

ATTACHMENT 17

**WASTE MANAGEMENT PLAN
FOR
POLYCHLORINATED BIPHENYLS**

Attachment 17

Waste Management Plan for Polychlorinated Biphenyls

OVERVIEW

This attachment includes the operating requirements specific to disposal of PCB's by incineration. EPA has issued a TSCA PCB Coordinated Approval pursuant to 40 CFR §761.77 that requires compliance with this attachment. Should any conflict arise between this attachment and the other sections of this permit, or the Clean Air Act, the more stringent provision shall be effective.

Clean Harbors is authorized under 40 CFR §761.65(b)(2)(iii) to store PCB's and PCB items designated for disposal in accordance with this permit, issued under the authorization contained in Section 3006, RCRA. Spills of PCB's shall be cleaned up in accordance with the PCB regulations.

WAIVER OF TECHNICAL REQUIREMENTS

The United States Environmental Protection Agency Region VIII (EPA) has waived the requirement at 40 CFR §761.70(a)(1)(i) for a burn temperature of 2192°F (+ or - 180°F) at the afterburner exit to allow a waste feed cutoff if the temperature drops to less than 1980°F for more than 60 seconds. EPA believes that PCBs can be burned with a DRE of 99.9999% using a waste feed cutoff at 1980°F as the result of two miniburns conducted to demonstrate this (*vide* Miniburn Test Report, METCO Environmental, January 2001).

CONTENTS

	Page
DEFINITIONS	2
PCB WASTE MANAGEMENT CONDITIONS	3
I Design and Performance Requirements	3
II Operating Requirements	4
(1) General	4
(2) Incineration	5
(i) Limitations on Waste Feed	5
(ii) Analysis of Waste Feed	6
(iii) Operating limits	6
(iv) Monitoring Requirements	9
(v) Waste Feed Cut-Off Requirements	11
(3) Record Keeping	13
(4) Reporting	14

DEFINITIONS

1. "EPA or EPA Region VIII" means the United States Environmental Protection Agency Regional Office located in Denver, Colorado.
2. "PCB" means POLYCHLORINATED BIPHENYLS as defined in 40 CFR §761.3.
3. "PCB spill" has the same meaning as "spill", defined in the PCB Spill Cleanup Policy in 40 CFR §761.123 and "disposal", defined in 40 CFR §761.3.
4. "Quantifiable Level/Level of Detection" means 2 micrograms per gram from any resolvable gas chromatographic peak, i.e., 2 ppm.
5. "Clean Harbors" means Clean Harbors Aragonite, LLC.
6. "TSCA" means the Toxic Substances Control Act.
7. All definitions contained in 40 CFR § 761.3 (Reference also 63FR35384) and § 761.123 are incorporated by reference into this attachment. Terms not defined in the regulations or in the attachment shall be defined by a generally accepted scientific or industrial meaning or a standard dictionary meaning.

Clean Harbors Aragonite, LLC

Attachment 17

PCB WASTE MANAGEMENT CONDITIONS

I. Design and Performance Requirements

(1) Storage for disposal shall be in accordance with the requirements of this permit and 40 CFR §761.65(b)(2)(iii), in a facility authorized under section 3006 of RCRA to manage hazardous waste in containers. PCB spills shall be cleaned up in accordance with PCB regulations. PCB spills and closure cleanup shall be performed in accordance with PCB regulations.

(2) Incineration. In accordance with 40 CFR §761.70 and this permit, the PCB incineration facility shall meet the following standards:

(i) Combustion criteria for liquid PCBs is maintenance of the introduced liquids for a 2-second dwell time at $1200^{\circ}\text{C} \pm 100^{\circ}\text{C}$ ($>2012^{\circ}\text{F}$) and 3% excess oxygen in the stack gas (undiluted) and is subject to the waiver of technical requirements;

(ii) Combustion efficiency shall be at least 99.90 % computed as follows:

$$\text{CE} = \frac{C_{\text{CO}_2}}{C_{\text{CO}_2} + C_{\text{CO}}} * 100, \text{ where}$$

CE = combustion efficiency

C_{CO_2} = concentration of carbon dioxide by volume; and

C_{CO} = concentration of carbon monoxide by volume;

(iii) The rate and quantity of PCBs that are fed to the combustion system shall be measured and recorded at regular intervals of no longer than 15 minutes;

(iv) The temperature of the incineration process shall be continuously measured and recorded;

(v) The flow of PCBs to the incinerator shall stop automatically whenever the Operating Conditions specified in Condition II that are tied to interlocks are exceeded or whenever the monitoring or recording devices for those conditions fail.

