

EQ FAX

Date of Transmittal: 5/13/91

Time of Transmittal: 3:35 pm

Number of Pages (including cover): 5

To Verify Receipt, Call: (919) 489 5299

To: Willard Hankins Phone No: 904 488-1344

Company: DER

Fax No: 904 922 6979

From: R. H. Hatcher

Message: Re: test data

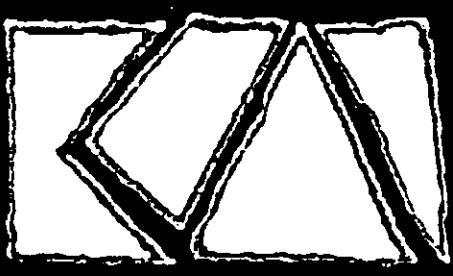
Environmental Quality Management, Inc.
3109 University Drive, Durham, North Carolina 27707
Tel: (919) 489 5299; Fax: (919) 489 5552

Ben Winkler

AIR POLLUTANT MEASUREMENTS
AND SOIL TESTING DURING THERMAL
PROCESSING OF CREOSOTE-CONTAMINATED SOIL

PINKER MATERIALS CORPORATION
MIAMI, FLORIDA

APRIL 5-6, 1999



KOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES

4000 NW FOURTEENTH STREET
GAINESVILLE, FLORIDA 32609
PHONE 352 684-2022 FAX 352 714-518

1.0 INTRODUCTION

Rinker Materials Corporation operates a wet process cement plant in Dade County, Florida. During the test period of April 5-6, 1989, a limerock dryer at the plant permitted by Permit A013-127621 was used to thermally ~~process soil contaminated with creosote~~. This test was approved by the Florida Department of Environmental Regulation as a one-time amendment to Permit A013-127621 by letter dated February 10, 1989. The intent of the test was to evaluate air emissions, soil decontamination efficiency and the possibility of routing the rock dryer exhaust gases to the cement kiln for incineration of the hydrocarbons stripped from the soil. By quantifying organic compounds that will eventually be directed to the cement kiln, both the effect of these compounds on the kiln and the effectiveness of the kiln for destroying these compounds can be evaluated.

During the test period, Koogler & Associates, Environmental Services, of Gainesville, Florida, conducted emission measurements on the rock dryer exhaust stack and collected integrated ~~samples~~ of both ~~creosote-contaminated soil and processed soil~~. The emissions from the dryer were controlled by a cyclone collector. ~~Hydrocarbon~~ emissions were uncontrolled and simulate anticipated emissions into the cement kiln combustion zone. Emission ~~measurements~~ were conducted for ~~particulate matter, semi-volatile organics, volatile organics, nitrogen oxides, selected metals, hydrogen chloride, and sulfur dioxide~~. Specific test methods are discussed in Section 4.0. Soil samples were analyzed for ~~semi-volatile hydrocarbons and selected metals~~.

6

The processing rate of the contaminated ~~soil~~ during the test period varied from 12-15 tons per ~~hour~~. The temperature of the discharged soil ranged from ~~900-1050 degrees Fahrenheit~~ during the test period. ~~Waste oil~~ was utilized for the dryer fuel at a rate of ~~5.5 gallons per ton of soil~~ processed.



4.0 FIELD AND ANALYTICAL PROCEDURES

Emission measurements were conducted for particulate matter, semi-volatile organics, volatile organics, nitrogen oxides, selected metals, hydrogen chloride, and sulfur dioxide. The stack gas velocity, stack gas moisture and stack gas oxygen measurements were made in conjunction with the MMS tests. Stack gas velocity and moisture were measured in accordance with EPA Method 2 and EPA Method 4, respectively, and oxygen was measured with a zirconium oxide cell. The test methods used for collection of each sample are detailed below:

<u>Parameter</u>	<u>Sampling Method</u>
Particulate Matter	EPA Modified Method 5 (MM5)
Semi-Volatile Organics	EPA Modified Method 5 (MM5)
Volatile Organics	EPA Volatile Organic Sampling Train (VOST)
Nitrogen Oxides	EPA Method 7
Metals	EPA-MM5-filter-analysis=(EPA-600/4-79-020)
Hydrogen Chloride	NaOH Absorber
Sulfur Dioxide	EPA Method 6

