AC62-107857

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

AUG 06 1985

BAQM

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ALEX SENKEVICH
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Causticizing System and Lime Handling [X] New[1] [ ] Existing[1]

APPLICATION TYPE: [X] Construction [ ] Operation [ ] Modification

COMPANY NAME: The Buckeye Cellulose Corporation COUNTY: Taylor

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired) Lime Bins, Slakers, White Liquor and Lime Mud Pressure Filters and Fugitives*

SOURCE LOCATION: Street 5 to 6 miles S.E. of Perry City Perry

UTM: East 256.740 North 3328.700

Latitude 30 ° 03 ' 59 "N Longitude 83 ° 33 ' 12 "W

APPLICANT NAME AND TITLE: Mr. C.E. Wertheimer, Jr., Plant Manager

APPLICANT ADDRESS: Route 3, Box 260, Perry, FL 32347

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of The Buckeye Cellulose Corp.

I certify that the statements made in this application for a construction permit are true, correct and complete to the best of my knowledge and belief. Further, I agree to maintain and operate the pollution control source and pollution control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: C.E. Wertheimer

C.E. Wertheimer, Jr., Plant Manager
Name and Title (Please Type)

Date: 8-2-85 Telephone No. 904/584-0121

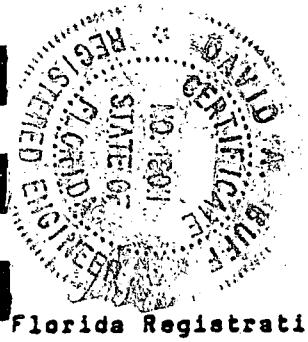
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA (where required by Chapter 471, F.S.)

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that

[1] See Florida Administrative Code Rule 17-2.100(57) and (104)

*This permit covers ancillary equipment and is a companion permit application to the No. 4 Lime Kiln application.

the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.



Signed David A. Buff

David A. Buff
Name (Please Type)

Environmental Science and Engineering, Inc.
Company Name (Please Type)

P.O. Box ESE, Gainesville, FL 32602
Mailing Address (Please Type)

Florida Registration No. 19011 Date: 7-31-85 Telephone No. 904/332-3318

SECTION II: GENERAL PROJECT INFORMATION

A. Describe the nature and extent of the project. Refer to pollution control equipment, and expected improvements in source performance as a result of installation. State whether the project will result in full compliance. Attach additional sheet if necessary.

See No. 4 Lime Kiln application, Attachment A

B. Schedule of project covered in this application (Construction Permit Application Only)

Start of Construction October 1985 Completion of Construction October 1987

C. Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for individual components/units of the project serving pollution control purposes. Information on actual costs shall be furnished with the application for operation permit.)

See No. 4 Lime Kiln application

D. Indicate any previous DER permits, orders and notices associated with the emission point, including permit issuance and expiration dates.

Not Applicable

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ;

if power plant, hrs/yr_____; if seasonal, describe:_____

F. If this is a new source or major modification, answer the following questions. (Yes or No)

1. Is this source in a non-attainment area for a particular pollutant? No

   a. If yes, has "offset" been applied? --

   b. If yes, has "Lowest Achievable Emission Rate" been applied? --

   c. If yes, list non-attainment pollutants. --

2. Does best available control technology (BACT) apply to this source? If yes, see Section VI. No

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. No

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

H. Do "Reasonably Available Control Technology" (RACT) requirements apply to this source? No

   a. If yes, for what pollutants?_____

   b. If yes, in addition to the information required in this form, any information requested in Rule 17-2.650 must be submitted.

Attach all supportive information related to any answer of "Yes". Attach any justification for any answer of "No" that might be considered questionable.

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description (dry)	Contaminants		Utilization Rate - lbs/hr (dry basis)	Relate to Flow Diagram
	Type	% Wt		
Green Liquor Solids	Particulate	100%	160,153	1a plus 1b
Lime Product	Particulate	100%	56,430	3a plus 3b
Water Treatment Lime Mud	Particulate	100%	9,673	25
Kiln Lime Product	Particulate	100%	54,167	14a plus 14b
Purchased Lime Product	Particulate	100%	88,000	15a, b, c, d

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): See Attachment A.

2. Product Weight (lbs/hr): See page 4b of 12.

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/hr	T/yr	
Particulate	2.08	9.13	Process Wt. Table*	36.6	20.8	91.2	2
TRS as H_2S	2.27	0.081	NA	NA	2.27	0.081	7
TRS as H_2S	2.27	0.066	NA	NA	2.27	0.066	9
Particulate	0.343	1.50	Process Wt. Table*	27.8-34.2	343	1502	16
Particulate	0.103	0.451	Process Wt. Table*	24.4	103	451	20

[1]See Section V, Item 2.

