Check Sheet

Company Name: JEFFERSON [redacted] SMURFIT CORD
Permit Number: AC 16-142989
PSD Number:
Permit Engineer:

Application:

- [x] Initial Application
  - [x] Incompleteness Letters
  - [x] Responses
  - [ ] Waiver of Department Action
  - [ ] Department Response
  - [x] Other

Cross References:

- [ ]
- [ ]
- [ ]

Intent:

- [x] Intent to Issue
- [x] Notice of Intent to Issue
- [x] Technical Evaluation
- [ ] BACT Determination
- [x] Unsigned Permit

Correspondence with:

- [ ] EPA
- [ ] Park Services
- [ ] Other

- [x] Proof of Publication
  - [ ] Petitions - (Related to extensions, hearings, etc.)
  - [ ] Waiver of Department Action
  - [ ] Other

Final Determination:

- [x] Final Determination
- [x] Signed Permit
- [ ] BACT Determination
- [x] Other

Post Permit Correspondence:

- [x] Extensions/Amendments/Modifications
- [x] Other

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services

March 15, 1991

Mr. Bruce Mitchell
Division of Air Resource Management
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

RE: Jefferson Smurfit Corporation
Lime Kiln No. 3
Visible emissions (VE) exceedance
Citation AP-90-27

Dear Bruce ~~Mr. Mitchell~~:

The information you requested regarding the above-referenced enforcement case is enclosed.

Please contact Mr. Jeremy Lucas at (904) 630-3666 (SUNCOM 820-3666) if additional information is required, or if there are any changes in the status of the VE standards for Lime Kiln No. 3 at the Jefferson Smurfit facility.

Very Truly Yours,

James L. Manning, P.E.
Deputy Director

JLM/JWL/ema

cc: Mr. A. Kutyna, DER
Mr. Greg Radlinski, OGC
ARD Enforcement File
ARD File 1750 A

LUCAS

BESD File No. _____

PHONE CONVERSATION RECORD

Talked with GENE TOWN Date 10/17/90 Time 11:30 (am) pm

of JEFFERSON SMURFIT Phone ( ) -

Re: NO. 3 LIME KILN VE EXCEEDANCE

X I placed call - I returned call Long Distance: Suncom __
Toll Free __
Regular Rates __

- Party called - Party returned call

My message X Party's message -

(1) BESD R'CD DER CORRESPONDENCE OF 10/2/90 - REVISING #3 LIME KILN VE LIMIT TO 10% OPACITY. WOULD LIKE TO SET UP MEETING TO DISCUSS RESOLUTION OF ENFORCEMENT CASE, IF POSSIBLE.

My reply - Party's reply X

(2) JSC WILL LIKELY FILE FOR ADMINISTRATIVE HEARING ON 10% OPACITY REVISION. WILL CALL YOU BACK NEXT WEEK TO LET YOU KNOW OUR INTENTIONS.

(3) O.K.

Action or follow-up necessary _____

Refer to KEITH/WOOLEY Signed [signature]

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

October 2, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
General Manager and V.P.
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: No. 3 Lime Kiln Visible Emission Limiting Standard
AC 16-142989

On October 1, 1985, Jefferson Smurfit Corporation received a construction permit (AC 16-095614) to construct the new No. 3 lime kiln. The source was subject to the RACT visible emission limiting standard pursuant to F.A.C. Rule 17-2.650(2)(c)9. On July 11, 1990, Jefferson Smurfit Corporation was issued the above referenced construction permit for a modification. Due to the rescission of F.A.C. Rule 17-2.650(2)(a)2, which applied to new and modified sources, it appeared that the source was entitled to a relaxation of the visible emission standard. However, F.A.C. Rule 17-2.400(1)(d) requires that all emission limiting standards and permit conditions that were established pursuant to F.A.C. Rule 17-2.650 shall remain in effect, even though Duval County has been redesignated to an air quality maintenance area for PM pursuant to F.A.C. Rule 17-2.460. Therefore, the following shall be changed:

Specific Condition No. 4:

FROM: Visible emissions from the lime kiln shall be less than 20 percent opacity pursuant to F.A.C. Rule 17-2.610(2). Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

TO: Visible emissions from the lime kiln shall not exceed 10 percent opacity pursuant to F.A.C. Rule 17-2.650(2)(c)9.b. Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth in Attachment 1 and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

This letter must be attached to the construction permit, No. AC 16-142989, and shall become a part of the permit.

Sincerely,

STEVE SMALLWOOD, P.E.
Director
Division of Air Resources Management

SS/BM/plm

Attachment

c: A. Kutyna, NE District
R. Roberson, BESD
D. Schwartz, DER, OGC
T. Cole, OHF&C, P.A.
J. Cox, JSC

Attachment 1

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

OFFICE OF GENERAL COUNSEL
ENVIRONMENTAL LAW DIVISION
CITY OF JACKSONVILLE
715 Towncentre
421 West Church Street
Jacksonville, Florida 32202-4111
Telephone: (904) 630-4900

MEMORANDUM

TO: James L. Manning, P.E.
Deputy Director, BESD

FROM: Gregory K. Radlinski
Assistant Counsel

DATE: September 11, 1990

RE: **Jefferson Smurfit Corporation**
Exceedance of visible emissions - Lime Kiln #3
Cease and Desist Citation AP-90-27

By your memorandum of August 24, 1990, you inquired whether Jefferson Smurfit's (Smurfit) #3 lime kiln was subject to a visible emissions limitation of 10% capacity on March 28, 1990, as provided in Smurfit's air operating permit for the recently constructed kiln. ("We recognize that there is a visible particulate emission limit in the permit." J. F. Mixon's letter of July 3, 1990.) In my opinion, Smurfit was subject to the 10% capacity limitation.

Distilling Smurfit General Manager and Vice President J. Franklin Mixon's argument, he questions whether even the 20% general particulate emissions limiting standard of Rule 17-2.610(2)(a), Fla. Admin. Code, applies to new lime kilns (in the absence of a new source performance standard expressed as a visible emissions limitation), even though Rule 17-2.610(2)(a), Fla. Admin. Code, prohibits existing lime kilns from emitting "visible emissions greater than 10% opacity." Mr. Mixon's odd result -- existing kilns may be held to higher pollution control standards than new construction -- is obviously inconsistent with current policy, which requires just the opposite -- new construction should operate cleaner than old facilities.

At the beginning of the air regulatory program, the Florida Department of Environmental Regulation (DER) designated all Florida ambient air on a pollutant-by-pollutant basis as attainment, non-attainment or unclassified. "The designation of each such area determines which emissions limiting standards, new and modified facility review requirements, and other air

> "shall be controlling over other standards in this rule except that any emissions limiting standard contained in Part VI which is more stringent than one contained in a Standard of Performance, or which regulates emissions of pollutants or sources or emissions not regulated by an applicable Standard of Performance shall apply." [Emphasis Supplied.]

While the new source performance standards for lime kilns do not regulate visible emissions, Rule 17-2, Part VI, particularly Rule 17-2.650(2)(c)9.b, F.A.C. does regulate visible emissions from lime kilns. Contrary to Mr. Mixon's convoluted expose on the determination of stringency, the plain language of the Rule adopts any standard in favor of a regulatory vacuum. Because there is no capacity standard under NSPS but there is a Part VI capacity standard for lime kilns, albeit existing ones, the Part VI standard applies to new construction.

This interpretation, rather than Mr. Mixon's, is consistent with the regulatory philosophy of the law: "Where a new or increased source of air pollution poses a possibility of degrading existing high air quality or ambient air quality established by [these Rules], such source or proposed source shall not be issued a Department permit until the Department has reasonable assurances that such source, construction or development will not violate [these Rules]." Rule 17-2.200, F.A.C. If visible emissions are a pollutant, then failing to regulate them in new construction by adopting at least the standards required of existing sources clearly "poses the possibility of degrading ambient air quality." This is especially true where Smurfit's emissions, by test, can exceed the maximum opacity allowed existing sources by 70%.

GKR/lou

Legal Request Memorandum

To: Judge J. Harrison, General Counsel

From: (Name) Mr. James L. Manning, P.E.

(Title) Deputy Director

(Dept/Agency) Dept. of Health, Welfare & Bio-Environmental Services
Air Pollution Control/Enforcement Activity

(Signature) James L. Manning (Date) 8-27-90

Re: The attached legal request.

A. The Office of General Counsel is requested to provide legal assistance as detailed in the attached legal request and supporting documents. This request is for:

- __ A legal opinion or legal advice.
- X Drafting or review of contract, contract amendment, change order or the like.
- __ Drafting or review of a deed, easement, permit, or the like.
- __ Drafting or review of ordinance, resolution, or the like.
- __ Filing of or defense against suit, civil service, or other administrative hearing.
- __ Other. Give brief description
  Review of VE rule applicability to Jefferson Smurfit Corp. Lime Kiln No. 3 (Citation AP-90-27)

B. Completion is requested by: August 31, 1990 (date)

C. For more information or discussion, contact:

(name) Jeremy W. Lucas
(title) Pollution Control Specialist
(telephone) (904) 630-3666 (ext. 2468)

D. Bill our account # 519116

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(Do not complete - For use of Office of General Counsel only)

A. Date received: ____ Legal Request No. 85127
B. Assign to: Greg Radlinski Date: ____
C. Date acknowledged to client: ____
D. Date completed: ____
E. Describe method or means of completion: ____

MEMORANDUM

August 24, 1990

TO: Mr. Daniel D. Richardson, Chief
Environmental Law Division, Office of General Counsel

FROM: Mr. James L. Manning, P.E., Deputy Director
Department of Health, Welfare and Bio-Environmental Services

RE: **Jefferson Smurfit Corporation correspondence of July 3 and August 2, 1990**

SUBJ: **Jefferson Smurfit Corporation**
Exceedance of visible emissions - Lime Kiln No. 3
Cease and Desist Citation AP-90-27

Please review the above-referenced correspondence regarding the applicability of visible emissions (VE) standards to the No. 3 Lime Kiln at Jefferson Smurfit Corporation to determine if the source was subject to a 10% opacity limit at the time of the VE observation on March 28, 1990.

In a recent teleconference, the Department of Environmental Regulation (DER) indicated that an error may have been made in establishing the visible emissions standard in Construction Permit AC16-142989. The DER may attempt to revise the permit to reinstate the 10% opacity limit of the current operating permit (A016-144609). A meeting may be required between Bio-Environmental Services Division (BESD) and the DER Central Air Permitting Section (CAPS) to determine an appropriate course of action for the permit and the enforcement case.

If additional information is required, please contact Mr. Jeremy Lucas at extension #2468.

The assistance of the Office of General Counsel in this matter is appreciated.

Jim Manning

James L. Manning, P.E.

JLM/ema

Enclosure

cc: BESD Air Enforcement File

disc/jlm/ddr/08

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Noise Pollution Control Activity

August 21, 1990

Mr. J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
P.O. Box 150
Jacksonville, FL 32201

Subject: No. 3 Lime Kiln

Re: Your Letters Dated July 3, and August 2, 1990

Dear Mr. Mixson:

The captioned letters have been forwarded to the Bio-Environmental Services Division (BESD) permitting section for review of the items mentioned concerning permitting issues which may be relevant to the alleged violation. A review of the other issues discussed in your letters are being reviewed by the office of General Counsel (OGC) to determine their applicability to this situation.

Upon receipt (approximately September 5, 1990) of comments from both of the above mentioned groups you will be contacted concerning resolution of this issue.

In the interim please direct any questions concerning this matter to Mr. Jerry E. Woosley of my staff at (904) 630-3666.

Very truly yours,

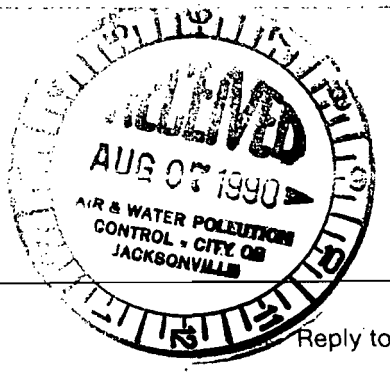
James L. Manning

James L. Manning, P.E.
Deputy Director

JLM/ema

cc: Mr. Andrew Kutyna, P.E., DER
Mr. Greg Radlinski, OGC
Mr. Jerry E. Woosley, BESD
BESD Air Enforcement File
File 1750 M

disc/jlm/ll



August 2, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED - RETURN RECEIPT REQUESTED

Rufus M. DeHart, M.D.
Director
Department of Health, Welfare and
Bio-Environmental Services
515 West 6th Street
Jacksonville, Florida 32206-4397

Re: CEASE AND DESIST CITATION AP-90-27
JEFFERSON SMURFIT CORPORATION

Dear Dr. DeHart:

The following is an additional and further response to that submitted to you on July 3, 1990, in regard to the Cease and Desist Citation of June 18, 1990 to Jefferson Smurfit Corporation concerning visible particulate emissions from the No. 3 lime kiln.

On July 22, 1990, Construction Permit AC16-142989 was issued by the Department of Environmental Regulation for the modification of the No. 3 lime kiln. The modification to be made to the No. 3 lime kiln includes the replacement of the existing wet scrubber system with an electrostatic precipitator and an increase in the maximum operating rate in the No. 3 lime kiln from 220 TPD to 275 TPD lime product.

In negotiating the conditions of this permit with the Central Air Permits Section (CAPS) of the Department of Environmental Regulation, the applicant submitted the comment that since the applicability section of F.A.C. Rule 17-2.650 (2)(a) associated with new and modified sources was deleted from the rule on May 30, 1988, then the visible emission standard contained in F.A.C. Rule 17-2.650 (2)(a) does not apply to the No. 3 lime kiln.

The Department agreed with the applicant's comment but determined that the "General Visible Emissions Standard" pursuant to F.A.C. Rule 17-2.610(2) does apply. The Department imposed a requirement in Specific Condition No. 4 of the construction permit that visible emissions from the lime kiln shall be less than 20 percent opacity pursuant to F.A.C. Rule 17-2.610(2).

The subject Cease and Desist Citation was issued against the visible emission standard contained in F.A.C. Rule 17-2.650(2)(c)9.b. Since this requirement was no longer applicable to this source after May 30, 1988 and Permit No. AO16-144609 was issued February 24, 1989, the visible emission standard of F.A.C.

DFH BES 8/7/90

Rule 17-2.650(2)(c)9.b. did not apply at the time of the visible emission test conducted on March 28, 1990. There was therefore no violation of a visible emission standard.

It is therefore requested that the Cease and Desist Citation, AP-90-27, be withdrawn and the case be closed on this matter.

Should there be any questions, please call Gene Tonn at 353-3611.

Sincerely,

J. Franklin Mixson
General Manager & Vice President

td/CIAP9027\WP.5

CR #P 041 811 823

BESD File No. 1750 A

PHONE CONVERSATION RECORD

Talked with GENE TONN Date 8/1/90 Time 3:00 am/(pm)

of J. SMURFIT Phone ( ) -

Re: VE EXCEEDANCE #3 LK

- I placed call - I returned call Long Distance: Suncom __
Toll Free __
Regular Rates __

X Party called - Party returned call

My message - Party's message X

(1) Rcd DER CAPS CONSTRUCTION PERMIT (ISSUED 7/12/90) FOR #3 LIME KILN, TO MODIFY SOURCE: INCREASE THRUPUT FROM 220 T/day TO 275 T/day, INSTALL ESP. DER CAPS AGREED THAT RACT VE STANDARD (DID NOT APPLY. USED GEN. VE (20%) SMURFIT DOES NOT AGREE THAT GENERAL VE APPLIES, BUT WILLING TO ACCEPT AT PRESENT. WHAT SHOULD WE DO TO REQUEST TERMINATION OF ENFORCEMENT ACTION.

My reply -- Party's reply

(2) SUBMIT ALL INFO IN WRITING WITH REQUEST FOR WITHDRAWAL OF CITATION. BESD WILL CONSIDER INFO & RESPOND (SEND LETTER TO DR. DEHART, CC: J. MANNING). WILL LEAVE MEETING SCHEDULED FOR 8/14/90. IF DETERMINATION TO WITHDRAW CITATION IS MADE, THEN I WILL CALL TO CANCEL MEETING. OTHERWISE WE WILL MEET 8/14 TO DISCUSS VE ISSUES, NOT NECESSARILY ENFORCEMENT CASE.

Action or follow-up necessary OBTAIN COPY OF DER CAPS MODIFICATION PERMIT / CONSIDER VE ISSUES UPON RECEIPT OF JSC LETTER

Refer to WOOSLEY / KIRTS / ROBERTSON Signed [signature]

PACE

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

July 3, 1990

CERTIFIED - RETURN RECEIPT REQUESTED

Rufus M. DeHart, M.D.
Director
Department of Health, Welfare and
Bio-Environmental Services
515 West 6th Street
Jacksonville, Florida 32206-4397

Re: CEASE AND DESIST CITATION AP-90-27

Dear Dr. DeHart:

This will respond to the Cease and Desist Citation of June 18, 1990 to Jefferson Smurfit Corporation concerning visible particulate emissions from the No. 3 lime kiln.