Particulate matter emission rates were determined from the filter portion of the MM5 sample train. Prior to this analysis, the filter was thoroughly washed with a methylene chloride/methanol mixture to remove any organics that were collected on the filter. The organics were combined with the MM5 samples. ~~After gravimetric analysis, each filter was analyzed for metals in accordance with methods published in EPA Publication EPA-600/4-79-020.~~ The semi-volatiles collected in the MM5 sampling train were analyzed in



TABLE 1

(5)

RINKER MATERIALS CORPORATION
APRIL 5, 1989
PARTICULATE MATTER EMISSIONS

Run No.	Stack Gas Oxygen (%)	Stack Gas Flow Rate (SCFMD)	Stack Gas Temperature (Deg F)	Stack Gas Moisture (%)	Particulate Matter	
					Conc. (gr/SCF)	Emission Rate (Lbs/Hr)
1	17.9	10,543	375.7	15.0	1.6071	145.56
2	18.0	9,800	355.0	13.8	1.7240	145.14
3	18.3	9,584	367.8	14.1	2.1920	180.48
Avg.	18.1	9,976	366.2	14.3	1.8410	157.06

Analysis of oil burned during test is not available

6

TABLE 5

RINKER MATERIALS CORPORATION
APRIL 5, 1989
METALS
EMISSION RATE (lb/hr)

Metal	Run 1	Run 2	Run 3	Average
Arsenic	0.226	0.194	0.199	0.206
Cadmium	0.002	0.002	0.002	0.002
Chromium	0.131	0.121	0.121	0.124
Hexavalent Chromium	0.002	0.001	0.003	0.002
Copper	0.109	0.096	0.095	0.100
Lead	0.136	0.112	0.096	0.114
Mercury	0.0001	0.0001	0.0001	0.0001
Zinc	0.291	0.285	0.251	0.276

②

TABLE 9
RINKER MATERIALS CORPORATION
APRIL 5, 1989
CONTAMINATED / PROCESSED SOIL
(mg/kg) OF METALS

Metal	Contaminated Soil	Processed Soil #1	Processed Soil #2	Processed Soil #3
Arsenic	129	129	130	124
Cadmium	1.7	1.6	1.8	1.6
Chromium	155	148	149	135
Hexavalent Chromium	<0.4	<0.4	<0.4	<0.4
Copper	90	114	93	80
Lead	19	21	24	22
Mercury	0.444	0.011	<0.007	<0.010
Zinc	52	53	60	57

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

3109 University Drive • Suite B

Durham, North Carolina 27707

(919) 489-5299

FAX (919) 489-5552

May 8, 1991

Mr. Willard Hanks
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32399-2400

RECEIVED
MAY 13 1991
Division of Air
Resources Management

Re: Lead Emissions

Dear Mr. Hanks:

Per our discussion concerning the expected lead emissions from the stone dryer, we have reviewed available data and have concluded the lead emission increase will not exceed 1200 lb/yr. Therefore, as originally expected the modification will not result in a significant increase under the definition for prevention of significant deterioration (PSD).

It is expected that 80 percent of the lead entering the unit in soil and waste fuel will remain in the treated soil. The remaining 20 percent will exit the dryer with the flue gases and be filtered in the fabric filter prior to entering the afterburner.

Because of the particle size of lead oxide fume, we estimate a worst-case filter efficiency of 90 percent. In reality, however, the lead fume will condense on larger particles and the filter efficiency will be higher. The actual improvement occurring through condensation cannot be determined without testing after construction.

Total lead entering the system is 56,766.6 lb/yr (2805 lb/yr fuel and 53,961.6 lb/yr soil). Uncontrolled emissions are expected to be 11,353.3 lb/yr (i.e., 20%). Controlled emissions are calculated to be 1135.3 lb/yr or 0.1296 lb/h.

Historic emissions are estimated to be 3.25 lb/yr based on a historic total suspended particulate (TSP) emission rate of 2.24 tons/yr with a lead content of 0.0725 percent.



Mr. Willard Hanks

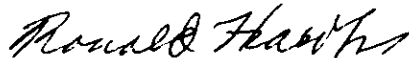
2

May 8, 1991

I have enclosed a summary and mass flow diagram for the system. I hope this will be adequate for issuance of the permit to construct. If you have any questions, please give me a call at (919) 489-5299.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.