*$E = 17.31\ P^{0.16}$ for $P > 30$ TPH

$E = 3.59\ P^{0.16}$ for $P \leq 30$ TPH

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators)

A. Raw Materials and Chemicals Used in your Process, if applicable:

Description	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Lime Product	Particulate	100	44,000	19

B. Process Rate, if applicable: (See Section V, Item 1)

1. Total Process Input Rate (lbs/hr): _____

2. Product Weight (lbs/hr): _____

C. Airborne Contaminants Emitted: (Information in this table must be submitted for each emission point, use additional sheets as necessary)

Name of Contaminant	Emission[1]		Allowed[2] Emission Rate per Rule 17-2	Allowable[3] Emission lbs/hr	Potential[4] Emission		Relate to Flow Diagram
	Maximum lbs/hr	Actual T/yr			lbs/yr	T/yr	

[1]See Section V, Item 2.

[2]Reference applicable emission standards and units (e.g. Rule 17-2.600(5)(b)2. Table II, E. (1) - 0.1 pounds per million BTU heat input)

[3]Calculated from operating rate and applicable standard.

[4]Emission, if source operated without control (See Section V, Item 3).

PRODUCT RATES

DESCRIPTIONS	PRODUCT (lb/hr dry)	RELATE TO FLOW DIAGRAM
White Liquor	113,150	26
Lime Mud to Kiln	96,726	11a
Lime Product to Water Treat.	5,417 Average	22
Lime Product to Slakers	56,430	3a plus 3b
Lime Product	44,000	18

D. Control Devices: (See Section V, Item 4) See Attachment B

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Micro-Pulsair 100S-10TR				
or equivalent	Particulate	99.9%	Submicron	See Att. B-2
Fuller Company				
(existing baghouse)	Particulate	99.9%	Submicron	See Att. B-2
Slakers Scrubber ⇦ vent to hood	Particulate	90%+	10μ+	See Att. B-4

E. Fuels Not Applicable.

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	

*Units: Natural Gas--MMCF/hr; Fuel Oils--gallons/hr; Coal, wood, refuse, other--lbs/hr.

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

F. If applicable, indicate the percent of fuel used for space heating.

Annual Average NA Maximum _____

G. Indicate liquid or solid wastes generated and method of disposal.

All collected lime dust will be recycled back into lime bins.

Grits from the two slakers (Streams 5a and 5b) and dregs and $CaCO_3$ from dregs filters (Stream 24) go to onsite solid waste disposal. All liquid wastes are either recycled or go to NPDES treatment system.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):
See Attachment B-1.

Stack Height: _____ ft. Stack Diameter: _____ ft.

Gas Flow Rate: _____ ACFM _____ DSCFM Gas Exit Temperature: _____ °F.

Water Vapor Content: _____ % Velocity: _____ FPS

SECTION IV: INCINERATOR INFORMATION

Not Applicable

Type of Waste	Type 0 (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq.& Gas By-prod.)	Type VI (Solid By-prod.)
Actual lb/hr Incinerated							
Uncontrolled (lbs/hr)							

Description of Waste _____

Total Weight Incinerated (lbs/hr) _____ Design Capacity (lbs/hr) _____

Approximate Number of Hours of Operation per day _____ day/wk _____ wks/yr. _____

Manufacturer _____

Date Constructed _____ Model No. _____

	Volume $(ft)^3$	Heat Release (BTU/hr)	Fuel		Temperature (°F)
			Type	BTU/hr	
Primary Chamber					
Secondary Chamber					

Stack Height: _____ ft. Stack Diamter: _____ Stack Temp. _____

Gas Flow Rate: _____ ACFM _____ DSCFM* Velocity: _____ FPS

*If 50 or more tons per day design capacity, submit the emissions rate in grains per standard cubic foot dry gas corrected to 50% excess air.

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner

[ ] Other (specify) _____

Brief description of operating characteristics of control devices: _____

Ultimate disposal of any effluent other than that emitted from the stack (scrubber water, ash, etc.):

NOTE: Items 2, 3, 4, 6, 7, 8, and 10 in Section V must be included where applicable.

SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight -- show derivation [Rule 17-2.100(127)]
   See Attachment A
2. To a construction application, attach basis of emission estimate (e.g., design calculations, design drawings, pertinent manufacturer's test data, etc.) and attach proposed methods (e.g., FR Part 60 Methods 1, 2, 3, 4, 5) to show proof of compliance with applicable standards. To an operation application, attach test results or methods used to show proof of compliance. Information provided when applying for an operation permit from a construction permit shall be indicative of the time at which the test was made.
   See Attachment A
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   See Attachment A
4. With construction permit application, include design details for all air pollution control systems (e.g., for baghouse include cloth to air ratio; for scrubber include cross-section sketch, design pressure drop, etc.)
   See Attachment B
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistant: actual emissions = potential (1-efficiency).
   See Attachment B
6. An 8 1/2" x 11" flow diagram which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
   See No. 4 Lime Kiln Application, Attachment A
7. An 8 1/2" x 11" plot plan showing the location of the establishment, and points of airborne emissions, in relation to the surrounding area, residences and other permanent structures and roadways (Example: Copy of relevant portion of USGS topographic map).
   See No. 4 Lime Kiln Application, Attachment A
8. An 8 1/2" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
   See No. 4 Lime Kiln Application, Attachment A

9. The appropriate application fee in accordance with Rule 17-4.05. The check should be made payable to the Department of Environmental Regulation. Check attached.

10. With an application for operation permit, attach a Certificate of Completion of Construction indicating that the source was constructed as shown in the construction permit. Not Applicable.

SECTION VI: BEST AVAILABLE CONTROL TECHNOLOGY Not Applicable

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy)

[ ] Yes [ ] No

Contaminant	Rate or Concentration

C. What emission levels do you propose as best available control technology?

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

1. Control Device/System:
2. Operating Principles:
3. Efficiency:*
4. Capital Costs:

*Explain method of determining

5. Useful Life:

6. Operating Costs:

7. Energy:

8. Maintenance Cost:

9. Emissions:

Contaminant	Rate or Concentration

10. Stack Parameters

a. Height: ft.

b. Diameter: ft.

c. Flow Rate: ACFM

d. Temperature: °F.

e. Velocity: FPS

E. Describe the control and treatment technology available (As many types as applicable, use additional pages if necessary).

1.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

2.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

3.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Cost:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

4.

a. Control Device:

b. Operating Principles:

c. Efficiency:[1]

d. Capital Costs:

e. Useful Life:

f. Operating Cost:

g. Energy:[2]

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

k. Ability to construct with control device, install in available space, and operate within proposed levels:

F. Describe the control technology selected:

1. Control Device:

2. Efficiency:[1]

3. Capital Cost:

4. Useful Life:

5. Operating Cost:

6. Energy:[2]

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

a. (1) Company:

(2) Mailing Address:

(3) City:

(4) State:

[1]Explain method of determining efficiency.
[2]Energy to be reported in units of electrical power - KWH design rate.

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

b. (1) Company:

(2) Mailing Address:

(3) City: (4) State:

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions:[1]

Contaminant	Rate or Concentration

(8) Process Rate:[1]

10. *Reason for selection and description of systems:*

[1]Applicant must provide this information when available. Should this information not be available, applicant must state the reason(s) why.

SECTION VII - PREVENTION OF SIGNIFICANT DETERIORATION

Not Applicable

A. Company Monitored Data

1. _____no. sites _____ TSP _____( ) SO^{2}* _____ Wind spd/dir

Period of Monitoring _____/_____/_____ to _____/_____/_____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

*Specify bubbler (B) or continuous (C).

2. Instrumentation, Field and Laboratory

a. Was instrumentation EPA referenced or its equivalent? [ ] Yes [ ] No

b. Was instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. _____ Year(s) of data from _____/_____/_____ to _____/_____/_____
month day year month day year

2. Surface data obtained from (location)_____

3. Upper air (mixing height) data obtained from (location)_____

4. Stability wind rose (STAR) data obtained from (location)_____

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

Attach copies of all final model runs showing input data, receptor locations, and principle output tables.

D. Applicants Maximum Allowable Emission Data

Pollutant	Emission Rate
TSP	_____ grams/sec
SO^2	_____ grams/sec

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description of point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

F. Attach all other information supportive to the PSD review.

G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

H. Attach scientific, engineering, and technical material, reports, publications, journals, and other competent relevant information describing the theory and application of the requested best available control technology.