We recognize that there is a visible particulate emission limit in the permit. However, after review of the rules cited as the basis for the cease and desist citation, we have found no authority for the assertion that we have exceeded any limit in the rules of the BESD or the Department of Environmental Regulation. On its face rule (17-2.650(2)(c)9b) applies only to existing sources. The rule explicitly "excepts" from its application sources which have been permitted under Rule 17-2.500 or .510, F.A.C. or received a determination of BACT. The lime kiln is a new source qualifying for the exception. There is no opacity limit for NSPS lime kilns. Jefferson Smurfit originally accepted the permit under the agency assertion that there was a rule requirement for a visible particulate emission limitation. Since there is no opacity limit for NSPS lime kilns we intend to seek an amendment to the permit to remove the opacity limit.

Jefferson Smurfit is aware of Section 17-2.660(2)(b), F.A.C., which allows more stringent limitations in other parts of Rule 17-2, F.A.C., to be imposed for new sources. However, the Department has always in its comparison for "stringency" determined first whether there was another standard that was applicable in the absence of the first standard. The Department, the Governor and Cabinet and the Courts have consistently found that if there is no standard with which to compare another standard, the first standard is not more stringent. In this case, because there is no opacity limitation in NSPS, an opacity limitation is not required. Section 17-2.660(2)(b) also allows the Department or BESD to impose limits on pollutants not regulated by an applicable standard of performance. However, in both the RACT rule and the general rule on particulates, opacity is clearly a method of measuring particulate emissions and not an independent standard. Therefore, neither the Department nor BESD can impose an opacity limit on the lime kiln under the argument that visible particulate emissions are not regulated by NSPS, since particulates are limited by NSPS standards. Similarly, the source of emissions, the lime kiln, is regulated by an applicable particulate standard of performance under NSPS. Accordingly, for all of the above reasons we do not believe the opacity measurement is applicable to this source and was inappropriately placed in the permit and therefore we intend to request the permit be amended to remove it as not having any basis in the rule.

Even though the visible emissions limit is not required by regulation we believe that if it were, there is provision for developing a different opacity limit. In this case, the opacity test in question was run at essentially the same time as the stack test for mass particulate matter. The source passed the test for determination of compliance with the emission limiting standard for mass particulate matter. Rule 17-2.610(2)(a), F.A.C., allows a higher visible particulate emission limit for a source if it is demonstrated that the source is in compliance with an applicable mass particulate emission standard while a compliance test is being conducted but fails to comply with the visible particulate emission standard during this test. It then requires the establishment of an opacity standard for the source at a level at which it will be able, as indicated by the compliance test, to meet the opacity limit at all times during which the source is meeting the applicable mass particulate standard. Since we have data indicating that the source does meet the mass particulate emission standard while the opacity limit is not being met, if visible emission limits were applicable, there are grounds for amending the permit for the source to allow a higher opacity limit comparable to the mass particulate emission limit.

Rule 17-2.610(2)(b), F.A.C., which has been adopted by the BESD, provides that it is not a violation of the rule to fail to meet a visible particulate emission limit if the reason is the presence of uncombined water. In this case, because the source currently has a wet scrubber as the control device, uncombined water is present thereby making a determination by Method 9 inappropriate. This is demonstrated by the fact that the mass particulate emission limit was met at essentially the same time the opacity test was run, thus indicating the higher opacity was not due to the presence of excess mass particulate matter.

There is presently pending with the Department a petition for rulemaking to amend the rule to not require opacity tests on sources with wet stacks, such as those with a wet scrubber. There is a wet scrubber currently utilized as the control device on this lime kiln.

Even though we do not believe a violation has occurred and the permit has been inappropriately drafted, we would like to respond to the citation with a proposal for a solution to the allegations. We are prepared to install a precipitator on this source as soon as a construction permit is issued by the Department. This will remove the presence of the wet stack, will decrease the emissions

of particulate matter and will decrease opacity from the source. We do not believe that an opacity limit is appropriate under any circumstance, but nevertheless will agree to install the additional control.

Representatives of Jefferson Smurfit Corporation have arranged a conference with Mr. Lucas to discuss the allegations in the cease and desist citation. We are prepared to agree to the improved control device as a resolution of this matter and will be discussing that further at the meeting.

Should you have any questions regarding this, we will be glad to meet with you.

Sincerely,

J. Franklin Mixson

J. Franklin Mixson
General Manager & Vice President

CR# P 041 811 817

td/CIAP9027\WP.5

1750 A

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:

Jefferson Smurfit Corporation
Containerboard Mill Division
P.O. Box 150
Jacksonville, FL 32201

4. Article Number

P 254 164 577

Type of Service:

- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail
- ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee

X Frank F. Meyer

6. Signature – Agent

X

7. Date of Delivery

6-25-90

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form 8811, Apr. 1989 *U.S.G.P.O. 1989-238-815 Emt **DOMESTIC RETURN RECEIPT**

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Air and Water Pollution Control

(904) 630-3666

FAX No. 630-3638

TELECOPY

DATE: JUNE 21, 1990

TO: JERRY COX

ORGANIZATION: JEFFERSON SMURFIT CORP.

TELECOPIER PHONE NUMBER: (904) 355-7078

FROM: JEREMY LUCAS, BESD

NO. OF PAGES TO FOLLOW: 2

AS PER YOUR REQUEST.

COPY OF PERMIT #1-90-27

BESD File No. _____
RETURN TO LUCAS

PHONE CONVERSATION RECORD

Talked with JERRY COX Date 6/21/90 Time 1:36 am (pm)

of JEFF. SMURFIT Phone ( ) -

Re: CITATION - CK #3 VE'S

- I placed call - I returned call Long Distance: Suncom __
Toll Free __
X Party called - Party returned call Regular Rates __

My message - Party's message X

(1) REC'D MESSAGE THAT CITATION HAD BEEN ISSUED. HAVEN'T REC'D IT YET.

My reply X Party's reply -

(2) MY PREVIOUS CALL WAS TO LET YOU KNOW IT HAD BEEN ISSUED. SHOULD BE ARRIVING IN MAIL (CERTIFIED) W/I 1-2 DAYS.

(3) CAN WE GET A COPY FAXED TO 355-7078?

(4) YES.

(5) HOW LONG DO WE HAVE TO RESPOND?

(6) 10 DAYS FROM RECEIPT OF CERTIFIED COPY.

7. O.K.

Action or follow-up necessary FAXED COPY OF CITATION 6/21

Refer to WOOSLEY/KENTS Signed

BESD File No. 1750 A

PHONE CONVERSATION RECORD

Talked with TRISH DAVIS Date 6/29/90 Time 11 :40 (am)/pm

of JEFF-SMURFIT / GENE TOWN'S OFFICE Phone ( ) -

Re: CITATION AP-90-27 ISSUED

X I placed call - I returned call Long Distance: Suncom ___
Toll Free ___
Regular Rates ___

- Party called - Party returned call

My message X Party's message -

(1) CITATION HAS BEEN SIGNED 6/19/90 FOR VE EXCEEDANCE OF NO. 3 LIME KILN, BASED UPON TEST CONDUCTED 3/28/90. WILL FAX A COPY OF CITATION TO YOU IF DESIRED.

My reply - Party's reply X

(2) THANK-YOU FOR CALLING. WILL RELAY INFO. TO MR. TOWN.

Action or follow-up necessary

MANNING / PACE / KIRTS / WOODLEY

Refer to ___ Signed

DEPARTMENT OF HEALTH, WELFARE
AND BIO-ENVIRONMENTAL SERVICES
Office of the Director

CEASE AND DESIST
CITATION
AP-90-27

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Jefferson Smurfit Corporation
Containerboard Mill Division
P.O. Box 150
Jacksonville, Florida 32201

RE: Duval County - AP
Jefferson Smurfit Corporation - 1915 Wigmore Street, Jacksonville, Florida
No. 3 Lime Kiln - Permit No. A016-144609
Visible emissions (VE) exceedance

PLEASE TAKE NOTICE that, pursuant to Chapter 403, Florida Statutes (FS), Chapter 360, Ordinance Code (Ordinances 84-674-684 and 88-117-123, City of Jacksonville), Jefferson Smurfit Corporation is hereby notified that it is in violation of Chapter 17-2, Florida Administrative Code (FAC), and Jacksonville Environmental Protection Board (JEPB) Rule 2.

The exceedance of VE from the No. 3 Lime Kiln is in violation of the allowable emissions stipulated in Permit No. A016-144609, Specific Condition No. 10; Rule 2.109, 2.201, and 2.207, JEPB; and Rule 17-2.650(2)(C)9.b., FAC.

The violation was determined from a review conducted by personnel of the Department of Health, Welfare and Bio-Environmental Services, of a VE test report which indicates that:

Jefferson Smurfit Corporation failed to demonstrate compliance during an Environmental Protection Agency (EPA) Reference Method (RM) 9 VE test conducted on or about March 28, 1990, on the No. 3 Lime Kiln, located at 1915 Wigmore Street, Jacksonville, Florida. The maximum allowable VE, stipulated in Permit No. A016-144609, Specific Condition No. 10, pursuant to Rule 2.207, JEPB, and Rule 17-2.650(2)(C)9.b., FAC, is 10% opacity versus the actual VE of 18% opacity observed during the test. Rule 2.109, JEPB, provides that no plant or source shall operate at capacities which exceed the capability of control devices to maintain air pollution emissions within the limitations imposed by rules or permit conditions. Rule 2.201, JEPB, provides that no person shall cause or permit the emission of air pollutants in quantities prohibited by law or rules of the JEPB or Department of Environmental Regulation (DER).

CORRECTIVE ACTION REQUIRED

1. Cease the exceedance of VE.

2. Respond to this Citation (in writing) within ten (10) calendar days from the date of receipt of this Citation.

3. Remove or abate the cause of the violation.

4. Contact Mr. Jeremy Lucas at (904) 630-3666 immediately upon receipt of this Citation to arrange a conference to discuss the aforesaid violation(s).

5. Contact Mr. Wayne Walker at (904) 630-3666 immediately upon receipt of this Citation to schedule an EPA RM 9 VE compliance test for the No. 3 Lime Kiln.

Florida Statutes 403.121 and 403.182(8), and Section 362.109, Ordinance Code, each provides for a continuing maximum potential penalty of $10,000 per day of violation. If litigation or an administrative hearing is required to achieve compliance, full penalties and recovery of legal fees will be sought.

DATED this 18 day of June 1990

City of Jacksonville
DEPARTMENT OF HEALTH, WELFARE AND
BIO-ENVIRONMENTAL SERVICES

by: _____
Rufus M. DeHart, M.D.
Director

RMD/JWL/ea

cc: Mr. Daniel D. Richardson, OGC
Mr. Andrew Kutyna, P.E., DER
Addressee via first class mail
BESD Air Enforcement File
BESD File 1750 A

disc/jsf/1

Eleanor

BESD File: 1750A

CITATION ROUTING SHEET

CITATION NO.: AP-90-27

FACILITY: JEFFERSON SMURFIT CORP.

SOURCE: LIME KILN NO.3

TYPE OF VIOLATION: EXCESSIVE VISIBLE EMISSIONS (VE)

DAY 0:	6/6/90	(30 DAYS FROM DATE OF DISCOVERY OF VIOLATION)
DAY 15:	6/21/90	(NOTIFICATION TO SUSPECTED SOURCE DUE DATE)
DAY 90:	9/4/90	(ASBESTOS CASES: FILE IN COURT, OR REFER TO EPA)
DAY 120:	10/4/90	(SOURCE VIOLATIONS: FILE IN COURT, OR REFER TO EPA)

		DATE	INITIAL
1.	Discovery of Violation: Date of inspection, investigation, stack test review, file review	5/7/90	WALKOUT (ff)
2.	Suspected Source Notified circle one: on site, by phone, by mail (attach documentation) ✓	5/17/90	HAWKINS (ff)
3.	Referral to Enforcement Specialist	5/17/90	ff
4.	Citation Draft Completed	5/23/90	ff
5.	Associate Engineer review, approve for typing	5/31/90	
6.	Air Secretary (First Typed Draft) *(subsequent revisions/corrections - see below)	6/1/90	EA
7.	Enforcement Specialist	6/4/90	
8.	Associate Engineer	6/7/90	
9.	Air Engineer	6/8/90	CVR
10.	Assistant Chief	6/8/90	
11.	Deputy Director (H W & BES)	6-14-90	
12.	Director (H W & BES)	6/18	
13.	Air Secretary (mail - Certified)	6/20/90	

*6. Air Secretary (Revisions/Corrections)

DATE	INITIAL	DATE	INITIAL

DIRECTOR'S ENFORCEMENT BRIEFING

Date: May 23, 1990

Citation No. AP-90-27

Violator: JEFFERSON SMURFIT CORPORATION
Address: 1915 WIGMORE STREET
JACKSONVILLE, FLORIDA

Source in Violation: NO. 3 LIME KILN
Source CDS classification: A-1 (>100 t/yr particulate matter)

Description of Violation: EXCEEDANCE OF VISIBLE EMISSIONS (VE)

Date of Violation: **From:** 03/28/90 **To:** PRESENT

Corrective Actions: UNKNOWN

Rules Violated: RULES 2.109, 2.201, 2.207; JEPB
RULE 17-2.650(2)(C)9.b.; FAC

Violation Classification:

	Yes	No
Significant:	X	_
Major:	__	X
Other:	__	X
Repeat:	__	X
NESHAPS	__	X
NSPS:	__	X
LAER:	__	X
NAA/NSR	__	X
PSD	__	X
BACT	__	X
RACT	X	_

	Yes	No
In NA Area:	X	__
|--> particulate		
Impact on NA Area	X	__

(NSPS for lime kilns applies to particulate matter and TRS only, not VE)

Allowable VE = 10% opacity
Actual VE = 18% opacity (180%)

Previous Enforcement Actions:
CITATION AP-89-43, 11/05/89, OBJECTIONABLE ODORS (open/unresolved)
NOTICE TO CORRECT (NTC), 06/26/89, FAILURE TO MAINTAIN POLLUTION CONTROL DEVICE (BAGHOUSE ON COAL SILO NO. 2) (closed/corrected)
NOTICE OF EXCESSIVE VISIBLE EMISSIONS, 11/03/88 (closed/malfunction)
CITATION AP-88-21, 08/16/88, OBJECTIONABLE ODORS/COMMUNITY ODOR NUISANCE (closed - Consent Order/Compliance plan requirements met)
CITATION AP-88-16, 06/10/88, OBJECTIONABLE ODORS/COMMUNITY ODOR NUISANCE (closed - Consent Order/Compliance plan requirements met)
CITATION AP-88-09, 04/28/88, OBJECTIONABLE ODORS/COMMUNITY ODOR NUISANCE (closed - Consent Order/Compliance plan requirements met)
CITATION AP-86-37, 11/20/86, FALLOUT (closed. Ordinance revised 3/88)
* CITATION AP-86-09, 05/05/86, FAILURE TO INSTALL TRS MONITOR
* CITATION AP-86-07, 04/24/86, MAINTENANCE AND REPORTING OF CEM DATA
* CITATION AP-86-05, 03/28/86, MAINTENANCE AND REPORTING OF CEM DATA, FAILURE TO INSTALL OPACITY MONITOR
* CITATION AP-86-01, 01/16/86, FAILURE TO MAINTAIN CEM DATA
*(closed - settled by EPA Consent Judgement, $67,000 civil penalty)
NTC, 09/19/85, FAILURE TO FILE EXCESS EMISSIONS REPORTS (closed)
CHIEF'S CITATION, 01/20/84, CIRCUMVENTION OF POLLUTION CONTROL DEVICE
*NOTE: JEFFERSON SMURFIT CORPORATION IS THE RESPONSIBLE PARTY FOR THE ONGOING CIVIL TRIAL REGARDING AUSTILL PACKAGING COMPANY

Last Inspection: JUNE 21, 1989
Violations Noted: FAILURE TO MAINTAIN POLLUTION CONTROL DEVICE (NTC)

SOURCE SAMPLING VIOLATION REFERRAL

Date: 5/10/90

Facility: Jefferson Smurfit Source: #3 lime kiln APIS #: 0003/23

Date Test Received by BESD: 5/7/90

Date Test Reviewed by BESD: 5/9/90

Date of Test: 3/28/90

Pollutant in Violation: Visible Emissions

Regulations Violated:

Federal:

State: FAC 17-2.650(2)(c)9.b.

Local: JEPB 2.207

Permit Number Affected: A016-144609

Specific Condition Violated: No. 10

Allowable Emissions: 10%

Actual Emissions: 17.71%

Due Date of Next Test: -/-/- (YE is upon request)

ATTACHMENTS: Copy of BESD stack test summary
Copy of consultant's stack test summary page
Copy of BESD source sampling response

Routing:

J. Lucas

CONSOLIDATED CITY OF JACKSONVILLE

OFFICE MEMO

DATE: 5/25/90

*TO : W. Tutt, C. Kirts, R. S. Pace

*FROM : W. Walker

*RE : Jefferson Smurfit Corp. (JSC)
#3 Lime Kiln: VE Test Failure
#10 Power Boiler: Failure to Conduct VOC Test

Mr. Gene Tonn of JSC telephoned the author at approximately 8:45 A.M. on May 25, 1990 to discuss the above captioned subjects.