Clean Harbors Aragonite, LLC

Attachment 17

(vi) Continuous emissions monitoring and recording shall be conducted for the following parameters whenever the incinerator is incinerating PCBs: O₂, CO and CO₂.

(vii) Air pollution control devices shall be used for HCl and particulate control in accordance with the Operation Requirements specified in Condition II of this attachment.

(viii) The mass air emissions from the incinerator shall be no greater than 0.001 grams of PCB per kilogram of PCB introduced to the incinerator (i.e., 99.9999% destruction and removal efficiency).

(ix) The emission of dioxins and furans shall be no greater than 0.40 ng TEQ/dscm.

(x) In accordance with 40 CFR §761.70(d)(4)(ii), the operation of the incinerator shall not present an unreasonable risk of injury to health or the environment from PCBs.

II. Operating Requirements

(1) General. Clean Harbors shall comply with all PCB regulations contained in 40 CFR Part 761.

(i) Attachment 1 Waste Analysis Plan is amended to include the following conditions regarding PCB residue characterization during incinerator operations:

a. Sampling. Clean Harbors shall obtain discrete samples from three waste streams; the kiln/ABC slag, the spray dryer residue and the baghouse dust. Two sampling methods are approved. The first method is grab samples from each waste stream residue exit (excluding those isolated for discrete analysis, re-incineration, or both). The second method is six samples from each rolloff container, from a rectangular six point grid, three of which shall be taken to a minimum depth of one foot above the bottom of the rolloff.

b. Compositing. The samples described in II.(1)(i)a. above shall be composited to create two samples for each day of "incinerator operations." The first daily composite shall consist of all kiln/ABC slag samples (excluding those isolated for discrete analysis, re-incineration, or both). The second daily composite shall be proportionate by weight of all spray dryer residue and baghouse dust samples.

Clean Harbors Aragonite, LLC

Attachment 17

c. Analysis. The composite samples described in II.(1)(i)b. above shall be analyzed by Clean Harbors to demonstrate that the total of all the Aroclors in the residues is less than 2 ppm. All residues that contain 2 ppm or more PCBs shall be reincinerated. Clean Harbors has the option, in lieu of the analytical requirements of this condition, to reincinerate any residue that it believes contains 2 ppm or more PCBs.

d. Upset conditions. In the event that any one of the feed limits or any one of the operating limits described in Conditions II.(2)(i)a. through d. and Conditions II.(2)(iii)a. through d., q. and r. is exceeded for a duration of 10 minutes or longer, the kiln/ABC slag residue waste stream will be discretely sampled. The timing of this sample shall be approximately one hour from the initiation of the exceedence unless the rate of movement of the slag residue through the kiln and conveyors has been affected by the exceedence. If the latter is the case, the discrete sample will be taken at such a time as is most likely to capture slag residue produced after the exceedence and before approved operating conditions were reestablished. The sample will be analyzed for PCBs, and all slag residues produced during the exceedence that contain 2 ppm or more PCBs shall be reincinerated. Clean Harbors has the option, in lieu of the sampling and analytical requirements of this condition, to reincinerate all slag residue produced during an exceedence specified in this condition.