First in cellulose

The Buckeye Cellulose Corporation

Mailing Address: Route 3 Box 260 Perry, Florida 32347 Phone: (904) 584-0121

July 12, 1982

Mr. Doug Dutton
Florida Department of Environmental Regulation
3426 Bills Road
Jacksonville, FL 32207

Dear Mr. Dutton:

The purpose of this letter is to provide the required delegation of authority for the Foley Plant Manager to communicate orally and in writing with the Florida Department of Environmental Regulation with respect to environmental matters involving the Foley Plant.

Effective July 1, 1982, Mr. C. E. Wertheimer, Jr. has succeeded Mr. G. B. Ellis as the Plant Manager at Foley. Attached are copies of the appropriate announcement and delegation of authority to Mr. Wertheimer.

I believe this meets the requirements for delegation of authority.

Very truly yours,

THE BUCKEYE CELLULOSE CORPORATION

J. H. Millican
Environmental Control Manager

JHM/eph

Attachments

bcc: T. H. Donnelly
C. E. Wertheimer
S. J. Kruger - Memphis
D. E. Ross - Legal DX-6/Cinti.

The Buckeye Cellulose Corporation

Mailing Address: P. O. Box 6407, Memphis, Tennessee 38108
Offices: 949 Tillman Street, Phone: (901) 324-8881
A subsidiary of The Procter & Gamble Company

DELEGATION OF AUTHORITY TO EXECUTE CONTRACTS

By Law 15 of the Board of Directors of The Buckeye Cellulose Corporation provides as follows:

The President or any Vice President may, by designation in writing, delegate to employees of this Company, The Procter & Gamble Company, or of any of either of their subsidiaries the right to execute:

A. Contracts for the purchase or sale of raw materials;
B. Contracts for the purchase or sale of finished products;
C. Contracts for the purchase of supplies, equipment and insurance;
D. Contracts for the purchase of services (including research performed by universities, foundations, commercial laboratories, and consultants);
E. Contracts for the rental of warehouse space or other storage facilities and services;
F. Agreements involving the receipt of confidential disclosures of technical information;
G. Such instruments as may be necessary in connection with the operation and fulfillment of the above-named contracts and agreements;
H. Tax returns and such instruments as may be necessary in connection with the settlement of any tax claims;
I. Notices, statements and certifications required by health and safety regulatory agencies of Federal and State Governments;
J. Documents pertaining to the furnishing of surety bonds.

Accordingly, I hereby delegate to the:

Foley Plant Manager
Manager, Flint River Operations
Flint River Production Plant Manager
Memphis Plant Manager
Huntsville Plant Manager
Southeastern Lands and Timber Manager

the authority to communicate orally and in writing with the appropriate Federal and State Environmental Regulation Departments with respect to environmental matters involving his/her area of operations.

These delegations are limited to matters for which these Managers have apparent authority resulting from their positions as the employees directly responsible for the overall operations of their respective facilities, such as permit and variance applications, permit and variance renewals, routine and special report forms and answering inquiries. These Managers are not authorized to bind the Corporation to financial or legal obligations such as Consent Agreements, Consent Stipulations (either covered by bond or otherwise), or other similar instruments. This supersedes any previous authority.

April 15, 1981
Date

R. E. Cannon, President

ANNOUNCEMENT

This is to announce the following organization changes in the Cellulose & Specialties Division:

Mr. C. E. Wertheimer, Jr., currently Memphis Plant Manager, will be appointed Foley Plant Manager effective July 1, 1982, succeeding Mr. G. B. Ellis whose new assignment will be announced at a later date. In preparation for this assignment, Mr. Wertheimer will be transferred to Special Assignment effective April 1, 1982.

Mr. B. G. Mullins, currently Group Manager, Huntsville Plant, will be appointed Memphis Plant Manager, effective April 1, 1982, succeeding Mr. Wertheimer.

cw
2/9/82

ATTACHMENT A

EMISSION CALCULATIONS

PROPOSED LIME SLAKERS, CAUSTICIZING LIME BINS,
WATER TREATMENT LIME BINS,
KILN LEAKS, AND TRS FUGITIVES

I. NEW SLAKERS

A. PARTICULATE MATTER EMISSIONS

1. MAXIMUM EMISSIONS

Based on one slaker vendor's information, total particulate emissions from slaking would be 5.0 lb/day. Other vendors could vary from this level. Therefore, maximum emissions are calculated at ten times this level.

5.0 lb/day x 10 / 24 hr/day = 2.083 lb/hr PM

2.08 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 9.13 TPY PM

9.125

2. ALLOWABLE EMISSIONS

Based on process weight table, $E = 17.31\ P^{0.16}$ for $P > 30$ TPH

Input to slakers consists of green liquor (Stream 1) and lime (Stream 3).