Mr. Tonn stated that the VE test of the #3 Lime Kiln was not conducted simultaneously with the particulate matter test of March 28, 1990, but rather during the TRS test of the same date. Mr. Tonn further stated that he was upset with BESD's decision to pursue possible enforcement action on the failed VE test due to the fact that the source had demonstrated compliance with PM standards on the same day and that weather conditions were not optimum for conducting a VE test on a wet plume. The author informed Mr. Tonn that BESD's enforcement activity was still reviewing the VE tests results, but that in the interim JSC should schedule and conduct a retest as soon as possible. Mr. Tonn agreed and said JSC would contact BESD with a test date in the near future.

Additionally, Mr. Tonn stated that JSC had not conducted the required VOC test of the #10 Power Boiler at the same time as the PM, NOx, SO2 & VE tests because they had planned to conduct the VOC test at a later date and to submit those results with the application for renewal of the source's current operating permit. Specific Condition No. 15 of permit AO16-86317 requires testing of VOC emissions via EPA Reference Method 25. Mr. Tonn stated that after discussing the matter with its consultant, Air Consulting & Engineering (ACE), JSC would prefer to use EPA Reference Method 25A for its upcoming VOC test. The author stated that since the permit specifically requires EPA RM 25, JSC ✱ should submit to BESD for review, in writing, a request for the use of an alternate test method. Mr. Tonn stated that he would do so.

No further information follows.

✱ Note: must apply to DER Secretary for ASP.

May 17, 1990

Mr. J. Franklin Mixson
Vice President, General Manager
Jefferson Smurfit Corporation
P.O. Box 150
Jacksonville, FL 32201

Re: Biennial Particulate & Visible Emissions Compliance Test Report
#3 Lime Kiln; #3 Lime Kiln Silo
Test Dates: March 28 & April 6, 1990
Permit No. A016-144609

Dear Mr. Mixson:

This is to acknowledge receipt of the above captioned test report, submitted May 7, 1990.

The #3 Lime Kiln has demonstrated compliance for particulate matter emissions and the #3 Lime Kiln Silo has demonstrated compliance for visible emissions, as stipulated in the referenced permit.

It is noted, however, that the #3 Lime Kiln failed to demonstrate compliance for visible emissions for the following reason:

> The highest 6-minute average opacity was 17.7% as opposed to the permitted allowable of 10%.

By copy of this letter, this violation of an emission limiting standard is being referred to the BESD enforcement section for possible further enforcement action. Jefferson Smurfit Corporation should take action to correct the problem and conduct a retest as soon as possible in order to establish that the source is once again in compliance. This agency should be notified of the scheduled retest date as soon as a test date is established.

If there are any questions concerning this matter, please contact the undersigned at (904) 630-3666.

Very truly yours,

George H. Hawkins
Assistant Engineer

GHH/ea/ghh/19

cc: Mr. Andy Kutyna, P.E., DER
Mr. Harvey Gray, TSI
BESD File 1750 B

BESD STACK TEST REVIEW

PLANT Jefferson Smurfit SOURCE #3 Lime Kiln IBM _____

PERMIT #AQ16-144609 FILE #1750B OBS. None RPT. REC'D 5/7/90

AIR041 # 31/16/00003/23 (INITIAL & DATE: _____)
CURRENT TEST DATE: 03/28/90 NEXT TEST DATE: 10/01/90
TEAM NAME: ACE-Gabel, Prows
1 TEST ACTUAL EMISSIONS: 00018.400000 (LBS/HR)
2 TEST ACTUAL EMISSIONS: _____ (LBS/HR)
3 TEST ACTUAL EMISSIONS: _____ (LBS/HR)
4 TEST ACTUAL EMISSIONS: _____ (LBS/HR)
COMMENTS: _____

AIR042 (VE TESTS ONLY)
OBSERVER NAME: D. Gray TEST LENGTH: 60 (Min) TEST PASS: N (Y OR N)
5 TEST % OPACITY: NORMAL: 18 EXCEPT: ___ TIME: ___ (Min)
6 TEST % OPACITY: NORMAL: ___ EXCEPT: ___ TIME: ___ (Min)

COMPLIANCE INDICATED	Y [ ] N [✓]	REPORT APPROVAL	Y [✓] N [ ]	FIELD TEST APPROVAL	Y [✓] N [ ]	PROCESS APPROVAL	Y [✓] N [ ]

1 METH.: 5/TSP ALLOW. EMIS.: 21.3#/hr. ACTUAL EMIS.: 18.44#/hr. (87 %)
2 METH.: _____ ALLOW. EMIS.: _____ ACTUAL EMIS.: _____ (____%)
3 METH.: _____ ALLOW. EMIS.: _____ ACTUAL EMIS.: _____ (____%)
4 METH.: _____ ALLOW. EMIS.: _____ ACTUAL EMIS.: _____ (____%)
5 METH.: 9/VE ALLOW. EMIS.: 10% ACTUAL EMIS.: 17.71% (177%)
6 METH.: _____ ALLOW. EMIS.: _____ ACTUAL EMIS.: _____ (____%)

1 ALLOW. PROCESS WT.: 9.2 T/hr. ACTUAL PROCESS WT.: 8.73 T/hr. (95 %)
2 ALLOW. PROCESS WT.: _____ ACTUAL PROCESS WT.: _____ (____%)
3 ALLOW. PROCESS WT.: _____ ACTUAL PROCESS WT.: _____ (____%)
4 ALLOW. PROCESS WT.: _____ ACTUAL PROCESS WT.: _____ (____%)
5 ALLOW. PROCESS WT.: _____ ACTUAL PROCESS WT.: _____ (____%)
6 ALLOW. PROCESS WT.: _____ ACTUAL PROCESS WT.: _____ (____%)

NOTES: Report received in 40 days.

REVIEWED BY: Walker DATE: 5/9/90 (OVER)

Jefferson Smurf.
#3 Lime Kiln
28 March 1990
Overall Average: 15.8958

00	-	10	15	10	15				15.208
01	-	15	15	20	15	15.625	15.625	15.833	15.833
02	-	15	20	10	10	16.042	16.458	16.667	16.875
03	-	15	15	15	20	16.875	16.875	17.083	17.292
04	-	20	20	25	15	17.083	16.875	16.875	16.667
05	-	10	10	15	15	16.250	15.833	15.417	15.417
06	-	20	15	15	15	15.625	16.042	16.042	16.042
07	-	20	25	25	20	15.833	16.042	15.833	15.625
08	-	15	20	15	15	15.417	15.000	14.583	14.583
09	-	10	10	15	15	14.583	14.375	14.375	14.583
10	-	10	10	15	15	14.792	15.208	15.208	15.000
11	-	15	20	15	15	15.417	15.417	15.417	15.417
12	-	15	20	10	10	15.833	15.417	15.417	15.417
13	-	15	15	15	20	15.417	15.417	15.417	15.625
14	-	15	15	15	20	15.625	15.417	15.417	15.208
15	-	15	20	15	10	15.000	15.000	15.000	14.792
16	-	20	10	15	15	14.583	14.375	14.792	15.208
17	-	25	10	15	15	15.000	15.208	15.000	15.000
18	-	15	20	10	15	14.583	14.583	14.583	14.583
19	-	15	10	15	15	14.583	14.375	14.583	14.375
20	-	10	15	15	15	14.375	14.583	14.792	14.792
21	-	10	15	25	20	15.000	15.208	15.208	15.417
22	-	15	15	10	15	15.625	15.833	15.417	15.208
23	-	15	10	15	15	15.417	16.250	16.250	16.250
24	-	15	15	15	10	16.458	16.458	16.458	16.458
25	-	15	15	20	15	16.458	16.458	16.042	16.042
26	-	15	20	15	20	16.042	15.833	15.833	15.833
27	-	15	20	15	15	16.042	16.250	16.250	16.250
28	-	20	15	15	15	16.042	16.042	16.250	16.458
29	-	20	20	15	15	16.458	16.667	16.875	16.875
30	-	20	15	15	10	16.667	16.667	16.667	16.667
31	-	15	15	10	15	16.667	16.667	17.083	17.083
32	-	15	15	15	**20**	17.083	17.292	**17.708**	17.708
33	-	**20**	**25**	**15**	**15**	17.708	17.083	17.083	17.083
34	-	**15**	**15**	**20**	**20**	17.083	17.083	16.667	16.458
35	-	**20**	**25**	**20**	**15**	16.250	16.042	15.833	15.833
36	-	**15**	**15**	**15**	**10**	16.042	16.042	16.250	16.667
37	-	**15**	**15**	**20**	**15**	16.667	16.458	16.250	16.250
38	-	**15**	**20**	**25**	20	16.458	16.667	16.250	15.833
39	-	20	10	15	15	15.625	15.833	16.042	16.042
40	-	15	15	10	15	16.042	15.833	16.042	16.042
41	-	15	20	15	15	15.833	15.625	15.625	15.625
42	-	20	15	20	20	15.417	15.417	15.417	15.208
43	-	15	10	15	15	15.208	15.625	15.625	15.833
44	-	20	25	15	10	15.625	15.417	15.417	15.625
45	-	15	15	20	15	15.833	15.625	15.417	15.417
46	-	15	10	15	15	15.625	16.042	16.042	16.042
47	-	10	15	15	15	16.458	16.458	16.458	16.250
48	-	15	15	20	15	16.250	16.250	15.833	15.833
49	-	15	20	15	20	16.042	16.042	16.458	16.250
50	-	15	20	15	15	16.250	15.833	15.833	15.833
51	-	20	10	15	15	15.833	16.250	16.458	17.083
52	-	20	20	15	15	16.875	16.667	16.667	16.875
53	-	20	15	15	10	16.875	16.875	16.875	16.875
54	-	15	15	10	15				
55	-	20	20	25	15				
56	-	15	10	15	15				
57	-	20	20	20	30				
58	-	15	15	15	20				
59	-	20	15	15	10				

Tel. (904) 353-5761

TECHNICAL SERVICES, INC.
ENVIRONMENTAL CONSULTANTS

Air and Water Pollution Sampling, Surveys, Testing and Analytical Services

2471 SWAN STREET
P. O. BOX 52329
JACKSONVILLE, FLORIDA 32201

VISIBLE EMISSIONS TEST DATA

FOR: JEFFERSON SMURFIT

PLANT ADDRESS: POST OFFICE BOX 150, JACKSONVILLE, FL 32201

SOURCE IDENTIFICATION: LIME KILN

COMPANY OFFICIAL CONTACT: MR. GENE TONN

TEST CONDUCTED BY: MR. DANE GRAY

OBSERVATION MADE FROM: GROUND LEVEL

COMMENTS:

A Copy of Dane Gray's State of Florida Certification is attached to this report.

Dane Gray

OBSERVER'S SIGNATURE

BEST AVAILABLE COPY

TEL. (904) 353-5761
1037 STOCKTON STREET
P. O. BOX 52329
JACKSONVILLE, FLORIDA 32201

TECHNICAL SERVICES, INC.

VISIBLE EMISSIONS FIELD DATA SHEET

Company Name Jefferson Smurfit

Source Lime Kiln

Date 3/28/90

Time 5:00pm – 6:00pm

Wind Direction and Speed NW 5-15 MPH

Observer's Signature Dane H. Gray

min. \ sec.	0	15	30	45
0	10	15	10	15
1	15	15	20	15
2	15	20	10	10
3	15	15	15	20
4	20	20	25	15
5	10	10	15	15
6	20	15	15	15
7	20	25	25	20
8	15	20	15	15
9	10	10	15	15
10	10	10	15	15
11	15	20	15	15
12	15	20	10	10
13	15	15	15	20
14	15	15	15	20
15	15	20	15	10
16	20	10	15	15
17	25	10	15	15
18	15	20	10	15
19	15	10	15	15
20	10	15	15	15
21	10	15	25	20
22	15	15	10	15
23	15	10	15	15
24	15	15	15	10
25	15	15	20	15
26	15	20	15	20
27	15	20	15	15
28	20	15	15	15
29	20	20	15	15

min. \ sec.	0	15	30	45
30	20	15	15	10
31	15	15	10	15
32	15	15	15	20
33	20	25	15	15
34	15	15	20	20
35	20	25	20	15
36	15	15	15	10
37	15	15	20	15
38	15	20	25	20
39	20	10	15	15
40	15	15	10	15
41	15	20	15	15
42	20	15	20	20
43	15	10	15	15
44	20	25	15	10
45	15	15	20	15
46	15	10	15	15
47	10	15	15	15
48	15	15	20	15
49	15	20	15	20
50	15	20	15	15
51	20	10	15	15
52	20	20	15	15
53	20	15	15	10
54	15	15	10	15
55	20	20	25	15
56	15	10	15	15
57	20	20	20	30
58	15	15	15	20
59	20	15	15	10

Height of Stack: 150'

Distance to Stack: 250'

Color of Plume: WHITE

Condensed water: (Yes) No

Point of Opacity Reading: AFTER PT OF CONDENSATION

Background Description: BLUE SKY w/ 25% CLOUD COVERAGE

Opacity = Sum of nos. recorded / Total nos. readings

= 425/24 = 17.7%

Ø PT AFTER CONDENSATION

Ø OBSERVER

SUN

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
Mr. J. Franklin Mixson General Mgr. & V.P. Jefferson Smurfit Corp. 1915 Wigmore Street Jacksonville, FL 32201	P 256 396 213
	Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
	Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X Janet F. Mayer	
7. Date of Delivery 10 OCT 1990	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 DOMESTIC RETURN RECEIPT

P 256 396 213

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. J. Franklin Mixson Gen. Mgr. & V.P.	
Street and No. Jefferson Smurfit Corp. 1915 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date mailed: 10/3/90 AC 16-142989	

PS Form 3800, June 1985 ☆U.S.G.P.O. 1989-234-555

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

October 2, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
General Manager and V.P.
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: No. 3 Lime Kiln Visible Emission Limiting Standard
AC 16-142989

On October 1, 1985, Jefferson Smurfit Corporation received a construction permit (AC 16-095614) to construct the new No. 3 lime kiln. The source was subject to the RACT visible emission limiting standard pursuant to F.A.C. Rule 17-2.650(2)(c)9. On July 11, 1990, Jefferson Smurfit Corporation was issued the above referenced construction permit for a modification. Due to the rescission of F.A.C. Rule 17-2.650(2)(a)2, which applied to new and modified sources, it appeared that the source was entitled to a relaxation of the visible emission standard. However, F.A.C. Rule 17-2.400(1)(d) requires that all emission limiting standards and permit conditions that were established pursuant to F.A.C. Rule 17-2.650 shall remain in effect, even though Duval County has been redesignated to an air quality maintenance area for PM pursuant to F.A.C. Rule 17-2.460. Therefore, the following shall be changed:

Specific Condition No. 4:

FROM: Visible emissions from the lime kiln shall be less than 20 percent opacity pursuant to F.A.C. Rule 17-2.610(2). Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

TO: Visible emissions from the lime kiln shall not exceed 10 percent opacity pursuant to F.A.C. Rule 17-2.650(2)(c)9.b. Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth in Attachment 1 and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

This letter must be attached to the construction permit, No. AC 16-142989, and shall become a part of the permit.

Sincerely,

STEVE SMALLWOOD, P.E.
Director
Division of Air Resources Management

SS/BM/plm

Attachment

c: A. Kutyna, NE District
R. Roberson, BESD
D. Schwartz, DER, OGC
T. Cole, OHF&C, P.A.
J. Cox, JSC
Reading File
Bruce Mitchell } 10/5/90

Attachment 1

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: October 2, 1990

SUBJ: Amendment to Construction Permit AC 16-142989
No. 3 Lime Kiln Visible Emission Limiting Standard

Attached for your approval and signature is a letter amending Specific Condition No. 4 for the above referenced construction permit.

The Bureau recommends approval of this amendment.

CF/BM/plm

Attachment

BEST AVAILABLE COPY

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

FAX TRANSMITTAL LETTER

DATE: 10-3-90

TO:

NAME: Ron Roberson

AGENCY: BESD

TELEPHONE: (904) 630-3638

OF PAGES (INCLUDE COVER SHEET): 4

FROM:

NAME: Bruce Mitchell

AGENCY: DARM/BAR

IF ANY PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. (904)488-1344 SC/ 278-1344

SENDER'S NAME: same as above

COMMENTS: JSC #3 Lime kiln VE issue.

MESSAGE CONFIRMATION OCT-03-'90 WED 10:07

TERM ID: DIV OF AIR RES MGMT F-3333

TEL NO: 904-922-6979

[illegible]	[illegible]	[illegible]	[illegible]	ID	DEPT CODE	OK	NG
352	10-03	10:04	[illegible]	[illegible] 3638		04	00

Handle or Store the Following Materials: Cement, Fertilizer, Phosphate Rock, Grain, Run-of-Pile Triple Super phosphate, Lime, Sand and Gravel, Dolomite.

1. Elimination of fugitive dust by ceasing, curtailing, postponing or deferring transfer or storage of material.

(f) Any other industrial or commercial establishments which emit air pollutants.