(2) Incineration. The incinerator consists of a slagging rotary kiln followed by a vertical afterburner. Combustion gases, after exiting the afterburner, pass through a spray dryer, a baghouse, a saturator, a two stage packed bed scrubber, and exit out the stack. Because the Clean Harbors incineration system is subject to the strict construction, maintenance and operating conditions of this permit, this PCB Waste Management Plan shall only impose conditions that are essential to compliance with the performance standards listed in Condition I of this attachment. Throughout this section there are references to 60-minute rolling averages and 12-hour rolling averages. Calculation of these values will be as described in 40 CFR §§ 63.1209(a)(6) and 63.1209(b)(5). Therefore, this PCB Waste Management Plan is conditioned as follows:

(i) Limitations on Waste Feed.

a. Total organic chlorine feed to the incinerator for all feed mechanisms combined shall not exceed 2319 pounds per hour as calculated on a 12-hourly rolling average basis.

Clean Harbors Aragonite, LLC

Attachment 17

b. All types of PCB waste may be fed to the incinerator under the conditions of this attachment. No PCB concentration restriction applies to the waste feed.

c. The PCB feed rate of both bulk solids and containers to the kiln shall not exceed 600 pounds per hour unless Condition II.(2)(i)d. (below) is met.

d. If the kiln is discharging molten slag and the discharge end of the kiln is coated with molten slag, Condition II.(2)(i)c. (above) is suspended. The determination of slagging mode in the kiln shall be made as specified in Condition II.(2)(iv)f.

e. The total PCB feed rate to the kiln and afterburner chamber shall not exceed 1608 pounds per hour as calculated on a 60-minute rolling average basis.

f. The maximum thermal input to the incineration system (kiln and afterburner combined) for any combination of waste, fuel, or both shall not exceed 155.7×10^6 Btu per hour as calculated on a 60-minute rolling average basis.

g. PCB waste shall only be incinerated when the incinerator complies with the operating conditions specified in Condition II.(2)(iii) of this attachment.

(ii) Analysis of Waste Feed. Throughout operation, Clean Harbors shall conduct sufficient analysis of the waste feed, in accordance with the waste analysis requirements to verify that the waste fed to the incinerator is within the physical and chemical composition limits specified in this attachment.

(iii) Operating Limits. Clean Harbors shall incinerate the wastes described in Condition II.(2)(i) only under the following conditions and subject to the automatic waste feed cutoffs specified in Condition II.(2)(v) of this attachment.

a. The kiln rotation shall be maintained at no less than 0.15 rpm while feeding waste and shall be monitored and recorded continuously.

b. The temperature of the combustion gas at the kiln exit shall not be less than 1800°F as calculated on a 60-minute rolling average basis. This temperature is defined as the average temperature readings of the A and B

Clean Harbors Aragonite, LLC

Attachment 17

or the A and C infrared pyrometers. Alternatively, when only one infrared pyrometer is on-line, the temperature of the combustion gas at the kiln exit, as measured by the single pyrometer, shall not be less than 1940°F as calculated on a 60-minute rolling average basis. Clean Harbors shall document in the operating record those periods when only one infrared pyrometer is on-line.

c. The temperature of the combustion gas at the afterburner chamber exit shall be maintained at 2018°F or higher as calculated on a 60-minute rolling average basis. This temperature shall be monitored and recorded continuously.

d. Oxygen concentration shall be $\geq 3\%$ by volume as monitored and recorded continuously at the exit of the afterburner chamber.

e. Clean Harbors shall control fugitive emissions from the combustion zone of the incinerator by maintaining pressure in the combustion zone at less than -0.01 inches of water column. The combustion zone pressure shall be monitored and recorded on a continuous basis.

f. The exhaust gas temperature at the exit of the spray dryer shall not exceed 520°F. The spray dryer exhaust gas temperature shall be monitored and recorded continuously.

g. The pressure drop across the baghouse shall be no less than 1.8 inches W.C. Pressure drop across the baghouse shall be monitored and recorded on a continuous basis.

h. The liquid flowrate to the saturator shall be maintained at or above 300 gallons per minute as calculated on a 60-minute rolling average basis. The liquid flowrate to the saturator shall be monitored and recorded continuously.

i. The exhaust gas temperature at the exit of the saturator shall not exceed 225°F. The saturator exhaust gas temperature shall be monitored and recorded continuously.

j. Scrubber liquid flowrate to the first stage of the packed tower shall be maintained at or above 1,882 gallons per minute as calculated on a 60-minute rolling average basis. The flowrate of liquid to the first stage of the packed tower shall be monitored and recorded continuously.