Maximum green liquor solids to slaking (Streams 1a plus 1b)

= 160,153 lb/hr = 80.08 TPH

.0765

160153
56430
216583
÷2000
108.2915

Maximum lime product to slaking (Streams 3a plus 3b)

= 56,430 lb/hr = 28.22 TPH

.215

Maximum total process input rate = 108.29 TPH

$E = 17.31\ (108.29)^{0.16}$ = 36.63 lb/hr PM × 4.38 = 160.31 TPY

.6295

3. POTENTIAL EMISSIONS

Scrubber on slakers rated at 90% or greater efficiency

2.08 lb/hr / 0.10 = 20.8 lb/hr = 91.2 TPY PM

× 0.10 = 0.208 × 4.38 = 0.912 TPY PM

B. PRODUCT RATE

Slakers product rate = Lime mud + white liquor

Assuming grits are negligible, the slaker product rate equals process input rate to slakers = 108.29 TPH = 216,580 lb/hr.

II. LIME TRANSFER TO CAUSTICIZING LIME BINS

PARTICULATE MATTER

1. MAXIMUM EMISSIONS

   One baghouse controls dust from both lime bins

   Manufacturer's data: 0.02 gr/scf @ 2,000 scfm (see Attachment B-2)

   0.02 gr/scf x 2,000 scf/min x 60 min/hr / 7,000 gr/lb
   = 0.343 lb/hr = 1.50 TPY PM

2. ALLOWABLE EMISSIONS

   Process weight table, $E = 17.31\ P^{0.16}$ for $P > 30$ TPH

   $E = 3.59\ P^{0.62}$ for $P \leq 30$ TPH

   a. Maximum process rate from No. 4 Lime Kiln into bins (Stream 14a + 14b) = 650 TPD
   = 27.083 TPH
   $E = 3.59\ (27.083)^{0.62}$ = 27.8 lb/hr PM $\times$ 4.38 = 121.56 TPY

   b. Maximum process rate from rail/truck at 44 TPH (only two loading spots will operate at the same time at 22 TPH each) (total of Streams 15a, b, c, and d).
   $E = 17.31\ (44)^{0.16}$ = 31.7 lb/hr PM

   c. The maximum process rate will occur when operating two rail/truck loading spots and simultaneously operating the kiln.
   $E = 17.31\ (27.083 + 44)^{0.16}$ = 34.2 lb/hr PM

3. POTENTIAL EMISSIONS

   Baghouse rated at 99.9% efficiency

   0.343 lb/hr / (1-0.999) = 343 lb/hr = 1,502 TPY PM

   $\times$ 0.001 = .00343 $\times$ 4.38 = 0.0015 TPY

III. LIME TRANSFER TO WATER TREATMENT BINS

PARTICULATE MATTER

1. MAXIMUM EMISSIONS

Baghouse rated at 600 scfm and 0.02 gr/scf (see Attachment B-2)
0.02 gr/scf x 600 scfm x 60 min/hr / 7,000 gr/lb = 0.103 lb/hr
Assume baghouse operates at all times (worst case):
0.103 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 0.451 TPY PM

2. ALLOWABLE EMISSIONS

Process weight table, $E = 3.59\ P^{0.62}$ for $P \leq 30$ TPH
Maximum transfer rate = 22 TPH (Stream 19)
$E = 3.59\ (22)^{0.62}$ = 24.4 lb/hr PM

3. POTENTIAL EMISSIONS

Assume 99.9% efficiency on baghouse
0.103 lb/hr / (1-0.999) = 103 lb/hr = 451 TPY PM

IV. KILN LEAKS

FUGITIVE PARTICULATE MATTER

MAXIMUM AND POTENTIAL EMISSIONS

For new kiln, leaks will only occur at feed, and emission factor is estimated to be 50% lower than for existing kilns, based upon better seal (see No. 4 Lime Kiln Application, Attachment C-13).

