

Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

March 1, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ed Allsopp  
Vice President of Cement Operations  
Rinker Materials Corporation  
1200 Northwest 137th Avenue  
Miami, Florida 33182

Re: DEP File No. 0250014-008-AC (PSD-FL-324)  
Rinker Miami Cement Plant – VOC BACT Determination

Dear Mr. Allsopp:

This is pursuant to: your air construction permit extension request dated September 7, 2000; additional requests consolidated in the letter from Koogler and Associates dated June 14, 2001; letters received from Oertel, Hoffman, Fernandez, and Cole, P.A. dated October 5 and 22, 2001, seeking time extensions for taking action on the mentioned requests; and your air construction permit application for modification received by the Department on November 19, 2001.

The Department hereby modifies the original air construction permit issued for the modernization project (September, 1997) as described below. Details of the rationale for the following changes are given in the Department's Technical Evaluation and Preliminary Determination dated December 14, 2001, as well as the enclosed final determination accompanying this letter. This action satisfies and concludes the original permit extension request from September 2000 (DEP File No. 0250014-007-AC) as well as the air construction permit application for modification from November 2001 (DEP File No. 0250014-008-AC).

## EXPIRATION DATE

The expiration date is hereby extended until March 31, 2002. All physical construction required to make cement and to conduct initial testing is complete. This permit modification authorizes work addressed in the Compliance Plan of Rinker's Title V Operating Permit and further work only for the purpose of installing the bypass, a continuous emission monitoring system (CEMS) for total hydrocarbons (THC), and additional equipment to burn tires, tire-derived fuel, and the specified non-hazardous waste fuels (other than sewage sludge).

Additional work beyond March 31, 2002, on the projects described above (other than installation of the THC monitor) shall require submittal of an air construction permit application to the Miami-Dade County Department of Environmental Resources Management (DERM).

## SECTION III. EMISSION UNIT(S) SPECIFIC CONDITIONS

### SUBSECTION A. COMMON CONDITIONS

#### EMISSION UNITS

This cement plant is subject to the applicable requirements of the New Source Performance Standards (NSPS) and the National Emissions Standards for Hazardous Air Pollutants (NESHAP), adopted by reference in Rules 62-204.800(7) and (10), F.A.C., including:

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- 40 CFR 60 Subpart F, Standards of Performance for Portland Cement Plants.
- 40 CFR 60, Subpart Y, Standards of Performance for Coal Preparation Plants
- 40 CFR 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants
- 40 CFR 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984
- ~~40 CFR 60, Subpart Eb, Standards of Performance for Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994. (Co-fired combustor reporting requirements only)~~
- 40 CFR 63, Subpart B, Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Sections 112 (g) and 112 (j).

{Permitting note: This cement plant is not subject to 40 CFR 60, Subpart Eb, Standards of Performance for Municipal Waste Combustors (MWC) for Which Construction is Commenced After September 20, 1994. Cement kilns were explicitly excluded from the NSPS as amended at 62 FR 45115, August 25, 1997 pursuant to court order [Davis County Solid Waste Management and Recovery District v. EPA, 101 F.3d 1395 (D.C. Cir. 1996), as amended, 108 F.3d 1454 (D.C. Cir. 1997)] and in response to industry submitted information showing that cement kilns burn less than 11 tons per day municipal solid waste.}

## **SUBSECTION B. SPECIFIC CONDITIONS**

### **EMISSION LIMITATIONS**

- B.1 The maximum allowable emission rates for the kiln, clinker cooler, raw mill, and preheater/precalciner shall not exceed the limits listed in Revised Table 1-2, Air Pollutant Standards and Terms (attached).  
**[Rule 62-210.200, F.A.C. (Definitions - Potential Emissions)]**

### **OPERATIONAL LIMITATIONS**

#### **B.5 Fuel Combustion**

- (1) Fuels fired in the pyroprocessing system (kiln and precalciner) shall not exceed a total heat input rate of 437 MMBtu/hr and shall consist only of:
- a. Bituminous coal, natural gas, petroleum coke, propane, No. 2 fuel oil, residual fuel oil, on-specification and off-specification used oil.
  - b. Whole tires and tire derived fuel (up to 40% total heat input) may be used as a supplemental fuel, but not as a start-up fuel.
  - c. Combustion of non-hazardous solid waste, oil filters, booms and rags from spill clean up, generated on site. This non-hazardous solid waste material shall be used as supplemental fuel not as a start-up fuel.
  - d. Combustion of non-hazardous solid waste (up to ~~30%~~10% of total heat input) may be used as supplemental fuel: unused diapers, papers products, non-chlorinated plastic waste, ~~sewage sludge from publicly owned treatment works (POTW)~~. This non-hazardous solid waste material shall ~~be~~ not be used as a start-up fuel.
  - e. The combined percent heat input from tires, tire-derived fuel and solid waste shall not exceed 40 percent of the total heat input from all fuels on a 24-hour basis.

### **CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)**

- B.10 By June 30, 2002, permittee shall install, calibrate, maintain and operate a CEMS in the kiln/raw mill/cooler stack to measure and record the emissions of total hydrocarbons (THC) from the kiln/raw mill/cooler. Fuel used for the flame ionization process shall consist of a hydrogen/helium mix specified by the CEMS manufacturer. The CEMS shall be installed, certified, operated and maintained in accordance with 40 CFR 60, Appendix B, Performance Specification 8A. The CEMS shall be used in conjunction with

a flow rate sensor certified in accordance with 40 CFR 60, Appendix B, Performance Specification 6. The CEMS data shall be quality assured using the procedures of Appendix F of 40 CFR 60.

Every day, the 24-hour average (daily average) THC emission rate for the previous day shall be calculated and recorded. Emissions shall be calculated in units of pounds per hour (propane equivalence) and pounds per ton of clinker (propane equivalence). Daily averages are to be calculated as the arithmetic mean of each monitored operating hour.