Ronald L. Hawks

RLH/drd

Enclosure

Historic Pb Emissions

Pb in stack dust 0.114 lb/h at 15 tons/h rate

$$\text{TSP} = 157.06 \text{ lb/h}$$

$$\text{Pb} = 0.0725\%$$

$$\text{Annual TSP} = 2.24 \text{ tons/yr}$$

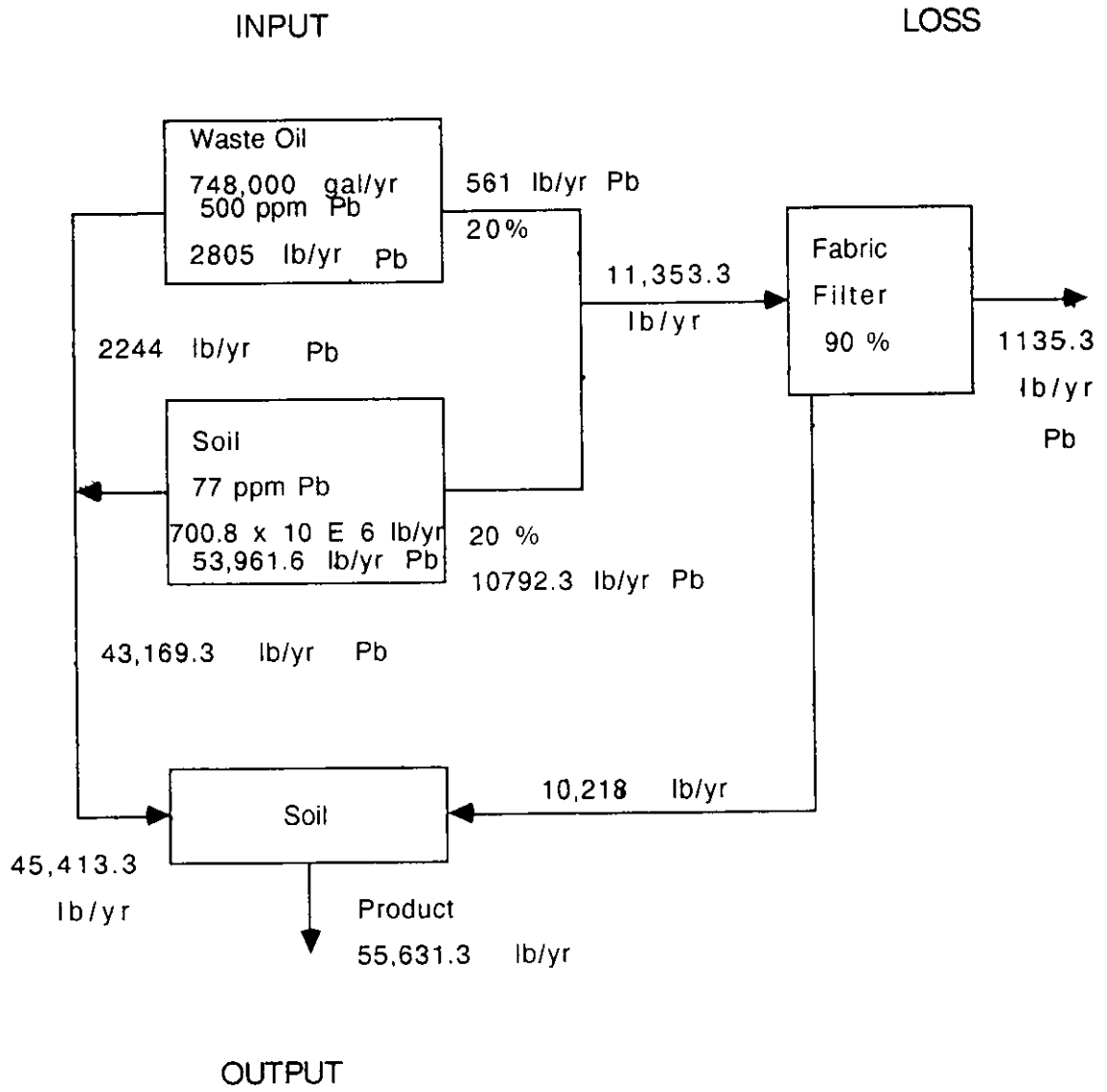
$$(2.24)(2000)\frac{(0.0725)}{(100)} = 3.248 \text{ lb/yr}$$

