equipment/monitoring systems identified in Tables D-5.2 and D-5.2a in Volume X of the approved permit application and record the data while incinerating hazardous waste, as specified in the approved permit application.
- IIIE5.D.5.b. Upon request by the Department, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards (R.61-79.264.347(a)(3)).
- IIIE5.D.5.c. The Permittee shall record and maintain the monitoring and inspection data as required by R.61-79.264.347(d).

IIIEB.D.5.d. The Permittee must cease operation when changes in waste feed or operating conditions exceed established limits designated in Volume X of the approved permit application or the conditions of this permit.

IIIEB.D.5.e. The Permittee shall ensure that all continuous monitoring systems are properly installed and operational prior to the introduction of hazardous wastes into the incinerator.

IIIEB.D.6. WASTE FEED CUT OFF REQUIREMENTS DURING POST TRIAL RUN PERIOD

IIIEB.D.6.a. The Permittee shall construct, maintain, and operate the systems identified in Volume X, Table D-5.1a of the approved permit application and Appendix IIIE-A of this permit to automatically cut-off the hazardous waste feed to the incinerator at the levels specified below. Hazardous wastes shall be fed to the incinerator only when all instruments required by this condition are on line and operating properly.

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
PCC temperature	1500 °F minimum	off	off	off	
SCC temperature	1800 °F minimum	off	off	off	off
PCC & SCC pressure	-.1 inches of water maximum	off	off	off	off
PCC Waste Burner	flameout	off			
SCC Waste Burner	flameout				off
Quench outlet temperature	210 °F maximum	off	off	off	off
Quench liquid flowrate	150 gpm minimum	off	off	off	off

<u>System</u>	<u>Cut-off Limit</u>	<u>PCC HHV Liquid Waste</u>	<u>PCC LHV Liquid Waste</u>	<u>Solid Waste</u>	<u>SCC HHV Liquid Waste</u>
Scrubber steam flowrate	5,000 lb/hr minimum	off	off	off	off
Scrubber liquid flowrate	56% of scrubber gas flowrate minimum	off	off	off	off
Scrubber effluent pH	pH<4.5 or pH>9.0	off	off	off	off
Combustion gas flowrate	22,038 acfm maximum	off	off	off	off
CO stack concentration one hour rolling average	100 ppm maximum	off	off	off	off
Induced draft fan	failure of two out of three fans	off	off	off	off
Power	failure	off	off	off	off
HHV liquid waste feed rate to PCC	385 lb/hr maximum	off			
LHV liquid waste feed rate to PCC	950 lb/hr maximum		off		
Solid waste feed rate to PCC	900 lb/hr maximum			off	
HHV liquid waste feed rate to SCC	191 lb/hr maximum				off

Routine testing may be accomplished by the Permittee without actually shutting down the incineration systems, if the testing procedures test all parts of the system except operation of the final electrical devices which would shut down the unit or portions thereof. At a frequency specified in Appendix III-E-A the Permittee must demonstrate operability of the systems by:

- a. Causing a waste feed outage through the successful operation of an appropriate cut-off device, and
 - b. Causing single waste outages through the successful operation of one of the appropriate cut-off devices for each waste.
- IIIE5.D.6.b. In accordance with the approved permit application for Waste Feed Cutoff Testing (Volume X, Section D.5.2.5), the following parts of the emergency waste feed cutoff system and associated alarms and sensors shall be tested on a weekly basis: waste feed flows, combustion gas velocity indicator, and concentration of carbon monoxide (CO) in the stack gas.
- IIIE5.D.6.c. In case of a malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut downs in accordance with the procedures in Volume X of the approved permit application. The Permittee shall not restart the incinerator until the problem causing the malfunction has been located and corrected.
- IIIE5.D.7. RECORDKEEPING DURING POST TRIAL BURN PERIOD
- IIIE5.D.7.a. The Permittee shall record and maintain, in the operating record for this permit, all monitoring and inspection data compiled under the requirements of this permit. (R.61-79.264.73 and R.61-79.264.347(d)).
- IIIE5.D.7.b. The Permittee shall record in the operating record for this permit the date and time of all automatic waste feed shut-offs, including the triggering parameters, reason for the shut-off and corrective actions taken. The Permittee shall also record all failures of the automatic waste feed shut-offs to function properly and corrective actions taken.
- IIIE5.D.7.c. If, based upon the analytical results of the trial burn, the Permittee determines that the incinerator failed to achieve any of the performance standards specified in Condition IIIE4.C or in R.61-79.264.343, the Permittee shall notify the Department within twenty-four (24) hours of the determination. Upon the request of the Department, the Permittee shall cease feeding hazardous waste to the incinerator.
- IIIE.5.D.8. INSTANTANEOUS VALUES
The Permittee may evaluate compliance with the following conditions on an instantaneous value basis instead of an hourly rolling average basis:

IIIES.D.2.b.(i),
IIIES.D.2.b.(ii) (except for IIIES.D.2.b.(ii)(3), maximum
solid waste feed rate),
IIIES.D.2.b.(iii),
IIIES.D.2.b.(v),
IIIES.D.3.a., and
IIIES.D.3.b.

IIIES.D.3.a. If the Permittee chooses to use instantaneous values rather than hourly rolling average values for the regulated parameters in the conditions identified in IIIES.D.3., the Permittee must notify the Department in writing at least fifteen (15) days prior to actual use of the instantaneous value basis. If the Permittee chooses to change from instantaneous values to hourly rolling average values, the Permittee must notify the Department in writing at least fifteen (15) days prior to actual use of the hourly rolling average.

IIIES.D.3.b. If the Permittee chooses to employ the instantaneous value basis, then

- (i) The value of the regulated parameter must be continuously monitored and recorded. The time period between evaluations of the parameter value must not be greater than 1 minute. The time period between recordings of the parameter value must not be greater than 1 minute.
- (ii) The instantaneous value of the regulated parameter must never exceed the maximum limit or fall below the minimum limit established in the permit condition.

**APPENDIX III-A
MONITORING INSTRUMENTATION**

MONITORING SYSTEM	PRIMARY INSTRUMENT NUMBER	MEASUREMENT DEVICE	MEASUREMENT FREQUENCY	RECORDING FREQUENCY	CALIBRATION FREQUENCY	TEST FREQUENCY*
PCC (Lilo) outlet temp.	1705-TC	Thermocouple	0.5 second	1 minute	Annually	Monthly
SCC outlet temp.	2404-TC	Thermocouple	0.5 second	1 minute	Annually	Monthly
PCC IIIV liquid feed	1600-FT	Mass flowmeter	0.5 second	1 minute	Quarterly	Weekly
PCC LIV liquid feed	2000-FT	Mass flowmeter	0.5 second	1 minute	Quarterly	Weekly
Solid waste feed	H262-510-10	Weigh scale	At occurrence	At occurrence	Semi-annually	Weekly
SCC IIIV liquid feed	2300-FT	Mass flowmeter	0.5 second	1 minute	Quarterly	Weekly
Combustion gas velocity	H263-5300-F	Isokinetic Sampling system	0.5 second	1 minute	Monthly	Weekly
PCC pressure	1704-PT	Pressure Sensor	0.5 second	1 minute	Quarterly	Monthly
Quench outlet gas temp.	3002-TT	Thermocouple	0.5 second	1 minute	Annually	Monthly
Free jet scrubber steam flow	3006-FT	Flowmeter	0.5 second	1 minute	Quarterly	Monthly
Quench liquid flow	4007-FT	Flowmeter	0.5 second	1 minute	Annually	Weekly
Free jet scrubber recycle flow	FT-3308	Flowmeter	0.5 second	1 minute	Annually	Weekly
Carbon monoxide	XT-3507 or XT-3509	Nondispersive infrared (NDIR)	0.5 second	1 minute	Daily zero and span; quarterly cal error	Weekly
Offgas oxygen	XT-3501 or XT-3508	Paramagnetic	0.5 second	1 minute	Daily zero and span; quarterly cal error	Weekly

**APPENDIX III-A
MONITORING INSTRUMENTATION**

MONITORING SYSTEM	PRIMARY INSTRUMENT NUMBER	MEASUREMENT DEVICE	MEASUREMENT FREQUENCY	RECORDING FREQUENCY	CALIBRATION FREQUENCY	TEST FREQUENCY*
PCC IIIV liquid burner flameout	1915-X or 1916-X	Redundant	0.5 second	At occurrence	1/A	1/A
SCC IIIV liquid burner flameout	2715-X or 2716-X	Redundant	0.5 second	At occurrence	1/A	1/A
Scubber liquid pH	3208-XT	Electrochemical	0.5 second	1 minute	Annually	Weekly
PCC IIIV liquid waste atomization media pressure	1607-PT	Pressure sensor	0.5 second	1 minute	Monthly	1/A
PCC LIV liquid waste atomization media pressure	2011-PT	Pressure sensor	0.5 second	1 minute	Monthly	1/A
SCC IIIV liquid waste atomization media pressure	2307-PT	Pressure sensor	0.5 second	1 minute	Monthly	1/A

* Testing of related waste feed cutoff system.

The type of pH sensors is described in vendor information contained in Appendix 21.

D.5.2.2.3 Sampling, Analysis, and Monitoring Procedures

[REF: R.61-79.270.62(b)(2)(iii)]

This section summarizes the sampling procedures to be used during the trial burn. Preparation of the sampling equipment and sampling procedures are addressed. Equipment calibration is briefly addressed; the Quality Assurance/Quality Control (QA/QC) Project Plan for the Trial Burn of the CIF (Appendix 22) more specifically addresses equipment calibration. Standard sampling and analytical methods have been referenced in this trial burn plan. QA/QC procedures for sampling and analytical methods are addressed in the QA/QC Plan for the Trial Burn at the CIF (Appendix 22).

The objective of a trial burn test is to obtain process data that will:

- Permit calculation of the POHC DRE, HCl removal efficiency, particulate emission, and Appendix VIII metals emission rates
- Confirm the fate of POHCs fed to the system; that is, confirm that POHCs have been destroyed by thermal oxidation, discharged in ash residues and/or the scrubber purge water, or emitted in the stack gases
- Document the test process feed and operating conditions that will be used in establishing operating permit conditions
- Document CO concentrations corrected to 7 percent O₂ in stack gas that occur during destruction of hazardous waste constituents
- Reflect normal worst case emissions rates of PICs, including dioxins and furans, for purposes of preparing an assessment of risks related to emissions from the CIF rotary kiln incinerator system.

provided in Appendix 16. A list of samples collected from each port and port location designations are as follows:

Volatile Organics - Volatile Organic Sampling Train (VOST) (11)
HCl/Cl₂ and particulate matter - Isokinetic HCl/Cl₂ Emission
Sampling Train Method 0050 (11)
Metals - Multimetals Train (MMT) (11)
Semivolatile Organics - Modified Method 5 (MM5) (11)
Aldehydes and Ketones - Aldehyde and Ketone Train Method 0011
(11)
Dioxins and Furans - PCDD/PCDF Train Method 23 (11)
Stack flow rate and temperature - EPA Methods 1, 2, 3, and 4 (11)
O₂ and CO₂ - EPA Method 3 (11)
O₂ and CO - Continuous Emissions Monitoring (CEM) (12)

Samples for determination of HCl/Cl₂/particulate matter, metals, aldehydes and ketones, semivolatile organics, and PCDD/PCDFs must all be collected isokinetically from sample locations meeting EPA 40 CFR Appendix A Method 1 criteria. Volatile organics will be sampled non-isokinetically from a separate location in the duct, along with continuous emissions of CO₂ and O₂. Specific location of these sample ports in the off-gas duct will be presented in the QAPP, as well as in Appendix 16.

VOST for Volatile Organics

Samples of volatile organics, including the volatile POHCs (chlorobenzene and tetrachloroethylene), will be collected from the incinerator's stack gas exhaust stream by the VOST method. The sampling protocol will follow procedures established in Method 0030 presented in SW-846. Details on performance of Method 0030 are presented in the QAPP for this Trial Burn.

Table D-15. Analyses Planned for Trial Burn Samples

Page 1 of 2

Sample Name	Analyses
Stack gas VOST	Analyzable volatile organics from April 1995 Exposure Assessment Guidance
Stack gas Method 0050	HCl, Cl ₂ , particulate matter
Stack gas MMS	Analyzable semivolatile organics from April 1995 Exposure Assessment Guidance, moisture
Stack gas MMT	Metals ¹ , moisture
Stack gas Method 0023	PCDDs, PCDF, moisture
Stack gas Method 0011	Aldehydes, Ketones, moisture
Stack gas Method 3	O ₂ , CO ₂
Combustion gas monitor	CO, O ₂

NOTES:

¹ Appendix VIII metals.

Tetrachloroethylene = C₂Cl₄

Chlorobenzene = C₆H₅Cl

Hexachloroethane = C₂Cl₆

Naphthalene = C₁₀H₈

incinerator operation and conducting one sampling run per day, the incinerator is expected to operate on test waste feeds for up to 10 hours per day for approximately 3 days for each trial burn test.

3. Quantity of Test Material to be Burned

Test liquids and test solids will be fed to the incinerator for an estimated 100 hours. It is expected that the unit will be equilibrated at test conditions with auxiliary fuel and switched to the test material 30 minutes before the start of each sampling run. A surplus of test material will be prepared in case operational problems require a longer testing period. Unused test material will be incinerated at the conclusion of the tests at post-trial burn conditions. Unused metal spiking solutions will not be incinerated. The minimum quantities of test materials required to complete the trial burn are listed in Table D-19.

Table D-17. Test Schedule

Test No.	Sampling Run No.*	Day
3 Maximum Solids Feed	3-1	9
	3-2	10
	3-3	11
2 Maximum Liquids Feed	2-1	5
	2-2	6
	2-3	7
1 Maximum Metals Feed	1-1	1
	1-2	2
	1-3	3

NOTE: * Each sampling run will be about 6-8 hours long, preceded by a 30 minute equilibration. A one-hour equipment changeover period will be done simultaneously with the conditioning period.

* One rest day is scheduled between each test condition.

Table D-18. Typical Daily Run Schedule

Time	Activity
0600	Begin adjusting system to test conditions
0700	Begin feeding test materials - start spiking of POHCs and metals
0700 to 0830	Allow system to reach steady-state operations; monitor process instrumentation; prepare sampling equipment; calibrate continuous monitors
0845	Begin run
0845 to 1300	No. 2 fuel oil (grab)- 1 per run PCC Organic Liquid Simulant (grab/VOA) - 15 minutes SCC Organic Liquid Simulant (grab/VOA) - 15 minutes Solid feed (grab) - Prior to trial burn PCC Aqueous Simulant (grab/VOA) - 15 minutes Wet Ash Container (grab/VOA) - one grab sample per drum; one composite per run Makeup water supply (grab/VOA) - beginning and end of each run, composited Offgas Condensate (grab/VOA) - beginning and end of each run, composited Caustic solution (grab/VOA) - beginning and end of each run, composited Ash Quench material (VOA) - 30 minutes Recirculation water (grab/VOA) - 30 minutes Purge water (grab/VOA) - 30 minutes Stack gas VOST (Volatile Organics) (grab) - 40 minutes per pair (4 pairs/run) Stack gas MMS (Semivolatile Organics) - 180 minute integrated sample Method 0050 (BIF HCl/Cl ₂ /particulate matter) - 120 minute integrated sample Stack MMT (metals) - 180 minute integrated sample Method 0011 (BIF Aldehydes/ketones) - 180 minute integrated sample Method 13 (BIF Dioxins/Furans) - 180 minute integrated sample Method 3 (CO ₂) - 60 minute integrated sample Stack gas CO, O ₂ monitor process operating conditions - Continuous
1300	Recover samples from sampling trains; composite liquid and solid subsamples to form run samples; complete sampling documentation; recover process operating and continuous monitoring data; prepare for next run

NOTE: Sampling during the trial burn will continue through incinerator operating abnormalities unless the safety interlocks shut the incinerator down. Waste feed cutoffs (not including the process safety interlocks that will be operational) will not be operational during the trial burn test.

Table D-22. Trial Burn Feed Conditions for CIF

Parameter	Condition 3	Condition 2	Condition 1
1.0 Feed Mechanisms	All	All	All
2.0 Stream Feed Rates			
PCC HHV Liquid Feed Rate (lb/hr)	96	385	96
PCC LHV Liquid Feed Rate (lb/hr)	300	950	450
SCC HHV Liquid Feed Rate (lb/hr)	75	191	75
Solid Waste Feed (lb/hr)	960	480	480
PCC Fuel Oil (lb/hr)	52	52	52
SCC Fuel Oil (lb/hr)	113	117	117
3.0 Total Metals Feed Rates (lb/hr):			
Carcinogenic Metals:			
Arsenic	0.067	0.067	0.067
Beryllium	0.007	0.007	0.007
Cadmium	0.027	0.027	0.027
Chromium	0.9	0.9	0.9
Non-carcinogenic Metals:			
Antimony	3.3	3.3	3.3
Barium	0.021	0.021	0.021
Lead	9.0	9.0	9.0
Mercury	0.1	0.1	0.1
Nickel	5.4	5.4	5.4
Selenium	0.011	0.011	0.011
Silver	0.004	0.004	0.004
Thallium	0.008	0.008	0.008
Chlorine Feed Rate (lb/hr)	202	211	219
Copper Chloride Feed Rate (lb/hr)	0.3	0.05	0.005
POHC Feed Rates (lb/hr):			
Naphthalene	15.5	16.3	16.9
Hexachloroethane	15.5	16.3	16.9
Chlorobenzene	6.3	5.6	5.6
Tetrachloroethylene	6.3	5.6	5.6
PIC Precursor Feed Rates (lb/hr):			
Benzene	6.8	17.4	6.8
Biphenyl	0.4	1.0	0.4
Toluene	8.6	26.0	7.4
Diphenylamine	0.25	0.6	0.25
Ethylene Glycol	9.8	24.4	14.6
Xylene	3.9	8.2	2.8
Phenol	0.05	0.14	0.05
1,1,1-Trichloroethane	10.3	7.3	5.5
Methyl ethyl ketone	3.0	7.4	4.5
Acetone	2.3	5.7	3.4
Methylene chloride	0.42	1.7	0.42
Carbon tetrachloride	0.05	0.19	0.05
Hexachlorobenzene	0.58	0.29	0.29
Acetonitrile	0.04	0.15	0.04

Table D-25. Summary of Expected Permit Conditions*
Permit Limits for Waste Type

Parameter	Kiln HHV, Lq acid	SCC HHV Liquid	Kiln HHV, Lq Gold	Kiln Solid	All	Comments
Appendix VIII constituent						All Appendix VIII constituents allowed requiring 99.99% DRE. No F020, F021, F022, F023, F026, and F027 wastes. * f. l.
Heat value (Btu/lb)	7500	7500	HPC*	HPC	HPC	Minimum
Ash content (lb/lb)	*	*	*	(465)	*	*30 lb/hr maximum total for all liquid waste streams
PEC Exit Temperature (°F)	N/A	N/A	N/A	N/A	1400 1800	Minimum Maximum
SECC Exit Temperature (°F)	N/A	N/A	N/A	N/A	1600 1950	Minimum Maximum
Feed rate (lb/hr)	385	191	950	900		Maximum, thermal duty controls; limits based on feed system design capacity
Chlorine content (lb/hr)	N/A	N/A	N/A	N/A	219	Maximum, total not to exceed
Tier I Metals (lb/hr)	N/A	N/A	N/A	N/A	SH: 3.3 Ba: 550 Hg: 3.3 Ni: N/A Se: N/A Ag: 3.3 Te: 3.3	Tier I Feed Limits
Tier III Metals*	N/A	N/A	N/A	N/A	As: 0.067 Pb: 0.007	Tier III Feed Limits

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Parameter	Kiln HHV, Lq slid	SCC HHV Liquid	Kiln LHV, Liquid	Kiln Solid	All	Comments
(lb/hr):						
Auxiliary fuel (MMBtu/hr)	H/C ^a	H/C ^a	H/C ^a	H/C ^a	H/C ^a	Minimum temperature limits required in lieu of auxiliary fuel limit
Thermal duty (MMBtu/hr)	N/A	N/A	N/A	N/A	N/A	Minimum RK: 23.93 SCC: 20.02
Atomization media pressure (psig)	N/A	N/A	N/A	N/A	N/A	Minimum, limit not demonstrated during trial burn, value set by manufacturer's recommendations
Kiln liner pressure (inches H ₂ O)	N/A	N/A	N/A	N/A	N/A	Minimum draft with 10 second time delay before AWT-C ^b
Carbon monoxide (ppm)	N/A	N/A	N/A	N/A	100	Maximum 1-hour rolling average
Combustion gas velocity (feet)	N/A	N/A	N/A	N/A	16,188 to 18,358	Maximum 1-hr rolling average, measured at stack, variable with scrubber steam flow per App. 13
Flue gas temperature (°F)	N/A	N/A	N/A	N/A	210	Maximum, limit not demonstrated during trial burn, value set by manufacturer's recommendations
Free jet stream flow (lb/hr)	N/A	N/A	N/A	N/A	6000	Minimum with 30-second time delay before AWT-C ^b

NOTES:
^aAll values are estimates that will be finalized based on the trial burn results.
^bH/C = the permit condition.
 Mercury limit concentration is based on results of the trial burn. Mercury, however, will not be in the incinerator's feed during operations, other than the pre- and trial burn operations.
^cAWT-C = Automatic Waste Feed Control

Test Run	FCC Temperature	SCC Temperature
3	1,400°F	1,600°F
2	1,400°F	1,600°F
1	1,800°F	1,950°F

These values are only estimates and will be revised or verified during the startup/shutdown period prior to the execution of the RCRA trial burn.

D.5.2.5 Waste Feed Cutoff Testing

[REF: R.61-79.264.345(e)]

During permitted operation, the emergency waste feed cutoff system and associated alarms as described in D.5.2.2.2, Item Number 7 will be tested as per SCHWMR R.61-79.264.347(c). The emergency waste feed cutoff system and associated alarms and sensors on the flow of waste feeds, on the CGVI, and on the concentration of CO in the stack gas will be tested on a weekly basis. The remaining and more reliable parts of the waste feed cutoff system relating to temperatures, pressures, flow of steam to the free jet scrubber, and the burner flame-out detection system will be tested on a monthly basis. This schedule of testing will minimize interruptions, allow maintenance of steady operations, and will afford appropriate equipment protection. The results of this testing will be recorded in the incinerator operating log. If the CIF is not routinely operating, the emergency waste feed cutoff system will be tested before startup of the CIF.

REFERENCES

Guidance Manual for Hazardous Waste Incinerator Permits, July 1983, U.S. EPA, Office of Solid Waste, Washington, D.C.

Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, January 1990, Volume IV, U.S. EPA, Office of Solid Waste, Washington, D.C.

Methods Manual for Compliance with the BIF Regulations, December 1990, U.S. EPA Office of Solid Waste, Washington, D.C.

Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incineration Handbook, January 1990, EPA/625/6-89/023, Center for Environmental Research Information, Cincinnati, OH

Quality Assurance Handbook of Air Pollution Measurement Systems, (EPA-6/4-77-0276)

Proposed Trial Burn Waste Feed Simulant Composition And PIC Precursor Spikes

1.0 Introduction

On October 13th, 1994 a meeting was held with the U. S. Environmental Protection Agency (EPA), the South Carolina Department of Health and Environmental Control (SCDHEC), the U. S. Department of Energy (DOE) and Westinghouse Savannah River Company (WSRC) in Atlanta to discuss the upcoming revisions to the Savannah River Site Consolidated Incineration Facility (CIF) Trial Burn Plan. During the meeting, the original proposal to feed Trial Burn waste surrogates of primarily sand and methanol for solid and liquid waste streams, respectively, was determined to be unacceptable. It was agreed that SRS would develop an alternative proposal for Trial Burn waste simulants which would more accurately represent actual waste to be fed to the CIF. This proposal was submitted to the EPA in a November 4, 1994 letter. The EPA reviewed and commented on this proposal. SRS has revised this proposal to address comments from the EPA received in a December 6, 1994 letter. SRS has similarly revised the CIF Trial Burn Plan to reflect the revised proposed waste feed simulants.

SRS has performed an analysis to determine the types of waste simulants that should be used during the Trial Burn. The following criteria were used in this analysis:

- Waste simulants must deliver sufficient quantities of POHCs to the incineration system to allow demonstration of at least 99.99% Destruction and Removal Efficiency (DRE).
- Waste simulants must deliver worst case quantities of ash and chlorine to the incineration system for the CIF to be permitted to treat all forecasted waste types
- The matrices of the waste simulants must be representative of the matrices of the wastes expected to be incinerated in the CIF.
- The waste simulants must contain representative Products of Incomplete Combustion (PIC) precursor compounds in concentrations representative to those expected in the CIF hazardous and mixed waste feeds.

The CIF will feed waste in four ways:

- Solid waste in 21" cardboard boxes,
- Organic (HHV) liquid waste to the Rotary Kiln (RK) waste burner,
- Aqueous (LHV) waste to the RK aqueous waste feed nozzle,
- Organic (HHV) liquid waste to the Secondary Combustion Chamber (SCC) waste burner.

Table 1 shows the proposed waste simulants for each of these four waste feeds as compared to the expected waste feeds. A detailed description of each of these waste simulants and the analysis used to develop these simulants are presented in Section 3.0.

The methodology for determining the additional hazardous constituents (PIC precursors) to be spiked during the Trial Burn is described in Section 2.0.

Table 1 - Proposed Waste Simulants

Waste Type	Expected Waste Feeds	Proposed Waste Simulant
Solid Waste	<ul style="list-style-type: none"> • Protective clothing • Spill cleanup materials • Solvent contaminated Rags • Solvents on inorganic absorbents • Paint solids • Contaminated soil 	<ul style="list-style-type: none"> • Clay absorbents • Polyvinyl chloride (PVC) • POHCs • PIC precursor spikes
RK Organic Liquid	<ul style="list-style-type: none"> • Contaminated oils • Petroleum based contaminated solvents • Chlorinated solvents • Paint solvents • Scintillation cocktails 	<ul style="list-style-type: none"> • Fuel Oil • POHCs • PIC precursor spikes
RK Aqueous	<ul style="list-style-type: none"> • Contaminated sump water • Water based wastes 	<ul style="list-style-type: none"> • Water • Metals • Ash simulant (metal spiking compounds and spiking solution suspension agent) • PIC precursor spikes
SCC Organic Liquid	<ul style="list-style-type: none"> • DWPF benzene waste 	<ul style="list-style-type: none"> • POHCs • PIC precursor spikes

2.0 Determination of Representative Waste Feed Organic Constituents

In order to determine candidate Products of Incomplete Combustion (PIC) precursor organic constituents to spike into the CIF trial burn test feed mixture, the ranking methodology presented in the Exposure Assessment Guidance for RCRA Hazardous Waste Combustion Facilities (EPA530-R-94-021) was used. The methodology builds a list of potential spikes by ranking waste feeds or waste feed hazardous constituents based on annual expected feed rate, carcinogenic and non carcinogenic toxicity, and bioaccumulation potential. The steps of the methodology are: (1) determine the waste feed hazardous constituents to be ranked and the expected annual feed quantity of each, (2) calculate the ranking scores for each identified constituent, and (3) compile a candidate list of spikes based on the five resulting ranking lists. The results for each step as applied to the CIF are discussed below.

2.1 Determination of Hazardous and Mixed Waste Constituents and Annual Quantity

The known constituents of existing or future CIF hazardous and mixed waste streams were compared to the constituents listed in Table 1 (Chemicals Recommended for Identification) and Table 2 (Chemicals for Potential Identification) in Attachment A of EPA530-R-94-021. Also, the

list of CIF hazardous and mixed waste constituents was compared to chemicals listed in the EPA Integrated Risk Information System (IRIS) database. These comparisons resulted in a list of thirty-one CIF hazardous and mixed waste feed constituents (see Attachment 1, pg. 1). The maximum annual expected feed quantity of each was calculated by summing the quantity of each constituent in inventory and future expected annual generation. For many constituents (e.g., Silvex) the annual expected quantities are conservative because the waste is no longer being generated at SRS. Incineration of the inventory amount will be one time only. However, for conservatism, the analysis assumed that all constituents will be incinerated annually at the listed quantity.

2.2 Calculation of Ranking Scores

Health risk data for the thirty-one compounds were retrieved from the IRIS database and other sources. As indicated in Attachment 1, the required health risk data and octanol-water partition coefficient is not available for many waste constituents. From the data available, the Quantity/Carcinogenicity (QC), Quantity/Noncarcinogenicity (QN), Quantity/Carcinogenicity/Bioaccumulation Potential (QCB) and Quantity/Noncarcinogenicity/Bioaccumulation Potential (QNB) scores were calculated.

2.3 Ranking of Candidate Spikes and Selection of Final Spike List

The constituents were ranked by the annual expected feed quantity (Attachment 1, pg. 2) and by each of the four calculated scores (Attachment 1, pgs. 3-6). A candidate spike list (Attachment 2) was compiled by first listing the top ten constituents based on quantity. Any of the top ten QC-ranked constituents, if not already listed based on quantity alone, were added. The same process was repeated for the QN, QCB, and QNB rankings. A list of twenty candidate spikes resulted. Constituents with an expected annual quantity of 50 lbs. or less were excluded from the final selection, since including these compounds in the trial burn would not yield an accurate representation of routine CIF emissions. The result was a final list of fifteen organic constituents PIC precursors that will be spiked into the CIF trial burn test feeds to simulate hazardous and mixed waste incineration.

[Text deleted]

3.0 Waste Simulants

The waste simulants will be used during all three test conditions through all feed mechanisms. The three Trial Burn test conditions are shown below.