650 TPD / 24 hr/day x (0.089 lb/ton x 0.5) = 1.205 lb/hr PM

1.205 lb/ton x 8,760 hr/yr / 2,000 lb/ton = 5.28 TPY PM

V. WHITE LIQUOR PRESSURE FILTER

ESTIMATED TRS EMISSIONS

Total TRS emissions are considered to be insignificant but can be calculated as follows:

1. NORMAL OPERATION--Based on design engineering information supplied by project engineers:

   1,400 acfm @ 210°F

   H_2S = 2 ppm

   PV = mRT m = PV/RT

   R = 1,545 ft-lb_f/lb mole-°R

   MW H_2S = 34

   R = 45.4 ft-lb_f/lb_m-°R

$$m = \frac{(14.7 \times 144)lb_f}{ft^2} \times \frac{1{,}400\ ft^3}{min} \times \frac{lb_m\text{-}°R}{45.4\ ft\text{-}lb_f} \times \frac{1}{(210+460)°R} \times$$

$$\frac{60\ min}{hr} \times \frac{2.0}{10^6} = 0.0117\ lb/hr\ TRS\ as\ H_2S$$

$$0.0117\ \frac{lb}{hr} \times \frac{8{,}760\ hr}{yr} \Big/ \frac{2{,}000\ lb}{ton} = 0.051\ TPY\ TRS\ as\ H_2S$$

2. ACID WASHING

   TRS fugitive emissions occur during the first 2 to 5 minutes of the 8-hour acid wash cycle. Acid wash frequency is estimated at once every 2 weeks. Based on 2 ft^3 of white liquor residing in a drained filter before acid washing:

$$\frac{(2\ ft^3\ liquor)}{wash} \times (27\%\ sulfidity) \times (7.65\ lb\ Na_2O/ft^3) =$$

$$\frac{4.13\ lb Na_2O}{wash}$$

$$4.13\ lb\ Na_2O/wash \times \frac{78\ lb\ Na_2S}{62\ lb\ Na_2O} = 5.20\ lb\ Na_2S/wash$$

$$5.20\ lb\ Na_2S/wash \times \frac{34\ lb\ H_2S}{78\ lb\ Na_2S} = 2.27\ lb\ H_2S/wash$$

With a wash frequency of once/2 weeks, then

$$\frac{26\ washes}{yr} \times \frac{2.27\ lb}{wash} / 2{,}000\ lb/ton = 0.030\ TPY\ TRS\ as\ H_2S$$

3. TOTAL TRS

$0.051 + 0.030 = 0.081$ TPY TRS as H_2S

VI. LIME MUD PRESSURE FILTER

ESTIMATED TRS EMISSIONS

Total TRS emissions are considered to be insignificant but can be calculated as follows:

1. NORMAL OPERATION--Based on design engineering information supplied by project engineers:

   1,400 acfm @ 150°F

   H_2S = 0.4 ppm

   methyl mercaptan (CH_3SH) = 0.9 ppm

   m = PV/RT

$$H_2S = \frac{(14.7 \times 144)\ lb_f}{ft^2} \times \frac{1{,}400\ ft^3}{min} \times \frac{lb_m\text{-}°R}{45.4\ ft\text{-}lb_f} \times \frac{1}{(150 + 460)°R}$$

$$\times \frac{60\ min}{hr} \times \frac{0.4}{10^6} = 0.0026\ lb/hr\ H_2S$$

CH_3SH molecular weight = 48

$R = 1{,}545/48 = 32.19\ ft\text{-}lb_f/lb_m\text{-}°R$

$$CH_3SH = \frac{(14.7 \times 144)\ lb_f}{ft^2} \times \frac{1{,}400\ ft^3}{min} \times \frac{lb_m\text{-}°R}{32.19\ ft\text{-}lb_f} \times \frac{1}{(150 + 460)°R}$$

$$\times \frac{60\ min}{hr} \times \frac{0.9}{10^6} = 0.0081\ lb/hr\ CH_3SH$$

$$CH_3SH\ as\ H_2S = 0.0081\ lb/hr \times \frac{34\ lb\ H_2S}{48\ lb\ CH_3SH} = 0.0057\ lb/hr\ TRS\ as\ H_2S$$

Total TRS as H_2S = 0.0026 + 0.0057 = 0.0083 lb/hr
0.0083 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 0.036 TPY TRS as H_2S

2. ACID WASHING

Frequency of acid washing of lime mud pressure filter will be the same as for the white liquor pressure filter (i.e., once every 2 weeks). The basis of emissions is also the same as for the white liquor pressure filter (i.e., 2 ft^3 of white liquor in filter).

TRS emissions = 0.030 TPY TRS as H_2S

3. TOTAL TRS

0.036 + 0.030 = 0.066 TPY TRS as H_2S

VII. LIME MUD PRECOAT FILTERS

FUGITIVE TRS EMISSIONS

1. NORMAL OPERATIONS

Based on field tests, Eurocan Pulp and Paper in Kitimat B.C., Canada, has developed fugitive TRS emission estimates for precoat filters. For a 900 gpm white liquor production at 31 percent sulfidity, estimated TRS emissions are 9 lb/day. It is reasonable to assume emissions are directly related to sulfidity and throughput.