1. Elimination of air pollutants by ceasing, curtailing, postponing or deferring operations.

2. Elimination of air pollutants from trade waste disposal operations which emit air pollutants.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 11-1-81, Formerly 17-2.07, Amended 8-26-81, 5-30-88.

PART IV AREA DESIGNATION AND ATTAINMENT DATES

17-2.400 Procedures for Designation and Redesignation of Areas.

(1) General.

(a) Under Rule 17-2.410, 17-2.420, or 17-2.430, all areas of the state shall be designated as nonattainment, attainment, or unclassifiable with respect to each air pollutant for which an ambient air quality standard is established under Rule 17-2.300. The designation of each such area determines which emission limiting standards, new and modified facility review requirements, and other air pollution control measures shall apply to sources and activities which emit the pollutant or the precursor of the pollutant for which the area is designated. Following the redesignation of an area as nonattainment, a revision to the State Implementation Plan (SIP) may be required to establish the emission limiting standards and other air pollution control measures appropriate for the area.

(b) Under Rule 17-2.450, all areas of the state that are not designated as nonattainment with respect to a pollutant for which a maximum allowable increase is defined in Rule 17-2.310 shall be designated as one or more prevention of significant deterioration (PSD) areas with respect to each such pollutant. The designation of a PSD area determines the area for which a PSD baseline date shall be established.

(c) Under Rule 17-2.440, all areas of the state shall be designated as Class I, Class II, or Class III. For an area that is designated as a PSD area, the designation of the area as Class I, II or III determines which set of maximum allowable increases in sulfur dioxide and total suspended particulate concentrations established under Rule 17-2.310 shall apply in the area after a PSD baseline date is established.

(d) Under Rule 17-2.460, certain areas of the state shall be designated as air quality maintenance areas. Areas that have been redesignated from nonattainment to attainment or unclassifiable may be designated as air quality maintenance areas with the effect that all emission limiting standards and permit limitations that were established pursuant to Rules 17-2.17 (repealed), 17-2.510, and 17-2.650, or otherwise as a result of the SIP or nonattainment corrective plan, and all other air pollution control measures that were required under the SIP or nonattainment corrective plan, shall remain in effect in such areas.

(2) Redesignation of Nonattainment, Attainment, and Unclassifiable Areas (Reserved).

(3) Redesignation of Class I, Class II and Class III Areas.

(a) Redesignation of an area classified under Rule 17-2.440 may be proposed by filing a petition for rulemaking with the Environmental Regulation Commission showing sufficient justification for such action provided that lands within the exterior boundaries of Indian Reservations may be reclassified only by the appropriate Indian Governing Body. This petition shall conform to the requirements of Section 120.54(5), Florida Statutes. The Department may also initiate reclassification procedures. All reclassifications shall be submitted as revisions to the State Implementation Plan.

(b) Decisions regarding whether an area should be reclassified shall be based on the following criteria.

1. For areas which are proposed to be reclassified as Class I or Class II:

a. A public hearing shall be held in accordance with the notice requirements of Rule 17-2.220(3).

b. At least 30 days notice of the proposed reclassification shall be given to other States, Indian Governing Bodies, and Federal Land Managers whose lands may be affected by the proposal.

c. A description and analysis of the health, environmental, economic, social, and energy effects of the proposed reclassification shall be prepared and made available for public inspection at least 30 days prior to the hearing. The notice shall state the availability of the required analysis.

d. If the reclassification includes any Federal lands, the state shall notify the Federal Land Manager of the proposal not more than 60 days prior to the hearing and allow an adequate opportunity for the Federal Land Manager to confer with the state and submit written comments and recommendations. If an area is reclassified against the recommendations of the Federal Land Manager, the state shall publish a notice listing the inconsistencies and the reasons for reclassifying the area against the Federal Land Manager's recommendations in the Florida Administrative Weekly.

e. Prior to proposing a reclassification, the state shall confer with the elected leadership of any local general purpose government in the area covered by the proposed reclassification.

2. For areas which are proposed to be reclassified as Class III:

a. All of the requirements of Rule 17-2.400(3)(b)1., above, shall be met.

b. Except for a reclassification proposed by an Indian Governing Body:

(i) the proposal shall be specifically approved by

the Governor after consultation with the appropriate committees of the legislature, if it is in session, or with the leadership of the legislature, if it is not in session; and

(ii) each unit of local general purpose government representing a majority of the residents of the area to be reclassified shall enact or adopt a resolution or other legislation concurring in the reclassification.

c. The reclassification may not cause or contribute to a violation of any state or national ambient air quality standard, or a violation of a maximum allowable increase in any other Class I, Class II, or Class III area.

d. To the extent practicable, any permit application and supporting documentation for a source subject to Section 17-2.500, which could receive a permit only if the area in question were reclassified as Class III, shall be made available for public inspection prior to the hearing on reclassification.

3. For areas which are proposed to be reclassified as Class I, Class II, or Class III by an Indian Governing Body:

a. All of the requirements of Rule 17-2.400(3)(b)1. and (3)(b)2.c. and d. shall be met, or equivalent procedures shall be followed.

b. Prior to proposing the reclassification, the Indian Governing Body shall consult with the state within which the Indian Reservation is located and any state which borders the Indian Reservation.

(c) The following areas shall not be reclassified as Class III:

1. An area which, as of August 7, 1977, exceeded ten thousand acres in size and was a national monument, a national primitive area, a national preserve, a national recreation area, a national wild and scenic river, a national wildlife refuge, or a national lakeshore or seashore; or

2. A national park or national wilderness area established after August 7, 1977, which exceeds ten thousand acres in size.

(d) Any area other than an area referred to in Rule 17-2.400(3)(c)1. or 2., above, or an area designated as Class I under Rule 17-2.440(1)(b) may be reclassified as Class III.

(4) Designation or Redesignation of Prevention of Significant Deterioration (PSD) Areas.

(a) Designation or redesignation of an area designated under Rule 17-2.450 may be proposed by filing a petition for rulemaking with the Environmental Regulation Commission. The petition shall conform to the requirements of Section 120.54(5), Florida Statutes. The Department may also initiate designation or redesignation procedures.

(b) PSD areas shall be designated only for those pollutants for which maximum allowable increases have been established under Rule 17-2.310.

(c) A PSD area for a pollutant shall not include any areas designated nonattainment for the pollutant under Rule 17-2.410.

(d) A PSD area may not be redesignated if the redesignation would result in the violation of any maximum allowable increase in the area proposed to be redesignated.

(e) Procedures for proposing the designation or redesignation of PSD areas are as follows:

1. A public hearing shall be held in accordance with the notice requirements of Rule 17-2.220(3).

2. At least 30 days notice of the hearing shall be given to Federal Land Managers whose lands may be affected by the proposed designation or redesignation.

3. The petition for rulemaking shall be made available for public inspection at least 30 days prior to the hearing and shall include a description and analysis of the health, environmental, economic, social and energy effects of the proposed designation or redesignation.

(5) Designation or Redesignation of Air Quality Maintenance Areas (Reserved).

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—Formerly 17-2.03(4), (6), 17-2.04(5), Amended and Renumbered 11-1-81, Amended 1-12-82, 7-21-83, 5-30-88.

17-2.410 Designation of Areas Not Meeting Ambient Air Quality Standards (Nonattainment Areas).

(1) Ozone Nonattainment Areas.

Until the U. S. Environmental Protection Agency redesignates the area as attainment, each of the following areas is designated as a nonattainment area for the air pollutant, ozone:

(a) Duval County
(b) Broward County
(c) Dade County
(d) Palm Beach County
(e) Hillsborough County
(f) Pinellas County

(2) TSP Nonattainment Areas.

(a) Until the U. S. Environmental Protection Agency designates the area as unclassifiable for TSP, each of the following areas is designated as a nonattainment area for the air pollutant, TSP:

1. That portion of Hillsborough County which falls within the area of the circle having a centerpoint at the intersection of U. S. 41 South and State Road 60 and a radius of 12 kilometers.

2. The downtown Jacksonville area in Duval County located within the following boundary lines: south and then west along the St. Johns River from its confluence with Long Branch Creek, to Main Street; north along Main Street to Eighth Street; east along Eighth Street to Evergreen Avenue; north along Evergreen Avenue to Long Branch Creek; and east along Long Branch Creek to the St. Johns River.

(b) (Reserved).

(3) PM_{10} Nonattainment Areas. (Reserved).

(4) Sulfur Dioxide Nonattainment Areas.

Until such date as the U. S. Environmental Protection Agency makes effective the redesignation of the area to attainment, each of the following areas is designated as a nonattainment area for the air pollutant, sulfur dioxide:

(a) That portion of Pinellas County that is

bounded on the south by UTM Coordinate 3112000N, on the east by UTM Coordinate 329000E, on the north by the Pasco County line, and on the west by the Gulf of Mexico.

1. That portion of Pinellas County that is bounded on the south by UTM Coordinate 3112000N, on the east by UTM Coordinate 329000E, on the north by the Pasco County line, and on the west by the Gulf of Mexico.

(5) Carbon Monoxide Nonattainment Areas. (Reserved).

(6) Nitrogen Dioxide Nonattainment Areas. (Reserved)

(7) As soon as practicable after notice of redesignation is published by the U. S. Environmental Protection Agency in the Federal Register, the Department shall publish notice of the effective date of redesignation in the Florida Administrative Weekly and a newspaper of general circulation in each county affected by the redesignation.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 11-1-81, Formerly 17-2.12(1)(b), 17-2.13(1), (8), 17-2.14(1), (4), 17-2.15, 17-2.16(1), (8), Amended 8-26-81, 1-12-82, 5-26-82, 7-21-83, 1-19-84, 5-10-84, 5-30-88, 7-9-89.

17-2.420 Designation of Areas Meeting Ambient Air Quality Standards (Attainment Areas).

(1) All of the State except those areas designated as nonattainment under Rule 17-2.410(1) is designated as attainment for the air pollutant ozone.

(2) All of the State except those areas designated as nonattainment under Rule 17-2.410(3) or as unclassifiable under Rule 17-2.430(1) is designated as attainment for the air pollutant PM_{10}.

(3) All of the State except those areas designated as nonattainment under Rule 17-2.410(4), F.A.C., or as unclassifiable under Rule 17-2.430(2), F.A.C., is designated as attainment for the air pollutant sulfur dioxide.

(4) All of the State except those areas designated as nonattainment under Rule 17-2.410(5), F.A.C., is designated as attainment for the air pollutant carbon monoxide.

(5) All of the State except those areas designated as nonattainment under Rule 17-2.410(5), F.A.C., is designated as attainment for the air pollutant nitrogen dioxide.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 11-1-81, Amended 1-12-82, 5-30-88, 7-9-89.

17-2.430 Designation of Areas Which Cannot Be Classified as Attainment or Nonattainment (Unclassifiable Areas).

(1) The following areas are designated as unclassifiable for the pollutant PM_{10}.

(a) That portion of Hillsborough County which falls within the area of the circle having a centerpoint at the intersection of U. S. 41 South and State Road 60 and a radius of 12 kilometers.

(b) The downtown Jacksonville area in Duval County located within the following boundary lines: south and then west along the St. Johns River from its confluence with Long Branch Creek, to Main Street; north along Main Street to Eighth Street; east along Eighth Street to Evergreen Avenue; north along Evergreen Avenue to Long Branch Creek; and east along Long Branch Creek to the St. Johns River.

(2) The following areas are designated as unclassifiable for the pollutant sulfur dioxide.

(a) Duval County

(b) Escambia County

(c) Hillsborough County

(d) The Southwest corner of Pasco County

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 11-1-81, Amended 8-26-81, 5-30-88, 7-9-89.

17-2.440 Designation of Class I, Class II, and Class III Areas.

(1) All areas of the State shall be classified as Class I, Class II, or Class III.

(a) Class II Areas — All areas of the State are designated Class II except for those areas specified in subsection (1)(b), below.

(b) Class I Areas — The following areas are designated as Class I areas and shall not be reclassified.

1. Everglades National Park.
2. Chassahowitzka National Wilderness Area.
3. St. Marks National Wilderness Area.
4. Bradwell Bay National Wilderness Area.

(2) Federally designated Class I Areas outside of Florida but within 100 kilometers of the State are as follows:

(a) Okefenokee National Wilderness Area.

(b) Wolf Island National Wilderness Area.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 11-1-81, Formerly 17-2.04(2),(3), Amended 8-26-81, 1-12-82.

17-2.450 Designation of Prevention of Significant Deterioration (PSD) Areas.

(1) The following areas are designated as PSD areas for the air pollutant TSP:

(a) All of the state except those areas designated under Rule 17-2.450(1)(b), FAC, below. The TSP baseline date established for this area is December 27, 1977.

(b) [Reserved]

(2) The following areas are designated as PSD areas for the air pollutant sulfur dioxide:

(a) All of the state except those areas designated nonattainment under Rule 17-2.410(3), FAC, and those areas designated under Rule 17-2.450(2)(b), FAC, below. The sulfur dioxide baseline date established for this area is December 27, 1977.

(b) [Reserved]

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 1-12-82, Amended 10-20-86, 5-30-88.

17-2.460 Designation of Air Quality Maintenance Areas.

(1) Each of the following areas is designated as

an air quality maintenance area for the air pollutant, ozone:

(a) [Reserved]

(b) Orange County.

(c) — (g) [Reserved]

(2) Effective on such date as the U. S. Environmental Protection Agency redesignates the area as attainment, each of the following areas is designated as an air quality maintenance area for the air pollutant, ozone:

(a) Duval County

(b) [Reserved]

(c) Broward County

(d) Dade County

(e) Palm Beach County

(f) Hillsborough County

(g) Pinellas County

(3) Effective on such date as the U. S. Environmental Protection Agency makes effective the redesignation of the area to attainment, each of the following areas is designated as an air quality maintenance area for the air pollutant, sulfur dioxide:

(a) That portion of Pinellas County that is bounded on the south by UTM Coordinate 3112000N, on the east by UTM Coordinate 329000E, on the north by the Pasco County line, and on the west by the Gulf of Mexico.

(4) As soon as practicable after notice of redesignation is published by the U. S. Environmental Protection Agency in the Federal Register, the Department shall publish notice of the effective date of redesignation in the Florida Administrative Weekly and a newspaper of general circulation in each county affected by the redesignation.

(5) Each of the following areas is designated as an air quality maintenance area for the air pollutant, particulate matter:

(a) That portion of Hillsborough County which falls within the area of the circle having a centerpoint at the intersection of U. S. 41 South and State Road 60 and a radius of 12 kilometers.

(b) The downtown Jacksonville area in Duval County located within the following boundary lines: south and then west along the St. Johns River from its confluence with Long Branch Creek, to Main Street; north along Main Street to Eighth Street; east along Eighth Street to Evergreen Avenue; north along Evergreen Avenue to Long Branch Creek; and east along Long Branch Creek to the St. Johns River.

Specific Authority 403.061 FS. Law Implemented 403.021, 403.031, 403.061, 403.087 FS. History—New 7-21-83, Amended 1-19-84, 5-10-84, 5-30-88, 7-9-89.

PART V NEW AND MODIFIED SOURCE REVIEW REQUIREMENTS

17-2.500 Prevention of Significant Deterioration. The provisions of this rule generally apply to the construction or modification of air pollutant emitting facilities in those parts of the state in which the state ambient air quality standards are being met.

The provisions of this rule also establish various requirements for existing sources and facilities in such areas, including specific construction operating permit requirements.

(1) General Prohibitions.

(a) Except as provided in Rule 17-2.510, F.A.C., the Department shall not permit the construction or modification of any source or facility that would cause or contribute to a violation of any ambient air quality standard.

(b) Except as provided in Rule 17-2.500(3)(f) and (g), F.A.C., the Department shall not permit the construction or modification of any source or facility that would cause or contribute to an ambient concentration at any point within a baseline area that exceeds either the appropriate baseline concentration for the point plus the appropriate maximum allowable increase or the appropriate ambient air quality standard, whichever is less.

(c) The Department shall include appropriate conditions in each permit issued to insure that the provisions of this section are not violated. Such conditions may include, but are not limited to, specifying an enforceable emission limitation for a source or facility that is more restrictive than the allowable emission limitation that would otherwise apply.

(2) Applicability.

This subsection establishes the criteria for determining whether or not a proposed new facility or modification to a facility is subject to the new source review (NSR) requirements of this section, either in whole or in part. The NSR requirements of this section include the applicable provisions of 17-2.500(4), General Provisions; 17-2.500(5), Preconstruction Review Requirements; and 17-2.500(6), Construction/Operation Permit Requirements; all as modified by the applicable provisions of 17-2.500(3), Exemptions and Exclusions.

A proposed new facility or modification that is not subject to the NSR requirements of this section, either in whole or in part, may be subject to review requirements under other sections of this Part.

(a) Nonprofit Health and Educational Facilities Exemption.

A proposed new facility or modification shall not be subject to the NSR requirements of this section if the new or modified facility would be a nonprofit health or nonprofit educational institution.

(b) Fugitive Emissions Exemption.