Expected Pb Emissions

$$1135.2 \text{ lb/yr} \rightarrow 0.1295 \text{ lb/h}$$

Net Change

$$1135.3 - 3.248 = 1131.95 \text{ lb/yr}$$





Rinker Materials

FACSIMILE

TRANSMISSION CEMENT DIVISION OFFICE

Rinker Materials Corporation
1200 N.W. 137th Avenue
Miami, FL 33182

PO Box 650679
Miami, FL 33265-0679

Facsimile (305) 223-5403
Telephone (305) 221-7645

TO: *Willard Hanks* DATE: *5-10-91*

LOCATION: *STATE OF FLORIDA* FROM: *Michael VARDEMAN*
DEPARTMENT of Environmental *Rinker Materials*
Regulation

FAX NUMBER NO. OF PAGES: *5*
904-422-6979 (Including this page)

Willard;

Enclosed are Ken Hanks calculations on the lead emissions. These were made using used oil off spec standards (i.e. ~~Pb 500 PPM~~ in line)

The hard copy will follow.

I'll give you a call later.

Michael Vardeman

ENVIRONMENTAL QUALITY MANAGEMENT, INC.

3109 University Drive • Suite B
Durham, North Carolina 27707
(919) 489-5299
FAX (919) 489-5552

May 8, 1991

Mr. Willard Hanks
State of Florida
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32399-2400

Re: Lead Emissions

Dear Mr. Hanks:

Per our discussion concerning the expected lead emissions from the stone dryer, we have reviewed available data and have concluded the lead emission increase will not exceed 1200 lb/yr. Therefore, as originally expected the modification will not result in a significant increase under the definition for prevention of significant deterioration (PSD).

It is expected that 80 percent of the lead entering the unit in soil and waste fuel will remain in the treated soil. The remaining 20 percent will exit the dryer with the flue gases and be filtered in the fabric filter prior to entering the afterburner.

Because of the particle size of lead oxide fume, we estimate a worst-case filter efficiency of 90 percent. In reality, however, the lead fume will condense on larger particles and the filter efficiency will be higher. The actual improvement occurring through condensation cannot be determined without testing after construction.

Total lead entering the system is 56,766.6 lb/yr (2805 lb/yr fuel and 53,961.6 lb/yr soil). Uncontrolled emissions are expected to be 11,353.3 lb/yr (i.e., 20%). Controlled emissions are calculated to be 1135.3 lb/yr or 0.1286 lb/h.

Historic emissions are estimated to be 3.25 lb/yr based on a historic total suspended particulate (TSP) emission rate of 2.24 tons/yr with a lead content of 0.0725 percent.

F

Mr. Willard Hanke

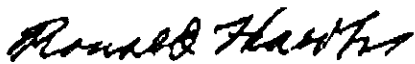
2

May 8, 1991

I have enclosed a summary and mass flow diagram for the system. I hope this will be adequate for issuance of the permit to construct. If you have any questions, please give me a call at (919) 489-5299.

Sincerely,

ENVIRONMENTAL QUALITY MANAGEMENT, INC.