Every day, the 30-day rolling average THC emission rate for the previous 30 operating days shall be calculated and recorded. Emissions shall be calculated in units of pounds per hour (propane equivalence) and pounds per ton of clinker (propane equivalence). The 30-day rolling averages are to be calculated as the sum of the THC emission rates for all monitored operating hours divided by the number of monitored operating hours, both taken over the previous 30 operating days.

A monitored operating hour is each hour in which fuel is fired in the unit and at least two emission measurements are recorded at least 15 minutes apart. Data taken during periods of startup, or when fuel is not fired to the unit, or when the CEMS is not calibrated shall be excluded from the averages. Data recorded during periods of shutdown, malfunction, load change, and continuous operating periods shall be included in the averages.

To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when fuel is fired in the unit, including periods of startup, shutdown, load change, continuous operation, and malfunction. Monitor downtimes shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A listing of monitor downtime occurrences shall accompany the SUMMARY REPORT if the monitoring system downtime is 5% or greater of the total monitored operating hours.

The permittee shall document the corrective actions taken (such as adjusting combustion parameters, feed rates, or raw material selection) and notify DERM within 24 hours if (1) the 30-day rolling average THC emission rate exceeds 0.12 pounds per ton of clinker (propane equivalence), or (2) ten consecutive daily average THC emission rates exceed 0.12 pound per ton of clinker (propane equivalence).

{Permitting note: The THC monitor results include methane and other non-VOC constituents. Therefore, the monitor provides reasonable assurance that the VOC standard is being met, but it is not the compliance method for the VOC standard. However, when the Department or DERM has good reason (including but not limited to the criteria specified in the above paragraph) to believe that the VOC emission standard in Revised Table 1-2 is being violated, they have the authority under 62-297.310(7)(b), F.A.C. to require the permittee to conduct compliance tests which identify the nature and quantity of VOC emissions from the kiln.}

The permittee shall report to DERM no later than the 15th day following each calendar quarter a summary of the daily average and 30-day rolling average THC emission rates for each day of that calendar quarter. These results should be reported as pounds per hour (propane equivalence) and pounds per ton of clinker (propane equivalence). [Rule 62-4.070 and 62-297.310, F.A.C.]

A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the emissions limits for NO<sub>x</sub> and SO<sub>2</sub> in Table 1-2. CEMS shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1996 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 1, 2, and 3 (1996 version). [Rules 62-4.070 (3) and 62-204.800, F.A.C.]

- B.11 A continuous emissions monitoring system (CEMS) shall be installed, calibrated, maintained, operated, and used to determine compliance with the emissions limits for NO<sub>x</sub> and SO<sub>2</sub> in Revised Table 1-2. CEMS shall be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1996 version) or other Department-approved QA plan; 40 CFR 60, Appendix B, Performance Specification 1, 2, and 3 (1996 version).

The CEMS shall calculate and record emission rates in units of pounds of NO<sub>x</sub> and SO<sub>2</sub> per hour. Clinker production rates shall be recorded daily. The permittee may establish a relationship between material feed rates and production rates of clinker if material feed rates are measured more accurately than clinker production rates and the relationship is accurate within 10%.

Every day, the 24-hour average NO<sub>x</sub> and SO<sub>2</sub> emission rate for the previous day shall be calculated. Emissions shall be calculated in units of pounds per hour and pounds per ton of clinker. Daily averages are to be calculated as the arithmetic mean of each monitored operating hour. A monitored operating hour is each hour in which fuel is fired in the unit and at least two emission measurements are recorded at least 15 minutes apart. Data taken during periods of startup, or when fuel is not fired to the unit, or when the CEMS is not calibrated shall be excluded from the daily average.

For compliance with the emission limits in Table 1-2, the daily average shall not include data from periods of startup when no clinker is being produced. However, emissions during startup periods shall not exceed the pound per hour limits in Table 1-2. Data recorded during periods of shutdown, malfunction, load change, and continuous operating periods shall be included in the daily average.

To the extent the monitoring system is available to record emissions data, the CEMS shall be operated and shall record data at all operating hours when fuel is fired in the unit, including periods of startup, shutdown, load change, continuous operation and malfunction.

Monitor downtimes and excess emissions based on daily averages, which include startup emissions, shall be reported on a quarterly basis using the SUMMARY REPORT in 40 CFR 60.7. A detailed report of the cause, duration, magnitude, and corrective action taken or preventative measures adopted for each excess emission occurrence, and a listing of monitor downtime occurrences shall accompany the SUMMARY REPORT when the total duration of excess emissions is 1% or greater or if the monitoring system downtime is 5% or greater of the total monitored operating hours.

Mass emission rates (lb/hr, and lb/ton clinker) shall be calculated based on source specific and fuel specific F factors calculated using 40 CFR 60 Appendix A, Method 19. These F factors shall be recalculated when fuel properties vary significantly from those used in the previously calculated F factors but not less than once per year. **[Rules 62-4.070 (3) and 62-204.800, F.A.C.]**

- B.13 For emissions other than NO<sub>x</sub> and SO<sub>2</sub>, compliance with the allowable emission limiting standards listed in Revised Table 1-2 shall be determined by using the following reference methods as described in 40 CFR 60, Appendix A (1996, version) and 40 CFR 61 Appendix B (1996, version) adopted by reference in Chapter 62-204, F.A.C.

**Method 5** Determination of Particulate Matter Emissions from Stationary Sources (I) and (A).

**Method 8** Determination of Sulfuric Acid Mist from Stationary Sources (I).

**Method 9** Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).

**Method 10** Determination of Carbon Monoxide Emissions from Stationary Sources (I) and (A).

**Method 25** ~~Determination of Volatile Organic Compound Emissions from Stationary Sources (I) and (A).~~

**Method 18** Measurement of Gaseous Organic Compound Emissions by Gas Chromatography -- to be performed concurrently with Method 25A at the permittee's option to correct the Method 25A results for the presence of methane.