A proposed new facility or modification shall not be subject to the NSR requirements of this section if:

1. The affected facility would not belong to any of the facility categories listed in Table 500-1, Major Facility Categories, or any other facility category which, as of August 7, 1980, is being regulated under 40 CFR 60 or 40 CFR 61; and

2. The facility or modification would be subject to the NSR requirements of this section only if fugitive emissions, to the extent quantifiable, are considered in determining whether the affected facility would be subject to NSR requirements pursuant to 17-2.500(2)(d), 2. if it is or were itself a

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: August 6, 1990

SUBJ: Amendment to Construction Permit AC 16-142989
No. 3 Lime Kiln Visible Emission Limiting Standard

Attached for your approval and signature is a letter amending Specific Condition No. 4 for the above referenced construction permit.

The Bureau recommends approval of this amendment.

CF/BM/plm

Attachment

NO.

CHF - Reconsider I don't think the statement clarifying the change is correct. 17-2.400 (11)(g) I believe) mean all RACT rules stay in effect until the EPA specifically changes them, which in this case they did. I just mean that the RACT rules

Review the rule with Gary and see what you think?

8-7-90

don't automatically go away when an area is redesignated attainment etc.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy CHF

THRU: David Schwartz DCS
Gary Smallridge Cynthia Christian for

DATE: August 15, 1990

SUBJ: Amendment to Construction Permit AC 16-142989
No. 3 Lime Kiln Visible Emission Limiting Standard

Attached for your approval and signature is a letter amending Specific Condition No. 4 for the above referenced construction permit.

The Bureau recommends approval of this amendment.

CF/BM/plm

Attachment

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:
Mr. J. Franklin Mixson
Gen. Mgr. & V.P.
Jefferson Smurfit Corp.
1915 Wigmore Street
Jacksonville, FL 32201

4. Article Number
P 256 396 250

Type of Service:
- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail
- ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X Frank Meyer

6. Signature — Agent
X

7. Date of Delivery
7/16/90

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Apr. 1989 ★U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

P 256 396 250

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. J. Franklin Mixson Gen. Mgr. & V.P.	
Street and No. Jefferson Smurfit Corporation 1915 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date mailed: 7/12/90 AC 16-142989	

PS Form 3800, June 1985 ☆U.S.G.P.O. 1989-234-555

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. J. Franklin Mixson
General Manager and V.P.
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

July 12, 1990

Enclosed is construction permit No. AC 16-142989 for Jefferson Smurfit Corporation to allow an increase in production capacity from 220 TPD to 275 TPD for the No. 3 lime kiln at your existing facility located in Jacksonville, Duval County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; 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 of Appeal must be filed within 30 days from the date this permit is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

Andy Kutyna, NE Dist.
Ron Roberson, BESD
Terry Cole, OHF&C
Jerry Cox, JSC
David Buff, P.E., KBN
Reading File
Bruce Mitchell } 7/12/90 RR

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of buisness on 7-12-90.

FILING AND ACKNOWLEDGEMENT FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Martha Jane Wise 7-12-90
Clerk Date

Final Determination

Jefferson Smurfit Corporation
Duval County
Jacksonville, Florida

Construction Permit Number:
AC 16-142989

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

July 10, 1990

Final Determination

The construction permit application package has been reviewed by the Department. Public Notice of the Department's Intent to Issue was published in the Florida Times-Union on June 20, 1990. The Technical Evaluation and Preliminary Determination were available for public inspection at the Department's Northeast District and Bureau of Air Regulation (Bureau) offices and the Duval County's Bio-Environmental Services Division office.

Comments were received on the proposed action from Mr. J. Franklin Mixson, V.P. and General Manager of Jefferson Smurfit Corporation-Jacksonville mill, in a letter with an attachment received on June 28, 1990. A comment was also received from Mr. Terry Cole, with Oertel, Hoffman, Fernandez & Cole, by phone on June 3, 1990. The Bureau's response to the comments are as follows:

A. Comments from Mr. J. Franklin Mixson:

Jefferson Smurfit Corporation requests that the No. 3 lime kiln be also permitted to fire natural gas if it becomes available.

o Bureau's Response:

Since the potential pollutant emissions while firing natural gas will not exceed the projected potential emissions and the net potential pollutant changes have been reviewed and noticed, the Bureau agrees with the request. It is noted that there is an error in the calculations for particulate matter (PM) and PM_{10}, which was discussed with Mr. Gene Tonn by phone on July 9, 1990 (see Interoffice Memorandum dated July 9, 1990). Therefore, the following will be changed and added:

Specific Condition No. 8

FROM: Particulate matter emissions from the lime kiln shall not exceed 0.24 g/dscm (0.104 gr/dscf; 21.0 lbs/hr, 93.2 TPY) corrected to 10 percent oxygen, when liquid fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(ii). A compliance test for particulate matter emissions shall be conducted using EPA Method 5, EPA Method 1, EPA Method 2 and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and, 40 CFR 60.285(a)(1) through (4) and 40 CFR 60.285(b).

TO: Particulate matter emissions from the lime kiln shall not exceed 0.24 g/dscm (0.104 gr/dscf; 21.0 lbs/hr, 93.2 TPY) corrected to 10 percent oxygen, when liquid

fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(ii). Particulate matter emissions from the lime kiln shall not exceed 0.15 g/dscm (0.067 gr/dscf; 13.0 lbs/hr, 56.9 TPY) corrected to 10 percent oxygen, when gaseous fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(i). A compliance test for particulate matter emissions shall be conducted using EPA Method 5, EPA Method 1, EPA Method 2 and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and, 40 CFR 60.285(a)(1) through (4) and 40 CFR 60.285(b).

B. Response from Mr. Terry Cole:

Since the applicability section of F.A.C. Rule 17-2.650(2)(a) associated with new and modified sources was deleted from rule on May 30, 1988, then the visible emission standard contained in F.A.C. Rule 17-2.650(2)(c)9.b. does not apply.

o Bureau's response:

The Bureau agrees with the comment. However, the "General Visible Emissions Standard" pursuant to F.A.C. Rule 17-2.610(2) does apply. Therefore, the following will be changed and added:

Specific Condition No. 4

FROM: Visible emissions from the lime kiln shall not exceed 10 percent opacity pursuant to F.A.C. Rule 17-2.650(2)(c)9.b. Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

TO: **Visible emissions from the lime kiln shall be less than 20 percent opacity pursuant to F.A.C. Rule 17-2.610(2). Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.**

Attachments to be Incorporated:

15. Mr. J. Franklin Mixson's letter with an attachment received June 28, 1990.

16. Mr. R. Bruce Mitchell's Interoffice Memorandum dated July 9, 1990.

The Bureau will incorporate the changes into the appropriate area of the proposed permit, as reflected above in the Final Determination. It is recommended that the proposed permit be issued as drafted, with the above revisions and attachments incorporated.

Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

PERMITTEE:
Jefferson Smurfit Corp.
1915 Wigmore Street
Jacksonville, FL 32201

Permit Number: AC 16-142989
Expiration Date: December 31, 1991
County: Duval
Latitude/Longitude: 30°22'00"N
81°37'30"W
Project: Causticizing System Modification

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. and specifically described as follows:

For the modification of the existing causticizing system, which will include the following: 1) replace the existing wet scrubber system serving the No. 3 lime kiln with an electrostatic precipitator; 2) increase the maximum operating rate in the No. 3 lime kiln from 220 TPD to 275 TPD lime product; 3) increase the maximum process in-put rate of the lime storage silo from 9.2 TPH to 11.5 TPH lime product from the No. 3 lime kiln; and, increase the maximum process in-put rate of the lime storage silo from 6.00 TPH to 21.2 TPH lime product, either from truck unloading or truck unloading and the No. 3 lime kiln. The existing lime kiln fires No. 6 fuel oil, with a maximum sulfur content of 2.5%, by weight, and has the capability to fire natural gas.

The proposed project will be constructed at the permittee's existing mill located at the above address in Duval County, Florida. The UTM coordinates are Zone 17-439.8 km East and 3359.4 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments to be incorporated:

1. Application to Modify Air Pollution Sources, DER Form 17-1.202(1), received December 9, 1987.

2. Mr. C. H. Fancy's letter dated January 7, 1988.

3. Mr. E. T. Tonn's letter with enclosures received April 24, 1989.

Attachments Continued:

4. Mr. J. Franklin Mixson's letter with attachments received February 5, 1990.
5. Mr. C. H. Fancy's letter dated March 6, 1990.
6. Mr. J. Franklin Mixson's letter with attachments received April 9, 1990.
7. Mr. C. H. Fancy's letter dated May 2, 1990.
8. Mr. J. Franklin Mixson's letter with attachments received May 21, 1990.
9. Mr. J. Franklin Mixson's letter with attachments received June 5, 1990.
10. Mr. J. Franklin Mixson's letter with attachments received June 7, 1990.
11. Mr. J. Franklin Mixson's letter with attachments received June 8, 1990.
12. Addendum to the June 8 letter from Mr. J. Franklin Mixson received June 11, 1990
13. EPA Memorandum No. 432
14. Technical Evaluation and Preliminary Determination dated June 12, 1990.
15. Mr. J. Franklin Mixson's letter with an attachment received June 28, 1990.
16. Mr. R. Bruce Mitchell's Interoffice Memorandum dated July 9, 1990.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

GENERAL CONDITIONS:

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. Permitted annual hours of operation are 8,760.

2. The causticizing system is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version).

3. Stack sampling facilities for the lime kiln shall comply with all applicable provisions of F.A.C. Rule 17-2.700(4). Stack sampling facilities for the lime silo shall comply with all applicable provisions of F.A.C. Rule 17-2.700(4) if, and only if, a compliance test in accordance with F.A.C. Rule 17-2.700 Table I is required for mass emissions pursuant to F.A.C. Rule 17-2.700(3)(d).

4. Visible emissions from the lime kiln shall be less than 20 percent opacity pursuant to F.A.C. Rule 17-2.610(2). Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

5. Particulate emissions from the lime silo shall not exceed 0.03 gr/dscf (0.15 lb/hr, 0.66 TPY) pursuant to F.A.C. Rule 17-2.650(2)(c)11.b.(ii). A compliance test shall be conducted using EPA Method 5, 40 CFR 60, Appendix A, in accordance with F.A.C. Rule 17-2.700 Table I. However, the mass emissions compliance test will be waived pursuant to F.A.C. Rule 17-2.700(3)(d) and an alternative standard of no visible emissions (5% opacity) shall be applied, which shall be verified by a compliance test using EPA Method 9, 40 CFR 60 Appendix A, in accordance with F.A.C. Rule 17-2.700.

6. The lime silo shall not exhibit any visible emissions (5% opacity) pursuant to F.A.C. Rule 17-2.650(2)(c)11.b.(i) and F.A.C. Rule 17-2.700(3)(d). A compliance test for visible emissions shall be conducted using EPA Method 9, 40 CFR 60, Appendix A, in accordance with F.A.C. Rule 17-2.700.

SPECIFIC CONDITIONS:

7. All vehicular deliveries of purchased lime to the lime silo shall be verifiable on a per month basis. On an annual basis, the amount of purchased lime shall be submitted as part of the annual operating report (AOR) to Duval County's Bio-Environmental Services Division (BESD).

8. Particulate matter emissions from the lime kiln shall not exceed 0.24 g/dscm (0.104 gr/dscf; 21.0 lbs/hr, 93.2 TPY) corrected to 10 percent oxygen, when liquid fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(ii). Particulate matter emissions from the lime kiln shall not exceed 0.15 g/dscm (0.067 gr/dscf; 13.0 lbs/hr, 56.9 TPY) corrected to 10 percent oxygen, when gaseous fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(i). A compliance test for particulate matter emissions shall be conducted using EPA Method 5, EPA Method 1, EPA Method 2 and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and, 40 CFR 60.285(a)(1) through (4) and 40 CFR 60.285(b).

9. Total reduced sulfur emissions from the lime kiln shall not exceed 8 ppm by volume on a dry basis, corrected to 10 percent oxygen (1.0 lb/hr, 4.4 TPY: liquid fossil fuel). A compliance test for total reduced sulfur emissions shall be conducted using EPA Method 16 or 16A and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and, 40 CFR 60.285(d).

10. The sulfur content of liquid fossil fuel burned in the lime kiln shall not exceed 2.50 percent, by weight, as determined by EPA Method 19, 40 CFR 60 Appendix A, and F.A.C. Rule 17-2.700.

11. Sulfur dioxide emissions from the lime kiln shall not exceed 10.4 lbs/hr and 45.6 TPY. A compliance test for sulfur dioxide emissions shall be conducted using EPA Method 6 pursuant to F.A.C. Rule 17-2.700(6)(a)6. The compliance test will be a one-time requirement to verify the SO_2 emissions data submitted and related to the review for PSD (prevention of significant deteroriation) and EPA Memorandum 4.32.

12. A total reduced sulfur continuous emissions monitoring system shall be installed, certified, operated and maintained pursuant to the provisions of F.A.C. Rules 17-2.660(3)(e), 17-2.660(4)(b), 17-2.710(3)(b); and, 40 CFR 60.13, 40 CFR 60 Appendix A, and 40 CFR 60 Appendix B.

SPECIFIC CONDITIONS:

13. A total reduced sulfur emissions report shall be provided to the BESD on a quarterly basis pursuant to the provisions of F.A.C. Rules 17-2.660(3)(a) and 17-2.710(4); and, 40 CFR 60.7 and 40 CFR 60.284(d).

14. Excess emissions of total reduced sulfur shall be determined quarterly pursuant to F.A.C. Rule 17-2.710(4)(c).

15. The causticizing system shall be subject to the provisions of F.A.C. Rule 17-2.250, Excess Emissions.

16. The causticizing system shall be subject to the provisions of F.A.C. Rule 17-4.130, Plant Operation-Problems.

17. The maximum fuel input to the lime kiln shall not exceed 535 gallons per hour and 4.69 million gallons per year when liquid fossil fuel is burned. Fuel consumption shall be verifiable on a monthly basis. On an annual basis, fuel consumption shall be reported in the AOR and submitted to BESD.

18. Maximum lime production rate of the lime kiln shall not exceed 11.5 tons per hour, 275 tons per day, and 100,375 tons per year. Lime production shall be verifiable on a daily and monthly basis. On an annual basis, lime production shall be reported in the AOR and submitted to BESD.

19. Maximum input to the lime storage silo shall not exceed 21.2 tons per hour of lime product. The deliveries of purchased lime shall verifiable on a monthly basis. The annual amount of purchased lime shall be reported in the AOR and submitted to BESD.

20. Compliance tests shall be conducted while the lime kiln is operating at 90-100% of the maximum permitted lime production rate and burning all of the TRS gases from the batch digester system and the MEE system.

21. A compliance test shall be conducted for the lime storage silo to demonstrate compliance with the permitted pollutant emissions standards. For the compliance test, two of the test runs shall be conducted while receiving 21.2 tons per hour (TPH) of purchased lime and one of the test runs shall be conducted while simultaneously receiving 11.2 TPH of lime from the lime kiln and 10 TPH of purchased lime.

SPECIFIC CONDITIONS:

22. An operation and maintenance plan pursuant to the provisions of F.A.C. Rule 17-2.650(2)(g) shall be prepared for the lime kiln and the lime storage silo; and, submitted to the BESD prior to issuance of an operation permit.

23. Unconfined emissions of particulate matter during construction and operation of the lime kiln and lime silo shall comply with the provisions of F.A.C. Rule 17-2.610(3). Reasonable precautions that might be taken shall include, but are not limited to:

a. Reduced speeds for vehicular traffic.
b. Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.
c. Use of paving or other asphaltic materials.
d. Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.
e. Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.
f. Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.
g. Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.
h. Enclosure or covering of conveyor systems.

24. The introduction of TRS gases from any source other than the multiple effect evaporator system and batch digester system shall require an amendment to this permit prior to the actual introduction of the TRS gases.

25. Objectionable odors shall not be allowed off plant property in accordance with F.A.C. Rule 17-2.620(2).

26. All process equipment, except for the lime storage silo, that will be a part of the operational causticizing system, shall be vented to the lime kiln.

27. In accordance with F.A.C Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions of air pollutants without the applicable pollution control device operating properly.

SPECIFIC CONDITIONS:

28. In accordance with F.A.C Rule 17-2.610(3), Unconfined Emissions of Particulate Matter, pollutant abatement equipment must be operating properly during operational production.

29. In accordance with F.A.C. Rule 17-2.650(2)(e), Circumvention, no owner or operator of a source subject to the requirements of F.A.C. Rules 17-2.600 or 17-2.650(c), establishing maximum concentrations of particulate matter in the exhaust gas from the source, shall circumvent the provisions of an applicable emission limitation by increasing the volume of gas in any exhaust or group of exhausts for the purpose of reducing the stack gas concentration. This includes allowing dilution air to enter the system through leaks, open vents, or similar means.

30. The lime handling system, i.e., conveyors, shutes, elevators, and storage bins, shall be enclosed and negative pressure maintained.

31. Failure of a control system(s) to meet the applicable and maximum allowable pollutant emission limiting standard and limit shall not be grounds for requesting a variance or relaxation of that standard and limit.

32. The lime kiln is subject to the provisions of 40 CFR 60.284(c)(1), (2), and (3).

33. The owner or operator of a source that has both a visible emissions and a particulate emissions limiting standard, shall run their compliance tests concurrently.