Test Condition 3: (DRE test/maximum solids)	Organic Liquid to RK	-	As needed
	Aqueous to RK	-	As needed
	Solids to RK	-	Maximum
	Organic Liquid to SCC	-	As needed
	Temperatures:		Kiln - 1,400°F, SCC - 1,600°F

Test Condition 2: (DPE test/maximum liquids)	Organic Liquid to RK	-	Maximum
	Aqueous to RK	-	Maximum
	Solids to RK	-	As needed
	Organic Liquid to SCC	-	Maximum
	Temperatures:		Kiln - 1,400°F, SCC - 1,500°F
Test Condition 1: (Solids test)	Organic Liquid to RK	-	As needed
	Aqueous to RK	-	Maximum
	Solids to RK	-	As needed
	Organic Liquid to SCC	-	As needed
	Temperatures:		Kiln - 1,800°F, SCC - 1,950°F

3.1 Solid Waste Simulant

The solid waste simulant will be a combination of granulated clay absorbent ("kitty litter") and polyvinyl chloride (PVC) spiked with POHCs and PIC precursors.

The list of PIC precursor spikes shown in Attachment 2-1 was compared to the anticipated solid waste feeds. It was determined that the following four chemicals will be present in expected solid wastes in quantities greater than 50 lbs/yr. Constituents with an expected annual quantity of 50 lbs. or less were not considered to be significant components of the solid waste streams.

- Toluene
- Xylene
- 1,1,1-Trichloroethane
- Hexachlorobenzene

These chemicals are typically present in paint solids, solvent rags, and on noncombustible clay absorbents. These chemicals are typically in concentrations less than 1% by weight but concentrations can be as high as 4%. These three chemicals will be added in relative concentrations equivalent to their relative annual quantities expected in solid wastes. The cumulative concentration of these chemicals will be approximately 2% by weight.

Kitty litter was chosen to represent the spill cleanup absorbents and to increase the overall ash content of the solid waste simulant. Kitty litter is commonly used for spill cleanups and to absorb the free liquid in waste sludges (see Attachment 4 for typical characterization). It is similar in chemistry to the other absorbents used at SRS that will be treated at the CIF. The kitty litter will also serve as an absorbent for the PIC precursor spikes and the liquid POHCs (tetrachloroethylene and chlorobenzene).

[text deleted]

The solid POHCs (hexachloroethane and naphthalene) will also be added to the solid waste simulant. The concentrations of POHCs present in the solid waste simulant will be based on the quantities of POHCs necessary for DRE determination.

PVC will make up the remainder of the solid waste simulant. This material will represent the base material for protective clothing and plastic sheeting used for contamination control. PVC will also serve as a source of organic chlorine to demonstrate maximum HCl removal.

The solid waste will be fed to the RK using the same cardboard boxes that will be used during actual operation.

During the metals run, the solid waste simulant will consist of PVC, POHCs and the PIC precursors. The kitty litter will not be added during this test run due to possible interferences with the metal emissions.

3.2 RK Organic Liquid Simulant

Fuel oil spiked with POHCs and PIC precursors is proposed as the RK organic liquid simulant.

Contaminated oils and petroleum based solvents used for plutonium and uranium extraction will constitute the majority of the projected liquid wastes to be fed through the RK waste burner. Fuel oil will also be used during the operation of the CIF to blend hazardous wastes for heat value and viscosity, and as a flush material for piping and tanks.

The final list of 15 PIC precursors shown in Attachment 2 was compared to the anticipated liquid waste feeds. It was determined that the following eleven chemicals will be added to the RK organic liquid simulant as PIC precursors. Nine of these are present in the waste coming to the RK waste burner in quantities greater than 100 lbs/yr. The other two, carbon tetrachloride and hexachlorobenzene will be added due to the high toxicity of these materials.

- Toluene
- Ethylene Glycol
- Xylene
- 1,1,1-Trichloroethane
- Acetonitrile
- Methyl Ethyl Ketone
- Tetrachloroethylene
- Acetone
- Methyene Chloride
- Carbon tetrachloride
- Hexachlorobenzene

Handwritten notes:
... should be considered ...
... consistent ...

These chemicals can range from trace concentrations to almost 100%. On an annual basis, these chemical make up about 4% by weight of the waste being fed to this burner. These chemicals will be added in relative concentrations equivalent to their relative annual quantities expected in liquid

wastes. The cumulative concentration of the nine chemicals will range from about 9.9 to 10.3 wt% by of the simulant.

The liquid POHCs will also be added to the liquid waste simulant in concentrations based on the quantities of POHCs necessary for the DRE determination.

[text deleted]

3.3 RK Aqueous Simulant

The aqueous waste simulant will be water spiked with metals, PIC precursors, and ash simulant (metal compounds and metal spiking solution suspension agent).

Aqueous waste treated at the CIF is typically more than 95% water. The CIF will use service water as the base material for this waste stream during the Trial Burn. The aqueous waste stream simulant will be used to add the metals to the CIF during the Trial Burn. [text deleted]. The following three PIC precursors will be added to this simulant during the Trial Burn:

- ethylene glycol
- methyl ethyl ketone
- acetone

[text deleted] Liquid waste ash simulant will be provided by the metal spike compounds and the clay-based metal spiking solution suspension agent.

3.4 SCC Organic Liquid Simulant

The waste simulant for the SCC organic liquid will be fuel oil spiked with the liquid POHCs and four PIC precursors that make up the Defense Waste Processing Facility (DWPF) organic waste.

The only waste that will be fed directly to the SCC waste burner is the DWPF organic waste. This waste stream will consist of the four aromatic hydrocarbons listed below. There will only be sufficient waste from DWPF, however, to fuel the SCC less than one third of the time. Normally, fuel oil will be the only feed to the SCC. Also, the use of a large percentage of benzene in the SCC during the Trial Burn will not be possible. There is a concern that feeding large quantities of benzene could cause interference problems with the volatile and semi-volatile analyses, by causing breakthrough. For this reason, the waste simulant will be mostly fuel oil with the PIC precursors added such that the cumulative concentration of the four chemicals will be approximately 9-10% by weight of the SCC organic liquid simulant.

The following PIC precursor spikes will be added to the fuel oil in relative concentrations to the anticipated DWPF waste stream.

- Benzene
- Biphenyl
- Diphenylamine

wastes. The cumulative concentration of the nine chemicals will range from about 9.9 to 10.3 wt% by of the simulant.

The liquid POHCs will also be added to the liquid waste simulant in concentrations based on the quantities of POHCs necessary for the DRE determination.

[text deleted]

3.3 RK Aqueous Simulant

The aqueous waste simulant will be water spiked with metals, PIC precursors, and ash simulant (metal compounds and metal spiking solution suspension agent).

Aqueous waste treated at the CIF is typically more than 95% water. The CIF will use service water as the base material for this waste stream during the Trial Burn. The aqueous waste stream simulant will be used to add the metals to the CIF during the Trial Burn. [text deleted]. The following three PIC precursors will be added to this simulant during the Trial Burn:

- ethylene glycol
- methyl ethyl ketone
- acetone

[text deleted] Liquid waste ash simulant will be provided by the metal spike compounds and the clay-based metal spiking solution suspension agent.

3.4 SCC Organic Liquid Simulant

The waste simulant for the SCC organic liquid will be fuel oil spiked with the liquid POHCs and four PIC precursors that make up the Defense Waste Processing Facility (DWPF) organic waste.

The only waste that will be fed directly to the SCC waste burner is the DWPF organic waste. This waste stream will consist of the four aromatic hydrocarbons listed below. There will only be sufficient waste from DWPF, however, to fuel the SCC less than one third of the time. Normally, fuel oil will be the only feed to the SCC. Also, the use of a large percentage of benzene in the SCC during the Trial Burn will not be possible. There is a concern that feeding large quantities of benzene could cause interference problems with the volatile and semi-volatile analyses, by causing breakthrough. For this reason, the waste simulant will be mostly fuel oil with the PIC precursors added such that the cumulative concentration of the four chemicals will be approximately 9-10% by weight of the SCC organic liquid simulant.

The following PIC precursor spikes will be added to the fuel oil in relative concentrations to the anticipated DWPF waste stream.

- Benzene
- Biphenyl
- Diphenylamine

ATTACHMENT 1
PAGE 1

ClF Waste Feed Organic Constituent Quantity/Toxicity Ranking
Sorted by Constituent Name

CAS#	Constituent	Estimated Maximum Feed (lbs/yr)	Chronic Inhalation RIC (mg/m ³)	Chronic Inhalation RIC (mg/kg/day)	Chronic Oral RID (mg/kg/day)	Oral Slope Factor (kg day/mg)	Inhalation Slope Factor (kg day/mg)	logK _{ow}	OC	GH	OCB	OTHB
67-64-1	Acetone	800			0.1			-0.24		6000		-1920
75-05-8	Acetonitrile	57			0.006			-0.34		9500		-3230
71-43-2	Benzene	334000			0.05	0.029	0.029	2.13	9000		20631	
92-52-4	Biphenyl	29606			0.0007	0.13	0.053	2.73		592120		
56-23-5	Carbon Tetrachloride	75			0.01	0.0001	0.001	1.97	10	107143	27	292500
67-66-3	Chloroform	46							4	4600	7	9062
8001-50-9	Creosote	8										
1319-77-3	Cresols (mixed)	12			0.1			1.95		70		392
84-74-2	Dimethyl Phthalate	7			0.1			5.60		80		143
75-34-3	Dichloroethane, 1,1-	8	0.5	0.1429				1.79				
75-35-4	Dichloroethylene, 1,1-	12			0.029	0.6	1.2	2.13	11	1333	31	2840
122-39-4	Dibenzylbenzene	4452			0.025			3.34		178000		594787
107-21-1	Ethylene Glycol	3440			2					1720		
50-00-0	Formaldehyde	4			2			0.35	0	20	0	7
64-18-6	Formic Acid	1849			2					925		
118-74-1	Hexachlorobenzene	66			0.0000	1.6	1.6	5.50	116	02500	501	453750
67-58-1	Methanol	200			0.5			0.77		460		308
78-93-3	Methyl Ethyl Ketone	1092	1	0.2657	0.6			0.26		3707		985
75-09-2	Methylene Chloride	675	3	0.8571	0.06	0.0075	0.0016	1.51	5	11250	8	16988
91-20-3	Naphthalene	36										
98-95-3	Nitrobenzene	11	0.002	0.0006	0.0005			1.63		22000		40260
79-46-9	Nitropropane	15	0.02	0.0057						2625		
108-95-2	Phenol	2968			0.6			1.48		4947		7321
93-72-1	Silvex (2,4,5-TP)	33			0.008			3.93		4125		16211
127-18-4	Tetrachloroethylene	904			0.01	0.052	0.002	2.53	47	90400	119	238712
108-88-3	Toluene	9922	0.4	0.1143	0.2			2.69		86010		233530
71-55-6	Trichloroethane, 1,1,1-	1860						2.47				
79-01-6	Trichloroethylene	330						2.42				
75-69-4	Trichlorofluoromethane	48	0.7	0.2000	0.3			2.53		240		607
76-13-1	Trichlorotrifluoroethane	32	30	8.5714	30					4		
1330-20-7	Xylenes (mixed)	2992			2			3.04		1496		4548

Application for a Hazardous Waste Part 61 Permit
Savannah River Site

Crystal's Notes

4/15 Tue	0530	Ops	Bring waste feeds on line: Blend 1, AQW, Spare, and Boxes
	0730	B3	Bring all four spiking stations on line
	0800	Radian	Commence Run 2 Radian: Prepare probes for Run 3
	1030	All	Complete Run 2
	1335	B3	Stop all four spiking systems
	1335	Ops	Reduce AQW flow to minimum
	1430	Ops	Obtain Test condition flow rates
	1430	B3	Bring all four spiking systems on line
	1500	Radian	Insert probes to commence Run 3 Radian: Recover Run 2 probes
	2030	All	Complete Run 3
	2035	B3	Flush metals nitrate and suspension
	2035	Ops	Stop BRW and ROW feeds Radian: Composite Run 2 ground samples
	2100	Ops	Stop AQW feed
	2100	Ops	Commence RK and SCC temperature drop to Condition 2 temps
	2100	B3	Give samples to Radian
	2230	Radian	Have all probes recovered for Run 3
2230	Radian	Have Run 3 ground samples composited	
4/16 Wed	0700	Radian	Set up trains for Run 4
	0800	Ops	Bring all waste feeds on line: BRW, AQW, ROW and Boxes
	0900	B3	Bring all 4 spiking systems on line
	1000	Radian	Commence Run 4
	1530	All	Complete Run 4
	1535	Ops	Stop BRW and ROW feeds
	1535	B3	Commence flushing of metals nitrate and metals suspension
	1600	Ops	Stop AQW feed
	1730	Radian	Have Run 4 trains recovered
	1930	Radian	Have Run 4 ground samples composited and packed
2000	Radian	Have trains for Run 5 prepared	
4/17 Thur	0530	Ops	Bring all waste feeds on line: BRW, ROW, AQW and boxes
	0730	B3	Bring all 4 spiking systems on line
	0800	Radian	Insert probes into duct and commence Run 5
	1330	All	Complete Run 5
	1335	B3	Stop all 4 spiking systems
	1335	Ops	Reduce flow rate of BRW, ROW and AQW to Burn Plan minimum
	1430	Ops	Restore feed rate of BRW, ROW and AQW to Condition 2
	1430	B3	Bring all 4 spiking systems on line
	1500	Radian	Insert probes and commence Run 6
	2030	All	Complete Run 6
	2035	Ops	Stop BRW and ROW feeds
	2035	B3	Commence flush of metals nitrate and metal suspension
	2100	Ops	Stop AQW feed
	2100	B3	Give samples to Radian
	2230	Radian	Recover trains for Run 6
2330	Radian	Complete composite of ground samples for Run 6 and prepare to ship	
4/18 Fri	0700	Radian	Prepare trains for Run 7
	0900	Ops S	Bring trucks to remove blowdown and ash drums
	1000	Ops	Bring all waste streams on line: BRW, ROW, AQW and boxes
	1130	B3	Bring all 4 spiking systems on line
	1200	Radian	Insert probes and commence Run 7
1730	All	Complete Run 7	

	1735	B3	Commence flush of metals nitrate and suspension
	1735	Cps	Secure BRW and ROW feeds
	1800	Cps	Secure AQW after flush
	1800	B3	Give samples to Radian
	1930	Radian	Recover trains from Run 7
	2130	Radian	Composite all ground samples from Run 7 and prepare to ship
	2200	Radian	Have trains for Run 8 prepared
4/19	0530	Cps	Bring waste feeds on line: BRW, ROW, AQW, and boxes
Sat	0700	B3	Bring all 4 spiking systems on line
	0800	Radian	Insert probes and commence Run 8
	1330	All	Complete Run 8
	1335	B3	Stop spiking pumps unless otherwise directed based on chemical supply
	1335	Cps	Reduce waste feed flows unless otherwise directed based on supply in tanks
	1400	Op S	Remove ash drums from CIF
	1430	B3	Restore spiking pumps to specified feed rates
	1430	Cps	Restore waste feed rates to full flow
	1500	Radian	Insert probes and commence Run 9
	2030	All	Complete Run 9
	2035	B3	Commence flush of nitrate and suspension systems
	2035	Cps	Stop BRW and ROW feeds
	2100	Cps	Stop AQW feed
	2230	Radian	Recover probes for Run 9
	2330	Radian	Composite ground samples for Run 9 and prepare to ship
4/20	0700	Cps	Raise RK temp to 1500 and SCC temp to 1800 F
Sun	1000	Radian	Prepare particulate train for Special Test
	1000	Radian	Prepare VOST for SCDHEC audit cylinder
	1000	Op S	Place material in stack sump
	1000	Cps	Commence all waste feeds: B (W, AQW, Spare and Boxes
	1130	B3	Commence spiking pumps
	1200	Radian	Insert PM train in stack
	1400	All	Complete special test
	1435	B3	Commence flush of all spiking systems
	1435	Radian	Collect all ground samples for the Special Test
	1500	Cps	Restore DCS setpoints and implement Post Trial Burn Temp changes
	1500	B3	Commence DEMOBILIZATION
	1530	Radian	Recover particulate train
	1600	Cps	If meet post TB configuration, burn tanks and boxes as directed by Burn Plan
	1630	Radian	Composite ground samples for Special Test and Prepare to ship
	1700	Radian	Commence DEMOBILIZATION

Post trial burn activities

Confirm that all samples have arrived safely at the laboratories
 Restore DCS WFCO;
 Commence Post Trial Burn Temperature setpoint of 1500 and 1800 in RK and SCC respectively
 Burn off TB chemicals in the tank farm
 Find home for excess boxes in N area
 Examine all one minute feed data, develop transmittal form, and send to Radian
 Provide system description and graphic of plant to Radian for Chapter 2 of report
 Provide all one minute operating data to Radian by 5/15
 Prepare draft final permit values in-house as data becomes available

- June 20, 1997 Review draft TB report
- July 20, 1997 Submit final TB report to SCORC

**SRS/CIF Trial Burn
Sign-up Sheet**

Monday, April 14th	Tuesday, April 15th	Wednesday, April 16th	Thursday, April 17th	Friday, April 18th	Saturday, April 19th	Sunday, April 20th
Run 1	Run 2	Run 4	Run 5	Run 7	Run 8	Year Audit /Social Test
Shelly Sherritt	Bill Carder	Tim Terwilliger	Crystal Rippy	Shelly Sherritt	Shelly Sherritt	Shelly Sherritt
Crystal Rippy	Joan Hartley	Phil Morris		Crystal Rippy	Crystal Rippy	Crystal Rippy
	David Wilson	Crystal Rippy				
	Crystal Rippy					
	Run 3		Run 6		Run 9	
	Crystal Rippy		Paul Wilkie		Crystal Rippy	
			Crystal Rippy		Shelly Sherritt	

Vost Field Data Sheet

4/20/97
 W.D. Williams
 1st Floor

Plant W.S.R.C. Date 4-20-97 Test # 1 Run # 1, 2, 3
 Sampling Location Audit Samples Operator Cal Johnson
 Ambient Temp. 80 (F) Barometric Press. 29.92 (Hg) Blank Tube Nos. Tenax: 3401A TIC: 3401B (1430)
 Assumed Moisture % 6.2 Probe Heater Setting 264 Comments _____
 Meter Box No. 5A7104 Meter Factor 1.026

Test Number	Leak Check (H ₂ O)		Tube No. (Lab)	Sampling (min)	Clock Time (24 hr)	Gas Meter Reading (L)	Meter Pressure (H ₂ O)	K ₂ CO ₃ Temp (F)	DGM Temp (F)	Probe Temp (F)	1st Condenser Outlet Temp (F)	2nd Condenser Outlet Temp (F)	Pump Vacuum (H ₂ O)
	Prb	Post											
1st Pass	0/15	0/15	T	0	1351	0633.59	1.00	214	73.73	268	50	50	1.0
			3401A	10	1401	0638.98	1.00	214	71.74	260	48	49	1.0
			TIC	20	1409	0643.53							
			3401B										
2nd Pass	0/16	0/16	T	0	1424	0649.34	0.90	214	76.76	262	51	51	1.5
			3401A	10	1434	0649.58	1.00	214	76.76	264	49	48	1.5
			TIC	20	1444	0654.32							
			3401B										
3rd Pass	0/16	0/15.5	T	0	1457	0655.15	1.00	216	77.78	261	50	50	1.0
			3401A	10	1457 ¹⁵⁰⁷	0660.10	.95	216	78.79	254	50	50	.5
			TIC	20	1517	0644.96							
			3401B										
			T										
			TIC										

1st Condensate (1520)



Condition 1
Run 1
April 14, 1997

Daily Testing Status

	BRW	ROW	AQW	Boxes
Waste Starting Time	0753	0910	1044	1047
Spiking Pumps Start Time	0920	1305	1053 min	
			1056 suspension	
Conditioning Start Time 30 minutes minimum	1056			
	Pair 1	Pair 2	Pair 3	Pair 4
VOST Start Time 40 minutes/pair	1146-1226	1318-1358	1421-1501	1549-1629
MMS 2.5 hours total 240 minutes	First Half Start Time	1210 Aborted	1415-1623	
	Second Half Start Time		1646-1912	
Method 23 2.5 hours total 120 minutes	First Half		1618-1632	
	Second Half		1650-1823	
Metals 2 hours total	First Half		1219-1329	
	Second Half		1417-1522	
PM/HC 2 hours total	First Half		1221-1331	
	Second Half		1415-1515	
Aldehydes Ketones 2 hours	First Half		1648-1753	
	Second Half		1809-1909	

Minimum Total Stack Time Required = 5 hours
NOx on at ~ 1000 hrs

2 WFCO on BRW Lo Pressure : 1304 restored 1307
1514 " 1516



Condition 1
Run 2
April 15,

Daily Testing Status

	BRW	ROW	AQW	Boxes
Waste Strating Time	0635	0611	0947	0040
Spiking Pumps Start Time	0935	0925	0953	nitrate
Conditioning Start Time	<i>Restart spiking 1535</i>	1457	0954 suspension	
30 minutes minimum	0954		1556	1554
	1558			
	Pair 1	Pair 2	Pair 3	Pair 4
VOST Start Time	1030-1110	1124-1204	1230-1310	1330-1410
40 minutes/pair				
MMS				1030-1230
3.5 hours total				1256-1414 <i>Restart 1629</i>
Method 23				1102-1252
3.5 hours total				1252-1352
Metals				1030-1130
2 hours total				1147-1247
PM/HCl				1028-1128
2 hours total				1149-1249
Aldehydes				1316-1414
Ketones				1629-1730
2 hours				

Minimum Total Stack Time Required = 5 hours

*Stopped feeds
Started feeds at 1414 due to action level requirement on prefilter/HCF*



Condition 1
Run 3
April 16, 19

Daily Testing Status

Waste Starting Time
Spiking Pumps Start Time

BRW	ROW	AQW	Boxes
0449	0517	0716	0715
0711	0712	0724 MW	
		0726 SUS	

Conditioning Start Time
30 minutes minimum

0726

VOST Start Time
40 minutes/pair
MMS
4 3.5 hours total

Pair 1	Pair 2	Pair 3	Pair 4
0844-0946	1003-1043	1058-1138	1212-1252

First Half Start Time 0840-1104
Second Half Start Time 1125-1325

Method 23
3.5 hours total
2.0

First Half 0941-1003
Second Half 1122-1222

Metals
2 hours total

First Half 0815-0957
Second Half 1016-1119

PM/HC
2 hours total

First Half 1207-1312
Second Half 1401-1501

Aldehydes - Run 3A
Ketones
2 hours

First Half 0817-0959
Second Half 1014-1117

Aldehydes Run 3B
Ketones
Minimum Total Stack Time Required = 5 hours

First Half 1244-1344
Second Half 1403-1503



Daily Testing Status

Condition 2
Run 4
April 17, 1999

Waste Starting Time
Spiking Pumps Start Time

BRW	ROW	AQW	Boxes
0509	0548	0725	0732
0715	0715	0732	SUB
		0734	MM

Conditioning Start Time
30 minutes minimum

0734

VOST Start Time
40 minutes/pair

Pair 1	Pair 2	Pair 3	Pair 4
0906 - 0946	1000 - 1040	1055 - 1135	1148 - 1228

MM5
2.5 hours total

First Half Start Time	0913 - 1113
Second Half Start Time	1137 - 1337

Method 23
2.5 hours total
2.0

First Half	0946 - 1046
Second Half	1140 - 1240

Metals
2 hours total

First Half	0926 - 1026
Second Half	1041 - 1141

PM/HQ
2 hours total

First Half	0914 - 1024
Second Half	1043 - 1143

Aldehydes
Ketones
2 hours

First Half	1204 - 1252
Second Half	1306 - 1400

Minimum Total Stack Time Required = 5 hours

WFCO - None



Condition ✓
Run 5
April 17, 199

Daily Testing Status

Waste Starting Time →
Spiking Pumps Start Time

BRW	ROW	AQW	Boxes
0500	0545	0725	0732
07:5	0715	0732	suspension metals nitrate

Conditioning Start Time
30 minutes minimum

1456

VOST Start Time
40 minutes/pair
MMS
3.5 hours total

Pair 1	Pair 2	Pair 3	Pair 4
1532-1612	1624-1704	1719-1759	1818-1858

First Half Start Time 1548-1748
Second Half Start Time 1900-2000

Method 23
3.5 hours total

First Half 1551-1651
Second Half 1803-1903

Metals
2 hours total

First Half 1835-1935
Second Half 1946-2046

PM/HQ
2 hours total

First Half 1551-1651
Second Half 1709-1809

Aldehydes
Ketones
2 hours

First Half 1548-1648
Second Half 1711-1811

Minimum Total Stack Time Required = 5 hours

* All waste remained online from Run 4 to Run 5

No WFCOs

Deviation: Temp Mod CIF-97-017, new sample port location at spare tank was placed in service at 1640.



Run 6
April 18, 199

Daily Testing Status

	BRW	ROW	AQW	Boxes
Waste Starting Time	1220	1228	1228	1206
Spiking Pumps Start Time	1228	1228	1231	1229 545
Conditioning Start Time 30 minutes minimum	1231			
	Pair 1	Pair 2	Pair 3	Pair 4
VOST Start Time 40 minutes/pair	1304-1344	1355-1435	1447-1527	1539-1619
MMS 3.5 hours total	First Half Start Time			1304-1531
	Second Half Start Time			1550-1801
Method 23 3.5 hours total	First Half			1414-1514
	Second Half			1543-1649
Metals 2 hours total	First Half			1317-1417
	Second Half			1436-1536
PM/HC 2 hours total	First Half			1315-1415
	Second Half			1438-1538
Aldehydes Ketones 2 hours	First Half			1614-1707
	Second Half			1721-1809

7-G-72

Minimum Total Stack Time Required = 5 hours

MMS stopped by Radion from 1314 to 1343 to assess flow rate issue. Possible the impinger packed too tight for wet gas. The flow cleared and sampling resumed.

WECO at 1620 to 1623 on BRW only. Flame scanner failure. Testing resumed at 1627

Radion time is 3 minutes off from CIF DCS. One minute data collected from 1301 to 1809



Conditioning
Run 7
April 19, 1

Daily Testing Status

Waste Starting Time
Spiking Pumps Start Time

BRW	ROW	AQW	Boxes
0642	0701	0717	0737
0715	0720	0724 MW	
		0725 SWS	

Conditioning Start Time
30 minutes minimum

0737

VOST Start Time
40 minutes/pair

Pair 1	Pair 2	Pair 3	Pair 4
0807-0847	0857-0937	0951-1031	1043-1123

MMS
3.5 hours total
4 hrs 24 min

First Half Start Time	0815-1030
Second Half Start Time	1047-1259

Method 23
2.8.5 hours total

First Half	0810-0910
Second Half	1045-1145

Metals
2 hours total

First Half	0815-0915
Second Half	0932-1032

PM/HC
2 hours total

First Half	0817-0917
Second Half	0930-1030

Aldehydes
Ketones
2 hours

First Half	1056-1156
Second Half	1216-1316

Minimum Total Stack Time Required = 5 hours

7-G-73

No WFCO

Deviations: Blend Tank #1 sampling station was modified by TMC-CIF-97-0018 to remove the needle and position a valve.

Note: The MMS train was extended to 4 hrs, 24 min (11 minute point) to compensate for lower flow in this condition.



Run 8
April 19,

Daily Testing Status

	BRW	ROW	AQW	Boxes
Waste Starting Time				1459
Spiking Pumps Start Time			1459	
Conditioning Start Time 30 minutes minimum	1459			
	Pair 1	Pair 2	Pair 3	Pair 4
VOST Start Time 40 minutes/pair	1529 - 1609	1621 - 1701	1715 - 1755	1810 - 1850
MMS 3.5 hours total				1530 - 1730 1744 - 1944
Method 23 3.5 hours total				1601 - 1701 1741 - 1841
Metals 2 hours total				1531 - 1631 1646 - 1746
PM/HCl 2 hours total				1529 - 1629 1648 - 1748
Aldehydes Ketones 2 hours				1828 - 1928 1937 - 1948

All other waste fields on from Run 7

Minimum Total Stack Time Required = 5 hours

* Run 8 is complete

2 Aldehyde/Ketone trains will be run during Run 9. The aldehyde run during Run 8 was stopped due to inclement weather (lightning)



Daily Testing Status

Condition 3
Run 9

4/2

April 20, 1997

Waste Starting Time
Spiking Pumps Start Time

BRW	ROW	AQW	Boxes
0515	0545	0937	0830
0844	0843	0846	

Conditioning Start Time
30 minutes minimum

0848

VOST Start Time
40 minutes/pair

Pair 1	Pair 2	Pair 3	Pair 4
0922-1002	1015-1055	1115-1155	1207-1247

MMS
4 3.5 hours total

First Half Start Time 0929 - 1129

Second Half Start Time 1142 - 1342

Method 23
2 3.5 hours total

First Half 1011 - 1111

Second Half 1148 - 1248

Metals
2 hours total

First Half 0933 - 1033

Second Half 1047 - 1147

PM/HCl
2 hours total

First Half 1304 - 1404

Second Half 1420 - 1520

Aldehydes (A)
Ketones
2 hours

First Half 0931 - 1031

Second Half 1049 - 1149

Aldehydes (B)
Ketones
Minimum Total Stack Time Required = 5 hours

First Half
Second Half

1302 - 1402

1422 - 1522

PART VII - METALS INCINERATION

Unless otherwise specified, feed rate limits for metals, total chloride, and ash are established and monitored by knowing the as-fed concentration of the substance (i.e., metals, chloride and ash) in each feedstream and the flow rate of the feedstream. To monitor the feed rate of these substances, the flow rate of each feedstream must be monitored using a continuous monitor which continuously samples the regulated parameter without interruption, evaluates the detector response at least once each fifteen (15) seconds and computes and records the average value at least once per minute. "Each feedstream" includes all hazardous wastes, all non-hazardous wastes and auxiliary fuel.

VII.A.

LIMITATION OF METALS CONTAINING WASTES

VII.A.1.

The Permittee must obtain the concentration of each metal, total chloride, and ash in each incinerator feed stream by chemical analysis of a representative sample of the as-fed feed stream prior to introduction to the incinerator. The analysis must be repeated as necessary to ensure that the most recent analysis is accurately representative of the metal of concern. All analysis will be performed in accordance with the appropriate methods referenced in "Test Methods for the Evaluating Solid Waste", EPA Document SW-846, Third Edition, November 1986, specifically Methods 3050 and 6010, or equivalent methods as approved by the Regional Administrator or authorized representative. Detailed waste stream sampling frequency and analytical methods are specified in Appendix D, Waste Characteristics.