Ronald L. Hawke

RLH/drd

Enclosure

Historic Pb Emissions

Pb in stack dust 0.114 lb/h at 15 tons/h rate

$$\text{TSP} = 157.06 \text{ lb/h}$$

$$\text{Pb} = 0.0725\%$$

$$\text{Annual TSP} = 2.24 \text{ tons/yr}$$

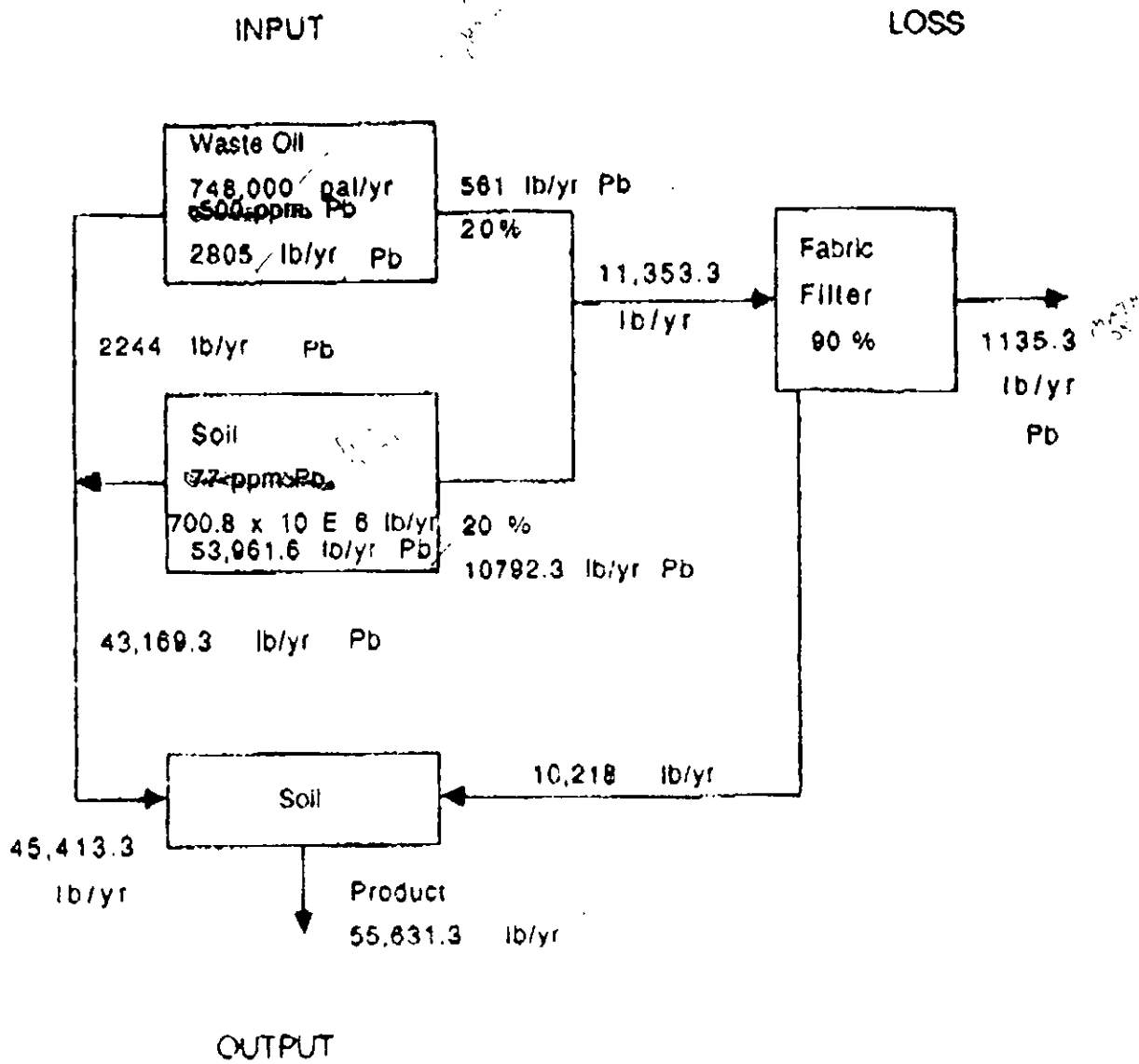
$$\frac{(2.24)(2000)(0.0725)}{(100)} = 3.248 \text{ lb/yr} \quad \checkmark \text{ pb}$$

Expected Pb Emissions

$$1135.2 \text{ lb/yr} \rightarrow 0.1295 \text{ lb/h}$$

Net Change

$$1135.3 - 3.248 = 1131.95 \text{ lb/yr}$$



RINKER MATERIALS

05/01/91

<u>NAME</u>	<u>AFFILIATION</u>	<u>PHONE</u>
E. GARY EARLY	FDER / OGC	(904) 488-9730
John E. Griffin	FDER / DWM	(904) 488-0300
Mike Harley	FDER / ACE	(904) 488-1344
Doug Outlaw	FDER / DWM	(904) 488-0300
Michael VARDEMAN	RINKER MATERIALS	(305) 221-7645
BILL VOSHELL	RINKER MATERIALS	(407) 820-8348
RONALD HAWKS	ENVIRONMENTAL QUALITY	(919) 489 5299
WILLARD HANKS	FDER / BAR	(904) 488-1344
Benny Andrews	FDEK / BAVC	" " "