34. A fuel flow gauge shall be installed on each of the fuel lines, i.e., fuel oil, TRS NCG (noncondensible gas) handling system etc., to the lime kiln.

35. PM_{10} emissions shall not exceed 20.7 lbs/hr (90.6 TPY), and is assumed to be 98.3% of the PM emissions.

36. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

PERMITTEE:
Jefferson Smurfit Corp.

Permit Number: AC 16-142989
Expiration Date: Dec. 31, 1991

SPECIFIC CONDITIONS:

37. An application for an operation permit must be submitted to the Department's Northeast District and BESD offices at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this 11th day
of July, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

STEVE SMALLWOOD, Director
Division of Air Resources
Management

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: File: Jefferson Smurfit Corporation
AC 16-142989

FROM: R. Bruce Mitchell

DATE: July 9, 1990

SUBJ: PM and PM_{10} Emissions Calculation Correction

The letter from Mr. J. Franklin Mixson, received June 28, 1990, had an attachment that contained the calculations for PM and PM_{10} associated with natural gas firing in the No. 3 lime kiln. In a discussion, on June 9, 1990, with Mr. Gene Tonn, who is with Jefferson Smurfit Corporation, it was noted that there was an error in the calculations. The corrections will follow:

PM

13,091 dscfm x (21% - 2%)/(21% - 10%) = 22,612 dscfm @ 10% O_2

22,612 dscfm x 0.067 gr/dscf x 1 lb/7000 gr x 60 min/hr =
13.00 lbs/hr

@ 8760 : 56.94 TPY

PM_{10}

= 98.3% of PM

56.94 TPY x 0.983 = 55.97 TPY

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____

To: _____ Location: _____

To: _____ Location: _____

From: _____ Date: _____

Interoffice Memorandum

TO: Steve Smallwood

FROM: Clair Fancy

DATE: July 10, 1990

SUBJ: Approval of Construction Permit No. AC 16-142989
Jefferson Smurfit Corporation

Attached for your approval and signature is a permit prepared by Bruce Mitchell for the above mentioned company to allow for an increase in production capacity from 220 TPD to 275 TPD for the No. 3 lime kiln. The source is located at the existing mill in Jacksonville, Duval County, Florida.

Comments were received during the public notice period. The comments were not controversial and are addressed in the Final Determination.

Day 90, after which this permit will be issued by default, is September 30, 1990.

I recommend your approval and signature.

CF/BM/plm

OK / NOTE: The actual "reasonable measures" to be used will need to be required in the operating permit. ft

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

June 27, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

SUBJECT: APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

Dear Mr. Fancy:

Attached are supporting calculations for proposed PM and PM10 emissions from the No. 3 Lime Kiln when gaseous fossil fuel is burned.

Applicant requests that particulate emission limitations be provided in the subject permit for burning gaseous fossil fuel should natural gas become a fuel for use in the Lime Kiln.

Should additional information be required, please call Gene Tonn at (904) 353-3611.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
Vice President & General Manager

cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

CR# P 041 811 816

td/LKMODREV

SUPPORTING CALCULATIONS
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

Proposed PM Emissions When Gaseous Fossil Fuel is Burned:

AT: 275 TON CaO/DAY
6.29 MM BTU/TON CaO
2% 02 IN STACK
13,575 DSCF CO2/TON CaO
.067 GRS/DSCF PARTICULATE

DSCFM FROM CaO =

$$\frac{275 \text{ TON CaO/DAY} \times 13{,}575 \text{ DSCF CO2/TON CaO}}{1440 \text{ MIN./DAY}} = 2{,}592 \text{ DSCFM}$$

DSCFM FROM GAS @ 0% 02 =

$$\frac{275 \text{ TON CaO/DAY} \times 6.29 \text{ MM BTU/TON CaO} \times 8740 \text{ DSCF/MM BTU}}{1440 \text{ MIN./DAY}} = 10{,}499 \text{ DSCFM}$$

TOTAL @ 0% 02 = 13,091 DSCFM

DSCFM AT STACK CONDITIONS OF 2% 02 =

$$\frac{13{,}091 \text{ DSCFM} \times (21\% - 0\%)}{(21\% - 2\%)} = 14{,}469 \text{ DSCFN @ 2\% 02}$$

CALCULATED TO 10% O2 =

$$\frac{14{,}469 \text{ DSCFM} \times (21\% - 0\%)}{(21\% - 10\%)} = 24{,}992 \text{ DSCFM @ 10\% 02}$$

$$24{,}992 \text{ DSCFM} \times .067 \text{ GR/DSCF}^{*} \times \frac{\text{LB}}{7000 \text{ GR}} \times \frac{60 \text{ MIN.}}{\text{HR}} = 14.35 \text{ LBS/HR.}$$

$$14.35 \text{ LBS/HR} \times \frac{8760 \text{ HRS}}{\text{YR}} \times \frac{\text{TON}}{2000 \text{ LBS}} = 62.85 \text{ TPY}$$

*EQUIVALENT TO 0.15 g/dscm

PM10

That fraction of PM which has an aerodynamic particle size diameter of 10 um and less is referred to as PM10. AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to PM10 emissions from lime kilns. The AP-42 data show that PM10 emissions from such sources represent 98.3% of PM emissions.

Proposed PM10 Emission When Gaseous Fossil Fuel is Burned

Annual Emissions = 62.85 TPY X 0.983 = 61.78 TPY

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

June 27, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

Submitted by Facsimile Transmission: 6-27-90
Followed by Federal Express: 6-27-90

Mr. Clair Fancy, P.E., Chief
Bureau of Air Regulation
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJECT: JEFFERSON SMURFIT CORPORATION
CAUSTICIZING SYSTEM
CONSTRUCTION PERMIT NO. AC16-142989

Dear Mr. Fancy:

In regard to the subject permit, attached is the proof of publication of the "Notice of Intent to Issue Permit", published in the legal ad section of the Florida Times-Union on Wednesday, June 20, 1990, as required by Section 403.815, F.S. and DER Rule 17-103.150, F.A.C.

Should there be any question, please call Gene Tonn at (904) 353-3611.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
General Manager & Vice President

cc: B. Mitchell
A. Kuteyna, NE Dist
R. Robertson, BESD

AIRBILL

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 3030013254

SCREEN 3030013254

RECIPIENT'S COPY

RECEIVED JUN 28 1990 DER-BAQM

Date: 6-27-90

From (Your Name) Please Print (1): E. T. TOWN - Tech. Dept

Your Phone Number (Very Important): (904) 223-3611

Company: JEFFERSON SMURFIT CORP

Dept./Floor No.:

Street Address: 3515 HIGHLAND STREET

City: JACKSONVILLE State: FL ZIP Required: 3 2 2 0 6

To (Recipient's Name) Please Print (2): Mr. Clair Fancy, P.E.

Recipient's Phone Number (Very Important): 904) 488-1

Company: DER-Bureau of Air Regulation

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. • Zip Codes.): 2600 Blair Stone Road

City: Tallahassee State: Fl ZIP Required: 32301

YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.) (3)

IF HOLD FOR PICK-UP, Print FEDEX Address Here (4)

Street Address

City State ZIP Required

PAYMENT ☐ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

SERVICES

1 ☐ PRIORITY 1 Overnight Delivery
2 ☐ COURIER-PAK OVERNIGHT ENVELOPE*
3 ☐ OVERNIGHT BOX
4 ☐ OVERNIGHT TUBE
5 ☐ STANDARD AIR Delivery not later than second business day
6 ☒ OVERNIGHT LETTER*
7 ☐
8 ☐
9 ☐
10 ☐

*Declared Value Limit $100.

DELIVERY AND SPECIAL HANDLING

1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☒ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) ☐
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Release Signature Not Applicable)
6 ☐ DRY ICE ____ Lbs.
7 ☐ OTHER SPECIAL SERVICE ____
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
11 ☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

PACKAGES	WEIGHT IN POUNDS ONLY	YOUR DECLARED VALUE	OVER SIZE
Total 1	Total	Total	

Received At
1 ☐ Regular Stop
2 ☐ On-Call Stop
3 ☐ Drop Box
4 ☐ B.S.C.
5 ☐ Station

FEDEX Corp. Employee No.

Date/Time for FEDEX Use

Emp. No. Date

☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

(5) Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

PART #111800
REVISION DATE 10/88
PRINTED IN U.S.A. FXEM
009 PROD.2/89

FLORIDA PUBLISHING COMPANY

Publisher

JACKSONVILLE, DUVAL COUNTY, FLORIDA

STATE OF FLORIDA }
COUNTY OF DUVAL }

Before the undersigned authority personally appeared _____

M. Lanehart, who on oath says that he is

Legal Advertising Assistant of The Florida Times-Union,

a daily newspaper published at Jacksonville in Duval County, Florida; that the attached copy of advertisement, being a Legal Notice

in the matter of Department of Environmental Regulation

in the _____ Court,

was published in THE FLORIDA TIMES-UNION in the issues of

June 20, 1990

Affiant further says that the said The Florida Times-Union is a newspaper published at Jacksonville, in said Duval County, Florida, and that the said newspaper has heretofore been continuously published in said Duval County, Florida, The Florida Times-Union each day, has been entered as second class mail matter at the postoffice in Jacksonville, in said Duval County, Florida, for a period of one year next preceeding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in said newspaper.

Sworn to and subscribed before me this 26th day of June A.D. 90

Mary E. Welch
Notary Public,
State of Florida at Large.

M. Lanehart

My Commission Expires
Notary Public, State of Florida
My Commission Expires Feb. 7, 1994
Bonded Thru Troy Fain - Insurance Inc.

DA 444

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Jefferson Smurfit Corporation, 1915 Wigmore Street, Jacksonville, Florida 32201, for the modification of the existing causticizing system located at the permittee's existing mill in Jacksonville, Duval County, Florida. The modification will allow an increase in the maximum processing rate of the No. 3 lime kiln from 220 TPD to 275 TPD lime product and an increase in the maximum process input rate of the associated lime storage silo from 15.0 TPH to 21.2 TPH lime product. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A Person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Northeast District
3426 Bills Road
Jacksonville, Florida 32207

Duval County Department of Health, Welfare & Bio-Environmental Services
421 West Church Street, Suite 412
Jacksonville, Florida 32202

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

June 27, 1990

Reply to: **Containerboard Mill Division**
1916 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

Submitted by Facsimile Transmission: 6-27-90
Followed by Federal Express: 6-27-90

Mr. Clair Fancy, P.E., Chief
Bureau of Air Regulation
Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

SUBJECT: JEFFERSON SMURFIT CORPORATION
CAUSTICIZING SYSTEM
CONSTRUCTION PERMIT NO. AC16-142989

Dear Mr. Fancy:

In regard to the subject permit, attached is the proof of publication of the "Notice of Intent to Issue Permit", published in the legal ad section of the Florida Times-Union on Wednesday, June 20, 1990, as required by Section 403.815, F.S. and DER Rule 17-103.150, F.A.C.

Should there be any question, please call Gene Tonn at (904) 353-3611.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
General Manager & Vice President

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

FAX TRANSMITTAL LETTER

DATE: 6-15-90

TO: Gene Tonn

NAME

AGENCY: Fefferson Smurfit Corporation

TELEPHONE: (904) 355-7078

NUMBER OF PAGES (INCLUDING COVER SHEET) 3

FROM: Bruce Mitchell

NAME:

AGENCY: DER / DARM / BAR

IF ANY OF THE PAGES ARE NOT CLEARLY RECEIVED, PLEASE CALL IMMEDIATELY. PHONE NO. (904) 488-1347

SENDERS NAME: B Bruce Mitchell

COMMENTS:

Fax'ed Intent to Issue (pages 1 & 2)

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:

Mr. J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corp.
Jacksonville, FL 32201

4. Article Number

P 423 104 519

Type of Service:

- ☐ Registered
- ☐ Insured
- ☒ Certified
- ☐ COD
- ☐ Express Mail
- ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee

X Frank Mixson

6. Signature — Agent

X

7. Date of Delivery

6-18-90

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Apr. 1989 ★U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

P 423 104 519

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

☆U.S.G.P.O. 1989-234-555

Sent to Mr. J. Franklin Mixson, JSC	
Street and No. 1919 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 6-15-90 Permit: AC 16-142989	

PS Form 3800, June 1985

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

June 12, 1990

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corporation
Jacksonville, Florida 32201

Dear Mr. Mixson:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit to modify the causticizing system at your existing mill in Jacksonville, Duval County, Florida. The modification will allow an increase in the process throughput rates of the No. 3 lime kiln and associated lime storage silo.

Please submit any written comments you wish to have considered concerning the Department's proposed action to Mr. Barry Andrews of the Bureau of Air Regulation.

Sincerely,

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

CHF/BM/plm

Attachments

c: A. Kutyna, NE District
J. Manning, BESD
D. Buff, P.E., KBN
J. Cox, JSC
J. Harper, EPA
C. Shaver, NPS

Read by File } 6-15-90 BM
Bruce

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

DER File No. AC 16-142989

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Jefferson Smurfit Corporation, applied on December 9, 1987, to the Department of Environmental Regulation to obtain a permit for the modification of the existing causticizing system. The modification will allow an increase in the maximum processing rate of the No. 3 lime kiln from 220 TPD to 275 TPD lime product and an increase in the maximum process input rate of the associated lime storage silo from 15.0 TPH to 21.2 TPH lime product. The proposed project will occur at the applicant's existing facility located in Jacksonville, Duval County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit is required for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department, at the address specified within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;

(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;

(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;

(d) A statement of the material facts disputed by Petitioner, if any;

(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;

(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and

(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application(s) have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office in General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such

person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

A. Kutyna, NE District
J. Manning, BESD
D. Buff, P.E., KBN
J. Cox, JSC
J. Harper, EPA
C. Shaver, NPS

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on 6-15-90.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Lori Osborn
Clerk

6-15-90
Date

State of Florida
Department of Environmental Regulation
Notice of Intent to Issue

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Jefferson Smurfit Corporation, 1915 Wigmore Street, Jacksonville, Florida 32201, for the modification of the existing causticizing system located at the permittee's existing mill in Jacksonville, Duval County, Florida. The modification will allow an increase in the maximum processing rate of the No. 3 lime kiln from 220 TPD to 275 TPD lime product and an increase in the maximum process input rate of the associated lime storage silo from 15.0 TPH to 21.2 TPH lime product. A determination of Best Available Control Technology (BACT) was not required. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

A person whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

The Petition shall contain the following information:

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

The application is available for public inspection during business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Department of Environmental Regulation
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Department of Environmental Regulation
Northeast District
3426 Bills Road
Jacksonville, Florida 32207

Duval County Department of Health,
Welfare & Bio-Environmental Services
421 West Church Street, Suite 412
Jacksonville, Florida 32202

Any person may send written comments on the proposed action to Mr. Barry Andrews at the Department's Tallahassee address. All comments mailed within 14 days of the publication of this notice will be considered in the Department's final determination.

Technical Evaluation
and
Preliminary Determination

Jefferson Smurfit Corporation
Duval County
Jacksonville, Florida

Construction Permit Number:
AC 16-142989

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

June 12, 1990

I. Project Description

A. Applicant

Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

B. Project and Location

The applicant proposes to modify its existing mill by increasing the maximum production rate of the No. 3 lime kiln from 220 TPD to 275 TPD, which will require an increase in the input rate of an associated lime storage silo. The project also includes the installation of an electrostatic precipitator (ESP) control system as a replacement of the existing wet scrubber control system servicing the No. 3 lime kiln.

The project will occur at the applicant's existing facility located in Duval County, Florida. The UTM coordinates are Zone 17, 439.8 km East and 3359.4 km North.

C. Process and Controls

The lime mud cake is discharged from the mud filter and fed to the calcining unit, the No. 3 lime kiln. Carbon monoxide is driven off and calcium carbonate is converted to calcium oxide (quick-lime). The reburned lime is then fed to the lime slaker classifier or sent to the lime storage silo, which can also receive lime product from truck delivery.

An ESP control system will be installed to control particulate matter (PM) emissions and visible emissions (VE). A baghouse control system services the lime storage silo to control PM emissions and VE.

D. The Source Industrial Codes are:

2611 - Pulp Mill

E. The Source Classification Codes are:

• Lime Kiln	3-07-001-06	Tons ADUP
	3-90-004-03	10^3 gals. burned
• Lime Storage Silo	3-07-001-99	Tons ADUP
	3-05-102-05	Tons Processed (limestone)

II. Rule Applicability

The proposed modification is subject to preconstruction review in accordance with Chapter 403, Florida Statutes, Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version).

The application package was deemed complete on June 8, 1990.

The existing facility is located in Duval County, which is an area designated nonattainment for the pollutant ozone in accordance with F.A.C. Rule 17-2.410(1)(a). The existing facility is also located in that part of Duval County that has been designated nonattainment for the pollutant PM in accordance with F.A.C. Rule 17-2.410(2)(a)2. Volatile organic compounds (VOC) are considered to be precursors to ozone.

The existing mill is a major emitting facility in accordance with F.A.C. Rule 17-2.100(115) for the pollutants PM, VOC, sulfur dioxide (SO_2), nitrogen oxides (NO_x), and carbon monoxide (CO).