Clean Harbors Aragonite, LLC

Attachment 17

k. Scrubber liquid flowrate to the second stage of the packed tower shall be maintained at or above 1,996 gallons per minute as calculated on a 60-minute rolling average basis. Scrubber liquid flowrate to the second stage of the packed tower shall be monitored and recorded continuously.

l. The pH of the first stage scrubber liquid feed to the packed tower shall be maintained at or above a pH of 5.47 as calculated on a 60-minute rolling average basis. The pH of the first stage scrubber liquid feed shall be monitored and recorded continuously.

m. The pH of the second stage scrubber liquid feed to the packed tower shall be maintained at or above a pH of 6.23 as calculated on a 60-minute rolling average basis. The pH of the second stage scrubber liquid feed shall be monitored and recorded continuously.

n. The pH of the scrubber effluent from the second stage of the packed tower shall be maintained at or above a pH of 5.80 as calculated on a 60-minute rolling average basis. The pH of the second stage scrubber effluent shall be monitored and recorded continuously.

o. The feed rate of activated carbon to the inlet of the baghouse shall be maintained at no less than 25 pounds per hour as calculated on a 60-minute rolling average basis. The feed rate of activated carbon shall be monitored and recorded continuously.

p. reserved

q. Combustion Efficiency (CE) shall be $\geq 99.90\%$ in the stack exhaust gas, calculated in accordance with the formula specified in Condition I.(2)(ii). CO and CO₂ are monitored and recorded continuously and CE is calculated and recorded every 15 seconds.

r. Combustion gas flowrate, measured as combustion gas flowrate at the stack, shall not exceed 77,800 acfm as calculated on a 60-minute rolling average basis. The combustion gas flowrate at the stack shall be monitored and recorded on a continuous basis.

(iv) Monitoring Requirements.

Clean Harbors Aragonite, LLC

Attachment 17

- a. The feedrate of pumpable materials, including waste feed and auxiliary fuel, shall be monitored and recorded continuously. The feed rate shall be quantified in pounds per hour.
- b. The feedrate of non-pumpable wastes shall be monitored and recorded on a periodic basis equal to the charging cycle. The feed rate shall be quantified in pounds per hour.
- c. The feedrate of containerized waste shall be monitored and recorded. The feedrate shall be quantified in pounds per hour.
- d. The feedrates specified in condition II.(2)(i) shall be monitored and recorded in the units specified in condition II.(2)(i).
- e. Clean Harbors shall maintain and operate monitoring equipment and record the data while incinerating PCB waste as specified in the following table:

<u>System Parameter Process</u>	<u>Monitor Type-Tag #</u>	<u>Location</u>	<u>Recording</u>
Kiln Rotation	Speed Transmitter ST 1003	PI-101	rpm, Continuous
Kiln Exit Temperature	Infrared Pyrometer TT 1005 A,B,C	PI-101	°F, Continuous
ABC Exit Temperature	Type K Thermocouple TE/TT 1009 A,B,C	PI-101	°F, Continuous
ABC Exit O ₂ Level	Oxygen Sensor AE/AT 1010 A,B	PI-101	%, Continuous, Wet basis
Combustion Zone Pressure	Differential Pressure Transmitter PIT 1006 A,B,C	PI-101	Inches W.C., Continuous
Spray Dryer Exit Gas Temperature	Type J Thermocouple TE/TT 2001 A,B,C	PI-201	°F, Continuous
Baghouse Pressure Drop	Differential Pressure Transmitter PIT 2020 A,B	PI-202	Inches W.C., Continuous
Saturator Liquid	Flow Transmitter	PI-204	GPM, Continuous