**Method 25A** Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer -- to be performed initially, quarterly from first quarter 2002 until the THC monitor is installed and certified, and annually thereafter. Method 25A results may be corrected for methane emissions at the permittee's option through a concurrently conducted Method 18 determination or through another method approved by DERM. If a concurrent demonstration of methane emissions is not performed, then the results of the Method 25A determination shall be used to demonstrate compliance with the allowable VOC emission limitation listed in Revised Table 1-2.

**Method 29** Determination of Lead, ~~Beryllium~~, and Mercury from Stationary Sources (I).

Prior to installation and certification of the THC monitor, permittee shall determine and record the THC content for each incoming shipment of raw materials through the Department's Method FL-PRO or through some other method approved by DERM. Such records shall be made available to DERM upon request.

Emission testing shall be performed at the kiln/cooler main stack during a period when the kiln precalciner, cooler, raw mill and preheater are operating simultaneously and under normal operating conditions. EPA-reference methods for sampling pollutants shall be as specified in 40 CFR 60, Appendix A. Prior to any emission testing to demonstrate compliance with any emission limit, the permittee shall determine the clinker production rate for the test according to a factor based on the preheater/precalciner feed rate and notify DERM in advance of the commencement of any test(s). That rate of clinker production shall be used to determine compliance with all clinker-based emission limits in the permit for that test.

These emission units shall comply with all applicable requirements of Rule 62-297.310, F.A.C. General Test Requirements and 40 CFR 60.8. Performance Tests. Revised Table 2-1, Compliance Requirements (attached) also lists the EPA methods.

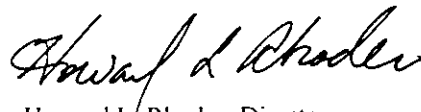
Testing of emissions shall be conducted with the emission unit operating at capacity and under the different permitted fuels scenarios (petroleum coke, coal, on or off specification used oil, TDF, solid waste, etc.) as specified in Specific Condition No.B.5. Fuel Combustion. The permittee shall provide DERM with a *protocol* that will outline the different fuel scenarios (% of total heat input) that this unit will be burning. Rinker shall obtain the test data necessary to determine whether this kiln is capable of accommodating the burning of coal or petroleum coke and all of the other supplemental fuels specified on Specific Condition B.5. Fuel Combustion. The fuel scenarios tested shall represent the actual combustion percentage (% of total heat input) that is going to be maintained while burning supplemental fuels during normal operation. The frequency of testing shall be determined by DERM.

Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the unit may be tested at less than 90% of the maximum operating rate allowed by the permit; in this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rules 62-204.800, 62-297.310, 62-297.400, 62-297.401, F.A.C., and 40 CFR 60 Appendix A and 40 CFR 60.8, Subpart A].

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. The enclosed Best Available Control Technology determination for VOC is hereby made part of the permit file. The Miami-Dade DERM will revise the present Title V Operation Permit as advised in the Notice of Final (Title V) Permit dated October 31, 2000 and to incorporate additional changes resulting from this permitting action.

Any party to this permitting decision (order) has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.



Howard L. Rhodes, Director  
Division of Air Resources Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Permit Amendment was sent by certified mail (\*) and copies were mailed by U.S. Mail before the close of business on 3/1/02 to the person(s) listed:

Ed Allsopp, VP, Rinker\*  
Scott Benyon, Rinker  
Mike Vardeman, Rinker  
Gregg Worley, EPA  
John Bunyak, NPS  
Isidore Goldman, DEP SED  
H. Patrick Wong, Miami-Dade DERM  
John Koogler, PhD., P.E., K&A  
Jason Hand, Esq., DEP OGC  
Segundo J. Fernandez, Esq., OHF&C

Clerk Stamp

**FILING AND ACKNOWLEDGMENT FILED**, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Victoria Gibson March 1, 2002  
(Clerk) (Date)

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1. Article Addressed to:

Mr. Ed Allsopp  
 Vice President of Cement Operations  
 Rinker Materials Corporation  
 1200 Northwest 137th Avenue  
 Miami, FL 33182

**COMPLETE THIS SECTION ON DELIVERY**

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C. Signature

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*Ed Allsopp*

3/5/00

Agent  
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PS Form 3800, January 2001

See Reverse for Instructions

**Revised Table 1-2. Air Pollutant Standards and Terms**

FACILITY ID NUMBER: 0250014

DEP File No. 0250014-008-AC (PSD-FL-324)  
 Original DEP File No. 0250014-002-AC  
 Portland Cement Plant and Associated Equipment  
 Dry Process Technology