VII.A.2.

The Permittee must monitor the flow rate of each feed stream, except the solid waste system, to the incinerator using a continuous monitor which continuously samples the flow rate without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every one (1) minute.

VII.A.2.a.

The Permittee must monitor, evaluate and record the solid waste feed rate at least once every five (5) minutes.

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VII.A.3.

The Permittee shall not introduce the following metals as metals or metals compounds to the incinerator at rates higher than the following total combined metal feed rates:

<u>Metal</u>	<u>Maximum Allowable Feed Rate*</u> <u>(lbs/hr)</u>
Antimony	0.980
Arsenic	0.067
Barium	160.000
Beryllium	0.007
Cadmium	0.027
Chromium	3.400
Lead	13.400
Mercury	0.980
Silver	9.800
Thallium	0.980

*The total lbs/hr is based on an instantaneous measurement monitored, evaluated and recorded at least every one minute or an hourly rolling average (updated at least every one minute). The total lbs/hr is the sum of the individual waste feed streams' and auxiliary fuel metals contribution in lbs/hr. These feed rate limits are subject to modification based on trial burn results.

VII.A.3.b.

The Permittee shall automatically shut off waste feed to the incinerator if any one minute instantaneous measurement or hourly rolling average exceeds the limits specified in Condition VII.A.3.a. Monitoring of the specified metals feed rates must continue after waste feed is cut off. If the metals inputs are monitored on an instantaneous basis, the hazardous waste feed shall not be restarted until the levels of these parameters comply with the limits specified in Condition VII.A.3.a. for thirty (30) minutes. If the metals input are monitored on an hourly rolling average basis, the hazardous waste feed shall not be restarted until the hourly rolling average drops below the limits specified in Condition VII.A.3.a.

VII.A.4.

The Permittee shall provide written documentation including records of all operating logs, analytical data, calibration logs, traceability logs, quality assurance data and engineering calculations to demonstrate compliance with Condition VII.A.3. upon request from the Regional Administrator or authorized representative. This documentation must be maintained until closure of the facility.

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VII.B.

STANDARD MONITORING

The Permittee shall, upon the request of the Regional Administrator, sample and analyze the waste and exhaust emissions to verify that the operating requirements established in this permit achieve the metals emission limits as follows:

<u>Metal</u>	<u>Total Metal Emission Rate*</u> <u>(lb/hr)</u>
Antimony	0.980
Arsenic	0.016
Barium	160.000
Beryllium	0.003
Cadmium	0.016
Chromium	0.284
Lead	13.400
Mercury	0.980
Silver	9.800
Thallium	0.980

VII.C.1.

This permit may be modified to revise the metals limitations if another permitted hazardous waste combustion unit is added to the facility, or if it is determined that the standards upon which the limits were based are no longer protective of human health and the environment.

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ATTACHMENT M

**ASH GROVE CEMENT COMPANY RCRA PERMIT
SECTION E**

(31 Sheets)

b. Unless the EPA Administrator takes action to the contrary, beginning October 6, 1996, the Permittee shall comply with 40 CFR Part 264 Subpart CC for air emissions from containers and tanks that are used to treat or store hazardous waste.

- (1) On or before October 6, 1996, the Permittee shall submit an implementation schedule, for the Director's review and approval, that includes the following information: a description of the proposed control equipment, specific calendar dates for award of contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of 40 CFR Part 264 Subpart CC.
- (2) The Director may extend the implementation date for control equipment at a facility to a date no later than December 8, 1997, when circumstances that are beyond the Permittee's control delay installation or operation of control equipment and the owner or operator has made all reasonable and prudent attempts to comply with the requirements of this permit.

E. INDUSTRIAL FURNACE REQUIREMENTS

E.1. Description of Industrial Furnaces

The Permittee operates two wet process cement kilns in which both liquid and solid hazardous wastes are burned as fuels. The kiln designated in this permit as Kiln No. 1 is on the North side of the facility, while the kiln designated as Kiln No. 2 is on the South. Liquid hazardous waste is burned along with fossil fuels, through multichannel burner pipes. Solid hazardous wastes are burned in small containers that are charged into the kilns at mid-kiln. The exhaust gases exit each kiln through electrostatic precipitators, for particulate matter control, which are ducted to a common stack.

The Permittee has satisfied the requirements for obtaining a permit under the federal regulations found at 40 CFR Part 266 §§ 102, 104, 105, 106, 107, 111, 112 ; and 40 CFR §§ 270.22 and 270.66. The regulations include the following requirements:

- a. Standards to control organic emissions;
- b. Standards to control particulate matter;
- c. Standards to control metals emissions;
- d. Standards to control hydrogen chloride and chlorine gas emissions;

e. Standards for direct transfer of hazardous waste; and

f. Standards for management of residues.

The above standards, as they specifically pertain to Kiln 1 and Kiln 2, are set forth in Section E of Part II of this permit. Modifications to the cement kiln systems, including air pollution control systems, necessary to comply with the final rule modifying 40 CFR §266.102 and establishing 40 CFR Part 63 Subpart EEE, shall require a permit modification pursuant to 40 CFR § 270.42(a)(2) for Class 1 permit modifications requiring prior approval of the Director. The operating requirements and limitations of this section shall be modified to incorporate revisions necessary to comply with the final rule modifying 40 CFR §266.102 and establishing 40 CFR Part 63 Subpart EEE. This modification shall be completed pursuant to 40 CFR § 270.42(a)(1) for Class 1 permit modifications.

E.2. Limitations of Hazardous Wastes

The Permittee may only burn hazardous waste identified in Part I, Attachment A of this permit, as specified in this permit and only under the terms of this permit. The KDHE has not adopted into its state regulations some of the hazardous wastes identified in Attachment A. Also, while some other wastes have been adopted as hazardous wastes under state regulations, KDHE has not yet been authorized to regulate these wastes in lieu of EPA. Therefore, any wastes identified in Attachment A which have not yet been adopted by or delegated to KDHE are specifically incorporated in Part II of this Permit, and are specifically authorized for treatment (e.g., burning) or storage by EPA.

E.3. Hazardous Waste Analysis

The Permittee shall conduct sampling and analysis as described in Section C of its approved permit application to ensure that the hazardous waste, other fuels, and industrial furnace feed stocks fired into the cement kilns are within the physical and chemical composition limits specified in the permit. Changes to the sampling and analysis procedures described in Section C of the approved permit application shall require a permit modification as required by 40 CFR § 270.42.

E.4. Compliance With Regulations

For the purposes of permit enforcement, compliance with the operating requirements specified in this permit shall be regarded as compliance with 40 CFR § 266.102. However, any evidence that indicates that compliance with these permit conditions is insufficient to ensure compliance with the requirements of 40 CFR § 266.102 shall constitute "information" which may justify modification or revocation and re-issuance of a permit under 40 CFR § 270.41.

E.5. Performance Standards

The Permittee shall maintain the cement kilns, hazardous waste feed systems, and the associated air pollution control equipment, so that, when operated in accordance with the waste feed limitations and operating requirements specified in this permit, they will meet the following performance standards:

a. The cement kilns shall achieve a destruction and removal efficiency (hereafter referred to as DRE) of 99.99 percent for each of the following principal organic hazardous constituents (hereafter referred to as POHCs) designated in this permit, and listed below, for each hazardous waste feed.

(1) Containerized Hazardous Waste:

- 1,2,4-trichlorobenzene
- trichloroethane

(2) Liquid Hazardous Waste

- ortho-dichlorobenzene
- trichloroethene

The DRE shall be determined using the method specified in 40 CFR §266.104(a)(1).

b. The Permittee shall control combined hydrogen chloride (hereafter referred to as HCl) and chlorine emissions from both Kiln 1 and Kiln 2 such that the rate of emissions from both kilns combined is no greater than 7.79 pounds per hour of HCl and 0.18 pounds per hour of chlorine, as required by 40 CFR § 266.102(e)(5)(ii)(A).

c. The cement kilns shall not emit particulate matter in excess of 0.08 grains per dry standard cubic foot of stack gas when corrected for seven (7) percent by volume of oxygen in the stack gas, in accordance with the formula specified at 40 CFR § 266.105(a).

d. Pursuant to 40 CFR § 266.102(e)(4), the combined emissions from cement Kilns 1 and 2 shall not be in excess of the following limits:

Table 1 - Metal Emissions Limits

Metal	Emission Limit (lb/hr)
Lead	3.18

Chromium VI	0.0167
Cadmium	0.103
Arsenic	0.00962

E.6. Limitation on Waste Feed.

The Permittee may burn only the hazardous wastes identified in Part I, Attachment A of this permit, in accordance with the following limitations.

Based on (i) system removal efficiencies for metals demonstrated during the Permittee's trial burn, (ii) an assessment of the content of antimony, barium, and silver in the total waste feed streams which the Permittee is allowed to burn, and (iii) the risk assessment completed by EPA concerning the Permittee's facility, EPA has determined that the highest potential emissions of antimony, barium and silver from the stack at the Permittee's facility are significantly below the applicable limits set by EPA regulation, and therefore that the requirements of 40 CFR § 266.102(d)(4) are met by imposing the feed rate limits set forth in Sections E.7.h. and E.7.i of this permit.

The feed rates of antimony, barium, and silver, shall be limited by complying with the feed rate limits of Sections E.7.h. and E.7.i. of this permit.

As for mercury and thallium, based on EPA's multi-exposure pathway risk assessment of potential health impacts from the burning of hazardous waste at the Permittee's facility, control of mercury and thallium emissions is better done through the use of annual average feed rate limitations, as defined in E.6.b. of this permit.

b. The annual average hazardous waste metals feed rates to each individual kiln shall not exceed the rates in Table 3, which are expressed in pounds per hour:

Table 3
Annual Average Total Hazardous Waste Metals Feed Rate Limits

Compound	Total Hazardous Waste Feed Limit (lbs./hr)
Arsenic	2.34
Beryllium	0.01
Cadmium	1.13
Chromium	13.9
Mercury	0.13
Thallium	0.98

c. The first annual compliance period for demonstrating compliance with the annual average hazardous waste metals feed rate limits specified in Section E.6.b. of this permit, shall begin on the effective date of this permit. Compliance with the annual average hazardous waste metals feed rate limits shall be determined for each metal as follows:

a. The hourly rolling average chlorine and metal feed rates to each individual kiln shall not exceed the rates in Table 2, which are expressed in pounds per hour:

Table 2 - Maximum Chlorine and Metal Feed Rates

Compound	Total Feed Stream (lbs./hr)	Total Hazardous Waste (lbs./hr)	Pumpable Hazardous Waste (lbs./hr)
Chlorine	550		
Arsenic	18.1	17.4	17.4
Beryllium	0.93		
Cadmium	2.29	1.65	1.65
Chromium	24.03	23.1	20.3
Lead	46.08	45.6	37.2

In addition to the feed rates for the metals specified above, 40 CFR § 266.102(d)(4) requires that RCRA permits specify feed rate limits for the metals antimony, barium, silver, mercury, and thallium contained in total feed streams, which includes cement kiln raw materials, fossil fuels and hazardous waste fuels. These feed rate limits are established to ensure that emission rate limits for these metals are not exceeded, and are based on the assumption that the metals fed to the kiln are emitted in amounts equal to the amounts fed into the unit.

With respect to antimony, barium, and silver, the Permittee has completed a trial burn which demonstrated that less than 1% of the amounts of these three metals that are introduced into the cement kiln are actually emitted from the stack. EPA also analyzed the composition of the materials fed into the Permittee's cement kilns to determine the amounts of these three metals which are actually fed into the kilns.

Additionally, EPA completed a multi-exposure pathway risk assessment of potential health impacts from the burning of hazardous waste at the Permittee's facility. This study included an assessment of any potential health impacts from the Permittee's emission levels of antimony, barium and silver. The study was based on the amounts of each of those metals fed into the kilns during the trial burn. Based on this assessment, the agency has concluded that the highest

potential emissions of these metals from the Permittee's facility will not result in adverse impacts to human health.

Annual Average Hazardous Waste Metals Feed Rate = Total Mass of Metals in Hazardous Waste Burned + Total Hours of Hazardous Waste Burning

The Permittee shall submit a report to document compliance with the annual-average hazardous waste metals feed rate limits specified in this permit to the Director within sixty (60) days after the first annual compliance period, as defined in this permit. This report shall include a summary of all hazardous waste shipments burned by the Permittee identifying the concentrations of metals measured, dates of analyses, and mass of hazardous waste shipment burned, as an alternative, the Permittee may submit a paper and electronic copy of a spreadsheet calculation used to determine annual average hazardous waste feed rates. These reports shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

In addition, the Permittee shall maintain, and make available for inspection, the running average of the annual average hazardous waste metals feed rates specified in Table 3. This running average shall be updated on, at minimum, a ninety (90) calendar day basis. Calculation of the running average shall be completed and available for inspection thirty (30) days after the close of each 90 calendar day period.

d. The Permittee shall monitor the feed rate of metals and chlorine/chloride in each feed stream to ensure that the feed rate limits set forth above are not exceeded. Monitoring metals and chlorine shall be accomplished by implementing Attachment D-14 "Metals and Chlorine Feed Rate Management Methodology," of the approved permit application.

E.7. Operating Conditions

Operating Conditions Applicable to Both Kilns

- a. Hazardous wastes shall not be introduced into a cement kiln unless the operating conditions in E.7.h. for Kiln 1, and E.7.i. for Kiln 2 are being met, all of the instruments required to verify compliance with such conditions are functioning properly and the parameters measured by the instruments are being recorded as required by this permit. The Permittee shall cease feeding hazardous waste to a cement kiln when either the waste feed or any operating condition exceeds limits designated in this permit.
- b. While burning hazardous wastes, a cement kiln shall be operated with the automatic waste feed cut-off system, as described in the approved permit application, functioning so that hazardous waste feed is automatically cut off when any operating condition specified in this permit is not met.
- c. The minimum combustion chamber temperature specified in Section E.7.h. or E.7.i. of this

permit for Kiln 1 or Kiln 2, respectively, shall be maintained at all times while hazardous waste or hazardous waste residues remain in the combustion chamber, as required by 40 CFR § 266.102(e)(7)(ii)(A).

d. Exhaust gases must exit through the electrostatic precipitators, and these systems shall be operated in accordance with the permit requirements specified in Section E.7.h. or E.7.i. of this permit for Kiln 1 or Kiln 2, respectively, while hazardous waste or hazardous waste residues remain in the kilns, as required by 40 CFR § 266.102(e)(7)(ii)(B).

e. All operating conditions for which limits are established in this permit shall continue to be monitored during an automatic waste feed-cutoff, and the hazardous waste feed shall not be restarted until the affected kiln is operating under all conditions specified in E.7. of this permit.

f. The Permittee shall cease burning hazardous waste when changes in combustion properties, or feed rates of the hazardous waste, other fuels, or industrial furnace feed stocks, or changes in the design or operating conditions of Kilns 1 or 2 deviate from the limits specified in this permit, as required by 40 CFR § 266.102(e)(7)(iii).

g. The mid-kiln hazardous waste feed systems shall not feed containerized waste with a combined volume for each kiln of greater than 14 gallons per kiln revolution.

Operating Conditions Specific to Kiln 1

h. The following conditions of operation shall be met at all times when hazardous waste is being introduced into Kiln 1:

- (1) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of carbon monoxide, monitored as specified in Permit Condition E.8 shall not exceed 600 ppmv, corrected to seven percent oxygen on a dry basis.
- (2) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of total hydrocarbons monitored as specified in Permit Condition E.8 shall not exceed 20 ppmv, corrected to seven percent oxygen on a dry basis.
- (3) The chain section inlet gas temperature monitored as specified in Permit Condition E.8 shall not be less than 1622° Fahrenheit or greater than 2052° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (4) The dry raw material mix feed rate monitored as specified in Permit Condition E.8 shall not exceed 65 tons per hour or fall below 42 tons per hour based on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).

- (5) The pumpable hazardous waste feed rate monitored as specified in Permit Condition E.8 shall not exceed 5.1 tons per hour, on an hourly rolling average basis, as defined in 40 CFR §266.102(e)(6)(i)(B).
- (6) The total hazardous waste feed rate, monitored as specified in Permit Condition E.8 shall not exceed 7.1 tons per hour on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (7) The power to the electrostatic precipitator, monitored as specified in Permit Condition E.8, shall not be less than 44.1 kVA on an hourly rolling average basis, as defined in 40 CFR §266.102(e)(6)(i)(B).
- (8) The maximum electrostatic precipitator inlet gas temperature monitored as specified in Permit Condition E.8 shall not be more than 388° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (9) The Permittee shall comply with the requirements of 40 CFR §266.102(e)(7)(i), to prevent fugitive emissions, by ensuring that no hazardous wastes are introduced into the kiln when the differential pressure between the raw material feed hood and the firing hood is greater than negative 1.0 inches water column (w.c.), or when the differential pressure to atmosphere at the firing hood is greater than negative 0.01 inches w.c. for more than a period of 60 continuous seconds, both measured as specified in permit Condition E.8.
- (10) The relative flue gas flow rate, monitored as specified in Permit Condition E.8, shall not be more than 1.07, on an hourly rolling average basis defined in 40 CFR §266.102(e)(6)(i)(B).
- (11) In the event that the operating conditions set out in E.7.h. (1)-(9) above are not met at any time when hazardous waste is present in Kiln 1, an automatic waste feed cut off shall be activated immediately, and the Permittee shall cease burning hazardous waste in Kiln 1 until such time as the operating conditions specified for Kiln 1 are again being met. Table 4 is a listing of the automatic waste feed cut-offs required by E.7.h.(1) through E.7.h.(9) above, describing the parameters and limits that shall activate the automatic hazardous waste feed cut-off mechanism as described in Section D-7 of the approved permit application.

3

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Table 4 - Kiln 1 Automatic Waste Feed Cut-off Limits

OPERATING PARAMETER	OPERATING CONDITION	RESPONSE TO DEVIATION FROM OPERATING CONDITION	LOCATION OF MONITORING DEVICE
Carbon Monoxide	Greater than 600 ppmv (HRA, 7% O ₂ Dry Basis)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Total Hydrocarbons	Greater Than 20 ppmv (HRA, 7% DRY BASIS)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Combustion Temperature	Less Than 1622° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Combustion Temperature	Greater Than 2052° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Pumpable Hazardous Waste	Greater Than 5.1 Tons Per Hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor
Total Hazardous Waste Feed	Greater Than 7.1 Tons per hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor and Container feed
Dry Raw Material Feed	Greater than 65 or less than 42 Tons Per Hour (HRA)	Immediate AWFCO	Raw Material Slurry Feed Line
Stack Flow	Greater than 1.07 Relative Flow (HRA)	Immediate AWFCO	I. D. Fan
ESP Power	Less Than 44.1 kVA (HRA)	Immediate AWFCO	ESP Voltage Controller
Kiln Differential Pressure	Greater than -1.0 in W.C.	Immediate AWFCO	Pressure Taps at Feed End and Burner Hood
Firing Hood Pressure	Greater than 0.01 W.C.	Immediate AWFCO	Pressure Tap at Burner Hood
ESP Inlet Temperature	Greater Than 388°F (HRA)	Immediate AWFCO	ESP Inlet

Operating Conditions Specific to Kiln No. 2.

i. The following conditions of operation shall be met at all times when hazardous waste is being introduced into Kiln 2:

- (1) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of carbon monoxide, monitored as specified in Permit Condition E.8., shall not exceed 600 ppmv, corrected to seven percent oxygen on a dry basis.
- (2) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of total hydrocarbons, monitored as specified in Permit Condition E.8., shall not exceed 20 ppmv, corrected to seven percent oxygen on a dry basis.
- (3) The chain section inlet gas temperature monitored as specified in Permit Condition E.8 shall not be less than 1622° Fahrenheit or greater than 2052° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (4) The dry raw material mix feed rate monitored as specified in Permit Condition E.8 shall not exceed 65 tons per hour or fall below 42 tons per hour based on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B)
- (5) The pumpable hazardous waste feed rate monitored as specified in Permit Condition E.8., shall not exceed 5.1 tons per hour, on an hourly rolling average basis, as defined in 40 CFR §266.102(e) (6)(i)(B).
- (6) The total hazardous waste feed rate, monitored as specified in Permit Condition E.8, shall not exceed 7.1 tons per hour on an hourly rolling average basis, as defined in 40 CFR § 266.102(e) (6)(i)(B).
- (7) The power to the electrostatic precipitator, monitored as specified in Permit Condition E.8., shall not be less than 71.0 kVA on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (8) The maximum electrostatic precipitator inlet gas temperature, monitored as specified in Permit Condition E.8., shall not be more than 364° Fahrenheit, on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (9) The Permittee shall comply with the requirements of 40 CFR §266.102(e)(7)(i), to prevent fugitive emissions, by ensuring that no hazardous wastes are introduced into the kiln when the differential pressure between the raw material feed hood and the firing hood is greater than negative 1.0 inches w.c., or when the differential pressure to atmosphere at the firing hood is greater than negative 0.01 inches w.c. for more than 60

continuous seconds, both measured as specified in Permit Condition E.8.

(10) The relative flue gas flow rate, monitored as specified in Permit Condition E.8, shall not be more than 0.98 on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).

(11) In the event that the operating conditions set out in E.7.i.(1)-(9) above are not met at any time when hazardous waste is present in Kiln 2, an automatic waste feed cut off shall be activated immediately, and the Permittee shall cease burning hazardous waste in Kiln 2 until such time as the operating conditions specified for Kiln 2 are again being met. Table 5 is a listing of the automatic waste feed cutoffs required by E.7.i.(1) through E.7.i.(9) above, describing parameters and the limits that shall activate the hazardous waste feed cut-off mechanism:

Table 5 - Kiln 2 Automatic Waste Feed Cut-off Limits

OPERATING PARAMETER	OPERATING CONDITION	RESPONSE TO DEVIATION FROM OPERATING CONDITION	LOCATION OF MONITORING DEVICE
Carbon Monoxide	Greater than 600 ppmv (HRA, 7% O ₂ , Dry Basis)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Total Hydrocarbons	Greater Than 20 ppmv (HRA, 7% DRY BASIS)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Combustion Temperature	Less Than 1622° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Combustion Temperature	Greater Than 2052° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Pumpable Hazardous Waste	Greater Than 5.1 Tons Per Hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor
Total Hazardous Waste Feed	Greater Than 7.1 Tons per hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor and Container feed
Dry Raw Material Feed	Greater than 65 or less than 42 Tons Per Hour (HRA)	Immediate AWFCO	Raw Material Slurry Feed Line
Stack Flow	Greater than 0.98 Relative Flow (HRA)	Immediate AWFCO	I. D. Fan
ESP Power	Less Than 71.0 kVA (HRA)	Immediate AWFCO	ESP Voltage Controller
Kiln Differential Pressure	Greater than -1.0" W.C.	Immediate AWFCO	Pressure Taps at Feed End and Burner Hood
Firing Hood Pressure	Greater Than -0.01" W.C. for more than 60 continuous seconds	Immediate AWFCO	Pressure Tap at Firing Hood
ESP Inlet Temperature	Greater Than 364°F (HRA)	Immediate AWFCO	ESP Inlet

j. Reporting of Automatic Waste Feed Cutoff Occurrences

The Permittee shall submit to the Director a quarterly report which describes the number of automatic waste feed cut-offs and their causes within the current reporting period. Each Quarterly Automatic Waste Feed Cut-Off Report shall be due thirty (30) calendar days after the last day of each calendar quarter. The first quarter for which a report is due is the first quarter in which this permit becomes effective. These reports shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

E.8. Monitoring and Inspection

a. The Permittee shall maintain, calibrate, and operate continuous monitors which monitor and record the operating conditions specified in Section E.7. of this permit and any one minute averages used to calculate hourly rolling averages. The continuous process monitoring instruments are specified in Tables 6 and 7 of this permit.

b. For purposes of this permit, the following terms shall have the meanings stated herein.

A continuous monitor shall be defined as one which continuously samples the regulated parameter without interruption, evaluates the detector response at least once every 15 seconds, computes and records a one minute average value for the parameter, and, where required by this permit, uses the one minute average values to calculate an hourly rolling average for the parameter.

A one minute average value shall be defined as the arithmetic mean of a minimum of four valid detector response values obtained within a 60 second period.

An hourly rolling average shall be defined as the arithmetic mean of the 60 most recent one minute average values recorded by the continuous monitoring system.

Except during instrument calibration periods as specified in II.8.c. below, the Permittee shall continuously record all data monitored by the instruments described in Tables 6 and 7 of this permit. For the purposes of this permit, "continuously record" shall mean that at least 95% of the values of each operating limit required to be monitored by this permit, in any 60 minute period during which hazardous waste is introduced into either kiln, shall be accurately recorded in the Permittee's operating record. In the event that more than 5% of the values of any operating limit are not accurately recorded in the operating record, or are recorded as missing or invalid data in the operating record, the Permittee shall immediately initiate an automatic waste feed cut-off, and shall cease burning hazardous waste in the affected kiln. All monitors shall record data in units corresponding to the limits specified in the operating conditions set out in E.7. of this permit unless otherwise specified in the permit.

c. Hazardous waste may continue to be introduced into the kilns during daily continuous emission monitor system (CEMS) calibration check periods as described in Section D-6 of the approved permit application. The CEMS shall be maintained according to the following schedule: (1) at least daily, a calibration check of the instrument; (2) at least daily, a system audit; (3) at least quarterly, a calibration error test; and, (4) at least annually, a performance specification test.

d. Proper operation of the automatic waste feed cut-off mechanisms shall be verified at least once every seven (7) days by simulating a process excursion for one operating parameter selected from Table 4, for Kiln No. 1, and Table 5, for Kiln No. 2, as described in Section F-2 of the approved permit application. The results of verification of proper operation of the automatic waste feed cut-off mechanisms shall be recorded and placed in the operating log. In the case of any malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut-off of all hazardous waste feed into the kiln, and shall not restart hazardous waste feed until the malfunction of the automatic system is located and corrected.

e. Carbon monoxide and oxygen shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" in 40 CFR Part 266 Appendix IX. The Permittee shall institute an automatic waste feed cut-off any time the measured concentration of carbon monoxide is below the value allowed for "zero" calibration gases.

In the event of replacement or reconfiguration of the following components of the carbon monoxide or oxygen CEMS, the Permittee shall complete "Performance Specification Test Procedures" on the CEMS in question within forty-five (45) days of such replacement or reconfiguration:

- (1) Gas Collection System
- (2) Carbon monoxide infrared photometer analyzer or oxygen electrochemical sensor

In the event of replacement of data recording/processing hardware and software, the Permittee shall conduct and record validation tests sufficient to document that these components are recording and processing data accurately. Records of such testing shall be retained in the operating record.

For purposes of this permit, CEMS component replacement shall mean replacement of components of a different size or type, except for gas analyzers, for which it shall mean replacement with a different make or model analyzer. The Permittee shall conduct a successful calibration error test prior to using a CEMS that has been replaced or reconfigured for purposes of complying with this permit.

In the event that a gas analyzer of the same make and model is substituted into the CEMS, the

Permittee shall complete a successful calibration error test before using the analyzer for purposes of complying with this permit.

Replacement, as defined in this section, or reconfiguration of the components specified in this section shall require a permit modification in accordance with 40 CFR §270.42(a)(2).

f. Hydrocarbons shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" 40 CFR Part 266 Appendix IX of this part. The Permittee shall institute an automatic waste feed cut-off any time the measured concentration of hydrocarbons is below the value allowed for "zero" calibration gases.

In the event of replacement or reconfiguration of the following components of the hydrocarbon CEMS, the Permittee shall complete "Performance Specification Test Procedures" on the CEMS in question within forty-five (45) days of such replacement or reconfiguration:

- (1) Sample line configuration
- (2) Flame ionization detector

In the event of replacement of data recording/processing hardware and software, the Permittee shall conduct and record validation tests sufficient to document that these components are recording and processing data accurately. Records of such testing shall be retained in the operating record.

For purposes of this permit, CEMS component replacement shall mean replacement of components of a different size or type, except for gas analyzers, for which it shall mean replacement with a different make or model analyzer. The Permittee shall conduct a successful calibration error test prior to using a CEMS that has been replaced or reconfigured for purposes of complying with this permit.

In the event that a gas analyzer of the same make and model is substituted into the CEMS, the Permittee shall complete a successful calibration error test before using the analyzer for purposes of complying with this permit.

Replacement, as defined in this section, or reconfiguration of the components specified in this section shall require a permit modification in accordance with 40 CFR § 270.42(a)(2).

g. As described in Section D-6 of the approved permit application, the Permittee may comply with the hydrocarbon limits specified in Special Permit Condition E.7. of this permit by monitoring hydrocarbons in by-pass ducts on the kilns, as allowed by 40 CFR § 266.104(g). When the Permittee complies with hydrocarbon emission limits by monitoring in the by-pass, the Permittee shall measure gas flow rate through the by-pass as described in Section D-6 of the approved permit application. A minimum of 10% of kiln off gas shall be diverted to the by-pass duct while compliance with hydrocarbon limits is being demonstrated by monitoring in the by-pass.