Clean Harbors Aragonite, LLC

Attachment 17

Flowrate	FT 2081		
Saturator Exit Gas Temperature	Type J Thermocouple TE/TT 2082 A,B,C	PI-204	°F, Continuous
Packed Tower First Stage Liquor Flowrate	Flow Transmitter FT 2092	PI-204	GPM, Continuous
Packed Tower Second Stage Liquor Flowrate	Flow Transmitter FT 2095	PI-204	GPM, Continuous
Packed Tower First Stage Liquor pH	pH Sensor AE 2104 A,B; AT 2104; AIC 2104	PI-205	pH, Continuous
Packed Tower Second Stage Liquor pH	pH Sensor AE 2130 A,B; AT 2130; AIC 2130	PI-206	pH, Continuous
Packed Tower Second Stage Effluent pH	pH Sensor AE/AT 2129 A,B	PI-206	pH, Continuous
Activated Carbon Feed Rate	loss-in-weight scale WT 2037 RL		lb/hr, hourly rolling average
Stack CO Level	NDIR photometer AE/AT 2199 A,B,C	PI-212	ppmv, Continuous, Oxygen Corrected, Dry Basis, Hourly Rolling Average
Stack CO ₂ Level	NDIR photometer Continuous, AE/AT 2198 A,B	PI-212	ppmv, O ₂ Corrected, Dry Basis
Combustion Gas Velocity	Annubar FE/FIT 2195	PI-212	ACFM, Continuous

f. Clean Harbors shall visually monitor the mode of kiln operation at least once before exceeding 600 pounds per hour of PCBs fed to the kiln in bulk solids and containers. During each kiln monitoring period Clean Harbors shall determine whether or not the kiln is discharging molten slag and whether or not the discharge end of the kiln is coated with molten slag. Clean Harbors shall note in the operating record the observations and determinations made during each kiln monitoring period.

g. Upon written request of the Assistant Regional Administrator Office for Partnership and Regulatory Assistance, Clean Harbors shall conduct sampling and analysis of the waste and exhaust emissions to verify that the

Clean Harbors Aragonite, LLC

Attachment 17

operating requirements established in this attachment achieve the performance standards included in Section I.(2) of this attachment. Clean Harbors shall redemonstrate the PCB performance standards at the same frequency and at the same time as it redemonstrates the other performance standards included in this permit.

h. Clean Harbors shall calibrate the instruments and monitors specified in Condition II.(2)(iv) of this attachment in accordance with the requirements of this permit and with conformance to 40 CFR §266 Appendix IX for the CO and O₂ continuous monitors and conformance to 40 CFR §60, Appendix B for CO₂ continuous monitors. .

(v) Waste Feed Cut-off Requirements.

a. Clean Harbors shall construct, maintain and operate automatic waste feed cut-off (AWFCO) systems for the following operating conditions:

1. A kiln rotation less than 0.15 rpm, instantaneous.
2. A kiln exit gas temperature of less than 1800°F as calculated on a 60-minute rolling average basis when operating with two pyrometers or a kiln exit gas temperature of less than 1940°F as calculated on a 60-minute rolling average basis when operating with one pyrometer (kiln waste feed cutoff only).
3. An afterburner chamber exit gas temperature of less than 1980°F for more than 60 seconds, an afterburner exit gas temperature of less than 2018°F as calculated on a 60-minute rolling average basis, or both.
4. An afterburner chamber exit oxygen concentration less than 3% by volume, wet basis, for more than two minutes and an afterburner chamber exit oxygen concentration less than 2% by volume, wet basis, for more than 15 seconds.
5. A combustion zone pressure of greater than -0.01 inches of water column, for more than 5 seconds.
6. Emergency vent opening, instantaneous.