Therefore, for the new precoat filters operating at an average of 1,200 gpm white liquor with 27 percent sulfidity, calculated TRS emissions are:

a. $\frac{27}{31} = \frac{x}{9}$ $\quad x = 7.8$ lb/day at 27% sulfidity

then:

$\frac{1,200}{900} = \frac{x}{7.8}$ $\quad x = 10.4$ lb/day at 1,200 gpm and 27% sulfidity

b. 10.4 lb/day / 24 hr/day = 0.433 lb/hr TRS as H_2S

c. 10.4 lb/day x $\frac{365 \text{ day}}{\text{yr}}$ / $\frac{2,000 \text{ lb}}{\text{ton}}$ = 1.90 TPY TRS as H_2S

2. ACID WASHING

The frequency of acid washing each precoat filter is about twice per week. Because of the method of acid washing, it is expected that total volume of residual white liquor per wash will be about 25 percent of the white liquor pressure filter or 0.25 x 2 ft^3 = 0.5 ft^3.

$$25\% \times \frac{2.27 \text{ lb}}{\text{wash}} \times 2 \text{ filters} \times \frac{2 \text{ washes}}{\text{week}} \times \frac{52 \text{ weeks}}{\text{yr}} / \frac{2{,}000 \text{ lb}}{\text{ton}} =$$

0.059 TPY TRS as H_2S

3. TOTAL

1.90 + 0.059 = 1.96 TPY TRS as H_2S

VIII. DREGS FILTERS

FUGITIVE TRS EMISSIONS

1. NORMAL OPERATION

The information from Eurocan Pulp and Paper includes an estimate for dregs filters fugitive TRS emissions at 75 percent of the lime mud precoat filter emissions. Calculated emissions then are:

0.75×10.4 lb/day = 7.80 lb/day

7.80 / 24 hr/day = 0.325 lb/hr TRS as H_2S

$$7.80 \text{ lb/day} \times \frac{365 \text{ days/yr}}{2{,}000 \text{ lb/ton}} = 1.424 \text{ TPY TRS as } H_2S$$

2. ACID WASHING

Each dregs filter will be acid washed about once per month. Emissions are calculated based on 75 percent of the emissions from the white liquor pressure filters. Calculated emissions are:

$$0.75 \times 2.27 \text{ lb } H_2S/\text{wash} = \frac{1.70 \text{ lb}}{\text{wash}}$$

$$\frac{1.70 \text{ lb}}{\text{wash}} \times 2 \text{ filters} \times \frac{1 \text{ wash}}{\text{filter-month}} \times \frac{12 \text{ month}}{\text{yr}} / 2{,}000 \text{ lb/ton}$$

$$= 0.020 \text{ TPY TRS as } H_2S$$

C. TOTAL

$1.424 + 0.020 = 1.44$ TPY TRS as H_2S

ATTACHMENT B

CONTROL EQUIPMENT INFORMATION

AND STACK PARAMETERS

Table B-1. EMISSION STACK GEOMETRY AND FLOW CHARACTERISTICS*

Emission Point	Stack Height (ft)	Stack Diameter (ft)	Gas Flow Rate (ACFM)	Gas Flow Rate (DSCFM)	Exit Temp. (°F)	Water Vapor (%)	Exit Velocity (ft/s)
Slakers Stack	90.0	1.67	1,700	1,000	175	Saturated	12.9
Lime Kiln Bin Baghouse	90.0	0.83	2,000	2,000	Ambient	Ambient	61.6
Water Treat Bin Baghouse	14.5	0.83	600	600	Ambient	Ambient	18.5
White Liquor Pressure Filter Vent	60.0	0.67-1.00	1,400	775	210	30	30-66
Lime Mud Pressure Filter Vent	60.0	0.67-1.00	1,400	850	150	30	30-66

*Final stack design for all stacks will be provided after vendor selection and prior to construction of the stack.

Source: Buckeye Cellulose, 1985.