**Permittee:**  
**Rinker Materials Corporation**

**Emission Unit - Kiln System**  
**Cement Plant Modernization**

E.U. ID#	Description	Pollutant ID	Fuel(s) [2]	Allowable Emissions [3]		Equivalent Emissions [4]	Basis
				Permit Limits	lb/hr	TPY	
ARMS #	Kiln/Cooler/Raw Mill	PM	coal/gas/WTDF/oil	0.20 lb/ton kiln <sub>ph</sub> feed *	44	193	RMC - Data
ARMS #	Kiln/Cooler/Raw Mill	PM <sub>10</sub>	coal/gas/WTDF/oil	0.17 lb/ton kiln <sub>ph</sub> feed *	37.40	164	RMC - Data
ARMS #	Kiln/Cooler/Raw Mill	SO <sub>2</sub>	coal/gas/WTDF/oil	0.7 lb/MMBTU <b>2.23 lb/ton of clinker</b>	306	1340	RMC - Data
ARMS #	Kiln/Cooler/Raw Mill	NO <sub>x</sub>	coal/gas/WTDF/oil	4.53 lb/MMBTU <b>4.9 lb/ton of clinker</b>	671	2940	RMC - Data
ARMS #	Kiln/Cooler/Raw Mill	CO	coal/gas/WTDF/oil	3.01 lb/ton clinker	412	1807	RMC - Data
ARMS #	Kiln/Cooler/Raw Mill	VOC	coal/gas/WTDF/oil	0.1 lb/ton clinker <b>0.12 lb/ton clinker</b>	13.7 <b>16.4</b>	60 <b>72</b>	RMC - Data <b>BACT</b>
ARMS #	Kiln/Cooler/Raw Mill	H <sub>2</sub> SO <sub>4</sub> mist	coal/gas/WTDF/oil	0.014 lb/ton clinker	1.92	8.4	AP - 42
ARMS #	Kiln/Cooler/Raw Mill	Beryllium	coal/gas/WTDF/oil	6.6x10 <sup>-7</sup> lb/ton clinker	9.04E-05	0.000396	AP - 42
ARMS #	Kiln/Cooler/Raw Mill	Mercury	coal/gas/WTDF/oil	2.4x10 <sup>-5</sup> lb/ton clinker	3.30E-03	0.014	AP - 42
ARMS #	Kiln/Cooler/Raw Mill	Lead	coal/gas/WTDF/oil	7.5x10 <sup>-5</sup> lb/ton clinker	0.01	0.045	AP - 42
ARMS #	Kiln/Cooler/Raw Mill	VE	coal/gas/WTDF/oil	10% opacity			NSPS

**ALLOWABLE OPERATING RATES**

Kiln/Cooler/Raw Mill		
Hours of operation per year	Hours	8760
Kiln preheater feed rate (kiln <sub>ph</sub> ) *	TPH	220
Kiln Heat Input	MMBtu/hr	437
Clinker Production [1]	TPH	137
Cooler throughput rate	TPH	137

**NOTES**

- [1] At a maximum design clinker production rate of 137 TPH and preheater feed rate of 220 TPH, utilizing a conversion factor of 0.60: (220 x 0.60 = 137).
- [2] Fuel combustion as specified in Specific Condition No. B.5, and the protocols established by DERM. See also Specific Condition B.13.
- [3] Compliance Units. This facility shall demonstrate compliance based on these standards.
- [4] "Equivalent Emissions" are based on annual emissions at 8760 hrs/yr. The "Equivalent Emissions" are also listed for informational purpose and for PSD and recordkeeping tracking purposes.



**Revised Table 2-1. Compliance Requirements**

**FACILITY ID NUMBER:** 0250014

Original DEP File No. 0250014-002-AC  
 Permit Modification No. 0250014-008-AC

Permittee:  
 Rinker Materials Corporation  
 Portland Cement Plant No. 2 and Associated Equipment

E.U. ID#	Description	Pollutant Name or Parameter	Fuel(s) [1]	EPA/Reference Method/CMS *	Testing Time Frequency	Min. Compliance Test Duration	CMS * Compliance
ARMS #	Kiln/Cooler/Raw Mill	PM/PM <sub>10</sub>	Oil/Coal /Gas/WTDF	5 or 201 / 201A	initial/annual [8]	3 one-hr run	
ARMS #	Kiln/Cooler/Raw Mill	VE	Oil/Coal/Gas/WTDF	9 / COMS	initial/annual/COMS	3 one-hr run	No [4]
ARMS #	Kiln/Cooler/Raw Mill	SO <sub>2</sub>	Oil/Coal/Gas/WTDF	CEMS	daily average	continuous	Yes [6]
ARMS #	Kiln/Cooler/Raw Mill	NO <sub>x</sub>	Oil/Coal/Gas/WTDF	CEMS	daily average	continuous	Yes [3]
ARMS #	Kiln/Cooler/Raw Mill	CO	Oil/Coal/Gas/WTDF	10 [5]	initial/annual	3 one-hr run	
ARMS #	Kiln/Cooler/Raw Mill	VOC	Oil/Coal/Gas/WTDF	25 or 25A [2]	Initial/annual	3 one-hr run	Yes No[2]
ARMS #	Kiln/Cooler/Raw Mill	H <sub>2</sub> SO <sub>4</sub> mist	Oil/Coal/Gas/WTDF	8	initial	3 one-hr run	
ARMS #	Kiln/Cooler/Raw Mill	Hg, Pb, Be	Oil/Coal/Gas/WTDF	29	initial	3 one-hr run	
ARMS #	Fugitive sources	VE		9	Protocol [7]		
ARMS #	Minor Sources	VE		9	initial/annual	3 one-hr run	

- [1] Initial compliance testing shall be conducted under all the scenarios this facility is planning to operate under. Specific condition B.13. Annual testing of emissions shall be conducted during the worst case scenario that this facility would normally operate under. Frequency of testing after initial compliance shall be determined by the Miami-Dade County Department of Environmental Resources Management (DERM). Fuels to be burned are specified in Specific Condition B.5.
- [2] ~~To comply with the condition of this permit, VOC emissions shall be tested initially, quarterly beginning with the first quarter of 2002 (by March 31, 2002) until the total hydrocarbon (THC) monitor is installed and certified, and annually thereafter. to comply with the condition of this permit. Thereafter, compliance will be assumed provided the CO allowable emission rate is reached. At Rinker's option, Method 25A can be corrected for methane through a concurrently conducted Method 18 determination or through another method approved by DERM. If a concurrent demonstration of methane is not performed, then the results of the Method 25A determination shall be used to demonstrate compliance with the VOC emission limit. In other words, Rinker has the option of using Method 25A alone if they stipulate that all of the THC is VOC.~~
- [3] NO<sub>x</sub> - The continuous emission monitoring system (CEMS) data shall be used for the kiln/cooler/raw mill for compliance requirement. The CEMS calibration and maintenance shall meet the applicable requirements of 40 CFR 60, Appendix B and Appendix F.
- [4] Pursuant to 40 CFR 60, Subpart F, the kiln/cooler/raw mill exhaust system shall be equipped with continuous opacity monitoring system (COMS) to record the opacity at the stack to indicate proper maintenance and operation. Monitoring of the opacity of emissions shall be demonstrated by COMS pursuant to 40 CFR 60.63. Notification and recordkeeping shall be in accordance with 40 CFR 60.7 and 40 CFR 60.65.
- [5] Continuous process monitors for CO and/or O<sub>2</sub> to optimize combustion conditions for pollution control shall be part of the process.
- [6] SO<sub>2</sub> - The continuous emission monitoring (CEMS) data shall be used for the kiln/cooler/raw mill compliance requirement. The CEMS calibration and maintenance shall meet the applicable requirements of 40 CFR 60, Appendix B and Appendix F.
- [7] Protocol as approved by the Permitting Authority (DERM).
- [8] Rinker has the option of using Method 5 if they stipulate that all of the PM is PM10.