Clean Harbors Aragonite, LLC

Attachment 17

7. An exhaust gas temperature at the exit of the spray dryer greater than 520°F, instantaneous.
8. A pressure drop across the baghouse of less than 1.8 inches of water column, instantaneous.
9. A liquid flowrate to the saturator of less than 300 gpm as calculated on a 60-minute rolling average basis.
10. An exhaust gas temperature at the exit of the saturator greater than 225°F, instantaneous.
11. A scrubber liquid flowrate to the packed tower first stage of less than 1882 gpm as calculated on a 60-minute rolling average.
12. A scrubber liquid flowrate to the packed tower second stage of less than 1996 gpm calculated on a 60-minute rolling average basis.
13. A pH of less than 5.47 in the first stage packed tower liquid feed, calculated on a 60-minute rolling average basis.
14. A pH of less than 6.23 in the second stage packed tower liquid feed, as calculated on a 60-minute rolling average basis.
15. A pH of less than 5.80 in the packed tower second stage effluent as calculated on a 60-minute rolling average basis.
16. A feed rate of activated carbon to the inlet of the baghouse of less than 25 pounds per hour as calculated on a 60-minute rolling average basis.
17. Induced draft fan off, instantaneous.
18. A combustion efficiency of less than 99.90% in the stack exhaust gas for more than 60 seconds.
19. A combustion gas flowrate, as measured at the stack, greater than 77,800 acfm as calculated on a 60-minute rolling average basis.

Clean Harbors Aragonite, LLC

Attachment 17

20. Activation of the emergency stop button, instantaneous.

21. Utility power failure, instantaneous.

b. In the case of a malfunction of the automatic waste feed cut-off system, Clean Harbors shall immediately initiate manual waste feed cut-off. Clean Harbors shall not restart the incineration system until the problem causing the malfunction has been identified and corrected.

c. Clean Harbors shall test the emergency waste feed cut-off systems and associated alarms every 168 hours of incinerator operations in accordance with the UDEQ RCRA permit to verify operability.

d. Clean Harbors shall operate the incinerator in such a way as to minimize opening the emergency vent.

(3) Record Keeping.

(i) Clean Harbors shall notify the Assistant Regional Administrator for the Office of Partnerships in writing within seven (7) days describing the incident and indicate the reason for each emergency vent opening. This notification shall also describe corrective measures taken by Clean Harbors to prevent future occurrences.

(ii) Clean Harbors shall record and maintain in the operating record all monitoring, maintenance, recording, calibration, test, and inspection data compiled under the requirements of this attachment.

(iii) Clean Harbors shall maintain a separate maintenance log for each instrument/monitor required in this attachment. The log shall contain all work, maintenance, calibration, testing, and inspection data as required for each instrument.

(iv) Clean Harbors shall record in a separate log as part of the operating record, the date and time of all automatic waste feed cut-offs while incinerating waste, including the triggering parameters, reason for the cut-off, and corrective action taken. Clean Harbors shall also record all failures of the automatic waste feed cut-off system to function properly and corrective actions taken.

Clean Harbors Aragonite, LLC

Attachment 17

(v) Clean Harbors shall prepare and maintain annual records and a written annual document log on the disposition of all PCBs and PCB items at the facility.

(vi) These records shall be kept either electronically, on paper, microfilm/microfiche, or other equivalent method, and shall be readily retrievable during an EPA inspection. Any copies shall be confirmable as accurate and true copies of the original records that represent the operational conditions of waste management activities at the facility.

(4) Reporting.

(i) Clean Harbors shall comply with Subparts J and K of the PCB regulations. Clean Harbors shall submit to EPA annual reports, as required by Subpart J, §761.180(b), due by July 15, of the records of all PCB wastes handled at the facility during the previous calendar year.

(ii) Clean Harbors shall notify the EPA regional administrator of changes to this attachment and changes relating to PCB waste requirements in the UDSHW Hazardous Waste Permit in accordance with §761.77(a)(3).

III. Administrative and Other Requirements

(1) Financial Assurance. Financial assurance shall be maintained in accordance with Attachment 7, Closure Cost.

(2) Closure Plan. Closure will be in compliance with PCB regulations.

(3) EPA Region VIII contacts. All written reports required to be submitted to EPA pursuant to this attachment shall be sent to the Director of the Office of Partnerships and Regulatory Assistance (OPRA), U.S. Environmental Protection Agency, 1595 Wynkoop Street, Denver, Colorado, 80202-1129. All telephone reports to EPA shall be made to the Chief of the Toxics Section.