Table 6 KILN NO. 1 PROCESS MONITORING INSTRUMENTATION

Parameter	Instrument	Type	Range	Accuracy	Validation Interval (Minimum)
Raw Material Mix Feed Rate	Taylor	712 NE magnetic flow meter	0-100 TPH		Quarterly
Pumpable Waste-Derived Fuel (LHDF) Feed Rate	TH Technology Model 5GD	Nuclear density gauge	60-80% Solids	± 10%	Quarterly
Solid Waste-Derived Fuel (SHDF) Feed Rate	Micro Motion	Coriolis mass	0-15 TPH	± 10%	Quarterly
Fossil Fuel Feed Rate (coal)	Omega Instrument	IDA 250 load cell DPV-41 transmitter	0-150 lbs.	± 10%	Quarterly
CO in Flue Gas	Mark	Weigh feeder	0-15 TPH	± 10%	Quarterly
O ₂ in Flue Gas	MEKOS 100	Photometer	0-3,000 ppm	*	Daily
THC in Flue Gas	Ametek ThermoX	Electrochemical	0-25%	*	Daily
Chain Section Gas Inlet Temperature	Bayer Diagnostic Comput	Flame ionization detector	0-100 ppm	*	Daily
ESP Inlet Temperature	Thermocouple	Type K	-454-2,500°F	± 5%	Quarterly
Electrical Power to ESP	Thermocouple	Type K	0-500°F	± 5%	Quarterly
Flue Gas Flow Rate (Relative)	PrecipTech SQ-300	Microprocessor	0-198.6 KVA	± 10%	Quarterly
Feed Hood Pressure	Thermocouple	Type K	0-800°F	± 10%	Quarterly
Firing Hood Pressure	Monarch Ins. Tachometer Rosemont	Proximity sensor D/P transmitter	0-2000 RPM 0-30 in. H ₂ O	± 10%	Quarterly
THC in Bypass Gas	Rosemont	D/P transmitter	0-(-)10 in. H ₂ O	± 10%	Quarterly
O ₂ in Bypass Gas	Rosemont	D/P transmitter	(-)0.5-(+)0.5 in. H ₂ O	± 10%	Quarterly
Bypass Gas Flow Rate	JUM Model VE-7 or Ratfisch RS55CA	Flame ionization detector	0-100 ppm	*	Daily
	Ametek ThermoX	Electrochemical	0-25%	*	Daily
	Kurz Model 155AA	Flow meter	0-6000 scfm	± 10%	Quarterly

Table 7 KILN NO. 2 PROCESS MONITORING INSTRUMENTATION

Parameter	Instrument	Type	Range	Accuracy	Validation Interval (Minimum)
Raw Material Mix Feed Rate	Taylor	712 NE magnetic flow meter	0-100 TPH	± 10%	Quarterly
	TJ Technology Model 500	Nuclear density gauge	60-80% Solids		Quarterly
Pumpable Waste-Derived Fuel (LMDP) Feed Rate	Micro Motion	Coriolis mass	0-15 TPH	± 10%	Quarterly
Solid Waste-Derived (SMDP) Fuel Feed Rate	Omega Instrument	LDA 250 load cell DPV-41 transmitter	0-150 lbs.	± 10%	Quarterly
Fossil Fuel Feed Rate (coal)	Mark	Weigh feeder	0-15 TPH	± 10%	Quarterly
CO in Flue Gas	MEKOS 100	Photometer	0-3,000 ppm	*	Daily
O ₂ in Flue Gas	Ametek ThermoX	Electrochemical	0-25%	*	Daily
THC in Flue Gas	Bayer Diagnostic Compu	Flame ionization detector	0-100 ppm	*	Daily
Chain Section Gas Inlet Temperature	Thermocouple	Type K	-454-2,500°F	± 5%	Quarterly
ESP Inlet Temperature	Thermocouple	Type K	0-500°F	± 5%	Quarterly
Electrical Power to ESP	PrecipTech SQ-300	Microprocessor	0-198.6 kVA	± 10%	Quarterly
Flue Gas Flow Rate (Relative)	Thermocouple	Type K	0-800°F	± 10%	Quarterly
	Monarch Ins. Tachometer Rosemont	Proximity sensor D/P transmitter	0-2000 RPM 0-30 in. H ₂ O	± 10%	Quarterly
Feed Hood Pressure	Rosemont	D/P transmitter	0-(-)10 in. H ₂ O	± 10%	Quarterly
Firing Hood Pressure	Rosemont	D/P transmitter	(-)0.5-(+)0.5 in. H ₂ O	± 10%	Quarterly
THC in Bypass Gas	JUM Model VE-7 or Ratfiach RSS5CA	Flame ionization detector	0-100 ppm	*	Daily
O ₂ in Bypass Gas	Ametek ThermoX	Electrochemical	0-25%	*	Daily
Bypass Gas Flow Rate	Kurz Model 155AA	Flow meter	0-6000 afm	± 10%	Quarterly

h. Upon the request of the Director, and at no less than five (5) year intervals, beginning with the effective date of this permit, the Permittee shall conduct sampling and analysis of the hazardous waste (and other fuels and industrial furnace feed stocks as appropriate), residues, and exhaust emissions to verify that the operating requirements established in the permit achieve the applicable standards of this permit and §§ 266.104, 266.105, 266.106, and 266.107.

Emissions testing conducted by the permittee in order to demonstrate compliance with revised emission standards for hazardous waste combustors which may be promulgated under either the Resource Conservation and Recovery Act or the Clean Air Act, may, with EPA approval, satisfy this requirement.

i. The cement kilns and associated equipment (pumps, valves, pipes, etc.) shall be subjected to thorough visual inspection when they contain hazardous waste, at least daily for leaks, spills, fugitive emissions, and signs of tampering, as specified in Section F-2 of the approved permit application.

E.9. Direct Transfer of Hazardous Waste

a. The Permittee shall construct, operate, and maintain an area for direct transfer of hazardous waste to the cement kilns in accordance with the plans and specifications in Section D-9 of the approved permit application. The Permittee's authorization to begin construction of this direct transfer area shall terminate within two years of the effective date of this permit.

b. The direct transfer area shall be operated in accordance with the following conditions:

- (1) The Permittee shall not transfer pumpable hazardous waste directly from an open-top container to the cement kilns.
- (2) All direct transfer equipment used for pumpable hazardous waste shall remain closed, at all times, except when necessary to add or remove the waste, and shall not be opened, handled, or stored in a manner that may cause any rupture or leak.

c. The Permittee shall conduct inspections of the direct transfer operations at least once each operating hour while hazardous waste is being transferred from a transport vehicle according to the procedures described in Section F-2 of the approved permit application.

- (3) The direct transfer of hazardous waste to the cement kilns shall be conducted so that it does not:
 - (a) Generate extreme heat or pressure, fire, explosion, or violent reaction;

- (b) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
 - (c) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
 - (d) Damage the structural integrity of the container or direct transfer equipment containing the waste;
 - (e) Adversely affect the capability of the cement kilns to meet the Performance Standards or Operating Conditions of this permit; or
 - (d) Threaten human health or the environment.
- (4) The owner or operator of the facility shall use appropriate controls and practices to prevent spills and overflows from the direct transfer equipment or its secondary containment systems. These include at a minimum:
- (a) Spill prevention controls (e.g., check valves, dry disconnect couplings); and
 - (b) Automatic waste feed cutoff in the event of a leak or spill from the direct transfer equipment.

E.10. Regulation of Residues

- a. The Permittee shall sample and analyze cement kiln dust as described in Attachment C-1 "Cement Kiln Dust Characterization Program" of the approved permit application.
- b. Records sufficient to document compliance with the provisions of Section E.10. of this permit condition shall be retained until closure of the affected kiln as a hazardous waste burner. At a minimum, the following shall be recorded:
 - (1) The date and time of sampling;
 - (2) The individual(s) who performed the sampling;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses; and
 - (5) Results of analyses.

E.11. Record Keeping

Unless otherwise required by this permit, the Permittee shall record and maintain in its operating record all information monitored and data required by Permit Condition E for three years as required by 40 CFR § 264.73. This period may be extended by request of the Director at any time and shall be automatically extended in the event of an enforcement action regarding this facility, until such time as:

- a. the enforcement proceeding is dismissed;
- b. any settlement agreement signed by the parties has expired or terminated; or
- c. a final, unappealable order has been issued in the proceeding.

E.12. Closure

At closure, the Permittee shall implement the closure plan contained in Section I of the approved permit application, and remove all hazardous waste and hazardous waste residues from the cement kiln systems. Part I, Permit Condition II.L is hereby incorporated by reference.

E.13. Cost Estimate for Facility Closure

Part I, Permit Condition II.M is hereby incorporated by reference.

E.14 Financial Assurance and Liability Requirements

The requirements of Part I, Permit Conditions II.N., II.O., and II.P are hereby incorporated by reference.

E.15. Environmental Monitoring

Background: The Permittee has demonstrated compliance with the air emissions standards at 40 CFR § 266.102, which are the requirements that must be met in order for a cement plant to obtain a final permit to burn hazardous wastes. In addition to reviewing the Permittee's compliance with applicable air emission standards, and as part of the permit application review process, EPA has conducted a study, known as the Ash Grove Cement Company Multipathway Risk Assessment, to determine the effect of the Permittee's air emissions on human health. Based on the results of this study, and pursuant to EPA's statutory mandate to assure protection of human health and the environment, EPA has determined that the Permittee must conduct an environmental monitoring program to assess the impacts of the Permittee's emissions on the environment. The monitoring program includes measuring concentrations of mercury in fish and water in Santa Fe Lake and,

Allen Lake, both located approximately 3 kilometers south/southwest and north/northeast, respectively, of the facility, and measuring concentrations of mercury and thallium in soils at points surrounding the facility. In the event access to Allen Lake is not granted to Ash Grove by its owner, Ash Grove shall sample the water and fish in its reservoir at the northern edge of its property boundary.

All workplans, related correspondence, and results related to this monitoring program shall be submitted to EPA and KDHE, and shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

a. Fish and Water Monitoring

Within sixty (60) days of the effective date of this permit the Permittee shall submit, for review and approval by the Director, a consolidated workplan that describes, in detail, work to be completed by the Permittee to conduct an ongoing, periodic mercury fish tissue and water concentration monitoring program at Santa Fe Lake and Allen Lake. This monitoring program shall consist of sampling and analysis of fish that are representative of the game fish population necessary to establish "baseline" mercury fish tissue concentrations and continued sampling and analysis of fish tissue necessary to identify trends that may be exhibited in mercury fish tissue concentrations. This data will be compared to the "benchmark" fish tissue mercury concentration identified in E.15.a.(3) of this permit.

- (1) The Permittee shall conduct an ongoing fish tissue mercury concentration monitoring program of Santa Fe and Allen Lake that shall be designed and conducted in accordance with applicable methods found in "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1 - Fish Sampling and Analysis" EPA 823-R-93-002, August 1993; and EPA Region 7 Standard Operating Procedures No. 2334.18A, "Technical Considerations in the Design of Fish Collection Activities for Water Quality Assessments," May 1, 1991; No. 2334.13A "Sampling Fish for Tissue Residue Determinations," May 23, 1990; and No. 3110.7A "Edible Fish Tissue Processing," January 27, 1992.
- (2) The contents of the workplan regarding an ongoing fish monitoring program shall include the following:
 - (a) Proposed schedule for conducting the ongoing mercury fish tissue monitoring program;
 - (b) Discussion of proposed approach to ensure that representative samples of fish tissue from Santa Fe Lake and Allen Lake (or the Ash Grove plant reservoir) are analyzed in this study;

- (c) Proposed analytical parameter selection, which shall include, at a minimum, the following:
- 1) Water Analyses
 - a) Air equilibrated p_H
 - b) Field pH
 - c) Ambient temperature
 - d) Acid Neutralization Capacity
 - e) Dissolved Organic Content
 - f) Conductance
 - 2) Fish Analyses
 - a) Muscle tissue mercury concentration (filet, skin off)
 - b) Species
 - c) Length
 - d) Wet weight;
- (d) Proposed sampling and analytical methods;
- (e) Discussion of the proposed sample size necessary for conducting a statistically valid study;
- (f) Discussion of proposed monitoring frequency sufficient to account for any seasonal variations;
- (g) Proposed sampling locations;
- (h) Discussion of proposed methods for statistical analysis of mercury fish tissue concentration data to detect any trends present in mercury levels over time;
- (i) Sampling and Analytical Data Quality Assurance Plan that includes and evaluation of the utility and necessity of "ultra clean" sample handling techniques; and
- (j) Description of proposed format for reporting of results which shall be made to EPA and the Kansas Department of Health and Environment, and to a document repository established at the City of Chanute Public Library.

(3) Benchmark Mercury Concentration Values

- (a) Mercury fish tissues concentrations and concentration trends measured in this ongoing sampling program will be evaluated against a benchmark value of 0.5 mg/kg on a fresh weight basis.

The Director may revise this benchmark value based on new, peer reviewed information developed by EPA concerning the health effects of mercury exposure via fish consumption.

- (b) Upon determination by the Director that mercury fish tissue concentrations are at or above the benchmark value defined in this permit, or on a verified trend that indicates that the benchmark values will be reached during the term of this permit, the Director will notify the Permittee that it shall undertake the following requirements:
- 1) Within two hundred seventy (270) days of such notification the Permittee shall complete a mercury source-to-receptor study, the design of which shall be approved by the Director, to quantify the Permittee's contribution to mercury fish tissue concentrations in Santa Fe Lake and Allen Lake; and
 - 2) Within three (3) years the Permittee shall complete all actions which the Director determines are necessary to reduce mercury emissions from the burning of hazardous waste to a level approved by the Director. In evaluating the necessary mercury emission reductions, the Director will consider the following, at a minimum: the reduction in mercury inputs into Santa Fe Lake and Allen Lake necessary to control mercury fish tissue concentrations, the Permittee's contribution to mercury fish tissue concentrations, reductions in mercury feed rate limits governed by this permit, and the effectiveness of process modifications and/or air pollution control devices in reducing mercury air emissions. The Director may consider any other factors which he/she may consider relevant in evaluating necessary mercury emission reductions.

(4) Termination of Fish Monitoring Program

The Director may notify the Permittee that the fish monitoring program may be terminated for the following reasons:

- (a) The Permittee demonstrates compliance with revised mercury emission standards under the Resource Conservation and Recovery Act and the Clean Air Act,

which are demonstrated to have no potential adverse impact on human health through fish consumption; or

- (b) The Director determines that data collected by this monitoring program demonstrate that mercury fish tissue concentrations are below benchmark values at a 95% confidence level, and that the results of trend analysis, if a valid trend is observed, indicate benchmark levels will not be reached during the term of Part II of this permit.

b. Surface Soil Monitoring

Within one hundred twenty (120) days of the effective date of this permit the Permittee shall submit, for review and approval by the Director, a consolidated workplan that describes, in detail, work to be completed by the Permittee to conduct an ongoing, periodic mercury and thallium surface soil monitoring program. This monitoring program shall consist of sampling and analysis of soil for mercury and thallium at locations surrounding the Ash Grove plant that are representative of the residential areas south of the Permittee's facility boundary, as well as sampling at locations in the Chanute area that are representative of naturally occurring or "background" mercury and thallium soil concentrations. EPA's modeling of Ash Grove stack emissions indicates that maximum soil concentrations in residential areas due to stack emissions impacts occurs in an area 300 to 500 meters south of the Ash Grove smoke stack. The Permittee must take this modeling information into account when preparing this workplan. Soil sampling and analysis should be done in a phased approach, with the purpose of Phase I being to establish baseline mercury and thallium surface soil concentrations. This will consist of two years of quarterly surface soil samples at the locations designated in the approved workplan. The purpose of quarterly sampling is to detect seasonal variation in soil concentrations, if any. Phase II of this monitoring program will consist of an annual soil sampling event at the time the highest baseline mercury and thallium surface soil concentrations were observed during Phase I. This data will be used to evaluate trends in mercury and thallium concentrations and will be compared by the Agency to "benchmark" mercury and thallium soil concentrations identified in E. 15.b.(3) of this permit.

- (1) The Permittee shall conduct an ongoing surface soil mercury and thallium concentration monitoring program at locations surrounding the Ash Grove plant that are representative of the residential areas south of the Permittee's facility boundary.
- (2) The contents of the work plan for performing an ongoing soil monitoring program shall include the following:
 - (a) Proposed schedule for conducting the ongoing mercury and thallium surface soil monitoring program;

- (b) Discussion of proposed approach to ensure that representative samples of surface soils in residential areas south of the Permittee's facility are analyzed in this study, as well as an approach to determine naturally occurring, or "background," concentrations in the Chanute area;
 - (c) Proposed sampling and analytical methods;
 - (d) Discussion of the proposed sample size/methodology necessary for conducting a statistically valid study, including the exposure/averaging areas for residences; for example, 0.25 acres;
 - (e) Proposed sampling locations and sample depths for exposure/averaging area and background surface soil sampling;
 - (f) Discussion of proposed methods for statistical analysis of mercury and thallium surface soil concentration data to determine the true mean concentrations within the exposure/averaging areas and any trends present in these concentrations over time;
 - (g) Sampling and Analytical Data Quality Assurance Plan; and
 - (h) Description of proposed format for reporting of results which shall be made to EPA and the Kansas Department of Health and Environment, and to a document repository established at the City of Chanute Public Library.
- (3) Mercury and thallium soil concentration data and concentration trends measured in this ongoing sampling program must be evaluated against the naturally occurring background values for the Chanute, Kansas area established in this monitoring program, and the following health based benchmark values:

Mercury - 5.6 mg/kg

Thallium - 1.5 mg/kg

The Director may revise these benchmark surface soil concentration values based on new, peer reviewed information developed by EPA concerning the health effects of mercury or thallium exposure via soil ingestion.

- (4) Upon determination by the Director that mercury or thallium surface soil concentrations are at or above the benchmark values defined in this permit or on a verified trend that indicates that the benchmark values will be reached during the term of this permit, the Director will notify the Permittee of the following:

- (a) Reductions in permitted annual average hazardous waste feed rates of mercury and/or thallium that shall remain in effect until the Permittee complete mercury and/or thallium emissions as required in Permit Condition E.15.(b)(4)(c) below;
- (b) Opportunity to conduct, at the Permittee's discretion, a mercury and/or thallium source to receptor study, the design of which shall be approved by the Director, to quantify the Permittee's contribution to mercury and/or thallium surface soil concentrations in the exposure/averaging areas; and
- (c) Within three (3) years the Permittee shall complete actions necessary to reduce mercury and/or thallium emissions from the burning of hazardous waste to a level approved by the Director. In evaluating the necessary mercury emission reductions, the Director will consider the following, at a minimum: the reduction in mercury and/or thallium emissions necessary to control mercury and/or thallium surface soil concentrations in the exposure/ averaging areas, the Permittee's contribution to mercury surface soil concentrations, further reductions in mercury and/or thallium feed rate limits governed by this permit, and the effectiveness of process modifications and/or air pollution control devices in reducing mercury and/or thallium air emissions. The Director may consider any other factors which he/she may consider relevant in evaluating necessary mercury and/or thallium emission reductions.

(5) Termination of Surface Soil Monitoring Program

The Director may notify the Permittee that the surface soil monitoring program may be terminated for the following reasons:

- (a) The Permittee demonstrates compliance with revised mercury and/or thallium emission standards under the Resource Conservation and Recovery Act and the Clean Air Act, which are demonstrated to have no potential adverse impact on human health through exposures, direct and indirect, to surface soils; or
- (b) The Director determines that data collected by this monitoring program demonstrate that mercury and/or thallium surface soil concentrations are below benchmark values at a 95% confidence level, and that the results of trend analysis, if a valid trend is observed, indicate benchmark levels will not be reached during the term of Part II of this permit.

ATTACHMENT 1

FACILITY SUBMISSION SUMMARY

Table 1. Summary of the planned reporting requirements pursuant to Section II of this permit.

SUBMISSION REQUIREMENTS	DUE DATE	PERMIT CONDITION
RFI Workplan	Within 120 calendar days of notification by the Director	C.6.a
RFI Report	According to the schedule contained in the approved RFI Workplan	C.7.a
CMS Workplan	Within 60 calendar days of notification from Director	C.8.b
CMS Report	According to the schedule contained on the approved CMS Workplan	C.9.a
Financial Assurance for Corrective Action	Within 120 calendar days after the permit has been modified to include a remedy	C.11.a
Quarterly Progress Reports	30 calendar days after the last day of each calendar quarter, beginning the first quarter in which the Director requires corrective action pursuant to Section II.C of this permit	C.12
Quarterly Automatic Waste Feed Cut-Off Reports	30 calendar days after the last day of each calendar quarter, beginning the first quarter in which the permit becomes effective	E.7.j.
Environmental Monitoring Workplans	Within 60 calendar days of the effective date of Section E.15 of this permit	E.15

Table 2. Summary of possible reporting requirements pursuant to Section II of this permit.

CONDITIONAL REQUIREMENTS	DUE DATE	PERMIT CONDITION
Permit Renewal	180 calendar days prior to Section II.C permit expiration	B.3.
Provisions for Section II.C Permit Transfer	90 calendar days prior to date of Section II.C permit transfer	B.4
Written Notice of Noncompliance	Within 5 calendar days of Permittee's awareness of the circumstance	B.8.d
Report Planned Changes	20 calendar days prior to making any physical alterations to any portion of the facility subject to Section II.C of this permit	B.7
Report Noncompliance	20 calendar days prior to making any changes which will result in noncompliance with Section II.C of this permit	B.8.a
Written Notification of Newly-Identified SWMUs	15 calendar days after discovery	C.3.a
SWMU Assessment Workplan	30 calendar days after receipt of Director's request	C.3.b
SWMU Assessment Report	According to the schedule in the SWMU Assessment Workplan	C.3.d
Written Notification of Newly-Identified Releases of SWMUs	15 calendar days after discovery	C.4.a
Newly-Identified Release Workplan	30 calendar days after receipt of Director's request	C.4.b
Newly-Identified Release Report	According to the schedule in the Newly-Identified Release Workplan	C.4.d

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CONDITIONAL REQUIREMENTS	DUE DATE	PERMIT CONDITION
Stabilization Notification	Within 24 hours of discovery of need for stabilization	C.5.a
Written Notification that Stabilization is Not Effective	10 calendar days after discovery	C.5.c
Financial Assurance Cost Estimate Increase	Within 60 calendar days following the increase of the cost estimate	C.11.b
Mercury and Thallium Source-to-Receptor Study	270 calendar days after receipt of Director's notice	E.15.c.(3)

ATTACHMENT Q

**ANNISTON CHEMICAL DEMILITARIZATION FACILITY
FINAL RCRA PERMIT, CONDITIONS FOR THE BRINE REDUCTION AREA**

(24 Sheets)

MODULE V MISCELLANEOUS TREATMENT UNITS

This Module describes the Miscellaneous Treatment Units (regulated under ADEM Admin. Code R. 335-14-5-.24) at the Anniston Army Depot Facility. There are four miscellaneous treatment units located in the Brine Reduction Area (BRA) of the ANCDF site. These four treatment units are: two evaporator packages (each evaporator package consists of one flash evaporator (BRA-EVAP-101 or BRA-EVAP-102) and one heat exchanger (BRA-EXCH-101 or BRA-EXCH-102)) and two drum dryers (BRA-DDRY-101 and BRA-DDRY-102). The Brine Reduction Area miscellaneous treatment units listed above have two major treatment objectives: (1) reducing the brines and wastewaters being processed by at least 80% by weight and (2) assuring that the brine salt residues have no free liquids as defined by RCRA. Within the first 720 hours of operation, the shakedown period, a performance test shall be conducted to verify that the treatment objectives are being met. During the shakedown, performance test, post-performance test and normal operation periods, the Permittee shall operate according to the parameters set forth in this Module. The parameters in this Module shall be modified after the performance test to reflect any changes necessitated by the performance test.

V.A. REQUIREMENTS FOR MISCELLANEOUS TREATMENT UNITS LOCATED IN THE BRINE REDUCTION AREA

1. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

- i. Subject to the terms of this Permit, the Permittee shall treat only brines from the Brine Surge Tanks in the miscellaneous treatment units identified in Table 5-1 of this Permit during Shakedown Periods I and II, Surrogate and Chemical Agent Trial Burn Periods and during the Post-Trial Burn Periods detailed in Module VI of this Permit.
- ii. Subject to the terms of this Permit, the Permittee shall treat only brines from the Brine Surge Tanks in the miscellaneous treatment units identified in Table 5-1 of this Permit during normal operations detailed in Module VII of this Permit.

2. MISCELLANEOUS TREATMENT UNIT CONSTRUCTION AND MAINTENANCE

- i. The Permittee shall construct the Brine Drum Dryers (BRA-DDYR-101 and BRA-DDYR-102) as specified in Table D-9-3 of Volume II, Section D-9 of the Application; all applicable drawings in Volume II, Section D-9 and Volume V, Attachment D-3 of the Application; and the applicable design specifications in Volume II, Attachment D-3, Section D-4B of the Application.
- ii. The Permittee shall construct the Brine Exchangers (BRA-EXCH-101 and BRA-EXCH-102), the Brine Evaporators (BRA-EVAP-101 and BRA-EVAP-102), and subsequent ancillary equipment as specified in Tables D-9-1 and D-9-2; all applicable drawings in Volume II, Section D-9 and Volume V, Section D-3 of the Application; and the applicable design specifications in Volume VI, Attachment D-3, Section D-4B of the Application.
- iii. All process monitors required, pursuant to Condition V.A.9. of this Permit, shall be equipped with alarms operated to warn of deviation, or imminent deviation, from the limits specified in Tables 5-4 and 5-5 of this Permit.
- iv. Modifications to the design plans and specifications in the Application for any miscellaneous treatment unit shall be allowed only in accordance with Condition II.A.2. of this Permit.
- v. Prior to treatment of hazardous waste in the miscellaneous treatment units, the Permittee shall install and test all process monitoring and control instrumentation specified in Table 5-4 of this Permit for the miscellaneous treatment units in accordance with the design plans in Volume II, Section D-9 and Volume VII, Attachment D-3, Sections D-4b of the Application.
- vi. The Permittee shall construct the secondary containment sump systems identified in Table 5-2 as specified in Table 5-3 of this Permit and the applicable design specifications in Volume VI, Attachment D-3, Section D-4b of the Application.

3. MISCELLANEOUS TREATMENT UNIT INSTALLATION

- i. The Permittee shall install the BRA Drum Dryers (BRA-DDRY-101 and BRA-DDRY-102) in accordance with the installation specifications in Volume VI, Attachment D-3, Section D-4B-04 of the Application.
- ii. The Permittee shall install the BRA Evaporators (BRA-EVAP-101 and BRA-EVAP-102) and the BRA Exchangers (BRA-EXCH-101 and BRA-EXCH-102) in accordance with the installation specifications in Volume VI, Attachment D-3, Section D-4B-05 of the Application.
- iii. The Permittee shall not install any altered miscellaneous treatment unit until such time that the Department has:
 - a. Received certification from an independent, registered professional engineer, that attests to the structural integrity and the suitability of the altered miscellaneous treatment unit for handling the specified hazardous waste in accordance with ADEM Admin. Code R. 335-14-5-.10.;
 - b. Approved the design and specifications of the altered miscellaneous treatment unit; and
 - c. Received and approved a permit modification in accordance with ADEM Admin. Code R. 335-14-8-.04.
- iv. The Permittee shall obtain and submit to the Department within 30 days of completing installation of each miscellaneous treatment unit a written certification from an independent, qualified, installation inspector or an independent, qualified, registered professional engineer attesting that proper installation procedures were used for each miscellaneous treatment unit listed in Table 5-1. The independent miscellaneous treatment unit installation and primary containment system inspections and subsequent written certifications, shall consider, but not be limited to, the following miscellaneous treatment unit installation documentation:
 - a. Field installation report with date of installation;
 - b. Approved welding procedures;
 - c. Welder qualifications and certifications;
 - d. Hydro-test reports in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section VIII, Division 1;

- e. Tester credentials;
 - f. Field inspector credentials;
 - g. Field inspection reports;
 - h. Field waiver reports; and
 - i. Non-compliance reports and corrective action (including field waiver reports) and repair reports.
- v. The Permittee shall obtain and submit to the Department within 30 days of completing installation of each miscellaneous treatment unit a written certification from an independent, qualified, installation inspector or an independent, qualified, registered professional engineer attesting that proper installation procedures were used. The independent miscellaneous treatment unit installation certification documentation submitted to the Department for the BRA Drum Dryers (BRA-DDRY-101 and BRA-DDRY-102) and the BRA Evaporator Packages (BRA-EVAP-101, BRA-EVAP-102, BRA-EXCH-101 and BRA-EXCH-102) shall include, but not be limited to, the following manufacturing design, fabrication, and testing documentation:
- a. Shop drawings with dimensional and capacity data;
 - b. Vessel wall thickness and nozzle reinforcement calculations;
 - c. Vessel structural support calculations;
 - d. Approved welding procedures;
 - e. Welder qualifications/certifications;
 - f. Material reports and mill certifications;
 - g. Results of X-ray testing;
 - h. Tester credentials;
 - i. Non-compliance reports and corrective action;
 - j. Hydrotest reports;
 - k. ASME code data report;

- l. Shop inspection reports; and
- m. Shop inspector credentials.
- vi. As specified in Conditions V.A.3.i. through V.A.3.v. of this Permit, for each hazardous waste miscellaneous treatment unit identified in Table 5-1, the Permittee shall:
 - a. Maintain the installation documentation on file at the ANAD Facility until such time that the miscellaneous treatment unit is certified closed in accordance with Condition II.J. of this Permit; and
 - b. Provide the installation documentation by certified mail, express mail, or hand delivery to the Department within fifteen (15) calendar days upon written request.
- vii. Prior to operating a hazardous waste miscellaneous treatment unit, the Permittee shall comply with Condition I.E.14. and Conditions V.A.3.i. through V.A.3.vi. of this Permit.

4. PERFORMANCE TEST

- i. The Permittee shall conduct a performance test on the BRA in accordance with the revised performance test plan provided for in Condition V.A.4.iii. of this Permit within the first 720 hours of operation of the BRA.
- ii. The Permittee shall operate and monitor each miscellaneous unit during the performance test as specified in this permit and in the performance test plan.
- iii. The performance test plan shall be resubmitted by the Permittee as a major permit modification at least 180 calendar days prior to the proposed start date of the performance test. All applicable public comment periods and notifications as required by ADEM Admin. Code R. 335-14-8-.04(2) shall be followed.
- iv. The revised performance test plan shall define operating conditions and waste feed rates that shall be used to determine treatment effectiveness of the BRA. The performance test shall not begin until permit modifications have been approved by the Department.