The following data is needed for environmental permitting of the Causticizing Modernization Project:

Water Treat Lime Bins

	EAST	WEST
Diameter	18' ID	18' ID
Height Above Grade	49'6"	59'6"
Volume in Cubic Feet	8890 CF	6348 CF
Volume in Tons Lime	249	178

Water Treat Lime Bin Baghouse (Existing)

Type of Control Equipment Baghouse
Filter Size
a. Square feet of filter cloth 200 SF
b. Type of Bags Cotton
Filter % efficiency on Lime Dust .02 Grains/CF
Design Air Flow Rate, ASCFM 600 CFM
Air:Cloth Ratio, ASCFM/Square Ft. 3 ASCFM/SF
Layout of Stacks
Dimensions of Baghouse
Stack Diameter, Inches 10"
Stack Height Above Grade 14'6"
Grade Elevation Above Sea Level, Ft. 54'6"
Manufacturer of Baghouse Fuller Company

Causticizing New Lime Bin Baghouse

Type of Control Equipment Micro-Pulsair 100S-10TR Baghouse or equivalent*
Filter Size
a. Square feet of filter cloth 1,178 (100 filter elements)
b. Type of Bags Polyester, 16 oz/ft^2, 275°F
Filter % efficiency on Lime Dust 99.9%, ≤ 0.02 Grains/ACFT
Design Air Flow Rate, ASCFM 2000
Air:Cloth Ratio, ASCFM/Square Ft. 1.7
Layout of Stacks
Dimensions of Baghouse 72" X 72" X 72" Pyramidal bottom 65" high 135" total
Stack Diameter, Inches Our call
Stack Height Above Grade 90'
Grade Elevation Above Sea Level, Ft. 55' 0"
Manufacturer of Baghouse Micro-Pulsaire Mikropul Corp.
Design Differential Pressure, in H_2O 16

Pneumatic Lime Conveying to Lime Bins from Rail/Truck

	To Water Treat	To Causticizing
Lime Flow Rate, TPH	22	22
Design Blower Volume, ASCFM	400	425
Surge Volume, ASCFM	600	637

*Specific design data will be provided to DER after selection of the baghouse vendor and prior to construction of the baghouse.

EKONO Inc.

cc: Dave Buff-ESE
O- CET

June 24, 1985

The Buckeye Cellulose Corporation
Route 3, Box 260
Perry, FL 32347

CAUSTICIZING LIME BINS
FILTER

Attn: Mr. Clint Thompson

Dear Clint:

Per your request, we have selected a baghouse type filter for service with your new lime-bins.

The lime-bins and bucket elevator will be maintained under a slight subpressure in order to avoid dust-leaks to the environment. The subpressure is created by means of a compressor installed on a service platform on top of the lime-bins. The baghouse filter will be installed in the duct immediately before the fan in order to separate lime dust from the air stream. The separated dust is dropped back into the lime bin through an air lock.

The type of baghouse filter we have selected is manufactured by the MIKROPUL Corp. of Summit, NJ:

Brand name:	MICRO-PULSAIRE 100$-10TR or equivalent
Design airflow:	Reverse jet cleaning 2,000 ACFM
No of filter elements:	100
Total filter area:	1,178 ft^2
Bag dimensions:	10 ft long x 4½ in. dia.
Filter cloth:	Polyester, 16 oz/ft^2, or Nomex
Design pressure drop:	16" (over total system)w.g.
Operation automatics:	Clean-on-demand
Collection efficiency:	99.9%
Discharge particulate:	0.02 grains/ACFT
Housing dimensions:	72" x 72" x 200" high
Filter pressure drop:	4 to 6 in. w.g.

I hope this information meets your current needs. If I can be of further assistance, please do not hesitate to give me a call.

Yours truly,

Gunnar A. Damstrom
Senior Project Engineer

GAD:grw
cc: C-File

Address
410 Bellevue Way S.E.
Bellevue, Wa. 98004
U.S.A.

Telephone
206-455-5969

Telex
329 471 ekono bvue

SLAKERS WET SCRUBBER DESIGN DATA

Scrubber type: direct contact condenser
Water pressure: 20-40 psig
Number of nozzles: 3 minimum
Water flow rate: 60 to 90 gpm
Water temperature: less than 90°F
Efficiency: 90% minimum, per vendor information

Slaker internal design will minimize dust carryover. Design features include:

* Distance between lime feed shute and vent follow good engineering practice.
* Internal dust baffle suspended from roof between lime feed chute and vent stack reduces dust loading to vent.
* Slaker impeller is submerged.
* Enclosure of the slaker will be maximized to minimize the vent volume required to keep the slaker under negative pressure.
* The face velocity at the plenum of the slaker vent is low to minimize entrainment of dust in the exhaust gas stream.

After a specific vendor is chosen, and prior to construction of the scrubber, specific design information will be submitted to DER.

REFERENCES

Note: See No. 4 Lime Kiln Application for references.