\* CMS [=] compliance demonstrated by a continuous monitoring system: CEMS or COMS.

**FINAL DETERMINATION**  
**File Nos. 0250014-007 & 008-AC (PSD-FL-324)**  
**Rinker Miami Cement Plant**

The Department distributed an "Intent to Issue Permit" package on December 14, 2001. The applicant published the "Public Notice of Intent to Issue" in the Miami Daily Review on December 27, 2001. The Department received the proof of publication on January 3, 2002. The applicant has requested an extension of the deadline for filing a petition for an administrative hearing until February 28, 2002.

No comments on the draft permit modification were received from the public or the National Park Service. The FDEP received comments from the applicant, from the U.S. Environmental Protection Agency (EPA) Region 4, and from the Miami-Dade County Department of Environmental Regulation Management (DERM). The following section summarizes the Department's response to the comments and resulting revisions.

**COMMENTS/CHANGES**

*Comments regarding the THC monitor:* The EPA supported requiring the THC monitor for purposes of compliance, noting that a monitor is the only practical way of determining compliance with an emission limit that is expressed over a 30-day averaging time. The applicant, however, pointed out that CEMS are not available for non-methane THC and argued that the THC results from the monitor (which include methane) should not be compared directly to the VOC emission limit (because methane is not a VOC). The applicant suggested that the monitor be used for purposes of reasonable assurance, but not for compliance. The DERM suggested using either approach (i.e., compliance or reasonable assurance), but requested an annual Relative Accuracy Test Audit (RATA) for the monitor -- along with an annual VOC compliance test -- if the monitor is required only for purposes of reasonable assurance.

*Response:* The final permit clarifies that an annual Method 25A test is the compliance method for the VOC emission limit. The permit does, however, specify the calculation and recording of daily average THC emissions and 30-day rolling average THC emissions. Corrective action and DERM notification are required if (1) the 30-day rolling average THC emission rate exceeds 0.12 lb/ton of clinker, or (2) the daily average exceeds 0.12 lb/ton of clinker for 10 consecutive days. When the Department or DERM has good reason (including but not limited to these two criteria) to believe that the VOC emission standard for the kiln is being violated, it has the authority under 62-297.310(7)(b), Florida Administrative Code (F.A.C.), to require the owner or operator to conduct compliance tests which identify the nature and quantity of VOC emissions.

The permit requires that the CEMS be installed, certified, operated and maintained in accordance with 40 CFR part 60, appendix B, performance specification 8A (PS-8A); it also requires CEMS data to be quality assured using the procedures of 40 CFR part 60, appendix F. Appendix F specifies that a "RATA must be conducted at least once every four calendar quarters," and PS-8A provides a specific alternative procedure to use in lieu of a RATA for THC CEMS. For brevity, the conditions and requirements of Appendix F and PS-8A are not included in the construction

permit modification. The specific conditions could be explicitly included in the operating permit for clarity and completeness.

The FDEP believes that the THC CEMS, notification requirements, performance specifications, and compliance testing provisions in the final permit provide reasonable assurance that the VOC emission limit is being met.

Comments regarding the 30-day rolling average: Both EPA and DERM suggested that the permit explicitly detail the calculation method for determining the 30-day rolling average THC emission rate. Both commenters recommended that the 30-day rolling average be calculated as the sum of all the valid hourly THC emission rates over the previous 30 operating days divided by the total number of valid operating hours.

Response: The FDEP concurs with these comments and has incorporated the calculation procedure into the final permit.

Comments regarding quarterly testing requirement: Both DERM and the applicant noted that, because of the timing of the final permit, the requirement to conduct a compliance test in the fourth quarter of 2001 should be removed.

Response: The FDEP concurs, and has added language specifying that compliance testing shall be conducted initially, quarterly until the THC monitor is installed and certified, and annually thereafter.

## **CONCLUSION**

The above minor revisions were made. Table 2-1 was updated to reflect the minor revisions, and typographical errors were corrected. The BACT determination was finalized and is enclosed. The final action of the Department is to issue the permit with the changes described above.

**BEST AVAILABLE CONTROL TECHNOLOGY  
DETERMINATION**

**RINKER MATERIALS CORPORATION  
MIAMI, DADE COUNTY, FLORIDA**

**Portland Cement Manufacturing Facility**

**VOC BACT Determination**

DEP File No. 0250014-008-AC  
PSD-FL-324

Department of Environmental Protection  
Division of Air Resources Management  
Bureau of Air Regulation

March 1, 2002

# BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

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## I. APPLICANT NAME AND ADDRESS

Rinker Materials Corporation  
1200 NW 137th Avenue  
Miami, Florida 33182

## II. FACILITY INFORMATION

### **A. FACILITY LOCATION**

Rinker Materials Corporation (Rinker) recently modernized the existing Miami Cement Plant by replacing the wet process cement plant with a 1.2 million tons per year (TPY) clinker dry-process cement production line [137 tons of clinker per hour (TPH)].