- v. The Permittee shall submit a summary of all data collected during the performance test to the Department upon completion of the performance test. The Permittee shall submit to the Department a complete performance test report within 90 calendar days of completion of the performance test.
- vi. The Permittee shall submit to the Department a risk assessment addendum and/or a final health risk assessment report completed pursuant to Condition II.N. of this Permit within 90 calendar days of completion of the performance test. All submissions shall be certified in accordance with ADEM Admin. Code R. 335-14-8-.02(2).
- vii. The Permittee shall submit to the Department a report proposing modifications to the operating conditions based on the results of the performance test.
- viii. If the preliminary calculations show that one or more of the performance standards listed in this permit for the BRA were not met during the performance test, the Permittee shall immediately stop waste feed to the BRA. The Department shall be verbally notified within 24 hours of this discovery. As necessary, a revised post performance test feed rate may be submitted to the Department for approval that shall allow the Permittee to dispose of the remaining hazardous wastes present in the tank systems.

5. PERFORMANCE STANDARDS

- i. The particulate matter emissions from the BRA, corrected to 7% oxygen in accordance with the formula given below (ADEM Admin. Code R. 335-14-5-.15(4)(c)), shall not exceed 34.3 mg/dscm (0.01 grains/dscf).

$$P_c = P_m \times 14 / (21 - Y)$$

Where: P_c = corrected concentration of particulate matter
 P_m = measured concentration of particulate matter ppm (dry volume)
 Y = measured O_2 concentration in the stack gas

- ii. The following metal and HCl emission rates from the BRA shall not be exceeded:

Antimony	1.26 E-05	gms/sec	Arsenic	1.38 E-05	gms/sec
Barium	1.07 E-04	gms/sec	Beryllium	1.26 E-05	gms/sec
Boron	2.51 E-04	gms/sec	Cadmium	1.69 E-05	gms/sec
Chromium	3.98 E-05	gms/sec	Cobalt	1.26 E-04	gms/sec
Copper	1.26 E-04	gms/sec	Lead	7.72 E-05	gms/sec
Manganese	5.03 E-05	gms/sec	Mercury	1.88 E-05	gms/sec
Nickel	1.26 E-04	gms/sec	Phosphorus	2.51 E-04	gms/sec
Selenium	1.26 E-05	gms/sec	Silver	1.26 E-05	gms/sec
Thallium	2.51 E-05	gms/sec	Tin	2.51 E-04	gms/sec
Vanadium	8.80 E-05	gms/sec	Zinc	1.26 E-04	gms/sec
HCl	2.28 E-03	gms/sec			

- iii. The treatment effectiveness shall be at least an 80 percent volume reduction, by weight, of the feed brine and produce a brine salt that contains no free liquids. The treatment effectiveness shall be determined by the following:

- a. Calculating a percent volume reduction by weight of the batch of brine by measuring moisture content in the brine salts. The percent volume reduction shall be calculated by:

[(Initial weight of batch) - (weight of brine and/or sludge left in brine surge tank) - (weight of salts produced by drum dryers) - (weight of particulate collected in dryer knockout box) - (weight of particulate collected from baghouses) - weight of salts collected in catch pans) - (weight of salts collected in exhaust ducts) - (weight of liquids collected in catch pan) - (weight of wash water collected from rinsing equipment) - (weight of any leaks or spills)] / (initial weight of batch)

- b. Brine salt that passes the paint filter liquids test (SW-846 Method 9095) and the free liquids test (SW-846 9096).
- iv. The Permittee shall monitor emissions of chemical agents being treated from the BRA using the ACAMS. The emission level shall not exceed the following concentrations:

	<u>Chemical Agent - Concentration (mg/m³)</u>		
	<u>VX</u>	<u>GB</u>	<u>HD/HT</u>
<u>Maximum Instantaneous Stack Emission</u>	0.00006	0.00006	0.006

- v. Compliance with the operating conditions specified in Condition V.A.7. of this Permit, shall be regarded as compliance with the required performance standards identified in Conditions V.A.5.i. through V.A.5.iv. of this Permit. However, if it is determined that during the effective period of this Permit that compliance with the operating conditions in Condition V.A.7. of this Permit, is not sufficient to ensure compliance with the performance standards specified in Conditions V.A.5.i. through V.A.5.iv. of this Permit, the Permit may be modified, revoked, or reissued, pursuant to ADEM Admin. Code R. 335-14-8-.04(2) or (3).

6. LIMITATION ON WASTE FEED

- i. The Permittee shall only feed brine to the BRA Evaporator Packages and/or Drum Dryers that is chemical agent free as analyzed according to Attachment 2 of this Permit.

- ii. The feed rates of metals and chlorine to the BRA Evaporator Packages and/or Drum Dryers based on an hourly rolling average shall not exceed the following limits:

Antimony	9.99 E - 03 lbs/hr	Arsenic	1.12 E - 01 lbs/hr
Barium	8.48 E - 02 lbs/hr	Beryllium	9.99 E - 03 lbs/hr
Boron	1.99 E - 01 lbs/hr	Cadmium	6.47 E - 01 lbs/hr
Chromium	2.45 E + 00 lbs/hr	Cobalt	9.99 E - 02 lbs/hr
Copper	9.99 E - 02 lbs/hr	Lead	6.00 E + 00 lbs/hr
Manganese	3.99 E - 02 lbs/hr	Mercury	1.49 E - 02 lbs/hr
Nickel	9.99 E - 02 lbs/hr	Phosphorus	1.99 E - 01 lbs/hr
Selenium	9.99 E - 03 lbs/hr	Silver	9.99 E - 03 lbs/hr
Thallium	1.99 E - 02 lbs/hr	Tin	1.99 E - 01 lbs/hr
Vanadium	6.98 E - 02 lbs/hr	Zinc	9.99 E - 02 lbs/hr
Free Chlorine	1.76 E - 02 lbs/hr		

7. OPERATING CONDITIONS

- i. The Permittee shall operate the miscellaneous treatment units as specified in Table 5-4 to maintain the system and process parameters listed in Table 5-4 of this Permit within the ranges or setpoints specified in Table 5-4 of this Permit.
- ii. The Permittee shall operate the miscellaneous treatment units specified in Table 5-5 to automatically cutoff and/or lockout the brine feed to the miscellaneous units when the monitored operating conditions deviate from the set points given in Table 5-5 of this Permit.
- iii. The Permittee shall not place hazardous wastes, treatment reagents, or other materials in the miscellaneous treatment unit(s) if they could cause the miscellaneous treatment unit(s) to rupture, leak, corrode, or otherwise fail.
- iv. The Permittee shall operate the miscellaneous treatment units to prevent spills and overflows using the procedures and equipment described in Volume II, Section D-9 of the Application.
- v. The Permittee shall operate the Brine Reduction Area Evaporator Package System (BRA-EVAP-101, BRA-EVAP-102, BRA-EXCH-101, and BRA-EXCH-102) as specified in Volume II, Section D-9 of the Application.
- vi. The Permittee shall operate the Brine Reduction Area Drum Dryers (BRA-DDRY-101 and BRA-DDRY-102) as specified in Volume II, Section D-9 of the Application.

- vii. The Permittee shall prevent spills and overflows from the BRA Drum Dryers, the BRA Evaporator Packages and the primary and secondary containment sump systems using the procedures and equipment described in Volume II, Section D-9 of the Application.

8. OPERATING PROCEDURES FOR SECONDARY CONTAINMENT SUMPS

- i. The secondary containment sumps shall consist of all sumps listed in Table 5-2 of this Permit.
- ii. The Permittee shall operate the secondary containment sumps in accordance with Volume II, Section D-4 of the Application.
- iii. The Permittee shall consider any materials or liquids detected in the secondary sumps or trenches to be a hazardous waste until the Permittee has sampled and analyzed the materials or liquids for chemical agent, TCLP metals and any other suspected hazardous waste or hazardous waste constituents, in accordance with the methods of the Waste Analysis Plan in Attachment 2 of this Permit. The Permittee shall send those liquids that are determined to be hazardous waste to the Brine Surge Tank currently being filled. Materials or liquids that are determined through analysis to be nonhazardous must also be evacuated from the sump in accordance with Condition V.A.8.iv. of this Permit.
- iv. The Permittee shall remove all materials or liquids in the secondary containment sumps by either a vacuum truck or dedicated sump pumps. The dedicated sump pump system may leave a residual liquid depth of no more than 3/4 inch. All sumps evacuated using a vacuum truck shall be pumped to a point where there is no free-standing liquids in the bottom of the sump.
- v. Operation of the sump level indicators, interstitial probes and the condition of the sump liner shall be visually inspected per the inspection requirements and schedules in Attachment 3 of this Permit. The ability of these indicators to detect liquids and the liner to contain liquids shall be tested upon installation, annually, and between every chemical agent change as specified in Attachment 3 of this Permit.

9. MONITORING REQUIREMENTS

- i. Upon receipt of a written request from the Department, the Permittee shall perform sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standards delineated in this permit.
- ii. All monitoring, recording, maintenance, calibration and test data shall be recorded and the records for each miscellaneous treatment unit shall be placed in the operating record for each respective unit, in accordance with Condition II.I. of this Permit.
- iii. The Permittee shall maintain, calibrate, and operate process monitoring, control, and recording equipment as specified in Table 5-4 and 5-5 of this Permit, while incinerating hazardous waste.
- iv. Brine shall not be fed to the BRA Evaporator Packages or Drum Dryers if any of the monitoring instruments listed in Table 5-4 and 5-5 of this Permit fails to operate properly.

10. WASTE FEED CUT-OFF REQUIREMENTS

- i. The Permittee shall operate the systems, specified in Table 5-5 of this Permit, to automatically cut off and/or lock out the hazardous waste feed to the BRA Evaporator Packages and Drum Dryers within ten minutes or less from when the monitored operating conditions deviate from the setpoints specified in Table 5-5 of this Permit except for Item Number BRA-15 in Table 5-5 of this permit which shall automatically cut off and/or lock out hazardous waste feed immediately. Waste feed may not restart until the parameter(s) which caused the feed cutoff or lockout is/are restored to permit limits and all other parameters are within permit limits.
- ii. In the event of a malfunction of the automatic waste feed cutoff systems listed in Table 5-5 of this Permit, the Permittee shall immediately, manually, cut off and/or lockout the waste feed, and perform staged shutdown of the BRA Evaporator Packages and Drum Dryers in accordance with the approved procedures specified in Volume II, Section D-5 and Volume VII, Attachment D-3, Section D-5b of the Application. The Permittee shall not restart the miscellaneous treatment unit until the problem causing the malfunction has been identified and corrected. Waste feed may not restart until the parameter(s) which caused the feed cutoff or lockout is/are restored to permit limits and all other parameters are within permit limits.

- iii. The Permittee shall manually cut off and/or lock out the waste feed, and perform staged shutdown of the BRA Evaporator Packages and Drum Dryers, in accordance with the approved procedures specified in Volume II, Section D-9 of the Application, when the operating conditions deviate from the limits specified in Condition V.A.7. of this Permit unless the deviation automatically activates the waste feed cutoff and/or lock out sequence specified in Condition V.A.10.i. of this Permit.
- iv. The Permittee shall cut off and/or lock out hazardous waste feed from a Brine surge tank when the second Brine surge tank receiving waste reaches a High level of seventeen (17) feet.
- v. If the number of automatic waste feed cutoffs from an individual parameter on Table 5-5 for the BRA is activated greater than twice within any operating day, the Permittee shall be required to, at a minimum, verbally provide to the Department the information required in Condition V.A.13.x. of this Permit by the close of the following business day.

11. RESPONSE TO LEAKS OR SPILLS

- i. In the event of a leak or a spill from a hazardous waste miscellaneous treatment unit, the Permittee shall remove the unit from service immediately and complete the following actions:
 - a. Stop the flow of hazardous waste into the unit and inspect the unit to determine the cause of the release.
 - b. Remove the waste and accumulated precipitation from the unit within twenty-four (24) hours of the detection of the leak to prevent further release and allow inspection and repair of the unit. If the Permittee finds that it shall be impossible to meet this time period, the Permittee shall notify the Department and demonstrate that the longer time period is required.
 - c. If the collected material is a hazardous waste, it shall be managed in accordance with all applicable requirements of ADEM Admin. Code R. 335-14-3, ADEM Admin. Code R. 335-14-4, and ADEM Admin. Code R. 335-14-5 and this permit.

- d. Contain visible releases to the environment. The Permittee shall immediately conduct a visual inspection of all releases to the environment and, based on that inspection, shall: (1) prevent further migration of the leak or spill to soils or surface water; (2) remove and properly dispose of any visible contamination of the soil or surface water and (3) follow the actions dictated by the Contingency Plan in Volume X, Section G of the Application for the type of waste released.
- e. Close the unit in accordance with the Closure Plan in Volume IX, Section I of the Application unless the following actions are taken:
 - (I) For a release caused by a spill that has not damaged the integrity of the unit, the Permittee shall remove the released waste and make any necessary repairs to fully restore the integrity of the unit before returning the miscellaneous treatment unit to service.
 - (II) For a release caused by a leak from the primary containment sump system to the secondary containment sump system, the Permittee shall repair the primary containment sump system prior to returning it to service.
 - (III) For a release to the environment caused by a leak from an aboveground portion of the ancillary equipment that does not have secondary containment, the Permittee shall repair the miscellaneous treatment unit or ancillary equipment before returning it to service.
 - (IV) If the Permittee replaces a component of the miscellaneous treatment unit to eliminate the leak, that component must satisfy the requirements for new miscellaneous treatment units or components in ADEM Admin. Code R. 335-14-5-.10.
- ii. For all major repairs to eliminate leaks or restore the integrity of the miscellaneous treatment unit, the Permittee shall obtain a certification by an independent, qualified, registered professional engineer that the repaired unit is capable of handling hazardous wastes without release for the intended life of the unit before returning the unit to service. Examples of major repairs are: installation of an internal liner; repair of a ruptured unit; or, repair or replacement of a secondary containment vault.
- iii. The Permittee shall submit to the Department all certifications of major repairs to correct leaks within seven (7) calendar days from returning the hazardous waste miscellaneous treatment unit(s) to use.

12. INSPECTION SCHEDULES AND PROCEDURES

The Permittee shall inspect the hazardous waste miscellaneous treatment units, in accordance with the inspection schedules specified in Attachment 3 of this Permit.

13. RECORDKEEPING AND REPORTING

- i. The Permittee shall verbally report to the Department within twenty-four (24) hours of detection, when a leak or spill occurs from a hazardous waste miscellaneous treatment unit to the environment, in accordance with Condition I.E.17. of this Permit.
- ii. Releases from hazardous waste miscellaneous treatment units that are contained within a secondary containment system shall be reported as required in Condition V.A.13.i. of this Permit and shall be recorded in the Operating Record as required by Condition II.I.1.i. of this Permit.
- iii. In addition to complying with the requirements of Condition I.E.17.ii. of this Permit, within thirty (30) calendar days of detecting a release to the environment from a hazardous waste miscellaneous treatment unit, the Permittee shall submit a written report detailing, at a minimum, the following to the Department:
 - a. Likely route of migration of the release;
 - b. Characteristics of the surrounding soil (including soil composition, geology, hydrogeology, wind direction and climate);
 - c. Results of any monitoring or sampling conducted in connection with the release. If the Permittee finds it shall be impossible to meet this time period, the Permittee shall provide the Department with a schedule of when the results shall be available. This schedule must be provided before the required thirty (30) calendar day submittal period expires;
 - d. Proximity of downgradient drinking water, surface water, and populated areas; and
 - e. Description of response actions taken or planned.

- iv. The Permittee shall obtain, and keep on file at the ANAD Facility, the written statements by those persons required to certify the design and installation of the hazardous waste miscellaneous treatment units as specified in Condition V.A.3. of this Permit until such time that the miscellaneous treatment unit is certified closed in accordance with Condition II.J.7. of this Permit.
- v. The Permittee shall keep on file at the ANAD Facility the written hazardous waste miscellaneous treatment unit assessments in accordance with ADEM Admin. Code R. 335-14-5-.10 of each hazardous waste miscellaneous treatment unit's integrity and suitability for handling hazardous waste, until such time that the hazardous waste miscellaneous treatment unit is certified closed in accordance with Condition II.J.7. of this Permit.
- vi. The Permittee shall maintain at the ANAD Facility a record of the results of leak tests and integrity tests conducted, in accordance with Conditions V.A.3. or V.A.11.ii. of this Permit.
- vii. In the event that a hazardous waste miscellaneous treatment unit exceeds the maximum allowable capacity designated for that unit in Table 5-1 of this Permit, the Permittee shall document in the Operating Record, as required by Condition II.I.1.i. of this Permit, the following information:
 - a. The date and time of occurrence;
 - b. Identify the unit by the identification number specified in Table 5-1 of this Permit;
 - c. Indicate if any other available miscellaneous treatment unit, within the system, is available and identify such unit by the unit identification number, specified in Table 5-1 of this Permit;
 - d. If no additional treatment capacity was available within the miscellaneous treatment unit system, indicate if the associated collection and/or treatment activities were automatically or manually cutoff; and
 - e. Indicate if any associated BRA Surge Tank's or BRA Evaporator Package's automatic waste feed cutoff interlocks were required. Identify the required interlock and whether the interlocks were successfully activated.
- viii. The Permittee shall document and record the results of each miscellaneous treatment unit's waste analysis required by Attachment 2 of this Permit.

- ix. The Permittee shall record and maintain in the operating record for each miscellaneous treatment unit, all monitoring and inspection data compiled under the conditions of this Permit, in accordance with Condition II.I. of this Permit.
- x. The Permittee shall record in the operating record the date, time, and duration of all automatic waste feed cutoffs and/or lockouts, including the triggering parameters, reason for the deviation, and corrective measures taken to prevent recurrence of the incident. The Permittee shall also record all incidents of the automatic waste feed cutoff function failures, including the corrective measures taken to correct the condition that caused the failure.

14. CLOSURE

- i. The Permittee shall close the miscellaneous treatment units listed in Table 5-1 of this Permit in accordance with the Closure Plan in Volume IX, Section I of the Application.
- ii. If the Permittee demonstrates that not all contaminated soils can be practically removed or decontaminated, at closure, the Permittee shall comply with the Conditions II.J.8. and II.J.9. of this Permit.

15. SPECIAL PROVISIONS FOR IGNITABLE OR REACTIVE WASTES

The Permittee shall not place ignitable or reactive waste in the miscellaneous treatment units or in the secondary containment systems listed in Tables 5-1 and 5-2 of this Permit.

16. SPECIAL PROVISIONS FOR INCOMPATIBLE WASTES

- i. The Permittee shall not place hazardous wastes in a miscellaneous treatment unit that has not been decontaminated and that previously held brine from a different chemical agent and/or incompatible material.
- ii. The Permittee shall only place the brine from one type of chemical agent (e.g., GB, VX, HD, or HT) specified for the particular campaign in the miscellaneous treatment units during any one chemical agent campaign.
- iii. Prior to initiating a campaign with a new chemical agent, the Permittee shall triple rinse the miscellaneous treatment units and their associated piping and ancillary equipment identified in Table 5-1 of this Permit with the appropriate decontamination solution to remove brine residuals.

- iv. The Permittee shall collect the decontamination solution generated in Condition V.A.16.iii. of this Permit in the BRA Surge Tank.

TABLE 5-1 HAZARDOUS WASTE MISCELLANEOUS TREATMENT UNITS PERMITTED FOR USE DURING SHAKEDOWN PERIODS I AND II, SURROGATE AND CHEMICAL AGENT TRIAL BURNS, POST TRIAL BURN PERIODS AND NORMAL CHEMICAL AGENT OPERATIONS

Unit I.D. Number	Maximum Allowable Capacity (gallons)	Dimensions of Unit (feet)	Permitted Hazardous Waste Activity	Permitted Hazardous Waste Codes ^{1,2}
BRA-DDRY-101	approximately 120	3.5' dia. X 12.0' drum length	Dehydration of Brine from BRA Evaporator Packages	TC Metals (D004-D011)
BRA-DDRY-102	approximately 120	3.5' dia. X 12.0' drum length	Dehydration of Brine from BRA Evaporator Packages	TC Metals (D004-D011)
BRA-EVAP-101	1,060 gallons shut-in maximum	4.5' dia. by 8.0' length (not including bottom cone)	Increase the specific gravity of the brine from the Brine Surge Tanks	TC Metals (D004-D011)
BRA-EVAP-102	1,060 gallons shut-in maximum	4.5' dia. by 8.0' length (not including bottom cone)	Increase the specific gravity of the brine from the Brine Surge Tanks	TC Metals (D004-D011)
BRA-EXCH-101	950 gallons/min. maximum recirculation rate	1,300 square feet of heat transfer area	Raise the temperature of the Brine from the Brine Surge Tanks	TC Metals (D004-D011)
BRA-EXCH-102	950 gallons/min. maximum recirculation rate	1,300 square feet of heat transfer area	Raise the temperature of the Brine from the Brine Surge Tanks	TC Metals (D004-D011)

¹ TC Organics are presumed to be absent due to successful incineration to below regulatory levels under the TC rule, but sampling and analysis shall be conducted to verify their absence in the Brine Surge Tank according to the Waste Analysis Plan included as Attachment 2 of this Permit. ² TC = Toxicity Characteristic

TABLE 5-2 HAZARDOUS WASTE SECONDARY CONTAINMENT SUMP SYSTEMS					
Sump I.D Number	Maximum Allowable Capacity (gallons)	Dimensions of Sump (feet)	Location Reference		
			Drawing ¹ Column - Row	Floor	Room
PUB-SUMP-101	85	2.25x2.25x2.25	C-3	1	BRA

¹ Reference building column-row numbers from Drawings AN-2-D-503 in Volume V, Section D-3 Drawings of the Application.

TABLE 5-3 SECONDARY CONTAINMENT SUMP SYSTEM DESIGN STANDARDS	
Sump Design Standards	Secondary Containment Sumps
PRIMARY LINER:	
Construction Material:	welded carbon steel
Sump Liner Capacity, gallons	89
Specified Shell Thickness, (inches)	3/16 steel
Grating Material	reinforced fiberglass
Dimensions, feet:	2.3 X 2.3 X 2.25
Protective Coating:	Chemical resistant epoxy coating
LEAK DETECTION SYSTEM:	
Inspection Procedures:	Visual inspection

TABLE 5-4 BRINE REDUCTION AREA INSTRUMENT AND PROCESS DATA

<u>Item No.</u>	<u>Control Parameter</u>	<u>Measuring Device</u>	<u>Location</u>	<u>Instrument Range</u>	<u>Range or Set Point</u>	<u>Accuracy</u>	<u>Calibration Method No. and Frequency^a</u>
1	Brine Feed: Brine Flow Rate to Evap. Pack. BRA-EVAP-101/ 102 FI-837/ FI-442	Electro- magnetic Flowmeter	In-Line	0-50 gpm	13-23 gpm	±0.5 % of Range	Inst. Calib. Para. 2.3
2	Heat Exchangers: BRA-EVAP- 101B/102B Brine Temp. TR-832/ TR-432	Thermocouple	In-Line	0-500°F	210-240°F	±0.375% of Range	Inst. Calib. Para. 2.4
3	Heat Exchanger: BRA-EVAP- 101B/102B Brine Density DE-834/ DE-434	Magnetically Vibrated Tube	Heat Exchanger	0.5-1.5	1.08-1.25	±2% of Range	Inst. Calib. Para. 1.1 and 1.2
4	Heat Exchangers BRA-EVAP- 101B/102B Steam Entering: Flow Rate FIC-830 FIC-430	Orifice & D/P Cell	In-Line	0-20,000 lb/hr	0-9,600 lb/hr	±0.5% of Span	Inst. Calib. Para. 2.3
5	Heat Exchangers BRA-EVAP- 101B/102B Steam Entering: Temperature (High Alarm) TAH-919/ TAH-419	Thermocouple	In-Line	0-500°F	260-300°F	±0.375% of Range	Inst. Calib. Para. 2.4
6	Flash Evaporators: Level LIT-752 High/Low Level Alarm	D/P Cell	Flash Chamber	0-72 in.	48 in.	±0.25% of Span	Inst. Calib. Para. 2.2

<u>Item No.</u>	<u>Control Parameter</u>	<u>Measuring Device</u>	<u>Location</u>	<u>Instrument Range</u>	<u>Range or Set Point</u>	<u>Accuracy</u>	<u>Calibration Method No. and Frequency^a</u>
7	Drum Dryers: BRA-DDYR-101/ 102 Brine Flow Rate to Drum Dryer FI-851/ FI-872	Electro- magnetic Flowmeter	In-Line	0-10 gpm	5.3 gpm	±0.5% of Span	Inst. Calib. Para. 2.3
8	Drum Dryers: BRA-DDYR-101/ 102 Temp. of Brine to Drum Dryer TAH-110	Thermocouple	In-Line	0-500°F	210-240°F	±0.375% of Range	Inst. Calib. Para. 2.3
9	Drum Dryers: BRA-DDYR-101/ 102 Liquid Level in Nip LIC-758/ LIC-759	D/P Cell	Vessel	0-36 in.	0-18 in.	±0.5% of Span	Inst. Calib. Para. 2.3
10	Drum Dryers: BRA-DDYR-101/ 102 Speed of Drum Drive Motors SIC-854/ SIC-875	Transmitter	Drum Drive Motor	1-20 rpm	1-12 rpm	±1% of Range	Inst. Calib. Para. 2.3
11	Drum Dryers - BRA-DDYR-101/ 102 Steam Entering: Flow Rate FI-847/ FI-868	Orifice & D/P Cell	In-Line	0-10,000 lb/hr	0-3,400 lb/hr	±0.5% of Span	Inst. Calib. Para. 2.3
12	BRA PAS: Dryer BRA-SEPA-105 Knockout Box - Temp. of Heater TIC-190	Thermocouple	Vessel	0-1,000°F	350°F	±0.375% of Span	Inst. Calib. Para. 2.4
13	BRA PAS: Burner BRA- BURN-110 - Operation (online/ offline) BE-170	Transmitter	Burner	N/A	N/A	N/A	N/A

Item No.	Control Parameter	Measuring Device	Location	Instrument Range	Range or Set Point	Accuracy	Calibration Method No. and Frequency ^a
14	BRA PAS: Burner BRA-BURN-110 - Fuel Gas Flow FO-305	Orifice Plate & D/P Cell	In-Line	0-12,000 scfh	10,000 scfh	±3% of Full Scale	Inst. Calib. Para. 2.3
15	BRA PAS: Baghouses BRA-SEPA-101/102 - Air Stream Temp. (Inlet) TI-172	Thermocouple	In-Line	0-1,000°F	200-400°F	±0.375% of Range	Inst. Calib. Para. 2.4
16	BRA PAS: Baghouses BRA-SEPA-101/102 - Pressure Differential across Bags PDI-143/ PDI-144 PDI-145	D/P Cell	Vessel	0-10 in. w.c.	1-7 in. w.c.	±0.25% of Range	Inst. Calib. Para. 2.3
17	BRA PAS: BRA-STAK-102 Exhaust Stack - Flow Rate FI-151	Orifice & D/P Cell	Stack	0-20,000 acfm	11,000 acfm	±0.5% of Span	Inst. Calib. Para. 2.4
18	Evaporator: Brine Temp. TISH-110	Thermocouple	Evaporator	0-500°F	212°F	±0.375% of Range	Inst. Calib. Para. 2.3
19	Level Switch in Baghouse LAH-94 LAH-95 LAH-96	Float	Baghouse	N/A	72 in.	N/A	Inst. Calib. Para. 2.2
20	BRA Stack Exhaust gas chemical agent MON ACAM 152	Gas Chromatography	Stack	Attachment D-2 of the Application	Attachment D-2 of the Application	± 1% Repeatability	Attachment D-2 of the Application

Notes:

^a See Attachment D-1 for "Process Instrument Calibration," "Oxygen and Carbon Monoxide Analyzer Calibration," and "Quality Assurance/Quality Control Data Forms." See also Operating and QA/QC procedures found in "Laboratory Quality Assurance Program for the Chemical Stockpile Disposal Program, November 1988" and Attachment D-1, "Stack Gas Sample Conditioning System." Additional operating and QA/QC procedures for the Automatic Continuous Air Monitoring System (Item No. 33 above) are in Attachment D-2 and Attachment F-1.

^b D/P = differential pressure N/A = not applicable

TABLE 5-5 MISCELLANEOUS TREATMENT UNITS WASTE FEED CUTOFF/LOCKOUT PARAMETERS			
Item Number	Tag Number	Process Data Description	Setpoints
BRA 1		Chemical Agent Concentration in brine going into the evaporator	Chemical Agent free as analyzed according to Attachment 2 of this Permit
BRA 2		Brine pH going into evaporator high	10.0
BRA 3		Brine pH going into evaporator low	5.5
BRA 4		Brine specific gravity going into evaporator high	1.25
BRA 5		Brine specific gravity going into evaporator low	1.00
BRA 6		Toxicity Organics concentration in brine going into the evaporator	Non-detectable
BRA 7		Brine specific gravity going into drum dryer high	1.25
BRA 8		Brine specific gravity going into drum dryer low	1.08
BRA 9	TAH-110	Brine temperature into the drum dryer high	250 °F
BRA 10		Total brine feed rate to the two drum dryers high based on an hourly rolling average	33423 lbs/hr. to be adjusted periodically or as necessary to comply with final metals and chlorine limitations
BRA 11	TAH-172	Temperature of flue gas into baghouse high	400 °F
BRA 12	PDAH-143 PDAH-144 PDAH-145	Differential pressure of the baghouse high-high	7 in. w.c.