The following table exhibits the proposed modification's maximum potential pollutant emissions:

Table 1

Source	Maximum Potential Pollutant Emissions (TPY) PM	PM_{10}	SO_2	NO_x	VOC	CO	TRS
Lime Kiln No. 3[1]	92.2	90.6	45.6	98.6	20.7	13.8	4.4
Lime Storage Silo[2]	0.7	0.7					
Total:	92.9	91.3	45.6	98.6	20.7	13.8	4.4

Note: [1]Based on 8760 hours annual operation, 23,607 dscfm, and 0.104 gr/dscf.
[2]Based on 8760 hours annual operation, 570 dscfm, and 0.03 gr/dscf, with no change in product.

The following table exhibits the actual pollutant emissions from the existing No. 3 lime kiln:

Table 2

Source	Actual Pollutant Emissions (TPY) PM	PM_{10}	SO_2	NO_x	VOC	CO	TRS
Lime Kiln No. 3[1]	78.3	76.9	6.3	66.2	10.0	6.7	0.6
Lime Storage Silo[2]	0.00	0.00					

Note: [1]Based on 220 TPD lime product, 865 TPD ADUP, and 8,508 hours operated in 1989.
[2]Assumed 0.00 for the most conservative scenario.

The following table will exhibit the net pollutant emissions from the proposed modification (Table 1) and the actual emissions from the affected sources (Table 2):

Table 3

	PM	PM_{10}	SO_2	NO_x	VOC	CO	TRS
Table 1	92.9	91.3	45.6	98.6	20.7	13.8	4.4
Table 2	-78.3	-76.9	-6.3	-66.2	-10.0	-6.7	-0.6
Net:	+14.6	+14.4	+39.3	+32.4	+10.7	+7.1	+3.8

Since there are no significant net emissions increase pursuant to Table 500-2, F.A.C. Chapter 17-2, for the proposed modification, the pollutants SO_2, NO_x, CO and TRS are not subject to PSD (prevention of significant deterioration) new source review pursuant to F.A.C. Rule 17-2.500(5); also, the pollutants PM and VOC are not subject to nonattainment new source review pursuant to F.A.C. Rule 17-2.510(4). Therefore, the potential pollutant emissions are subject to review pursuant to F.A.C. Rule 17-2.520, Sources Not Subject to PSD or Nonattainment Requirements.

The proposed modification shall be subject to F.A.C. Rules 17-2.240, 17-2.250, 17-2.610(3), 17-2.620(2), 17-2.650(2)(c)9., 17-2.650(2)(c)11., 17-2.650(2)(e), 17-2.660, 17-2.700, and 17-2.710.

In accordance with F.A.C. Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions of air pollutants without the applicable pollution control device operating properly.

The proposed modification shall be subject to the provisions of F.A.C. Rule 17-2.250, Excess Emissions.

In accordance with F.A.C. Rule 17-2.610(3), Unconfined Emissions of PM, pollutant abatement equipment must be operating properly during operations/production.

In accordance with F.A.C. Rule 17-2.620(2), objectionable odors shall not be allowed off plant property.

Since there is a PM emission limiting standard for a lime kiln contained in 40 CFR 60.282 and there is not a visible emissions (VE) standard, the VE standard of 10% opacity, not to be exceeded, pursuant to F.A.C. Rule 17-2.650(2)(c)9.b. shall be applicable and is consistent with F.A.C. Rule 17-2.660(2)(b).

The lime storage silo operations shall be subject to F.A.C. Rule 17-2.650(2)(c)11., Materials Handling, Sizing, Screening, Crushing and Grinding Operations, which states that no owner or operator of a source subject to this provision shall cause,

permit, or allow any visible emissions (5% opacity) from such a source. The PM emissions limiting standard pursuant to this section shall be 0.03 gr/dscf, not to be exceeded.

The New Source Performance Standard (NSPS), 40 CFR 60, Subpart BB, Kraft Pulp Mills, was adopted by reference in accordance with F.A.C. Rule 17-2.660(2)(a). The proposed lime kiln is subject to the provisions of this NSPS.

In accordance with 40 CFR 60.282(a)(3), no owner or operator shall cause to be discharged into the atmosphere from any lime kiln any gases which contain PM in excess of 0.30 g/dscm (0.13 gr/dscf), corrected to 10% oxygen, when liquid fossil fuel is burned. However, the applicant has requested a more stringent emission limiting standard of 0.24 g/dscm (0.104 gr/dscf), corrected to 10% oxygen, when liquid fossil fuel is burned, in order to avoid new source review pursuant to F.A.C. Rules 17-2.500(5) and 17-2.510(4).

In accordance with 40 CFR 60.283(a)(5), no owner or operator shall cause to be discharged into the atmosphere from any lime kiln any gases which contain TRS in excess of 8 ppm by volume on a dry basis, corrected to 10% oxygen.

For the No. 3 lime kiln, the monitoring of emissions and operations shall be in accordance with 40 CFR 60.284 and F.A.C. Rule 17-2.710. The test methods and procedures shall be in accordance with 40 CFR 60.285 and F.A.C. Rule 17-2.700.

For the lime silo, the emissions test methods and procedures shall be in accordance with F.A.C. Rule 17-2.700.

III. Summary of Emissions and Air Quality Analysis

A. Emission Limitations

The regulated pollutant emissions from the proposed modification are visible emissions (VE), particulate matter (PM), sulfur dioxide (SO_2), and total reduced sulfur (TRS). The following table will reflect the maximum allowable emissions standards and limits applicable to the proposed modification:

Table 4

Source	Pollutant	Maximum Allowable Emissions Standard/Limit
Lime Kiln	PM_{10}[1]	Not to exceed 20.7 lbs/hr (90.6 TPY)
	PM	Not to exceed 0.24 g/dscm (0.104 gr/dscf) corrected to 10% oxygen, when liquid fossil fuel is burned (21.04 lbs/hr, 92.2 TPY)
	VE	Not to exceed 10% opacity

Table 4 cont'd

Source	Pollutant	Maximum Allowable Emissions Standard/Limit
	TRS	Not to exceed 8 ppm by volume on a dry basis, corrected to 10% oxygen; (while on liquid fossil fuel: 1.0 lb/hr, 4.38 TPY)
	SO_2	Sulfur content of the liquid fossil fuel is not to exceed 2.5%, by weight; not to exceed 10.4 lbs/hr and 45.6 TPY
Lime Silo	PM	Not to exceed 0.03 gr/dscf (0.15 lb/hr, 0.66 TPY)
	VE	Not to exhibit any VE (5% opacity)

Note: [1]PM_{10} is assumed to be 98.3% of the PM emissions.

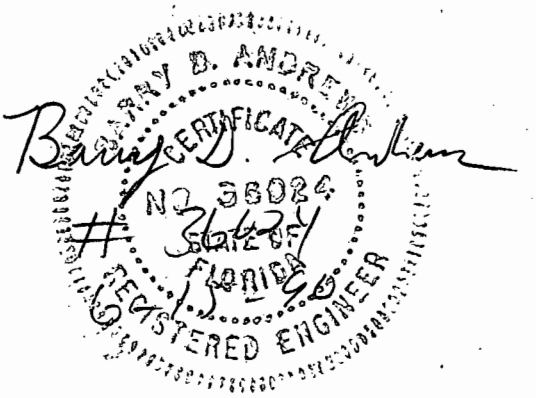
The emission limiting standards/limits are consistent with the applicable requirements pursuant to F.A.C. Chapter 17-2 and the NSPS, 40 CFR 60, Subpart BB, which is adopted by reference pursuant to F.A.C. Rule 17-2.660.

B. Air Quality Analysis

From a technical review of the application package and its amendments, the Department has determined that the proposed modification does not require an air quality analysis.

IV. Conclusion

Based on the information provided by Jefferson Smurfit Corporation, the Department has reasonable assurance that the proposed modification of the causticizing system, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of any air quality standard, PSD increment, or any other technical provision of Chapter 17-2 of the Florida Administrative Code.



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

PERMITTEE:
Jefferson Smurfit Corp.
1915 Wigmore Street
Jacksonville, FL 32201

Permit Number: AC 16-142989
Expiration Date: December 31, 1991
County: Duval
Latitude/Longitude: 30°22'00"N
81°37'30"W
Project: Causticizing System Modification

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code (F.A.C.) Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version). The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the modification of the existing causticizing system, which will include the following: 1) replace the existing wet scrubber system serving the No. 3 lime kiln with an electrostatic precipitator; 2) increase the maximum operating rate in the No. 3 lime kiln from 220 TPD to 275 TPD lime product; 3) increase the maximum process in-put rate of the lime storage silo from 9.2 TPH to 11.5 TPH lime product from the No. 3 lime kiln; and, increase the maximum process in-put rate of the lime storage silo from 6.00 TPH to 21.2 TPH lime product, either from truck unloading or truck unloading and the No. 3 lime kiln. The existing lime kiln fires No. 6 fuel oil, with a maximum sulfur content of 2.5%, by weight, and has the capability to fire natural gas.

The proposed project will be constructed at the permittee's existing mill located at the above address in Duval County, Florida. The UTM coordinates are Zone 17-439.8 km East and 3359.4 km North.

The source shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments to be incorporated:

1. Application to Modify Air Pollution Sources, DER Form 17-1.202(1), received December 9, 1987.
2. Mr. C. H. Fancy's letter dated January 7, 1988.
3. Mr. E. T. Tonn's letter with enclosures received April 24, 1989.

Attachments Continued:

4. Mr. J. Franklin Mixson's letter with attachments received February 5, 1990.

5. Mr. C. H. Fancy's letter dated March 6, 1990.

6. Mr. J. Franklin Mixson's letter with attachments received April 9, 1990.

7. Mr. C. H. Fancy's letter dated May 2, 1990.

8. Mr. J. Franklin Mixson's letter with attachments received May 21, 1990.

9. Mr. J. Franklin Mixson's letter with attachments received June 5, 1990.

10. Mr. J. Franklin Mixson's letter with attachments received June 7, 1990.

11. Mr. J. Franklin Mixson's letter with attachments received June 8, 1990.

12. Addendum to the June 8 letter from Mr. J. Franklin Mixson received June 11, 1990

13. EPA Memorandum No. 432

14. Technical Evaluation and Preliminary Determination dated June 12, 1990.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

GENERAL CONDITIONS:

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

a. Have access to and copy any records that must be kept under the conditions of the permit;

b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

GENERAL CONDITIONS:

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.120 and 17-30.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit or a copy thereof shall be kept at the work site of the permitted activity.

13. This permit also constitutes:

( ) Determination of Best Available Control Technology (BACT)
( ) Determination of Prevention of Significant Deterioration (PSD)
(x) Compliance with New Source Performance Standards

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

GENERAL CONDITIONS:

15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITIONS:

1. Permitted annual hours of operation are 8,760.

2. The causticizing system is subject to all applicable provisions of F.A.C. Chapters 17-2 and 17-4, and 40 CFR (July 1, 1988 version).

3. Stack sampling facilities for the lime kiln shall comply with all applicable provisions of F.A.C. Rule 17-2.700(4). Stack sampling facilities for the lime silo shall comply with all applicable provisions of F.A.C. Rule 17-2.700(4) if, and only if, a compliance test in accordance with F.A.C. Rule 17-2.700 Table I is required for mass emissions pursuant to F.A.C. Rule 17-2.700(3)(d).

4. Visible emissions from the lime kiln shall not exceed 10 percent opacity pursuant to F.A.C. Rule 17-2.650(2)(c)9.b. Compliance tests shall be measured by EPA Method 9 pursuant to F.A.C. Rule 17-2.700 Table I.

5. Particulate emissions from the lime silo shall not exceed 0.03 gr/dscf (0.15 lb/hr, 0.66 TPY) pursuant to F.A.C. Rule 17-2.650(2)(c)11.b.(ii). A compliance test shall be conducted using EPA Method 5, 40 CFR 60, Appendix A, in accordance with F.A.C. Rule 17-2.700 Table I. However, the mass emissions compliance test will be waived pursuant to F.A.C. Rule 17-2.700(3)(d) and an alternative standard of no visible emissions (5% opacity) shall be applied, which shall be verified by a compliance test using EPA Method 9, 40 CFR 60 Appendix A, in accordance with F.A.C. Rule 17-2.700.

6. The lime silo shall not exhibit any visible emissions (5% opacity) pursuant to F.A.C. Rule 17-2.650(2)(c)11.b.(i) and F.A.C. Rule 17-2.700(3)(d). A compliance test for visible emissions shall be conducted using EPA Method 9, 40 CFR 60, Appendix A, in accordance with F.A.C. Rule 17-2.700.

7. All vehicular deliveries of purchased lime to the lime silo shall be verifiable on a per month basis. On an annual basis, the amount of purchased lime shall be submitted as part of the annual operating report (AOR) to Duval County's Bio-Environmental Services Division (BESD).

8. Particulate matter emissions from the lime kiln shall not exceed 0.24 g/dscm (0.104 gr/dscf; 21.0 lbs/hr, 93.2 TPY) corrected to 10 percent oxygen, when liquid fossil fuel is burned pursuant to F.A.C. Rule 17-2.660(2)(a); and, 40 CFR 60.282(a)(3)(ii). A compliance test for particulate matter emissions shall be conducted using EPA Method 5, EPA Method 1, EPA Method 2 and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and 40 CFR 60.285(a)(1) through (4) and 40 CFR 60.285(b).

9. Total reduced sulfur emissions from the lime kiln shall not exceed 8 ppm by volume on a dry basis, corrected to 10 percent oxygen (1.0 lb/hr, 4.4 TPY: liquid fossil fuel). A compliance test for total reduced sulfur emissions shall be conducted using EPA Method 16 or 16A and EPA Method 3 pursuant to F.A.C. Rules 17-2.660(2)(b), 17-2.660(3)(b), 17-2.660(4)(a) and 17-2.700 Table I; and, 40 CFR 60.285(d).

10. The sulfur content of liquid fossil fuel burned in the lime kiln shall not exceed 2.50 percent, by weight, as determined by EPA Method 19, 40 CFR 60 Appendix A, and F.A.C. Rule 17-2.700.

11. Sulfur dioxide emissions from the lime kiln shall not exceed 10.4 lbs/hr and 45.6 TPY. A compliance test for sulfur dioxide emissions shall be conducted using EPA Method 6 pursuant to F.A.C. Rule 17-2.700(6)(a)6. The compliance test will be a one-time requirement to verify the SO_2 emissions data submitted and related to the review for PSD (prevention of significant deteroriation) and EPA Memorandum 4.32.

12. A total reduced sulfur continuous emissions monitoring system shall be installed, certified, operated and maintained pursuant to the provisions of F.A.C. Rules 17-2.660(3)(e), 17-2.660(4)(b), 17-2.710(3)(b); and, 40 CFR 60.13, 40 CFR 60 Appendix A, and 40 CFR 60 Appendix B.

13. A total reduced sulfur emissions report shall be provided to the BESD on a quarterly basis pursuant to the provisions of F.A.C. Rules 17-2.660(3)(a) and 17-2.710(4); and, 40 CFR 60.7 and 40 CFR 60.284(d).

14. Excess emissions of total reduced sulfur shall be determined quarterly pursuant to F.A.C. Rule 17-2.710(4)(c).

15. The causticizing system shall be subject to the provisions of F.A.C. Rule 17-2.250, Excess Emissions.

16. The causticizing system shall be subject to the provisions of F.A.C. Rule 17-4.130, Plant Operation-Problems.

17. The maximum fuel input to the lime kiln shall not exceed 535 gallons per hour and 4.69 million gallons per year when liquid fossil fuel is burned. Fuel consumption shall be verifiable on a per month basis. On an annual basis, fuel consumption shall be reported in the AOR and submitted to BESD.

18. Maximum lime production rate of the lime kiln shall not exceed 11.5 tons per hour, 275 tons per day, and 100,375 tons per year. Lime production shall be verifiable on a daily and per month basis. On an annual basis, lime production shall be reported in the AOR and submitted to BESD.

19. Maximum input to the lime storage silo shall not exceed 21.2 tons per hour of lime product. The deliveries of purchased lime shall verifiable on a per month basis. The annual amount of purchased lime shall be reported in the AOR and submitted to BESD.

20. Compliance tests shall be conducted while the lime kiln is operating at 90-100% of the maximum permitted lime production rate and burning all of the TRS gases from the batch digester system and the MEE system.

21. A compliance test shall be conducted for the lime storage silo to demonstrate compliance with the permitted pollutant emissions standards. For the compliance test, two of the test runs shall be conducted while receiving 21.2 tons per hour (TPH) of purchased lime and one of the test runs shall be conducted while simultaneously receiving 11.2 TPH of lime from the lime kiln and 10 TPH of purchased lime.

22. An operation and maintenance plan pursuant to the provisions of F.A.C. Rule 17-2.650(2)(g) shall be prepared for the lime kiln and the lime storage silo; and, submitted to the BESD prior to issuance of an operation permit.