This site is approximately 8.2 kilometers to the Everglades National Park, a Class I Prevention of Significant Deterioration (PSD) Area, and in an ozone (O<sub>3</sub>) maintenance area in Dade County.

### **B. FACILITY CLASSIFICATION CODE (SIC)**

Major Group No. 32, Clay, Glass, and Concrete Products  
Industry Group No. 324, Cement, Hydraulic  
Industry No. 3241, Cement, Hydraulic

### **C. FACILITY CATEGORY**

The Rinker Miami Cement Plant directly emits more than 100 TPY of several regulated air pollutants and emits over 10 TPY of at least one hazardous air pollutant (HAP). Therefore it is classified as a "Major Source of Air Pollution or Title V Source," per the definitions in Rule 62-212.200, Florida Administrative Code (F.A.C.).

This industry is listed in Table 212.400-1, "Major Facilities Categories", Rule 62-212.400, F.A.C. Therefore, stack and fugitive emissions of over 100 TPY of carbon monoxide (CO), volatile organic compounds (VOC), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), or particulate matter (PM/PM<sub>10</sub>) characterize the existing installation as a Major Facility per the definitions in Rule 62-210.200, F.A.C. and subject to applicability review for the requirements of PSD per Rule 62-212.400, F.A.C.

Per Table 212.400-2, "Regulated Air Pollutants – Significant Emission Rates", modifications at the facility resulting in emissions increases greater than 40 TPY of NO<sub>x</sub> or SO<sub>2</sub>, 7 TPY of sulfuric acid mist (SAM), 25/15 TPY of PM/PM<sub>10</sub>, 3 TPY of fluorides, 1200 pounds per year (lb/yr) of lead or 200 lb/yr of mercury require review per the PSD rules and a determination for Best Available Control Technology (BACT) per Rule 62-212.400, F.A.C.

The approved Rinker modernization project was not subject to New Source Review including the PSD provisions because the modernized plant was expected to result in less overall air pollution than the existing plant. This is primarily due to the lower fuel requirements per unit of product characteristic of the dry processes.

# BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

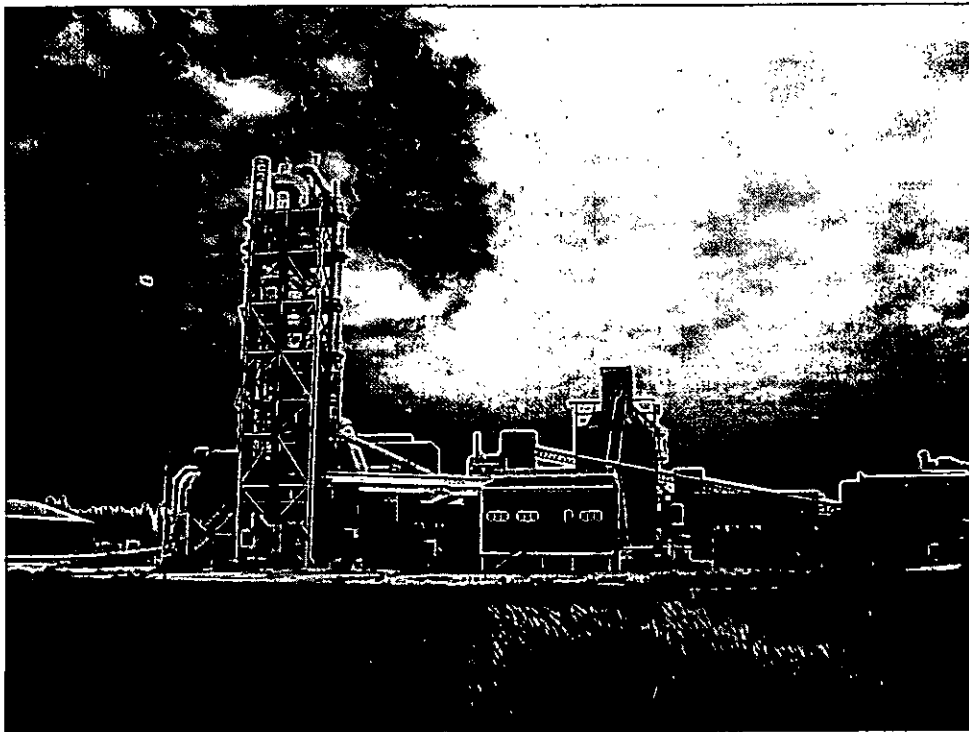
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## III. MODERNIZATION PROJECT

The Department issued a permit to Rinker on September 11, 1997 to modify the existing wet process plant by incorporating the modern dry process technology including a preheater and precalciner along with indirect firing. The dry process preheater/precalciner (PH/PC) kiln is the most fuel-efficient cement pyroprocessing technology currently available. Thermal efficiencies will be improved with the PH/PC kiln and the amount of fuel combusted per ton of clinker produced is expected to be reduced

The modernized cement plant will produce up to 137 TPH of clinker (highest maintained rate over a day). The annual potential production rate will not exceed 1.2 million TPY of clinker. The major equipment will include a PH/PC kiln, a clinker cooler, raw mill, finish mill, silos, conveyers, and particulate control/dust collection and recycling equipment. The cement product will be stored in silos and shipped in bags or in bulk by rail or truck.

A more complete project and process description was provided in the Technical Evaluation and Preliminary Determination issued for the modernization project on June 23, 1997. Rinker completed basic construction of the dry process kiln line in Spring of 2000. Compliance tests were conducted during the second half of the year. Following is a photograph of the constructed dry process plant taken in late June 2001.



**Rinker Modernized Dry Process Cement Plant in Miami, Florida**

# BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

## IV. VOC BACT DETERMINATION REQUEST

On November 19, 2001, Rinker submitted a request that the Department perform a determination of BACT pursuant to the PSD rules (62-212.400, F.A.C.). The main reason for Rinker's request is that the VOC limit accepted by the company to avoid PSD during the modernization project is very difficult to meet for reasons that are discussed below.