TABLE 5-5 MISCELLANEOUS TREATMENT UNITS WASTE FEED CUTOFF/LOCKOUT PARAMETERS			
Item Number	Tag Number	Process Data Description	Setpoints
BRA 13	PDT-143 PDT-144 PDT-145	Differential pressure of the baghouse low	1 in. w.c.
BRA 14	BSLL-170	Loss of burner flame low-low	Flame loss
BRA 15	ACAM 152	Chemical Agent emission high-high based on instantaneous measurement in BRA stack	.00006 mg/m ³ GB .006 mg/m ³ HD/HT 0.00006mg/m ³ VX

ATTACHMENT T

**ASH GROVE CEMENT COMPANY
PART II—EPA AUTHORIZATION UNDER THE HAZARDOUS AND
SOLID WASTE AMENDMENTS OF 1984**

(57 Sheets)

ASH GROVE CEMENT, CHANUTE, KS
EPA ID NO. KSD031203318
(HWSA PART II) PAGE 1 OF 57

PART II
EPA AUTHORIZATION UNDER THE HAZARDOUS AND
SOLID WASTE AMENDMENTS OF 1984

Pursuant to Section 227 of the Hazardous and Solid Waste Amendments of 1984 (hereafter referred to as "HWSA"), the United States Environmental Protection Agency (hereafter referred to as "EPA") is granted authority to issue or deny permits or those portions of permits affected by the requirements established by HWSA. By this authority and pursuant to Sections 3001(g), 3001(h), 3002(b), 3004(d), 3004(u), 3004(v) and 3005 of the Resource Conservation and Recovery Act (RCRA) as amended by HWSA, 42 USC §§6921(g), 6921(h), 6922(b), 6924(d), 6924(u), 6924(v), and 6925, EPA hereby grants to Ash Grove Cement Company as Owner, and Ash Grove Cement Company as Operator (hereafter referred to jointly as "the Permittee"), EPA sSID Number KSD031203318, permission to perform activities permitted by HWSA as well as certain activities required by HWSA, at its facility located at North Santa Fe Street, Chanute, Kansas 66720 (37° 41' 51" latitude, and 95° 27' 47" longitude), in accordance with the conditions of Part II of this permit.

Part II of this permit addresses the corrective action requirements for solid waste management units, the combustion of hazardous waste in cement kilns, and other HWSA requirements as administered and enforced by EPA. Applicable regulations are found in 40 CFR Parts 260 through 264, 268, 270, and 124, as specified in Part II of this permit.

All regulations cited in Part II of this permit refer to regulations in effect on the date of this permit issuance. With the exception of regulations in existence at the time of permit issuance and referenced in Part II of this permit, the only other RCRA regulations applicable to this facility during the life of Part II of this permit shall be those regulations which, by their terms, specifically apply to pre-existing RCRA permits.

The Regional Administrator has delegated authority to perform all actions necessary to issue, deny, modify, or revoke and reissue permits for owners and operators of hazardous waste treatment, storage, and disposal facilities pursuant to Section 3005 of RCRA to the Director of the Air, RCRA, and Toxics Division (hereafter referred to as "Director") or the Director's designated representative, by delegation No. R7-8-6; January 1, 1995.

Part II of this permit is based on the assumption that the information in the approved permit application, submitted by the Permittee on May 31, 1995, (hereafter referred to as "the application") is accurate and that the facility will be operated as specified in the application.

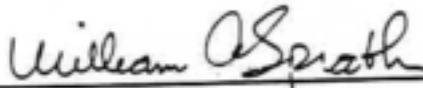
ASH GROVE CEMENT, CHANUTE, KS
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(HWSA PART II) PAGE 2 OF 57

Any inaccuracies found in the application or other submitted information may be grounds for the termination, revocation and reissuance, or modification of Part II of this permit in accordance with 40 CFR §§270.41, 270.42, and 270.43, or for enforcement action. The Permittee shall inform EPA of any deviation from or changes in the application that would affect the Permittee's ability to comply with Part II of this permit.

Part II of this permit shall become effective at 12:01 AM on 9/16/96 and shall remain in effect until 9/16/06 unless revoked and reissued, terminated or continued in accordance with 40 CFR §§270.41, 270.43, and 270.51. Part II of this permit shall remain in effect even if Part I is appealed, terminated, has expired, or is otherwise not in effect.

This permit is not subject to the requirements of the Paperwork Reduction Act.

Done at Kansas City, Kansas, this 15th day of Aug., 1996



William A. Spratlin
William A. Spratlin
Director
Air, RCRA and Toxics Division

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A. DEFINITIONS

For purposes of Part II of this permit, terms used herein shall have the same meaning as those in RCRA and 40 CFR Parts 124, 260, 261, 264, 268, and 270, unless this permit specifically provides otherwise. Where terms are not defined in RCRA, the regulations, the permit or EPA guidance or publications, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

"Facility," for the purposes of corrective action, means all contiguous property under the control of the owner or operator.

"Hazardous constituent" means any constituent identified in Appendix VIII of 40 CFR Part 261.

"Hazardous waste" means any solid waste as defined in 40 CFR §261.2 which also meets any of the criteria of a hazardous waste as listed in 40 CFR §261.3.

"Release" means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous constituents) into the environment, including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes and/or hazardous constituents.

"Solid waste management unit (SWMU)" means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

"Stabilization" means actions to control or abate threats to human health and/or the environment from releases at RCRA facilities, and/or to prevent or minimize the further spread of contamination while long-term remedies are pursued.

B. STANDARD CONDITIONS

Part I, Standard Permit Conditions I.A. through I.J. are hereby incorporated by reference in Part II of this permit, unless they are otherwise contained below. Standard Permit Conditions incorporated by reference shall remain in effect even if Part I is appealed, terminated, has expired, or is otherwise not in effect. In the event of any discrepancy between the Standard Permit Conditions I.A. through I.J. of Part I of this permit, and the conditions set forth in B.1. through B.12. below, the provisions of B.1. through B.12. shall control as to Part II of this permit.

B.1. Submittal of Permit Requirements

- a. Failure to submit the information required in Part II of this permit, or falsification of any submitted information, shall be grounds for an enforcement action pursuant to RCRA and/or termination of Part II of this permit.
- b. The Permittee shall ensure that all plans, reports, notifications, and other submissions to the Director required in Part II of this permit are signed and certified in accordance with 40 CFR §§270.11 and 270.30(k).
- c. Extensions of the due dates specified in Part II of this permit may be granted by the Director in accordance with the permit modification procedures set forth in 40 CFR §270.42.
- d. Unless otherwise specified, two (2) copies of these plans, reports, notifications or other submissions shall be sent to the EPA by certified mail or hand delivered to:

U.S. Environmental Protection Agency
Region VII
ART Division
726 Minnesota Avenue
Kansas City, Kansas 66101

In addition, one (1) copy of these plans, reports, notifications or other submissions shall be submitted to:

Kansas Department of Health and Environment
Bureau of Waste Management
Hazardous Waste Section
Forbes Field, Building 740
Topeka, Kansas 66620-0001

B.2. Permit Modification, Revocation and Reissuance, and Termination

- a. Part II of this permit may be modified, revoked and reissued, or terminated as specified in 40 CFR §§270.41, 270.42, and 270.43.
- b. The Director may modify Part II of this permit in accordance with 40 CFR §270.41.
- c. The Permittee may request a modification of Part II of this permit in accordance with the provision of 40 CFR § 270.42.
- d. Modifications to Part II of this permit do not constitute a reissuance of the permit. The filing

of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any condition in Part II of this permit.

B.3. Permit Renewal

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, or if the Permittee has not received a determination from the Director that corrective action has been completed, then the Permittee must apply for and obtain a new permit. In such cases, the Permittee shall submit a complete application for a new permit to EPA at least one hundred eighty (180) days prior to the expiration of Part II of this permit, unless permission for a later submission date has been given by the Director. Review of any application for a permit renewal shall consider improvements on the state of control and measurement technology, as well as changes in applicable regulations.

B.4. Transfer of Permits

Part II of this permit is not transferable to any person or entity until such a time as this permit has been modified or revoked and reissued to identify the proposed new owner or operator of the facility (hereafter referred to as "New Permittee") and to incorporate such other requirements as may be necessary, all in accordance with the procedures set forth in 40 CFR §270, Subpart D. At least ninety (90) calendar days prior to the anticipated date of transfer, the New Permittee shall submit to the Director: 1) a revised permit application; and 2) a copy of the written agreement between the Permittee and the New Permittee, containing the specific date for transfer of the permit responsibilities described herein. The Permittee and the New Permittee shall also comply with the financial requirements as more specifically set forth in 40 CFR §270.40 and 40 CFR §264, Subpart H. It shall be the Permittee's responsibility to notify the New Permittee in writing of the requirements of 40 CFR Parts 264 and 270 and Part II of this permit.

B.5. Appeal of a Permit

Part II of this permit may be appealed pursuant to the provisions of 40 CFR §124.19(a), which provides as follows:

Within thirty (30) calendar days after a RCRA final permit decision has been issued under 40 CFR §124.15, any person who filed comments on that draft permit or participated in the public hearing may petition the Environmental Appeals Board, in writing, to review any condition of the permit decision. Any person who failed to file comments or failed to participate in the public hearing on the draft permit may petition for administrative review only to the extent of the changes from the draft to the final permit decision. The 30-day period within which a person may request review under this section begins with the service of notice of the Director's action unless a later date is

specified in that notice. The petition shall include a statement of the reasons supporting that review, including a demonstration that any issues being raised were raised during the public comment period (including any public hearing) to the extent required by these regulations and when appropriate, a showing that the condition in question is based on:

- (1) A finding of fact or conclusion of law which is clearly erroneous, or
- (2) An exercise of discretion or an important policy consideration which the Environmental Appeals Board should, in its discretion, review.

B.6. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of Part II of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of Part II of this permit.

B.7. Reporting Planned Changes

The Permittee shall give a twenty (20) calendar day advanced notice to the Director of any physical alterations or additions to the portions of the facility subject to Part II of this permit, except for those alterations or additions for which notice is required by Part I of this permit.

B.8. Reporting Noncompliance

a. The Permittee shall give a twenty (20) calendar day advanced notice to the Director of any planned changes in the permitted facility or activities required by Part II of this permit which may result in noncompliance with the requirements of Part II of this permit.

b. Notwithstanding B.8.a. above, the Permittee shall report to the Director any noncompliance with Part II of this permit which may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the circumstances. The report shall include the following:

- (1) Information concerning release of any hazardous waste and/or hazardous constituent that may cause an endangerment to public drinking water supplies; and

- (2) Any information of a release or discharge of hazardous waste and/or a hazardous constituent, or of a fire or explosion from the hazardous waste management facility, which could threaten the environment or human health outside the facility.

c. The description of the occurrence and its cause shall include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident;
- (4) Name and quantity of materials involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

d. A written notice shall also be provided to the Director within five (5) calendar days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period(s) of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and, if not, the time the Permittee anticipates that noncompliance will continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Director may waive the 5-day written notice requirement in favor of a written report within fifteen (15) calendar days. These reports shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

B.9. Incorporations to the Permit

All plans and schedules required by the conditions of Part II of this permit are, upon approval of the Director, enforceable under Part II of this permit. Any noncompliance with such approved plans and schedules shall constitute noncompliance with Part II of this permit.

B.10. Supplemental Data

All raw data, such as laboratory s, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to Part II.C. of this permit shall be maintained at the permitted facility during the term of Part II of this permit, including the term of any reissued permits. Such information shall be made available to the Director upon request.

B.11. Review and Approval Procedures

- a. After submission of any plan or pertaining to activities required by this permit, (excluding the Quarterly Progress), the Director will either approve or disapprove the plan or in writing. The Permittee shall implement all plans according to the schedule contained in the approved plans.
- b. If the Director disapproves the plan or , the Director will notify the Permittee in writing of the plan's deficiencies and specify a due date for submittal of a revision.
- c. If the Director disapproves the revised plan or , the Director may modify the plan or and will notify the Permittee of any modifications. The plan or , as modified by the Director, shall become the approved plan or .
- d. If the Permittee takes exception to the modifications made by the Director, the Permittee shall follow the procedures outlined in the Part II Permit Condition B.12. entitled, "Dispute Resolution."

B.12. Dispute Resolution

- a. If the Permittee disagrees, in whole or in part, with any EPA disapproval, modification, or other decision or directive made by EPA pursuant to the provisions of Part II of this permit, the Permittee shall notify the EPA in writing of any objections and the basis for them within fifteen (15) calendar days of receipt of EPA's disapproval, decision, or directive. The notice shall set forth specific points of the dispute, the position the Permittee maintains should be adopted as consistent with the requirements of Part II of this permit, the factual and legal basis for the Permittee's position, and all matters the Permittee considers necessary for the EPA's determination. The EPA and the Permittee shall then have an additional thirty (30) calendar days from the EPA's receipt of the Permittee's objection to attempt to resolve the dispute. If agreement is reached, the resolution will be reduced to writing by EPA and shall become part of Part II of this permit. If the parties are unable to reach complete agreement within this 30-day period, the matter will be submitted for resolution to the Director. If requested by the Permittee, the Director may, at his or her discretion, agree to meet with the Permittee. The Director's resolution shall become an enforceable part of Part II of this permit. The Director shall notify the Permittee in writing of the resolution of the dispute, and the reasons for this resolution.

b. The existence of a dispute as defined herein and EPA's consideration of such matters as placed in dispute shall not excuse, toll or suspend any obligation or deadline required pursuant to Part II of this permit, that is not the subject of dispute, during pendency of the dispute resolution process.

C. CORRECTIVE ACTION

C.1. Authority

Section 3004(u) of RCRA, 42 USC §6924, and 40 CFR §264.101, require that all permits issued after November 8, 1984, address corrective action for releases of hazardous waste or hazardous constituents from any solid waste management unit (SWMU), regardless of when waste was placed in the unit or whether the unit is closed. Those sections further require that permits issued under Section 3005 of RCRA, 42 USC §6925, contain a schedule of compliance for corrective action where corrective action cannot be completed prior to permit issuance and that such permits contain evidence of financial assurance for completing corrective action. Section 3004(v) of RCRA, 42 USC §6924(v) authorizes the Regional Administrator to require that corrective action be taken by the facility owner or operator beyond the facility boundary when necessary to protect human health and the environment, unless the owner or operator demonstrates that permission to undertake such action, despite the owner/operator's best efforts, was denied. Section 3005(c)(3) of RCRA, 42 USC §6925(c)(3), requires that each permit issued under that section shall contain terms and conditions as the Regional Administrator determines necessary to protect human health and the environment. The Regional Administrator has delegated authority to perform all actions necessary to enforce the corrective action portion (hereafter referred to as "Section II.C") of this permit to the Director of the Air, RCRA, and Toxics Division (hereafter referred to as "Director") or the Director's designated representative.

C.2. Identification of Solid Waste Management Units

The EPA has conducted a RCRA Facility Assessment (RFA) to identify releases or potential releases from any SWMU at the facility. The RFA identified the following SWMUs at the facility:

- SWMU #1 Paraffin Waste Disposal Landfill
- SWMU #2 Satellite Waste Accumulation Point (SWAP):
Primary Crusher
- SWMU #3 SWAP: Shop and Storeroom
- SWMU #4 SWAP: Control Area
- SWMU #5 SWAP: Electrical Substation
- SWMU #6 SWAP: Laboratory
- SWMU #7 SWAP: Rail Loading Area
- SWMU #8 Central Hazardous Materials Storage Area/Tank

- SWMU #10 Chem-Fuel Tank Area and Secondary Containment
- SWMU #11 Chem-Fuel Lines
- SWMU #12 Chem-Fuel Rail Unloading Area
- SWMU #13 Chem-Fuel Truck Unloading Area
- SWMU #14 Chem-Fuel Sump Drums
- SWMU #15 Parts Washers (4)
- SWMU #16 Industrial Waste Landfill, Permit No. 177
- SWMU #17 Kiln Dust Landfill, Permit No. 345
- SWMU #18 Former Waste Refractory Brick Disposal Area

The RFA also identified the following areas of concern ("AOCs"):

- AOC A Clinker Storage Area
- AOC B Lubricant Storage Area
- AOC C General Storage
- AOC D Muriatic Acid Storage Area

Subsequent to the RFA six other SWMUs have been identified:

- SWMU #19 No. 1 and No. 2 Cement Kilns
- SWMU #20 Container Storage (Surge) Building
- SWMU #21 Solid Waste Derived Fuel Storage Building
- SWMU #22 New Industrial Waste Landfill
- SWMU #23 Inactive Kiln Dust Fill Area
- SWMU #24 Ruan Waste Transferring area

C.3. Notification Requirements for and Assessment of Newly-Identified Solid Waste Management Units

a. The Permittee shall notify the Director in writing of any and all SWMUs identified subsequent to the issuance of Section II.C of this permit no later than fifteen (15) calendar days after discovery.

b. The Director may require a workplan for conducting an investigation of the newly-identified SWMU(s). Within thirty (30) calendar days after receipt of notice that the Director requires a workplan, the Permittee shall submit a SWMU Assessment Workplan which shall include any of the following as specified in the Director's notice:

- (1) Discussion of past waste management practices at the unit;
- (2) A sampling and analysis program for groundwater, land surface and subsurface strata, surface water or air, as necessary to determine whether a release of hazardous waste

and/or hazardous constituents from such unit(s) has occurred, or is occurring;

- (3) Whether any release is harmful to human health or the environment; and/or
- (4) A proposed schedule for implementation and completion of the Workplan.

The sampling and analysis program, if required, shall be capable of yielding representative samples and must include parameters sufficient to identify migration of hazardous waste and/or hazardous constituents from the newly-identified SWMU(s) to the environment. The SWMU Assessment Workplan shall specify any data to be collected to provide for a complete SWMU Assessment, as defined below.

c. The SWMU Assessment Workplan will be reviewed in accordance with the procedures set forth in Section II.B.11. Upon EPA's approval of the SWMU Assessment Workplan, the Permittee shall implement said Workplan in accordance with the schedules contained therein.

d. The Permittee shall submit a SWMU Assessment to the Director according to the schedule specified in the approved SWMU Assessment Workplan. The SWMU Assessment shall present and discuss the information obtained from implementation of the approved SWMU Assessment Workplan. At a minimum, the shall provide the following information for each newly-identified SWMU:

- (1) The location of the newly-identified SWMU in relation to other SWMUs;
- (2) The type and function of the unit;
- (3) The general dimensions, capacities, and structural description of the unit;
- (4) The period during which the unit was operated;
- (5) The physical and chemical properties of all wastes that have been or are being managed at the SWMU, to the extent available;
- (6) The results of any sampling and analysis conducted;
- (7) Past and present operating practices;
- (8) Previous uses of the area(s) occupied by the SWMU;
- (9) Amounts of waste handled; and
- (10) Drainage areas and/or drainage patterns near the SWMU.

e. The SWMU Assessment will be reviewed in accordance with the procedures set forth in Section II.B.11. After reviewing the , and any other available information, the Director will determine the need for further investigation, stabilization, a RCRA Facility Investigation, or a Corrective Measures Study.

C.4. Notification Requirements for Newly-Identified Releases from Solid Waste Management Units

a. The Permittee shall notify the Director, in writing, of any release(s) of hazardous waste and/or hazardous constituents identified during the course of groundwater monitoring, field investigation(s), environmental auditing, or other activities undertaken after issuance of Section II.C of this permit, no later than fifteen (15) calendar days after discovery.

b. The Director may require a Workplan for conducting an investigation of the newly-identified release(s). Within thirty (30) calendar days after receipt of notice that the Director requires a Workplan, the Permittee shall submit a Newly-Identified Release Investigation Workplan which may include any of the following as specified in the Director's notice:

- (1) Discussion of past waste management practices at the release;
- (2) A sampling and analysis program for groundwater, land surface and subsurface strata, surface water or air, as necessary to determine whether it is harmful to human health or the environment; and/or
- (3) A proposed schedule for implementation and completion of the Workplan.

The sampling and analysis program, if required, shall be capable of yielding representative samples and must include parameters sufficient to identify migration of the release to the environment. The Newly-Identified Release Investigation Workplan shall specify any data to be collected to provide for a complete Newly-Identified Release , as defined below.

c. The Newly-Identified Release Investigation Workplan will be reviewed in accordance with the procedures set forth in Section II.B.11. Upon EPA's approval, the Permittee shall implement said plan in accordance with the schedule(s) contained therein.

d. The Permittee shall submit a Newly-Identified Release to the Director according to the schedule specified in the approved Newly-Identified Release Investigation Workplan. The Newly-Identified Release shall present and discuss the information obtained from

implementation of the approved Newly-Identified Release Investigation Workplan. At a minimum, the shall provide the following information for each newly-identified release:

- (1) The location of the newly-identified release in relation to SWMUs;
- (2) The general dimensions of the extent of the release;
- (3) The period during which the release was suspected to have occurred;
- (4) The physical and chemical properties of all wastes that have been determined to comprise the release;
- (5) The results of any sampling and analysis conducted;
- (6) Past and present operating practices near and at the location of the release;
- (7) Previous uses of the area(s) occupied near and at the location of the release;
- (8) Amounts of waste handled near and at the release; and
- (9) Drainage areas and/or drainage patterns near and at the release.

e. The Newly-Identified Release will be reviewed in accordance with the procedures set forth in Section II.B.11. Based on the findings of the and any other available information, the Director will determine the need for further investigation, including stabilization, a RCRA Facility Investigation, or a Corrective Measures Study.

C.5. Stabilization

a. The Permittee shall notify the Director within twenty-four (24) hours of becoming aware of a situation that requires stabilization.

b. If, during the course of any activity initiated under Section II.C of this permit, the Director determines that a release or potential release of hazardous waste and/or hazardous constituents poses a threat to human health or the environment, the Director may require stabilization to control or abate such threat, or to minimize or prevent the further spread of contamination until final corrective measures can be initiated. The Director will determine the specific action(s) that must be taken to implement stabilization, including the schedule for implementing the stabilization requirements, and will inform the Permittee of the action(s) in writing.

c. If at any time, the Permittee determines that the stabilization activities are not controlling or abating the threat or effectively minimizing or preventing the further spread of contamination, the Permittee must notify the Director in writing no later than ten (10) calendar days after such a determination is made. The Director may then require that the stabilization activities be revised to

make them more effective, or that final corrective measures be implemented to remediate the contaminated media.

C.6. RCRA Facility Investigation Workplan

a. Requirement to Submit RFI Workplan and Overall Objectives of RFI

The Permittee shall submit the RFI Workplan to EPA within one hundred twenty (120) calendar days of receipt of a written notice from EPA requiring the submittal of the RFI Workplan. In order to substantiate future corrective action decisions, the RFI shall meet the following objectives:

- (1) Full characterization of the nature, concentration, vertical and horizontal extent, and rate of migration of releases of hazardous waste and/or hazardous constituents at the facility and their actual or potential receptors; and
- (2) Collection of any other pertinent data which can be utilized to substantiate future corrective action decisions.

b. Guidance for Developing RFI Workplan

The RFI Workplan shall be consistent with the technical intent and objectives of the most recent version of the EPA document entitled, RCRA Facility Investigation Guidance (EPA 530/SW-89-031). The RFI Workplan shall contain a description of known current conditions which identifies the source(s) of the information collected and how data gaps will be filled. The RFI Workplan shall detail all proposed corrective action activities and procedures to be conducted at the facility, a schedule for implementing and completing investigations, and for submission of s (including the final RFI), the qualifications of personnel performing or directing the investigations, including contractor personnel, and the overall management of the RFI.

c. Quality Assurance Project Plan

The RFI Workplan shall include the submittal of a Quality Assurance Project Plan (QAPP). The QAPP shall present the policies, organization, objectives, functional activities, and specific quality assurance and quality control activities designed to achieve the data quality goals of the RFI. It shall include the RFI objectives, sampling procedures, analytical methods, field and

laboratory quality control samples, chain-of-custody procedures and data review, validation and ing procedures.

d. Health and Safety Plan

The Permittee shall prepare and maintain a health and safety plan during the project that assures the RFI activities are conducted in a manner that is not harmful to human health or the environment.

e. Allowability of Phased RFI

Due to the complexity of defining the extent of contamination, the Permittee may be allowed, or EPA may, at its discretion, require the Permittee to use a phased approach which requires the submittal of supplemental RFI Workplans.

f. Specific Characterizations Required for Each SWMU to be Addressed Under This RFI

The SWMUs and areas of concern (AOC) listed below shall be investigated during the RFI. The numbers in parentheses to the right of the SWMU or AOC correspond to subsections in the following section (g. Guidance on Characterizations...), and indicate the initial characterizations, described in those subsections, that are required to be performed on the SWMU or AOC. EPA may require additional characterization or other investigation at these SWMUs/AOC based on the results of the initial characterizations. All information regarding previous investigations of releases from these SWMUs/AOCs, and any corrective actions taken, shall be submitted with the RFI Workplan unless they have already been submitted to EPA. Pertinent information that has previously been submitted to EPA shall be referenced by author, title, and date. Also, all analyses of any environmental media not already submitted to EPA shall be submitted with the Workplan. EPA may, at its discretion, evaluate previous investigations and analyses and corrective actions taken and may modify requirements of the RFI as appropriate.

- SWMU #1 Paraffin Waste Disposal Landfill—(1,2,3,4,5)
- SWMU #16 Industrial Waste Landfill—(1,2)
- SWMU #17 Kiln Dust Landfill—(1,2,4,5)
- SWMU #22 New Industrial Waste Landfill—(1,2)
- SWMU #23 Inactive Kiln Dust Fill Area—(1,2,4,5)

g. Guidance on Characterizations (Unit, Waste, Soil, Groundwater, etc.) To be Performed Under This RFI

(1) Characterization of the SWMU or AOC

The characterization of a SWMU or-AOC must include the following, to the fullest extent possible:

- (a) Location of the SWMU or AOC;
- (b) Design features of each SWMU (engineering drawings if existing);
- (c) Dimensions and capacities;
- (d) Age of the SWMU or AOC, and period of operation;
- (e) Past and present operating practices;
- (f) Amounts of waste handled;
- (g) Previous uses of area occupied by the SWMU or AOC;
- (h) Drainage areas; and
- (i) If applicable, method used to close the SWMU.

(2) Characterization of the Waste

The waste characterization shall provide sufficient information to document the hazardous constituent content of the waste(s) handled by the SWMU, both currently and historically, and shall include the following:

- (a) Identification of existing sources of information on waste characterization;
- (b) Methods for obtaining data not presently available;
- (c) Procedures for sampling, including sample locations, sampling schedule, number of samples to be taken and methods for collecting and preserving samples;
- (d) Procedures for analysis, including a list of analytical parameters, rationale for selection of parameters, analytical methods and identification of detection limits;

- (e) Procedures for quality assurance/quality control (QA/QC) to ensure validity of data; and
- (f) Existing waste characterization data shall include information on sampling, analysis and QA/QC as described in c-e above.

(3) Characterization of the Soil Contamination

The objective of soil characterization is to determine the nature as well as the vertical and horizontal extent of soil contamination at the area of concern, or resulting from any releases of hazardous waste or hazardous constituents from a SWMU. The RFI Workplan shall include:

- (a) Parameters to be sampled for and a rationale for their selection;
- (b) Sampling and analytical methods;
- (c) Sample locations, number of samples to be taken, and supporting rationale for the number and location of samples;
- (d) Site soil characteristics including soil descriptions and analysis of background soils;
- (e) Generation of maps and cross sections depicting the horizontal and vertical (from the ground surface to the water table) extent of contamination; and
- (f) Description of decontamination procedures for personnel and equipment.

(4) Characterization of Surface Water and Sediment

The objective of surface water and sediment characterization is to determine the nature and extent of surface water and sediment contamination resulting from any releases of hazardous waste or hazardous constituents from the SWMU/AOC. The RFI Workplan shall include:

- (a) Parameters to be sampled for and a rationale for their selection;
- (b) Sampling and analytical methods;
- (c) Sample locations, number of samples to be taken, and supporting rationale for the number and location of samples;

- (d) Description of decontamination procedures for personnel and equipment.

(5) Characterization of Groundwater Contamination.

The Permittee is required to investigate the groundwater contamination and hydrogeologic conditions associated with the-SWMU/AOC. The RFI Workplan shall describe in detail the methods, procedures, and schedules for completing this characterization.

(a) Subjects of the Investigation

- 1) The Permittee shall investigate the horizontal and vertical extent of the groundwater contamination originating from the SWMU/AOC, including:
 - a) The horizontal and vertical direction, and rate of movement of the contamination; and
 - b) The generation of isoconcentration maps and cross sections for specific contaminants and groups of contaminants.
- 2) The types and concentration of contaminants (if any) coming from upgradient sources.
- 3) The Permittee shall define the hydrogeologic conditions present at the SWMU/AOC, including the items listed below. The hydrogeologic characterization must cover not only the subsurface conditions directly beneath the SWMU/AOC, but also the subsurface conditions of any areas currently or potentially impacted by contamination from the SWMU/AOC, as well as any areas likely to be required for the investigation or remediation of that contamination.
 - a) Depth to the water table including piezometric surface maps;
 - b) Thickness of the uppermost aquifer (the uppermost aquifer is defined as all hydraulically interconnected water bearing zones overlying the uppermost effective aquitard);
 - c) A description of the materials which make up the uppermost aquifer;
 - d) Characteristics of the uppermost aquifer including porosity, permeability, transmissivity, etc.;

- e) Depth to and description of the uppermost effective aquitard;
 - f) Descriptions of any aquifers which underlie the uppermost aquifer;
 - g) Depth to and description of the bedrock; and
 - h) Characterization of the shallowest confining unit, including porosity, permeability, and transmissivity.
- 4) How any of the above conditions vary seasonally.

(b) Monitoring Well Network

The Permittee shall install a monitoring well network capable of providing the information described in Section II.C.6.g.(5). If the Permittee wishes to use any existing wells, the adequacy of those wells must be established and the information below must be provided for those wells. The RFI Workplan shall contain detailed plans for the monitoring well network, including provision for the following:

- 1) Surveyed well locations to a tolerance of ± 0.01 foot, including a survey to a ground surface reference point (tolerance for the top of the well casing shall be no more than ± 0.01 foot), and an (x,y) coordinate shall be given for each well using a common reference point;
- 2) Size and depth of wells, screened interval, screen slot size;
- 3) Detailed protocol on how every well is, or will be, constructed, including well development, and construction diagrams similar to the example diagrams in Attachment D, cleaning of casings and screens and origin of cement, bentonite, water for hydration, installation date, drilling method, screen and casing material type, filter pack and grain size distribution, grout mix design, and other annular seal construction details;
- 4) Description of methods used to connect segments of the well casings and screens, including methods used to plug the bottom and cap the top of the well;
- 5) Methods used to seal the borehole annulus to prevent downward or upward migration of contaminants through the well bore;
- 6) Continuous boring logs completed in the field by a qualified geologist, using

an interval of one inch equals one foot, shall be taken during the installation of all new wells; and

- 7) Boring logs and installation diagrams of existing wells, and a well summary table that includes well identification number, horizontal coordinate location, ground surface elevation, well depth, screened depth, and installation date.