## V. PRESENT SITUATION

As of this time, all physical construction required to make cement at or near the permitted production limit is complete. A Title V Operation Permit with a Compliance Plan was issued in October 2000. Compliance testing has been conducted. Following are the results of tests for VOC.

Pollutant	Permit Limit	Result
VOC	0.1 lb/ton clinker	0.1 lb/ton clinker

The emissions of VOC are at the allowable limit based on lb/ton of clinker produced. However annual emissions are still less than the value that would have triggered PSD. The modernization permit required only an initial test for VOC and relied upon carbon monoxide testing as a surrogate for VOC.

## VI. BACKGROUND ON VOC ISSUE

The following table is from the Technical Evaluation and Preliminary Determination in support of the modernization permit issued in 1997. The permit allowed an increase of only 32.9 TPY, of which 20.5 TPY were consumed by a contemporaneous soil remediation thermal unit project.

CONTEMPORANEOUS CREDITABLE CHANGES (TPY)\*

Pollutants	Modernization Project	(+) Increases (Contemporaneous)	(-) Decreases (Shutdowns)	= Total	PSD Significance
VOC	60	20.5	47.6	32.9	40

\* Sum of Contemporaneous Creditable Changes (TPY) detailed in Rinker's letter dated April 16, 1997.

As a result, an increase in kiln emissions from 47.6 actual TPY to 60 potential TPY was allowed despite a near doubling in cement output. Emissions of VOC from raw materials in the old wet process were masked by the fact that raw materials are slurried and then dried, calcined, and converted to clinker within the kiln. It was apparently believed that VOC would be evolved in the kiln and would be destroyed in the calciner that would act somewhat as an afterburner.

A similar assumption was made for the new preheater calciner kiln constructed by Florida Rock in Newberry, Florida. In that case, a BACT limit for VOC was set at 0.12 lb/ton of clinker. The company initially failed to achieve the permitted limit and was able to do so after an extensive program to diagnose the causes and potential remedies. Testing at Rinker was scheduled after the testing at Florida Rock and Rinker (with difficulty) met its more stringent limit of 0.1 lb/ton of clinker.

## BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

The Department would have issued a higher BACT limit than the limit necessary to avoid PSD if the request had been made at that time. It is noted that the modernization permit required only the initial test for VOC and that the Title V Operation specifies no further testing permit. Nevertheless, Rinker has requested both a new limit and permanent testing and monitoring requirements to be incorporated into the Title V Operation Permit.

Rinker's request to increase the emission rate to 0.12 (matching the Florida Rock limitation) will result in annual VOC emissions of approximately 72 TPY. This would trigger PSD per the above table because emissions increases including contemporaneous increases and decreases would be approximately 45 TPY versus the PSD threshold of 40 TPY

### VII. VOC LIMITATIONS AT OTHER FACILITIES

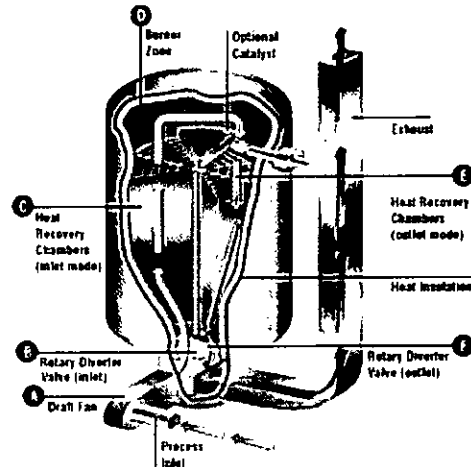
Following is a tabulation of some recent VOC emission limitations for new cement kiln projects. The approximate value determined by the U.S. Environmental Protection Agency (EPA) as Maximum Achievable Control Technology (MACT) for kilns at greenfield sites is included for comparison. There is no MACT requirement for new kilns or existing kilns at brownfield sites.

PLANT	YEAR	PSD?	VOC (lb/ton)	TECHNOLOGY
Rinker (Revision)	2001	Y	0.12	Process/Raw Materials
Rinker Modernization	1997	N	0.10	Process/Combustion
Fla. Rock Newberry	1996	Y	0.12	Process/Combustion
FCS Brooksville	1995/97	Y	0.085	Process/Combustion
Holnam Midlothian	1997	N	0.70	Process/Combustion
TXI Midlothian	1998	N	0.026	Regen Thermal Oxidation
Tarmac Miami	2000	N	0.19	Process/Combustion
Holnam Holly Hill	2000	Y	0.27	Process/Raw Materials
Suwannee American	2000	Y	0.12	Process/Combustion
St. Lawrence Cement	2001 (draft)	LAER	0.11	Process/Raw Materials
Rio Grande	2000	Y	0.05	Process/Combustion
All Greenfield Plants	Future	MACT	~0.3	Process/Raw Materials



## BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

TXI proposed a sophisticated regenerative thermal oxidation (RTO) system that cost about \$17,500,000 (installed) and was able to net out of PSD for VOC and CO. In addition to the cost, additional NO<sub>x</sub> results from burning natural gas in the RTO.<sup>1</sup> Eleven RTO modules of the type shown below were installed and cover an area approximately the "size of a football field."



A Top/Down BACT determination might not have required such a system at the TXI Midlothian site. However the company wanted to avoid protracted delays in their expansion that were likely if they tried to obtain a PSD permit with a BACT determination in Texas for their modernization/expansion project. No subsequent projects have required RTO systems as BACT or LAER.

Colorado specified an annual limit, based on a rolling 12-month total, for the Rio Grande Portland Cement plant outside Pueblo, Colorado. This annual limit is equivalent to about 0.05 lb VOC per ton of clinker. After the initial source compliance testing, however, the Rio Grande permit does not provide for additional VOC measurements, other than general language reserving the right to require testing of any emission source as requested by the State.