(c) Monitoring of the Groundwater

The RFI Workplan shall include plans for monitoring the groundwater contamination in order to obtain the information required in Section II.C.6.g.(5).

- 1) The RFI Workplan shall include detailed protocol on how wells will be sampled, parameters to be monitored and the rationale for selecting those parameters. The Workplan shall also include a schedule for the sampling of the wells and analysis of the samples.
- 2) The results of analysis shall be reported in the first quarterly due after the results are received. The analytical results shall be submitted on a diskette in the format requested by the Director. Two hard copies of the analytical results shall also be submitted.

- (d) All field work shall be conducted under the supervision of a qualified engineer/geologist.

h. RFI Workplan Review, Approval, and Implementation

The RFI Workplan(s) will be reviewed in accordance with the procedures set forth in Section II.B.11. Upon approval thereof, the Permittee shall implement the Workplan(s) in accordance with the schedule(s) contained therein.

C.7. RCRA Facility Investigation

a. The Permittee shall submit the RFI according to the schedule contained in the approved RFI Workplan. The RFI shall present all information gathered under the approved RFI Workplan along with a brief facility description and map showing the property boundary and all SWMUs, AOCs, and releases. The information presented in the RFI shall be consistent with the technical intent and objectives of Section 5 of the most recent version of the EPA publication entitled, RCRA Facility Investigation Guidance (EPA/530/SW-89-031).

b. The RFI must contain adequate information to support further corrective action decisions at the facility. The RFI shall describe the procedures, methods, and results of all investigations,

including but not limited to the following:

- (1) Characterization of the extent, nature, direction, rate, movement and concentration of releases at and from the facility.
- (2) Characterization of the environmental setting at the facility, including:
 - (a) Hydrogeological conditions;
 - (b) Soil characteristics;
 - (c) Surface water and sediment quality; and
 - (d) Air quality and meteorological conditions.
- (3) Characterization of SWMUs or AOCs from which releases have been or may be occurring, including unit and waste characteristics.
- (4) Descriptions of humans and environmental systems which are, may have been, or, based on site-specific circumstances, may be exposed to release(s).
- (5) Information that will assist the Director in assessing risks to human health and the environment from releases from solid waste management units.
- (6) Extrapolations of future contaminant movement.
- (7) The results of any laboratory, bench-scale or pilot-scale tests or studies to determine the feasibility or effectiveness of treatment technologies or other technologies that may be appropriate in implementing remedies at the facility.
- (8) Statistical analyses to aid in the interpretation of data.
- (9) Results of any stabilization efforts.

c. The RFI will be reviewed in accordance with the procedures set forth in Section II.B.11. After review of the RFI, if the Director determines that the objectives of the RFI have not been met, the Director may require additional investigation.

C.8. Corrective Measures Study Workplan

a. If the Director determines that there has been a release of hazardous waste and/or hazardous

constituents that may present a threat to human health or the environment, the Director may require a Corrective Measures Study (CMS) and will notify the Permittee in writing.

b. The Permittee shall submit a CMS Workplan to the Director within sixty (60) calendar days of notification of the requirement to conduct a CMS. The CMS Workplan shall be consistent with the most recent version of the EPA guidance document entitled, RCRA Corrective Action Plan: EPA 520-R-94-004. The EPA may require the Permittee to evaluate as part of the CMS one or more specific potential remedies. These remedies may include a specific technology or combination of technologies that, in EPA's judgment, achieves protection of human health and the environment. At a minimum, the CMS Workplan shall provide the following information:

- (1) A description of the general approach to investigating and evaluating potential remedies;
- (2) A definition of the specific objectives of the study;
- (3) A description of the remedies which will be studied;
- (4) A description of the method to be used to evaluate remedies which ensures compliance with the remedy standards found in EPA's proposed rule entitled, "Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities," 55 FR at 145 (July 27, 1990);
- (5) The schedules for conducting the study and submitting a Corrective Measures Study ; and
- (6) The proposed format for the presentation of information in the Corrective Measures Study .

c. The Director will review the CMS Workplan in accordance with the procedures set forth in Section II.B.11. Upon approval thereof, the Permittee shall implement the Workplan in accordance with the schedule contained therein.

C.9. Corrective Measures Study

a. The Permittee shall submit a CMS according to the schedule contained in the approved CMS Workplan. The CMS shall present all information gathered under the approved CMS Workplan and shall be consistent with the technical intent and objectives of the most recent version of the EPA guidance document entitled, RCRA Corrective Action Plan (EPA/530-SW-88-028), or EPA's proposed rule entitled, "Corrective Action for Solid Waste Management Units at

Hazardous Waste Management Facilities," 55 FR at 145 (July 27, 1990). The CMS shall summarize the results of the investigations for each remedy studied and of any bench-scale or pilot tests conducted and shall propose a remedy. The CMS shall include, but not be limited to, the following information:

- (1) Evaluation of performance, reliability, ease of implementation, and potential impacts of each remedy studied, including safety impacts, cross media impacts, and control of exposure to any residual contamination;
- (2) Assessment of the effectiveness of each remedy in achieving adequate control of sources and cleanup of the hazardous waste or constituents released from solid waste management units;
- (3) Assessment of the time required to begin and complete each remedy;
- (4) Estimation of the costs of implementing each remedy;
- (5) Recommendation of remedy and rationale for selection;
- (6) Assessment of institutional requirements, such as State or local permit requirements, or other environmental or public health requirements which may substantially affect implementation of the remedy.

b. The CMS shall contain adequate information to support the Director in the remedy selection process.

c. The CMS will be reviewed in accordance with the procedures set forth in Section II.B.11.

C.10. Remedy Selection

The Director will select a remedy that will (1) be protective of human health and the environment; (2) control the source(s) of release(s) so as to reduce or eliminate, to the maximum extent practicable, further releases that may pose a threat to human health and the environment; and (3) meet all applicable federal, state, and local laws and regulations. After the Director selects the remedy, a permit modification will be initiated pursuant to 40 CFR §270.41 or §270.42 Class 3, as applicable, to require implementation of the selected corrective measure.

C.11. Financial Assurance for Corrective Action

a. Within one hundred twenty (120) calendar days after Section II.C of this permit has been modified to include a remedy, the Permittee shall demonstrate continuous compliance with the RCRA financial assurance requirements specified in Section 3004(t) of HSWA for corrective

action being performed under Section 3004(u) of HSWA. The effective financial assurance mechanism shall be substantially equivalent to that as specified in either final RCRA Subpart S corrective action regulations or 40 CFR §264 Subpart H. Other financial assurance amounts and mechanisms may be used if approved in writing by the Director. The amount of the financial assurance shall be based on the cost estimate required in the Section II.C Permit Condition entitled, "Corrective-Measures Study."

b. If the cost estimate increases, documentation of financial assurance for that increase shall be provided within sixty (60) calendar days following the increase in the cost estimate. The Permittee shall also adjust the cost estimate for inflation within sixty (60) calendar days prior to the anniversary date of the establishment of the financial instrument(s), or within thirty (30) calendar days after the close of the fiscal year if a financial test or corporate guarantee is used, in accordance with 40 CFR §264.142(b).

C.12. Quarterly Progress

The Permittee shall submit to the Director a signed Quarterly Progress covering all activities within the current ing period which are conducted pursuant to Section II.C of this permit. Each Quarterly Progress shall be due thirty (30) calendar days after the last day of each calendar quarter. The first quarter for which a Quarterly Progress is due is the first quarter in which the Director requires the Permittee to begin corrective action activities pursuant to Section II.C of this permit, including development of Workplans. These Quarterly Progress s shall be submitted until such time that the activities pursuant to the corrective action provisions of Section II.C of this permit are complete. The Quarterly Progress s shall include the following information for the quarter being ed:

- a. A description of the work completed;
- b. Summaries of all findings, including summaries of laboratory data;
- c. Summaries of all problems or potential problems encountered during the ing period and actions taken to rectify problems; and
- d. Projected work for the next quarter.
- e. Any instances of noncompliance with Section II.C of this permit not otherwise required to be ed pursuant to Section II.C Permit Condition B.15.

D. FACILITY-SPECIFIC CONDITIONS

D.1. Land Disposal Restrictions

a. The Permittee must comply with all regulations implementing the land disposal restrictions required in 40 CFR Part 268. The Permittee also must comply with regulations implementing the land disposal restrictions that are promulgated after the effective date of Part II of this permit, as these requirements are self-implementing provisions of HSWA. The Permittee is not subject to the land disposal restrictions if the applicable treatment standard is met, the waste is exempt under 40 CFR §268.1(c), the waste is subject to a variance, or if any other exemption in 40 CFR Part 268 applies.

b. If allowed in the State RCRA Permit (Part I), the Permittee may store wastes to which the land disposal restriction applies for up to one year unless EPA can demonstrate that such storage was not solely for the purpose of accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment, or disposal as provided in 40 CFR §268.50(b). For storage of hazardous waste to which the land disposal prohibition applies beyond one year, however, the Permittee shall bear the burden of proving that such storage was solely for the purpose of accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal as provided in 40 CFR §268.50(c).

D.2. Air Emissions Standards From Equipment Leaks, Containers and Tanks

a. The Permittee shall comply with 40 CFR Part 264 Subpart BB for air emissions from pumps, valves, compressors, sampling connecting systems, open-ended valves or lines, pressure relief devices, flanges, and other connectors, and closed-vent systems and control devices, that contain or contact hazardous waste with organic concentrations of at least 10 percent by weight.

Section M of the approved permit application identifies the categories of equipment installed at the facility, at the time of this permit issuance, which are subject to these requirements. In the event additional categories of equipment, which are subject to these requirements, are installed at the facility, the Permittee shall initiate a permit modification under 40 CFR §270.42(a)(1) to address the requirements of 40 CFR Part 264 Subpart BB.

- (1) Each piece of equipment subject to the air emission standards for equipment leaks shall be marked in such a manner that it can be distinguished easily from other pieces of equipment.
- (2) Equipment that is in vacuum service is excluded from the requirements of 40 CFR Part 264 Subpart BB provided that it is identified as required in 40 CFR § 264.1064(g)(5).
- (3) The Permittee shall meet the test methods and procedures, record keeping, and ing requirements of 40 CFR Part 264 Subpart BB and Section M of the approved permit application.

b. Unless the EPA Administrator takes action to the contrary, beginning October 6, 1996, the Permittee shall comply with 40 CFR Part 264 Subpart CC for air emissions from containers and tanks that are used to treat or store hazardous waste.

- (1) On or before October 6, 1996, the Permittee shall submit an implementation schedule, for the Director's review and approval, ~~that includes the following information:~~ a description of the proposed control equipment, specific calendar dates for award of contracts or issuance of purchase orders for the control equipment, initiation of on-site installation of the control equipment, completion of the control equipment installation, and performance of any testing to demonstrate that the installed equipment meets the applicable standards of 40 CFR Part 264 Subpart CC.
- (2) The Director may extend the implementation date for control equipment at a facility to a date no later than December 8, 1997, when circumstances that are beyond the Permittee's control delay installation or operation of control equipment and the owner or operator has made all reasonable and prudent attempts to comply with the requirements of this permit.

E. INDUSTRIAL FURNACE REQUIREMENTS

E.1. Description of Industrial Furnaces

The Permittee operates two wet process cement kilns in which both liquid and solid hazardous wastes are burned as fuels. The kiln designated in this permit as Kiln No. 1 is on the North side of the facility, while the kiln designated as Kiln No. 2 is on the South. Liquid hazardous waste is burned along with fossil fuels, through multichannel burner pipes. Solid hazardous wastes are burned in small containers that are charged into the kilns at mid-kiln. The exhaust gases exit each kiln through electrostatic precipitators, for particulate matter control, which are ducted to a common stack.

The Permittee has satisfied the requirements for obtaining a permit under the federal regulations found at 40 CFR Part 266 §§ 102, 104, 105, 106, 107, 111, 112 ; and 40 CFR §§ 270.22 and 270.66. The regulations include the following requirements:

- a. Standards to control organic emissions;
- b. Standards to control particulate matter;
- c. Standards to control metals emissions;
- d. Standards to control hydrogen chloride and chlorine gas emissions;

- e. Standards for direct transfer of hazardous waste; and
- f. Standards for management of residues.

The above standards, as they specifically pertain to Kiln 1 and Kiln 2, are set forth in Section E of Part II of this permit. Modifications to the cement kiln systems, including air pollution control systems, necessary to comply with the final rule modifying 40 CFR §266.102 and establishing 40 CFR Part 63 Subpart EEE, shall require a permit modification pursuant to 40 CFR § 270.42(a)(2) for Class 1 permit modifications requiring prior approval of the Director. The operating requirements and limitations of this section shall be modified to incorporate revisions necessary to comply with the final rule modifying 40 CFR §266.102 and establishing 40 CFR Part 63 Subpart EEE. This modification shall be completed pursuant to 40 CFR § 270.42(a)(1) for Class 1 permit modifications.

E.2. Limitations of Hazardous Wastes

The Permittee may only burn hazardous waste identified in Part I, Attachment A of this permit, as specified in this permit and only under the terms of this permit. The KDHE has not adopted into its state regulations some of the hazardous wastes identified in Attachment A. Also, while some other wastes have been adopted as hazardous wastes under state regulations, KDHE has not yet been authorized to regulate these wastes in lieu of EPA. Therefore, any wastes identified in Attachment A which have not yet been adopted by or delegated to KDHE are specifically incorporated in Part II of this Permit, and are specifically authorized for treatment (e.g., burning) or storage by EPA.

E.3. Hazardous Waste Analysis

The Permittee shall conduct sampling and analysis as described in Section C of its approved permit application to ensure that the hazardous waste, other fuels, and industrial furnace feed stocks fired into the cement kilns are within the physical and chemical composition limits specified in the permit. Changes to the sampling and analysis procedures described in Section C of the approved permit application shall require a permit modification as required by 40 CFR § 270.42.

E.4. Compliance With Regulations

For the purposes of permit enforcement, compliance with the operating requirements specified in this permit shall be regarded as compliance with 40 CFR § 266.102. However, any evidence that indicates that compliance with these permit conditions is insufficient to ensure compliance with the requirements of 40 CFR § 266.102 shall constitute "information" which may justify modification or revocation and re-issuance of a permit under 40 CFR § 270.41.

E.5. Performance Standards

The Permittee shall maintain the cement kilns, hazardous waste feed systems, and the associated air pollution control equipment, so that, when operated in accordance with the waste feed limitations and operating requirements specified in this permit, they will meet the following performance standards:

a. The cement kilns shall achieve a destruction and removal efficiency (hereafter referred to as DRE) of 99.99 percent for each of the following principal organic hazardous constituents (hereafter referred to as POHCs) designated in this permit, and listed below, for each hazardous waste feed.

(1) Containerized Hazardous Waste:

- 1,2,4-trichlorobenzene
- trichloroethane

(2) Liquid Hazardous Waste

- ortho-dichlorobenzene
- trichloroethene

The DRE shall be determined using the method specified in 40 CFR §266.104(a)(1).

b. The Permittee shall control combined hydrogen chloride (hereafter referred to as HCl) and chlorine emissions from both Kiln 1 and Kiln 2 such that the rate of emissions from both kilns combined is no greater than 7.79 pounds per hour of HCl and 0.18 pounds per hour of chlorine, as required by 40 CFR § 266.102(e)(5)(ii)(A).

c. The cement kilns shall not emit particulate matter in excess of 0.08 grains per dry standard cubic foot of stack gas when corrected for seven (7) percent by volume of oxygen in the stack gas, in accordance with the formula specified at 40 CFR § 266.105(a).

d. Pursuant to 40 CFR § 266.102(e)(4), the combined emissions from cement Kilns 1 and 2 shall not be in excess of the following limits:

Table 1 - Metal Emissions Limits

Metal	Emission Limit (lb/hr)
Lead	3.18

Chromium VI	0.0167
Cadmium	0.103
Arsenic	0.00962

E.6. Limitation on Waste Feed.

The Permittee may burn only the hazardous wastes identified in Part I, Attachment A of this permit, in accordance with the following limitations.

Based on (i) system removal efficiencies for metals demonstrated during the Permittee's trial burn, (ii) an assessment of the content of antimony, barium, and silver in the total waste feed streams which the Permittee is allowed to burn, and (iii) the risk assessment completed by EPA concerning the Permittee's facility, EPA has determined that the highest potential emissions of antimony, barium and silver from the stack at the Permittee's facility are significantly below the applicable limits set by EPA regulation, and therefore that the requirements of 40 CFR § 266.102(d)(4) are met by imposing the feed rate limits set forth in Sections E.7.h. and E.7.i of this permit.

The feed rates of antimony, barium, and silver, shall be limited by complying with the feed rate limits of Sections E.7.h. and E.7.i. of this permit.

As for mercury and thallium, based on EPA's multi-exposure pathway risk assessment of potential health impacts from the burning of hazardous waste at the Permittee's facility, control of mercury and thallium emissions is better done through the use of annual average feed rate limitations, as defined in E.6.b. of this permit.

b. The annual average hazardous waste metals feed rates to each individual kiln shall not exceed the rates in Table 3, which are expressed in pounds per hour:

Table 3
Annual Average Total Hazardous Waste Metals Feed Rate Limits

Compound	Total Hazardous Waste Feed Limit (lbs./hr)
Arsenic	2.34
Beryllium	0.01
Cadmium	1.13
Chromium	13.9
Mercury	0.13
Thallium	0.98

c. The first annual compliance period for demonstrating compliance with the annual average hazardous waste metals feed rate limits specified in Section E.6.b. of this permit, shall begin on the effective date of this permit. Compliance with the annual average hazardous waste metals feed rate limits shall be determined for each metal as follows:

a. The hourly rolling average chlorine and metal feed rates to each individual kiln shall not exceed the rates in Table 2, which are expressed in pounds per hour:

Table 2 - Maximum Chlorine and Metal Feed Rates

Compound	Total Feed Stream (lbs./hr)	Total Hazardous Waste (lbs./hr)	Pumpable Hazardous Waste (lbs./hr)
Chlorine	550		
Arsenic	18.1	17.4	17.4
Beryllium	0.93		
Cadmium	2.29	1.65	1.65
Chromium	24.03	23.1	20.3
Lead	46.08	45.6	37.2

In addition to the feed rates for the metals specified above, 40 CFR § 266.102(d)(4) requires that RCRA permits specify feed rate limits for the metals antimony, barium, silver, mercury, and thallium contained in total feed streams, which includes cement kiln raw materials, fossil fuels and hazardous waste fuels. These feed rate limits are established to ensure that emission rate limits for these metals are not exceeded, and are based on the assumption that the metals fed to the kiln are emitted in amounts equal to the amounts fed into the unit.

With respect to antimony, barium, and silver, the Permittee has completed a trial burn which demonstrated that less than 1% of the amounts of these three metals that are introduced into the cement kiln are actually emitted from the stack. EPA also analyzed the composition of the materials fed into the Permittee's cement kilns to determine the amounts of these three metals which are actually fed into the kilns.

Additionally, EPA completed a multi-exposure pathway risk assessment of potential health impacts from the burning of hazardous waste at the Permittee's facility. This study included an assessment of any potential health impacts from the Permittee's emission levels of antimony, barium and silver. The study was based on the amounts of each of those metals fed into the kilns during the trial burn. Based on this assessment, the agency has concluded that the highest

potential emissions of these metals from the Permittee's facility will not result in adverse impacts to human health.

Annual Average Hazardous Waste Metals Feed Rate = Total Mass of Metals in Hazardous Waste Burned ÷ Total Hours of Hazardous Waste Burning

The Permittee shall submit a report to document compliance with the annual average hazardous waste metals feed rate limits specified in this permit to the Director within sixty (60) days after the first annual compliance period, as defined in this permit. This report shall include a summary of all hazardous waste shipments burned by the Permittee identifying the concentrations of metals measured, dates of analyses, and mass of hazardous waste shipment burned, as an alternative, the Permittee may submit a paper and electronic copy of a spreadsheet calculation used to determine annual average hazardous waste feed rates. These reports shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

In addition, the Permittee shall maintain, and make available for inspection, the running average of the annual average hazardous waste metals feed rates specified in Table 3. This running average shall be updated on, at minimum, a ninety (90) calendar day basis. Calculation of the running average shall be completed and available for inspection thirty (30) days after the close of each 90 calendar day period.

d. The Permittee shall monitor the feed rate of metals and chlorine/chloride in each feed stream to ensure that the feed rate limits set forth above are not exceeded. Monitoring metals and chlorine shall be accomplished by implementing Attachment D-14 "Metals and Chlorine Feed Rate Management Methodology," of the approved permit application.

E.7. Operating Conditions

Operating Conditions Applicable to Both Kilns

a. Hazardous wastes shall not be introduced into a cement kiln unless the operating conditions in E.7.h. for Kiln 1, and E.7.i. for Kiln 2 are being met, all of the instruments required to verify compliance with such conditions are functioning properly and the parameters measured by the instruments are being recorded as required by this permit. The Permittee shall cease feeding hazardous waste to a cement kiln when either the waste feed or any operating condition exceeds limits designated in this permit.

b. While burning hazardous wastes, a cement kiln shall be operated with the automatic waste feed cut-off system, as described in the approved permit application, functioning so that hazardous waste feed is automatically cut off when any operating condition specified in this permit is not met.

c. The minimum combustion chamber temperature specified in Section E.7.h. or E.7.i. of this

permit for Kiln 1 or Kiln 2, respectively, shall be maintained at all times while hazardous waste or hazardous waste residues remain in the combustion chamber, as required by 40 CFR § 266.102(e)(7)(ii)(A).

d. Exhaust gases must exit through the electrostatic precipitators, and these systems shall be operated in accordance with the permit requirements specified in Section E.7.h. or E.7.i. of this permit for Kiln 1 or Kiln 2, respectively, while hazardous waste or hazardous waste residues remain in the kilns, as required by 40 CFR § 266.102(e)(7)(ii)(B).

e. All operating conditions for which limits are established in this permit shall continue to be monitored during an automatic waste feed-cutoff, and the hazardous waste feed shall not be restarted until the affected kiln is operating under all conditions specified in E.7. of this permit.

f. The Permittee shall cease burning hazardous waste when changes in combustion properties, or feed rates of the hazardous waste, other fuels, or industrial furnace feed stocks, or changes in the design or operating conditions of Kilns 1 or 2 deviate from the limits specified in this permit, as required by 40 CFR § 266.102(e)(7)(iii).

g. The mid-kiln hazardous waste feed systems shall not feed containerized waste with a combined volume for each kiln of greater than 14 gallons per kiln revolution.

Operating Conditions Specific to Kiln 1

h. The following conditions of operation shall be met at all times when hazardous waste is being introduced into Kiln 1:

- (1) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of carbon monoxide, monitored as specified in Permit Condition E.8 shall not exceed 600 ppmv, corrected to seven percent oxygen on a dry basis.
- (2) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of total hydrocarbons monitored as specified in Permit Condition E.8 shall not exceed 20 ppmv, corrected to seven percent oxygen on a dry basis.
- (3) The chain section inlet gas temperature monitored as specified in Permit Condition E.8 shall not be less than 1622° Fahrenheit or greater than 2052° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (4) The dry raw material mix feed rate monitored as specified in Permit Condition E.8 shall not exceed 65 tons per hour or fall below 42 tons per hour based on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).

- (5) The pumpable hazardous waste feed rate monitored as specified in Permit Condition E.8 shall not exceed 5.1 tons per hour, on an hourly rolling average basis, as defined in 40 CFR §266.102(e)(6)(i)(B).
- (6) The total hazardous waste feed rate, monitored as specified in Permit Condition E.8 shall not exceed 7.1-tons per hour on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (7) The power to the electrostatic precipitator, monitored as specified in Permit Condition E.8, shall not be less than 44.1 kVA on an hourly rolling average basis, as defined in 40 CFR §266.102(e)(6)(i)(B).
- (8) The maximum electrostatic precipitator inlet gas temperature monitored as specified in Permit Condition E.8 shall not be more than 388° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (9) The Permittee shall comply with the requirements of 40 CFR §266.102(e)(7)(i), to prevent fugitive emissions, by ensuring that no hazardous wastes are introduced into the kiln when the differential pressure between the raw material feed hood and the firing hood is greater than negative 1.0 inches water column (w.c.), or when the differential pressure to atmosphere at the firing hood is greater than negative 0.01 inches w.c. for more than a period of 60 continuous seconds, both measured as specified in permit Condition E.8.
- (10) The relative flue gas flow rate, monitored as specified in Permit Condition E.8, shall not be more than 1.07, on an hourly rolling average basis defined in 40 CFR §266.102(e)(6)(i)(B).
- (11) In the event that the operating conditions set out in E.7.h. (1)-(9) above are not met at any time when hazardous waste is present in Kiln 1, an automatic waste feed cut off shall be activated immediately, and the Permittee shall cease burning hazardous waste in Kiln 1 until such time as the operating conditions specified for Kiln 1 are again being met. Table 4 is a listing of the automatic waste feed cut-offs required by E.7.h.(1) through E.7.h.(9) above, describing the parameters and limits that shall activate the automatic hazardous waste feed cut-off mechanism as described in Section D-7 of the approved permit application.

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Table 4 - Kiln 1 Automatic Waste Feed Cut-off Limits

OPERATING PARAMETER	OPERATING CONDITION	RESPONSE TO DEVIATION FROM OPERATING CONDITION	LOCATION OF MONITORING DEVICE
Carbon Monoxide	Greater than 600 ppmv (HRA, 7% O ₂ , Dry Basis)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Total Hydrocarbons	Greater Than 20 ppmv (HRA, 7% DRY BASIS)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Combustion Temperature	Less Than 1622° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Combustion Temperature	Greater Than 2052° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Pumpable Hazardous Waste	Greater Than 5.1 Tons Per Hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor
Total Hazardous Waste Feed	Greater Than 7.1 Tons per hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor and Container feed
Dry Raw Material Feed	Greater than 65 or less than 42 Tons Per Hour (HRA)	Immediate AWFCO	Raw Material Slurry Feed Line
Stack Flow	Greater than 1.07 Relative Flow (HRA)	Immediate AWFCO	I. D. Fan
ESP Power	Less Than 44.1 kVA (HRA)	Immediate AWFCO	ESP Voltage Controller
Kiln Differential Pressure	Greater than -1.0 in W.C.	Immediate AWFCO	Pressure Taps at Feed End and Burner Hood
Firing Hood Pressure	Greater than 0.01 W.C.	Immediate AWFCO	Pressure Tap at Burner Hood
ESP Inlet Temperature	Greater Than 388°F (HRA)	Immediate AWFCO	ESP Inlet

Operating Conditions Specific to Kiln No. 2.

i. The following conditions of operation shall be met at all times when hazardous waste is being introduced into Kiln 2:

- (1) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of carbon monoxide, monitored as specified in Permit Condition E.8., shall not exceed 600 ppmv, corrected to seven percent oxygen on a dry basis.
- (2) The hourly rolling average concentration, as defined in 40 CFR § 266.102(e)(6)(i)(B), of total hydrocarbons, monitored as specified in Permit Condition E.8, shall not exceed 20 ppmv, corrected to seven percent oxygen on a dry basis.
- (3) The chain section inlet gas temperature monitored as specified in Permit Condition E.8 shall not be less than 1622° Fahrenheit or greater than 2052° Fahrenheit on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (4) The dry raw material mix feed rate monitored as specified in Permit Condition E.8 shall not exceed 65 tons per hour or fall below 42 tons per hour based on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B)
- (5) The pumpable hazardous waste feed rate monitored as specified in Permit Condition E.8., shall not exceed 5.1 tons per hour, on an hourly rolling average basis, as defined in 40 CFR §266.102(e) (6)(i)(B).
- (6) The total hazardous waste feed rate, monitored as specified in Permit Condition E.8, shall not exceed 7.1 tons per hour on an hourly rolling average basis, as defined in 40 CFR § 266.102(e) (6)(i)(B).
- (7) The power to the electrostatic precipitator, monitored as specified in Permit Condition E.8., shall not be less than 71.0 kVA on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (8) The maximum electrostatic precipitator inlet gas temperature, monitored as specified in Permit Condition E.8., shall not be more than 364° Fahrenheit, on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).
- (9) The Permittee shall comply with the requirements of 40 CFR §266.102(e)(7)(i), to prevent fugitive emissions, by ensuring that no hazardous wastes are introduced into the kiln when the differential pressure between the raw material feed hood and the firing hood is greater than negative 1.0 inches w.c., or when the differential pressure to atmosphere at the firing hood is greater than negative 0.01 inches w.c. for more than 60

continuous seconds, both measured as specified in Permit Condition E.8.

(10) The relative flue gas flow rate, monitored as specified in Permit Condition E.8, shall not be more than 0.98 on an hourly rolling average basis, as defined in 40 CFR § 266.102(e)(6)(i)(B).

(11) In the event that the operating conditions set out in E.7.i.(1)-(9) above are not met at any time when hazardous waste is present in Kiln 2, an automatic waste feed cut off shall be activated immediately, and the Permittee shall cease burning hazardous waste in Kiln 2 until such time as the operating conditions specified for Kiln 2 are again being met. Table 5 is a listing of the automatic waste feed cutoffs required by E.7.i.(1) through E.7.i.(9) above, describing parameters and the limits that shall activate the hazardous waste feed cut-off mechanism.