A special situation (not listed in the above table) caused Holnam to install an RTO for the purpose of VOC/odor control to abate problems associated with high levels of naturally occurring kerogens in the raw materials available for its plant in Michigan. VOC emissions from that plant were estimated in the "thousands of TPY" versus the 72 TPY foreseen for the Rinker plant.

An alternative to RTO is a carbon filter such as included in the Polysius Environmental Technology (POLVITEC).<sup>2</sup> Such a system was installed at the HCB Siggenthal Plant in Switzerland for multi-pollutant control from dried sewage sludge combustion.<sup>3</sup> The project was feasible because the City of Zurich put up a portion of the capital cost of \$15 million for the installation and the plant recovers costs by burning a variety of other wastes.

## BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

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VOC from raw materials can be controlled by judicious selection of the raw materials. Limestone, clay, and sand are the predominant components of the raw material feed stock. Controlling VOC only through careful selection of raw materials is therefore not a viable option if local, in-state sources of these components are high in VOC content.

There are some control options, however, if the primary materials are relatively free of VOC but the additives, such as mill scale, are high in VOC content. One option is to use mill scale that is free of or cleaned of lubricants.<sup>4</sup> Another is grinding and metering additives directly into the kiln.<sup>5</sup> The organic content of the mill scale is driven off in the preheater. By adding the VOC laden material directly into the hot zone of the kiln instead of the preheater system, the VOC are combusted before they can be emitted.<sup>6</sup>

### VIII. VOC BACT DETERMINATION

The Department has determined that the top control for VOC is 0.026 lb/ton of clinker to be achieved by RTO or carbon adsorption. Reduction of emissions from 0.12 to 0.026 lb/ton would represent annual emission reductions of about 60 TPY. There is no way it can be cost-effective to accomplish such a small reduction through an RTO system or a carbon adsorption filter on a cement kiln. In any event, the plant is only requesting an increase of some 12 TPY.

In Florida, locally available limestone, sand, and clay typically have a low organic content. Mill scale and other additives can be high in VOC content. Adding the mill scale directly to the kiln is not cost-effective in relation to the increased heat consumption of the kiln, possible build ups at the injection point, and the difficulties in producing the homogeneous kiln feed needed for high quality clinker.<sup>6</sup>

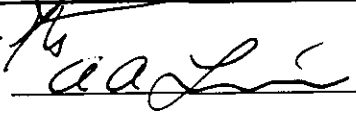
Without judicious selection of raw materials, emissions from kilns such as Rinker and Florida Rock can easily be on the order of 0.2 lb/ton. Both Rinker and Florida Rock have implemented programs to ensure VOC content is minimized in the incoming raw materials in addition to having very effective pyroprocessing systems to burn out VOC emanating from the kilns.

By comparison with recent BACT determinations (including a draft LAER determination) with other kilns around the country, the Rinker and Florida Rock kilns have low VOC emissions. The Department believes that 0.12 lb/ton of clinker is the proper limit for the Rinker kiln and that this limit can be met through proper combustion controls and raw materials selection, without the need for additional control devices or direct firing of the additives.

To provide reasonable assurance that the facility will comply with the VOC emissions limit, the Department will require continuous emissions monitoring system (CEMS) for Total Hydrocarbons (THC) such as was installed at Florida Rock. Until the CEMS is installed, the Department will require quarterly stack testing and testing of hydrocarbon content in the incoming raw materials. After installation of the CEMS, the Department will require annual VOC testing; additional testing may be required by Miami-Dade County following review of the CEMS data. These requirements are established in the permit modification accompanying this BACT determination.

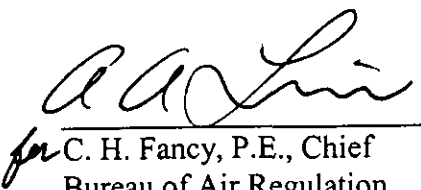
# BEST AVAILABLE CONTROL TECHNOLOGY DETERMINATION

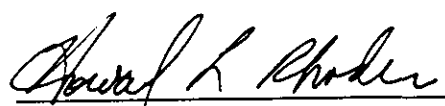
## IX. DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Greg DeAngelo, Permit Engineer  
A. A. Linero, P.E. Administrator   
New Source Review Section  
Department of Environmental Protection  
Bureau of Air Regulation  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Recommended By:

Approved By:

  
for C. H. Fancy, P.E., Chief  
Bureau of Air Regulation

  
Howard L. Rhodes, Director  
Division of Air Resources Management

3/1/2002  
Date

3/1/02  
Date

### References

- <sup>1</sup> Memorandum from Greer, W.L., Trinity Consultants, Inc., Olathe, KS, to Linero, A.A., Florida DEP. *Re: Draft AWMA Paper*. February 9, 2001.
- <sup>2</sup> Kupper, D. "Trends on Desulfurization and Denitrification Techniques in the Cement Industry," in *Proceedings of the 34<sup>th</sup> IEEE Cement Industry Technical Conference*. 1992. Dallas, TX.
- <sup>3</sup> de Quervain, B., Ph.D., "Umweltfreundliche Klarschlammverbrunnung am Beispiel des PCW Portland-Cement-Werks," *GWA des Schweizerischen Vereins des Gas und Wasserfaches*, 1992, Sonderdruck No. 1258.
- <sup>4</sup> Letter from Fred Cohrs, Florida Rock Industries, to Kirby Green, Florida DEP, re: VOC Emissions Testing, dated September 25, 2000.
- <sup>5</sup> Terry, Mark S. "BACT: What is available with Today's Technology," *Krupp Polysius Technical Seminar*. 1999.
- <sup>6</sup> Reference Document, "Best Available Techniques" for the Cement Industry," CEMBUREAU (The European Cement Association). December 1999.