Table 5 - Kiln 2 Automatic Waste Feed Cut-off Limits

OPERATING PARAMETER	OPERATING CONDITION	RESPONSE TO DEVIATION FROM OPERATING CONDITION	LOCATION OF MONITORING DEVICE
Carbon Monoxide	Greater than 600 ppmv (HRA, 7% O ₂ , Dry Basis)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Total Hydrocarbons	Greater Than 20 ppmv (HRA, 7% DRY BASIS)	Immediate AWFCO	Duct Between ESP and Exhaust Stack
Combustion Temperature	Less Than 1622° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Combustion Temperature	Greater Than 2052° F (HRA)	Immediate AWFCO	Chain Section Gas Inlet Temperature
Pumpable Hazardous Waste	Greater Than 5.1 Tons Per Hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor
Total Hazardous Waste Feed	Greater Than 7.1 Tons per hour (HRA)	Immediate AWFCO	Hazardous Waste Feed Line on Burner Floor and Container feed
Dry Raw Material Feed	Greater than 65 or less than 42 Tons Per Hour (HRA)	Immediate AWFCO	Raw Material Slurry Feed Line
Stack Flow	Greater than 0.98 Relative Flow (HRA)	Immediate AWFCO	I. D. Fan
ESP Power	Less Than 71.0 kVA (HRA)	Immediate AWFCO	ESP Voltage Controller
Kiln Differential Pressure	Greater than -1.0" W.C.	Immediate AWFCO	Pressure Taps at Feed End and Burner Hood
Firing Hood Pressure	Greater Than -0.01" W.C. for more than 60 continuous seconds	Immediate AWFCO	Pressure Tap at Firing Hood
ESP Inlet Temperature	Greater Than 364°F (HRA)	Immediate AWFCO	ESP Inlet

j. Reporting of Automatic Waste Feed Cutoff Occurrences

The Permittee shall submit to the Director a quarterly report which describes the number of automatic waste feed cut-offs and their causes within the current reporting period. Each Quarterly Automatic Waste Feed Cut-Off Report shall be due thirty (30) calendar days after the last day of each calendar quarter. The first quarter for which a report is due is the first quarter in which this permit becomes effective. These reports shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

E.8. Monitoring and Inspection

a. The Permittee shall maintain, calibrate, and operate continuous monitors which monitor and record the operating conditions specified in Section E.7. of this permit and any one minute averages used to calculate hourly rolling averages. The continuous process monitoring instruments are specified in Tables 6 and 7 of this permit.

b. For purposes of this permit, the following terms shall have the meanings stated herein.

A continuous monitor shall be defined as one which continuously samples the regulated parameter without interruption, evaluates the detector response at least once every 15 seconds, computes and records a one minute average value for the parameter, and, where required by this permit, uses the one minute average values to calculate an hourly rolling average for the parameter.

A one minute average value shall be defined as the arithmetic mean of a minimum of four valid detector response values obtained within a 60 second period.

An hourly rolling average shall be defined as the arithmetic mean of the 60 most recent one minute average values recorded by the continuous monitoring system.

Except during instrument calibration periods as specified in II.8.c. below, the Permittee shall continuously record all data monitored by the instruments described in Tables 6 and 7 of this permit. For the purposes of this permit, "continuously record" shall mean that at least 95% of the values of each operating limit required to be monitored by this permit, in any 60 minute period during which hazardous waste is introduced into either kiln, shall be accurately recorded in the Permittee's operating record. In the event that more than 5% of the values of any operating limit are not accurately recorded in the operating record, or are recorded as missing or invalid data in the operating record, the Permittee shall immediately initiate an automatic waste feed cut-off, and shall cease burning hazardous waste in the affected kiln. All monitors shall record data in units corresponding to the limits specified in the operating conditions set out in E.7. of this permit unless otherwise specified in the permit.

c. Hazardous waste may continue to be introduced into the kilns during daily continuous emission monitor system (CEMS) calibration check periods as described in Section D-6 of the approved permit application. The CEMS shall be maintained according to the following schedule: (1) at least daily, a calibration check of the instrument; (2) at least daily, a system audit; (3) at least quarterly, a calibration error test; and, (4) at least annually, a performance specification test.

d. Proper operation of the automatic waste feed cut-off mechanisms shall be verified at least once every seven (7) days by simulating a process excursion for one operating parameter selected from Table 4, for Kiln No. 1, and Table 5, for Kiln No. 2, as described in Section F-2 of the approved permit application. The results of verification of proper operation of the automatic waste feed cut-off mechanisms shall be recorded and placed in the operating log. In the case of any malfunction of the automatic waste feed cut-off systems, the Permittee shall perform manual shut-off of all hazardous waste feed into the kiln, and shall not restart hazardous waste feed until the malfunction of the automatic system is located and corrected.

e. Carbon monoxide and oxygen shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" in 40 CFR Part 266 Appendix IX. The Permittee shall institute an automatic waste feed cut-off any time the measured concentration of carbon monoxide is below the value allowed for "zero" calibration gases.

In the event of replacement or reconfiguration of the following components of the carbon monoxide or oxygen CEMS, the Permittee shall complete "Performance Specification Test Procedures" on the CEMS in question within forty-five (45) days of such replacement or reconfiguration:

- (1) Gas Collection System
- (2) Carbon monoxide infrared photometer analyzer or oxygen electrochemical sensor

In the event of replacement of data recording/processing hardware and software, the Permittee shall conduct and record validation tests sufficient to document that these components are recording and processing data accurately. Records of such testing shall be retained in the operating record.

For purposes of this permit, CEMS component replacement shall mean replacement of components of a different size or type, except for gas analyzers, for which it shall mean replacement with a different make or model analyzer. The Permittee shall conduct a successful calibration error test prior to using a CEMS that has been replaced or reconfigured for purposes of complying with this permit.

In the event that a gas analyzer of the same make and model is substituted into the CEMS, the

Permittee shall complete a successful calibration error test before using the analyzer for purposes of complying with this permit.

Replacement, as defined in this section, or reconfiguration of the components specified in this section shall require a permit modification in accordance with 40 CFR §270.42(a)(2).

f. Hydrocarbons shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" 40 CFR Part 266 Appendix IX of this part. The Permittee shall institute an automatic waste feed cut-off any time the measured concentration of hydrocarbons is below the value allowed for "zero" calibration gases.

In the event of replacement or reconfiguration of the following components of the hydrocarbon CEMS, the Permittee shall complete "Performance Specification Test Procedures" on the CEMS in question within forty-five (45) days of such replacement or reconfiguration:

- (1) Sample line configuration
- (2) Flame ionization detector

In the event of replacement of data recording/processing hardware and software, the Permittee shall conduct and record validation tests sufficient to document that these components are recording and processing data accurately. Records of such testing shall be retained in the operating record.

For purposes of this permit, CEMS component replacement shall mean replacement of components of a different size or type, except for gas analyzers, for which it shall mean replacement with a different make or model analyzer. The Permittee shall conduct a successful calibration error test prior to using a CEMS that has been replaced or reconfigured for purposes of complying with this permit.

In the event that a gas analyzer of the same make and model is substituted into the CEMS, the Permittee shall complete a successful calibration error test before using the analyzer for purposes of complying with this permit.

Replacement, as defined in this section, or reconfiguration of the components specified in this section shall require a permit modification in accordance with 40 CFR § 270.42(a)(2).

g. As described in Section D-6 of the approved permit application, the Permittee may comply with the hydrocarbon limits specified in Special Permit Condition E.7. of this permit by monitoring hydrocarbons in by-pass ducts on the kilns, as allowed by 40 CFR § 266.104(g). When the Permittee complies with hydrocarbon emission limits by monitoring in the by-pass, the Permittee shall measure gas flow rate through the by-pass as described in Section D-6 of the approved permit application. A minimum of 10% of kiln off gas shall be diverted to the by-pass duct while compliance with hydrocarbon limits is being demonstrated by monitoring in the by-pass.

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Table 6 KILN NO. 1 PROCESS MONITORING INSTRUMENTATION

Parameter	Instrument	Type	Range	Accuracy	Validation Interval (Minimum)
Raw Material Mix Feed Rate	Taylor	712 ME magnetic flow meter	0-100 TPH	± 10%	Quarterly
	TN Technology Model SGD	Nuclear density gauge	60-80% Solids		
Pulpable Waste-Derived Fuel (LWDF) Feed Rate	Micro Motion	Coriolis mass	0-15 TPH	± 10%	Quarterly
Solid Waste-Derived (SMDF) Fuel Feed Rate	Omega Instrument	LDA 250 load cell DPV-41 transmitter	0-150 lbs.	± 10%	Quarterly
Fossil Fuel Feed Rate (coal)	Mark	Weigh feeder	0-15 TPH	± 10%	Quarterly
CO in Flue Gas	MEKOS 100	Photometer	0-3,000 ppm	*	Daily
O ₂ in Flue Gas	Ametek ThermoX	Electrochemical	0-25%	*	Daily
THC in Flue Gas	Bayer Diagnostic Comput	Flame ionization detector	0-100 ppm	*	Daily
Chain Section Gas Inlet Temperature	Thermocouple	Type K	-454-2,500°F	± 5%	Quarterly
ESP Inlet Temperature	Thermocouple	Type K	0-500°F	± 5%	Quarterly
Electrical Power to ESP	PrecipTech 50-300	Microprocessor	0-198.6 kVA	± 10%	Quarterly
Flue Gas Flow Rate (Relative)	Thermocouple Monarch Ins. Tachometer Rosemont	Type K	0-800°F	± 10%	Quarterly
		D/P transmitter	0-2000 RPM 0-30 in. H ₂ O	± 10%	Quarterly
Feed Hood Pressure	Rosemont	D/P transmitter	0-(-)10 in. H ₂ O	± 10%	Quarterly
Firing Hood Pressure	Rosemont	D/P transmitter	(-)0.5-(+)0.5 in. H ₂ O	± 10%	Quarterly
THC in Bypass Gas	JUM Model VE-7 or Ratfich RS55CA	Flame ionization detector	0-100 ppm	*	Daily
O ₂ in Bypass Gas	Ametek ThermoX	Electrochemical	0-25%	*	Daily
Bypass Gas Flow Rate	Kurz Model 155AA	Flow meter	0-6000 scfm	± 10%	Quarterly

Table 7 KILN NO. 2 PROCESS MONITORING INSTRUMENTATION

Parameter	Instrument	Type	Range	Accuracy	Validation Interval (Minimum)
Raw Material Mix Feed Rate	Taylor	712 NE magnetic flow meter	0-100 TPH	± 10%	Quarterly
	TN Technology Model SDD	Nuclear density gauge	60-80% Solids		Quarterly
Pumpable Waste-Derived Fuel (LWDF) Feed Rate	Micro Motion	Coriolis mass	0-15 TPH	± 10%	Quarterly
Solid Waste-Derived (SWDF) Fuel Feed Rate	Omega Instrument	LDA 250 load cell DPV-41 transmitter	0-150 lbs.	± 10%	Quarterly
Fossil Fuel Feed Rate (coal)	Mark	Weigh feeder	0-15 TPH	± 10%	Quarterly
CO in Flue Gas	MEKOS 100	Photometer	0-3,000 ppm	*	Daily
O ₂ in Flue Gas	Anetek ThermoX	Electrochemical	0-25%	*	Daily
THC in Flue Gas	Bayer Diagnostic Compur	Flame ionization detector	0-100 ppm	*	Daily
Chain Section Gas Inlet Temperature	Thermocouple	Type K	-454-2,500°F	± 5%	Quarterly
ESP Inlet Temperature	Thermocouple	Type K	0-500°F	± 5%	Quarterly
Electrical Power to ESP	PrecipTech SQ-300	Microprocessor	0-198.6 kVA	± 10%	Quarterly
Flue Gas Flow Rate (Relative)	Thermocouple Monarch Ins. Tachometer Rosemont	Type K	0-800°F	± 10%	Quarterly
		Proximity sensor D/P transmitter	0-2000 RPM 0-30 in. H ₂ O	± 10%	Quarterly
Feed Hood Pressure	Rosemont	D/P transmitter	0-(-)10 in. H ₂ O	± 10%	Quarterly
Firing Hood Pressure	Rosemont	D/P transmitter	(-)0.5-(+)0.5 in. H ₂ O	± 10%	Quarterly
THC in Bypass Gas	JUM Model VE-7 or Ratfinch RSS5CA	Flame ionization detector	0-100 ppm	*	Daily
O ₂ in Bypass Gas	Anetek ThermoX	Electrochemical	0-25%	*	Daily
Bypass Gas Flow Rate	Kurz Model 155AA	Flow meter	0-6000 scfm	± 10%	Quarterly

h. Upon the request of the Director, and at no less than five (5) year intervals, beginning with the effective date of this permit, the Permittee shall conduct sampling and analysis of the hazardous waste (and other fuels and industrial furnace feed stocks as appropriate), residues, and exhaust emissions to verify that the operating requirements established in the permit achieve the applicable standards of this permit and §§ 266.104, 266.105, 266.106, and 266.107.

Emissions testing conducted by the permittee in order to demonstrate compliance with revised emission standards for hazardous waste combustors which may be promulgated under either the Resource Conservation and Recovery Act or the Clean Air Act, may, with EPA approval, satisfy this requirement.

i. The cement kilns and associated equipment (pumps, valves, pipes, etc.) shall be subjected to thorough visual inspection when they contain hazardous waste, at least daily for leaks, spills, fugitive emissions, and signs of tampering, as specified in Section F-2 of the approved permit application.

E.9. Direct Transfer of Hazardous Waste

a. The Permittee shall construct, operate, and maintain an area for direct transfer of hazardous waste to the cement kilns in accordance with the plans and specifications in Section D-9 of the approved permit application. The Permittee's authorization to begin construction of this direct transfer area shall terminate within two years of the effective date of this permit.

b. The direct transfer area shall be operated in accordance with the following conditions:

- (1) The Permittee shall not transfer pumpable hazardous waste directly from an open-top container to the cement kilns.
- (2) All direct transfer equipment used for pumpable hazardous waste shall remain closed, at all times, except when necessary to add or remove the waste, and shall not be opened, handled, or stored in a manner that may cause any rupture or leak.

c. The Permittee shall conduct inspections of the direct transfer operations at least once each operating hour while hazardous waste is being transferred from a transport vehicle according to the procedures described in Section F-2 of the approved permit application.

- (3) The direct transfer of hazardous waste to the cement kilns shall be conducted so that it does not:
 - (a) Generate extreme heat or pressure, fire, explosion, or violent reaction;

- (b) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
 - (c) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
 - (d) Damage the structural integrity of the container or direct transfer equipment containing the waste;
 - (e) Adversely affect the capability of the cement kilns to meet the Performance Standards or Operating Conditions of this permit; or
 - (d) Threaten human health or the environment.
- (4) The owner or operator of the facility shall use appropriate controls and practices to prevent spills and overflows from the direct transfer equipment or its secondary containment systems. These include at a minimum:
- (a) Spill prevention controls (e.g., check valves, dry disconnect couplings); and
 - (b) Automatic waste feed cutoff in the event of a leak or spill from the direct transfer equipment.

E.10. Regulation of Residues

- a. The Permittee shall sample and analyze cement kiln dust as described in Attachment C-1 "Cement Kiln Dust Characterization Program" of the approved permit application.
- b. Records sufficient to document compliance with the provisions of Section E.10. of this permit condition shall be retained until closure of the affected kiln as a hazardous waste burner. At a minimum, the following shall be recorded:
 - (1) The date and time of sampling;
 - (2) The individual(s) who performed the sampling;
 - (3) The date(s) analyses were performed;
 - (4) The individual(s) who performed the analyses; and
 - (5) Results of analyses.

E.11. Record Keeping

Unless otherwise required by this permit, the Permittee shall record and maintain in its operating record all information monitored and data required by Permit Condition E for three years as required by 40 CFR § 264.73. This period may be extended by request of the Director at any time and shall be automatically extended in the event of an enforcement action regarding this facility, until such time as:

- a. the enforcement proceeding is dismissed;
- b. any settlement agreement signed by the parties has expired or terminated; or
- c. a final, unappealable order has been issued in the proceeding.

E.12. Closure

At closure, the Permittee shall implement the closure plan contained in Section I of the approved permit application, and remove all hazardous waste and hazardous waste residues from the cement kiln systems. Part I, Permit Condition II.L is hereby incorporated by reference.

E.13. Cost Estimate for Facility Closure

Part I, Permit Condition II.M is hereby incorporated by reference.

E.14 Financial Assurance and Liability Requirements

The requirements of Part I, Permit Conditions II.N., II.O., and II.P are hereby incorporated by reference.

E.15. Environmental Monitoring

Background: The Permittee has demonstrated compliance with the air emissions standards at 40 CFR § 266.102, which are the requirements that must be met in order for a cement plant to obtain a final permit to burn hazardous wastes. In addition to reviewing the Permittee's compliance with applicable air emission standards, and as part of the permit application review process, EPA has conducted a study, known as the Ash Grove Cement Company Multipathway Risk Assessment, to determine the effect of the Permittee's air emissions on human health. Based on the results of this study, and pursuant to EPA's statutory mandate to assure protection of human health and the environment, EPA has determined that the Permittee must conduct an environmental monitoring program to assess the impacts of the Permittee's emissions on the environment. The monitoring program includes measuring concentrations of mercury in fish and water in Santa Fe Lake and

Allen Lake, both located approximately 3 kilometers south/southwest and north/northeast, respectively, of the facility, and measuring concentrations of mercury and thallium in soils at points surrounding the facility. In the event access to Allen Lake is not granted to Ash Grove by its owner, Ash Grove shall sample the water and fish in its reservoir at the northern edge of its property boundary.

All workplans, related correspondence, and results related to this monitoring program shall be submitted to EPA and KDHE, and shall be made available for public review in an information repository established at the City of Chanute Public Library, pursuant to 40 CFR § 270.30(m).

a. Fish and Water Monitoring

Within sixty (60) days of the effective date of this permit the Permittee shall submit, for review and approval by the Director, a consolidated workplan that describes, in detail, work to be completed by the Permittee to conduct an ongoing, periodic mercury fish tissue and water concentration monitoring program at Santa Fe Lake and Allen Lake. This monitoring program shall consist of sampling and analysis of fish that are representative of the game fish population necessary to establish "baseline" mercury fish tissue concentrations and continued sampling and analysis of fish tissue necessary to identify trends that may be exhibited in mercury fish tissue concentrations. This data will be compared to the "benchmark" fish tissue mercury concentration identified in E. 15. a.(3) of this permit.

- (1) The Permittee shall conduct an ongoing fish tissue mercury concentration monitoring program of Santa Fe and Allen Lake that shall be designed and conducted in accordance with applicable methods found in "Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1 - Fish Sampling and Analysis" EPA 823-R-93-002, August 1993; and EPA Region 7 Standard Operating Procedures No. 2334.18A, "Technical Considerations in the Design of Fish Collection Activities for Water Quality Assessments," May 1, 1991; No. 2334.13A "Sampling Fish for Tissue Residue Determinations," May 23, 1990; and No. 3110.7A "Edible Fish Tissue Processing," January 27, 1992.
- (2) The contents of the workplan regarding an ongoing fish monitoring program shall include the following:
 - (a) Proposed schedule for conducting the ongoing mercury fish tissue monitoring program;
 - (b) Discussion of proposed approach to ensure that representative samples of fish tissue from Santa Fe Lake and Allen Lake (or the Ash Grove plant reservoir) are analyzed in this study;

- (c) Proposed analytical parameter selection, which shall include, at a minimum, the following:
- 1) Water Analyses -
 - a) Air equilibrated pH
 - b) Field pH
 - c) Ambient temperature
 - d) Acid Neutralization Capacity
 - e) Dissolved Organic Content
 - f) Conductance
 - 2) Fish Analyses
 - a) Muscle tissue mercury concentration (filet, skin off)
 - b) Species
 - c) Length
 - d) Wet weight;
- (d) Proposed sampling and analytical methods;
- (e) Discussion of the proposed sample size necessary for conducting a statistically valid study;
- (f) Discussion of proposed monitoring frequency sufficient to account for any seasonal variations;
- (g) Proposed sampling locations;
- (h) Discussion of proposed methods for statistical analysis of mercury fish tissue concentration data to detect any trends present in mercury levels over time;
- (i) **Sampling and Analytical Data Quality Assurance Plan** that includes and evaluation of the utility and necessity of "ultra clean" sample handling techniques; and
- (j) Description of proposed format for reporting of results which shall be made to EPA and the Kansas Department of Health and Environment, and to a document repository established at the City of Chanute Public Library.

(3) Benchmark Mercury Concentration Values

- (a) Mercury fish tissues concentrations and concentration trends measured in this ongoing sampling program will be evaluated against a benchmark value of 0.5 mg/kg on a fresh weight basis.

The Director may revise this benchmark value based on new, peer reviewed information developed by EPA concerning the health effects of mercury exposure via fish consumption.

- (b) Upon determination by the Director that mercury fish tissue concentrations are at or above the benchmark value defined in this permit, or on a verified trend that indicates that the benchmark values will be reached during the term of this permit, the Director will notify the Permittee that it shall undertake the following requirements:

- 1) Within two hundred seventy (270) days of such notification the Permittee shall complete a mercury source-to-receptor study, the design of which shall be approved by the Director, to quantify the Permittee's contribution to mercury fish tissue concentrations in Santa Fe Lake and Allen Lake; and
- 2) Within three (3) years the Permittee shall complete all actions which the Director determines are necessary to reduce mercury emissions from the burning of hazardous waste to a level approved by the Director. In evaluating the necessary mercury emission reductions, the Director will consider the following, at a minimum: the reduction in mercury inputs into Santa Fe Lake and Allen Lake necessary to control mercury fish tissue concentrations, the Permittee's contribution to mercury fish tissue concentrations, reductions in mercury feed rate limits governed by this permit, and the effectiveness of process modifications and/or air pollution control devices in reducing mercury air emissions. The Director may consider any other factors which he/she may consider relevant in evaluating necessary mercury emission reductions.

(4) Termination of Fish Monitoring Program

The Director may notify the Permittee that the fish monitoring program may be terminated for the following reasons:

- (a) The Permittee demonstrates compliance with revised mercury emission standards under the Resource Conservation and Recovery Act and the Clean Air Act,

which are demonstrated to have no potential adverse impact on human health through fish consumption; or

- (b) The Director determines that data collected by this monitoring program demonstrate that mercury fish tissue concentrations are below benchmark values at a 95% confidence level, and that the results of trend analysis, if a valid trend is observed, indicate benchmark levels will not be reached during the term of Part II of this permit.

b. Surface Soil Monitoring

Within one hundred twenty (120) days of the effective date of this permit the Permittee shall submit, for review and approval by the Director, a consolidated workplan that describes, in detail, work to be completed by the Permittee to conduct an ongoing, periodic mercury and thallium surface soil monitoring program. This monitoring program shall consist of sampling and analysis of soil for mercury and thallium at locations surrounding the Ash Grove plant that are representative of the residential areas south of the Permittee's facility boundary, as well as sampling at locations in the Chanute area that are representative of naturally occurring or "background" mercury and thallium soil concentrations. EPA's modeling of Ash Grove stack emissions indicates that maximum soil concentrations in residential areas due to stack emissions impacts occurs in an area 300 to 500 meters south of the Ash Grove smoke stack. The Permittee must take this modeling information into account when preparing this workplan. Soil sampling and analysis should be done in a phased approach, with the purpose of Phase I being to establish baseline mercury and thallium surface soil concentrations. This will consist of two years of quarterly surface soil samples at the locations designated in the approved workplan. The purpose of quarterly sampling is to detect seasonal variation in soil concentrations, if any. Phase II of this monitoring program will consist of an annual soil sampling event at the time the highest baseline mercury and thallium surface soil concentrations were observed during Phase I. This data will be used to evaluate trends in mercury and thallium concentrations and will be compared by the Agency to "benchmark" mercury and thallium soil concentrations identified in E.15.b.(3) of this permit.

- (1) The Permittee shall conduct an ongoing surface soil mercury and thallium concentration monitoring program at locations surrounding the Ash Grove plant that are representative of the residential areas south of the Permittee's facility boundary.
- (2) The contents of the work plan for performing an ongoing soil monitoring program shall include the following:
 - (a) Proposed schedule for conducting the ongoing mercury and thallium surface soil monitoring program;

- (b) Discussion of proposed approach to ensure that representative samples of surface soils in residential areas south of the Permittee's facility are analyzed in this study, as well as an approach to determine naturally occurring, or "background," concentrations in the Chanute area;
 - (c) Proposed sampling and analytical methods;
 - (d) Discussion of the proposed sample size/methodology necessary for conducting a statistically valid study, including the exposure/averaging areas for residences; for example, 0.25 acres;
 - (e) Proposed sampling locations and sample depths for exposure/averaging area and background surface soil sampling;
 - (f) Discussion of proposed methods for statistical analysis of mercury and thallium surface soil concentration data to determine the true mean concentrations within the exposure/averaging areas and any trends present in these concentrations over time;
 - (g) Sampling and Analytical Data Quality Assurance Plan; and
 - (h) Description of proposed format for reporting of results which shall be made to EPA and the Kansas Department of Health and Environment, and to a document repository established at the City of Chanute Public Library.
- (3) Mercury and thallium soil concentration data and concentration trends measured in this ongoing sampling program must be evaluated against the naturally occurring background values for the Chanute, Kansas area established in this monitoring program, and the following health based benchmark values:

Mercury - 5.6 mg/kg

Thallium - 1.5 mg/kg

The Director may revise these benchmark surface soil concentration values based on new, peer reviewed information developed by EPA concerning the health effects of mercury or thallium exposure via soil ingestion.

- (4) Upon determination by the Director that mercury or thallium surface soil concentrations are at or above the benchmark values defined in this permit or on a verified trend that indicates that the benchmark values will be reached during the term of this permit, the Director will notify the Permittee of the following:

- (a) Reductions in permitted annual average hazardous waste feed rates of mercury and/or thallium that shall remain in effect until the Permittee complete mercury and/or thallium emissions as required in Permit Condition E.15.(b)(4)(c) below;
- (b) Opportunity to conduct, at the Permittee's discretion, a mercury and/or thallium source to receptor study, the design of which shall be approved by the Director, to quantify the Permittee's contribution to mercury and/or thallium surface soil concentrations in the exposure/averaging areas; and
- (c) Within three (3) years the Permittee shall complete actions necessary to reduce mercury and/or thallium emissions from the burning of hazardous waste to a level approved by the Director. In evaluating the necessary mercury emission reductions, the Director will consider the following, at a minimum: the reduction in mercury and/or thallium emissions necessary to control mercury and/or thallium surface soil concentrations in the exposure/ averaging areas, the Permittee's contribution to mercury surface soil concentrations, further reductions in mercury and/or thallium feed rate limits governed by this permit, and the effectiveness of process modifications and/or air pollution control devices in reducing mercury and/or thallium air emissions. The Director may consider any other factors which he/she may consider relevant in evaluating necessary mercury and/or thallium emission reductions.

(5) Termination of Surface Soil Monitoring Program

The Director may notify the Permittee that the surface soil monitoring program may be terminated for the following reasons:

- (a) The Permittee demonstrates compliance with revised mercury and/or thallium emission standards under the Resource Conservation and Recovery Act and the Clean Air Act, which are demonstrated to have no potential adverse impact on human health through exposures, direct and indirect, to surface soils; or
- (b) The Director determines that data collected by this monitoring program demonstrate that mercury and/or thallium surface soil concentrations are below benchmark values at a 95% confidence level, and that the results of trend analysis, if a valid trend is observed, indicate benchmark levels will not be reached during the term of Part II of this permit.

ATTACHMENT 1

FACILITY SUBMISSION SUMMARY

Table 1. Summary of the planned reporting requirements pursuant to Section II of this permit.

SUBMISSION REQUIREMENTS	DUE DATE	PERMIT CONDITION
RFI Workplan	Within 120 calendar days of notification by the Director	C.6.a
RFI Report	According to the schedule contained in the approved RFI Workplan	C.7.a
CMS Workplan	Within 60 calendar days of notification from Director	C.8.b
CMS Report	According to the schedule contained on the approved CMS Workplan	C.9.a
Financial Assurance for Corrective Action	Within 120 calendar days after the permit has been modified to include a remedy	C.11.a
Quarterly Progress Reports	30 calendar days after the last day of each calendar quarter, beginning the first quarter in which the Director requires corrective action pursuant to Section II.C of this permit	C.12
Quarterly Automatic Waste Feed Cut-Off Reports	30 calendar days after the last day of each calendar quarter, beginning the first quarter in which the permit becomes effective	E.7.j
Environmental Monitoring Workplans	Within 60 calendar days of the effective date of Section E.15 of this permit	E.15

Table 2. Summary of possible reporting requirements pursuant to Section II of this permit.

CONDITIONAL REQUIREMENTS	DUE DATE	PERMIT CONDITION
Permit Renewal	180 calendar days prior to Section II.C permit expiration	B.3.
Provisions for Section II.C Permit Transfer	90 calendar days prior to date of Section II.C permit transfer	B.4
Written Notice of Noncompliance	Within 5 calendar days of Permittee's awareness of the circumstance	B.8.d
Report Planned Changes	20 calendar days prior to making any physical alterations to any portion of the facility subject to Section II.C of this permit	B.7
Report Noncompliance	20 calendar days prior to making any changes which will result in noncompliance with Section II.C of this permit	B.8.a
Written Notification of Newly-Identified SWMUs	15 calendar days after discovery	C.3.a
SWMU Assessment Workplan	30 calendar days after receipt of Director's request	C.3.b
SWMU Assessment Report	According to the schedule in the SWMU Assessment Workplan	C.3.d
Written Notification of Newly-Identified Releases of SWMUs	15 calendar days after discovery	C.4.a
Newly-Identified Release Workplan	30 calendar days after receipt of Director's request	C.4.b
Newly-Identified Release Report	According to the schedule in the Newly-Identified Release Workplan	C.4.d

CONDITIONAL REQUIREMENTS	DUE DATE	PERMIT CONDITION
Stabilization Notification	Within 24 hours of discovery of need for stabilization	C.5.a
Written Notification that Stabilization is Not Effective	10 calendar days after discovery	C.5.c
Financial Assurance Cost Estimate Increase	Within 60 calendar days following the increase of the cost estimate	C.11.b
Mercury and Thallium Source-to-Receptor Study	270 calendar days after receipt of Director's notice	E.15.c.(3)