23. Unconfined emissions of particulate matter during construction and operation of the lime kiln and lime silo shall comply with the provisions of F.A.C. Rule 17-2.610(3). Reasonable precautions that might be taken shall include, but are not limited to:

a. Reduced speeds for vehicular traffic.
b. Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.
c. Use of paving or other asphaltic materials.
d. Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.
e. Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.
f. Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.
g. Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.
h. Enclosure or covering of conveyor systems.

24. The introduction of TRS gases from any source other than the multiple effect evaporator system and batch digester system shall require an amendment to this permit prior to the actual introduction of the TRS gases.

25. Objectionable odors shall not be allowed off plant property in accordance with F.A.C. Rule 17-2.620(2).

26. All process equipment, except for the lime storage silo, that will be a part of the operational causticizing system, shall be vented to the lime kiln.

27. In accordance with F.A.C Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions of air pollutants without the applicable pollution control device operating properly.

28. In accordance with F.A.C Rule 17-2.610(3), Unconfined Emissions of Particulate Matter, pollutant abatement equipment must be operating properly during operational production.

29. In accordance with F.A.C. Rule 17-2.650(2)(e), Circumvention, no owner or operator of a source subject to the requirements of F.A.C. Rules 17-2.600 or 17-2.650(c), establishing maximum concentrations of particulate matter in the exhaust gas from the source, shall circumvent the provisions of an applicable emission limitation by increasing the volume of gas in any exhaust or group of exhausts for the purpose of reducing the stack gas concentration. This includes allowing dilution air to enter the system through leaks, open vents, or similar means.

30. The lime handling system, i.e., conveyors, shutes, elevators, and storage bins, shall be enclosed and negative pressure maintained.

31. Failure of a control system(s) to meet the applicable and maximum allowable pollutant emission limiting standard and limit shall not be grounds for requesting a variance or relaxation of that standard and limit.

32. The lime kiln is subject to the provisions of 40 CFR 60.284(c)(1), (2), and (3).

33. The owner or operator of a source that has both a visible emissions and a particulate emissions limiting standard, shall run their compliance tests concurrently.

34. A fuel flow gauge shall be installed on each of the fuel lines, i.e., fuel oil, TRS NCG (noncondensible gas) handling system etc., to the lime kiln.

35. PM_{10} emissions shall not exceed 20.7 lbs/hr (90.6 TPY), and is assumed to be 98.3% of the PM emissions.

36. The permittee, for good cause, may request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit (F.A.C. Rule 17-4.090).

37. An application for an operation permit must be submitted to the Department's Northeast District and BESD offices at least 90 days prior to the expiration date of this construction permit or within 45 days after completion of compliance testing, whichever occurs first. To properly apply for an operation permit, the applicant shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (F.A.C. Rule 17-4.220).

Issued this _____ day
of _____, 1990

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

_____

STEVE SMALLWOOD, Director
Division of Air Resources
Management

ATTACHMENTS AVAILABLE UPON REQUEST

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

June 7, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

RECEIVED
JUN 12 1990
DER-BAQM

SUBJECT: COMPLETENESS REVIEW
APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

Dear Mr. Fancy:

The following information is submitted in response to telephone conversations of June 7, 1990 with our Mr. Gene Tonn and your Mr. Bruce Mitchell.

The information submitted is Attachment 1 and Attachment 2 of the submittal of May 18, 1990 and June 5, 1990 revised on June 7, 1990 to address the correction of stack emission to 10% O_2.

Permittee desires to negotiate emission limitations for natural gas burning when natural gas becomes a fuel for use in the Lime Kiln.

Should additional information be required, please call Gene Tonn at (904) 353-3611.

Very truly yours,

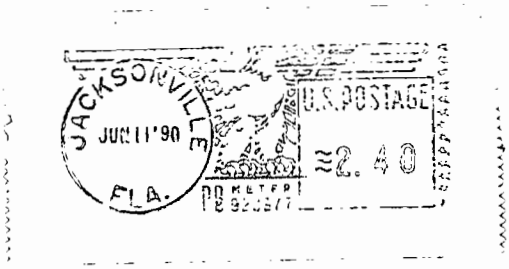
J. Franklin Mixson
Vice President & General Manager

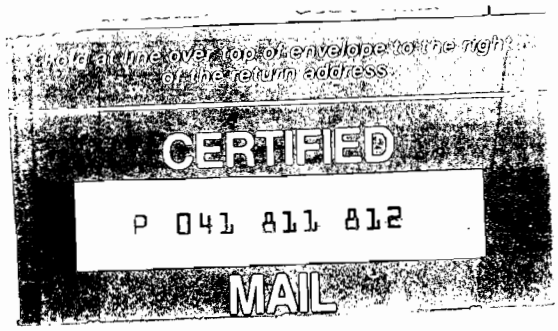
cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

td/LKMODREV

CR# P 041 811 812

BEST AVAILABLE COPY





JEFFERSON SMURFIT CORPORATION
1915 Wigmore Street
P. O. Box 150
Jacksonville, FL 32201

MR. C. H. FANCY, P. E.
CHIEF, BUREAU OF AIR REGULATIONS
FLORIDA DEPARTMENT OF ENCIRONMENTAL REGULA
2600 BLAIR STONE ROAD
TALLAHASSEE, FL. 32399-2400

FORM 140
(REV. 10/85)

FIRST CLASS

ATTACHMENT I
REVISED 6-5-90
REVISED 6-7-90

SUMMARY OF NET EMISSION CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

	TONS/YEAR						
	PM	PM10	SO2	TRS	CO	NOX	VOC
Actual Emissions of No. 3 LIME KILN	78.27	76.94	6.3	0.6	6.7	66.2	10.0
Proposed Emissions Based on 275 TPD lime			45.6	5.3	13.8	98.6	20.7
No. 3 Lime Kiln	92.16	90.59					
No. 3 Lime Kiln Silo	0.66	0.66*					
Net Change	+14.55	+14.31	+39.3	+4.7	+7.1	+32.4	+10.7
PSD Significance Level	25	15	40	10	100	40	40

*Worse case scenario from application to modify permit dated 12-8-87.
This amount dedicated to No. 3 Lime Kiln Silo as discussed with Mr. Bruce Mitchell, DER CAPS, June 4, 1990

ATTACHMENT 2
REVISED 6-5-90
REVISED 6-7-90

SUPPORTING CALCULATIONS
NET EMISSIONS CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

Actual Emissions
Based on: 865 TADP
8,508 hours

Proposed Emissions
Based on: 1250 TADP
275 TPD lime
8,760 hours

Particulate Matter (PM)
Particulate Matter (PM) represents total particulate matter emissions from the lime kiln.

Actual PM Emissions
The actual PM emission is calculated from the compliance emission test of March 28, 1990 which determined an emission of 0.12 grs/DSCF or 18.4 lbs/hr. (synopsis of test attached). Actual emission of particulate matter is therefore:

$$18.4 \text{ lbs/hr.} \times 8{,}508 \text{ hrs./yr.} \times \frac{\text{ton}}{2000 \text{ lbs}} = 78.27 \text{ tons/yr.}$$

Proposed PM Emissions
AT: 275 TON CaO/DAY
6.29 MM BTU/TON CaO
2% 02 IN STACK
13,575 DSCF CO2/TON CaO
0.112 GRS/DSCF PARTICULATE

DSCFM FROM CaO =

$$\frac{275 \text{ TON CaO/DAY} \times 13{,}575 \text{ DSCF CO2/TON CaO}}{1440 \text{ MIN./DAY}} = 2{,}592 \text{ DSCFM}$$

DSCFM FROM OIL =

$$\frac{275 \text{ TON CaO/DAY} \times 6.29 \text{ MM BTU/TON CaO} \times 9220 \text{ DSCF/MM BTU}}{1440 \text{ MIN./DAY}} = 11{,}075 \text{ DSCFM}$$

TOTAL @ 0% 02 = 13,667 DSCFM

CALCULATED TO 10% O2 =

$$\frac{13{,}667 \text{ DSCFM} \times (21\% - 2\%)}{(21\% - 10\%)} = 23{,}607 \text{ DSCFM @ 10\% 02}$$

$$23{,}607 \text{ DSCFM} \times 0.104 \text{ GR/DSCF}^{*} \times \frac{\text{LB}}{7000 \text{ GR}} \times \frac{60 \text{ MIN.}}{\text{HR}} = 21.04 \text{ LBS/HR.}$$

$$21.04 \text{ LBS/HR} \times \frac{8760 \text{ HRS}}{\text{YR}} \times \frac{\text{TON}}{2000 \text{ LBS}} = 92.16 \text{ TPY}$$

***EQUIVALENT TO 0.24 g/dscm**

PM10

That fraction of PM which has an aerodynamic particle size diameter of 10 um and less is referred to as PM10. AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to PM10 emissions from lime kilns. The AP-42 data show that PM10 emissions from such sources represent 98.3% of PM emissions.

Actual PM10 Emissions

Annual emissions = 78.27 TPY X 0.983 = 76.94 TPY

Proposed PM10 Emissions

Annual Emissions = 92.16 TPY X 0.983 = 90.59 TPY

ADDENDUM TO
ATTACHMENT 2
REVISED 6-8-90

Total Reduced Sulfur

Maximum emissions are based upon the NSPS for lime kilns at kraft pulp mills (40 CFR 60, Subpart BB): 8 PPM by volume, dry basis, corrected to 10% O_2. Maximum flue gas flow rate at maximum lime production rate of 275 TPD (11.46 TPH) = 23,607 dscfm @ 10% O_2 (based on No. 6 fuel oil burning).

$$23{,}607 \text{ dscfm} \times \frac{60 \text{ min.}}{\text{hr.}} \times \frac{8}{10^6} \times \frac{34 \text{ lb.}}{\text{mole}} \times \frac{\text{mole}}{385.3 \text{ ft}^3} =$$

0.999 or 1.0 lb/hr TRS as H_2S

1.0 lb/hr X 8.760 hr/yr/2000 lb/ton =

4.38 TPY TRS as H_2S

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET,P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

CONTAINERBOARD MILL DIVISION
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FLORIDA 32201

TELEPHONE: (904) 353-3611

FACIMILE TRANSMITTAL FORM

DATE JUNE 7, 1990

TO: JOHN MILLICAN
DEXTER, HOFFMAN ET AL
(Company or Facility & Location)
904/877-0981

FROM: GENE TOWN
NSC
(Company or Facility & Location)

No. of Pages 5 (Includes Cover Sheet) ( ) Urgent ( ) Routine

Return to _____
(If different than from)

These document(s) have been transmitted from (904) 355-7078

If you experience difficulty with receipt, call (904) 353-3611

RECEIVED
JUN 07 1990
DER - BAQM

Rec'd 04:59: Hand Delivered. AAR

06/08/90 16:16 Hand Delivered 6-8-90 Barry Andrews

File Copy 002 AC16-142989

RECEIVED

JUN 08 1990

DER - BAQM

ADDENDUM TO
ATTACHMENT 2
REVISED 6-8-90

Total Reduced Sulfur

Maximum emissions are based upon the NSPS for lime kilns at kraft pulp mills (40 CFR 60, Subpart BB): 8 PPM by volume, dry basis, corrected to 10% O_2. Maximum flue gas flow rate at maximum lime production rate of 275 TPD (11.46 TPH) = 23,607 dscfm @ 10% O_2 (based on No. 6 fuel oil burning).

$$23{,}607 \text{ dscfm} \times \frac{\text{CO min.}}{\text{hr.}} \times \frac{8}{10^6} \times \frac{34 \text{ lb.}}{\text{mole}} \times \frac{\text{mole}}{385.3 \text{ ft}^3} =$$

0.999 or 1.0 lb/hr TRS as H_2S

1.0 lb/hr X 8.760 hr/yr/2000 lb/ton =

4.38 TPY TRS as H_2S

cc: Bruce Mitchell
Andy Kutyna - NE Dist.
Ron Roberson - BESD
BA/CHF
} 6-11-90 RAM

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

June 5, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

SUBJECT: COMPLETENESS REVIEW
APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

Dear Mr. Fancy:

The following information is submitted in response to telephone conversations of June 4, 1990 with our Mr. Gene Tonn and your Mr. Bruce Mitchell.

The information submitted is Attachment 1 and Attachment 2 of the submittal of May 18, 1990 revised on June 5, 1990 to address the PM and PM10 emission from the No. 3 Lime Kiln Silo.

We understand that the information submitted herewith fulfills the completeness review of this permit application. The construction schedule for installation of the electrostatic precipitator is extremely tight. Prompt processing with the earliest approval is very important to the Company and will be greatly appreciated.

Should additional information be required, please call Gene Tonn at (904) 353-3611.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
Vice President & General Manager

cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

td/LKMODREV

ATTACHMENT I
REVISED 6-5-90

SUMMARY OF NET EMISSION CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

	TONS/YEAR						
	PM	PM10	SO2	TRS	CO	NOX	VOC
Actual Emissions of No. 3 LIME KILN	78.27	76.94	6.3	0.6	6.7	66.2	10.0
Proposed Emissions Based on 275 TPD lime			45.6	5.3	13.8	98.6	20.7
No. 3 Lime Kiln	92.82	91.24					
No. 3 Lime Kiln Silo	0.66	0.66*					
Net Change	+15.21	+14.96	+39.3	+4.7	+7.1	+32.4	+10.7
PSD Significance Level	25	15	40	10	100	40	40

*Worse case scenario from application to modify permit dated 12-8-87.
This amount dedicated to No. 3 Lime Kiln Silo as discussed with Mr. Bruce Mitchell, DER CAPS, June 4, 1990

ATTACHMENT 2
REVISED 6-5-90

SUPPORTING CALCULATIONS
NET EMISSIONS CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

Actual Emissions
Based on: 865 TADP
8,508 hours

Proposed Emissions
Based on: 1250 TADP
275 TPD lime
8,760 hours

Particulate Matter (PM)
Particulate Matter (PM) represents total particulate matter emissions from the lime kiln.

Actual PM Emissions
The actual PM emission is calculated from the compliance emission test of March 28, 1990 which determined an emission of 0.12 grs/DSCF or 18.4 lbs/hr. (synopsis of test attached). Actual emission of particulate matter is therefore:

$$18.4 \text{ lbs/hr.} \times 8{,}508 \text{ hrs./yr.} \times \frac{\text{ton}}{2000 \text{ lbs}} = 78.27 \text{ tons/yr.}$$

Proposed PM Emissions
AT: 275 TON CaO/DAY
6.29 MM BTU/TON CaO
8% 02 IN STACK
13,575 DSCF CO2/TON CaO
0.112 GRS/DSCF PARTICULATE

DSCFM FROM CaO =

$$\frac{275 \text{ TON CaO/DAY} \times 13{,}575 \text{ DSCF CO2/TON CaO}}{1440 \text{ MIN./DAY}} = 2{,}592 \text{ DSCFM}$$

DSCFM FROM OIL =

$$\frac{275 \text{ TON CaO/DAY} \times 6.29 \text{ MM BTU/TON CaO} \times 9220 \text{ DSCF/MM BTU}}{1440 \text{ MIN./DAY}} = 11{,}075 \text{ DSCFM}$$

TOTAL @ 0% 02 = 13,667 DSCFM

CALCULATED TO 8% O2 =

$$\frac{13{,}667 \text{ DSCFM} \times (21\% - 0)}{(21\% - 8\%)} = 22{,}073 \text{ DSCFM @ 8\% 02}$$

$$22{,}073 \text{ DSCFM} \times 0.112 \text{ GR/DSCF} \times \frac{\text{LB}}{7000 \text{ GR}} \times \frac{60 \text{ MIN.}}{\text{HR}} = 21.19 \text{ LBS/HR.}$$

$$21.19 \text{ LBS/HR} \times \frac{8760 \text{ HRS}}{\text{YR}} \times \frac{\text{TON}}{2000 \text{ LBS}} = 92.82 \text{ TPY}$$

PM10

That fraction of PM which has an aerodynamic particle size diameter of 10 um and less is referred to as PM10. AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to PM10 emissions from lime kilns. The AP-42 data show that PM10 emissions from such sources represent 98.3% of PM emissions.

Actual PM10 Emissions

Annual emissions = 78.27 TPY X 0.983 = 76.94 TPY

Proposed PM10 Emissions

Annual Emissions = 92.82 TPY X 0.983 = 91.24 TPY

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

June 5, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

RECEIVED
JUN 05 1990
DER - BAQM

SUBJECT: COMPLETENESS REVIEW
APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

Dear Mr. Fancy:

The following information is submitted in response to telephone conversations of June 4, 1990 with our Mr. Gene Tonn and your Mr. Bruce Mitchell.

The information submitted is Attachment 1 and Attachment 2 of the submittal of May 18, 1990 revised on June 5, 1990 to address the PM and PM10 emission from the No. 3 Lime Kiln Silo.

We understand that the information submitted herewith fulfills the completeness review of this permit application. The construction schedule for installation of the electrostatic precipitator is extremely tight. Prompt processing with the earliest approval is very important to the Company and will be greatly appreciated.

Should additional information be required, please call Gene Tonn at (904) 353-3611.

Very truly yours,

J. F. Mixson

J. Franklin Mixson
Vice President & General Manager

cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

td/LKMODREV

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

May 18, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

SUBJECT: COMPLETENESS REVIEW
APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

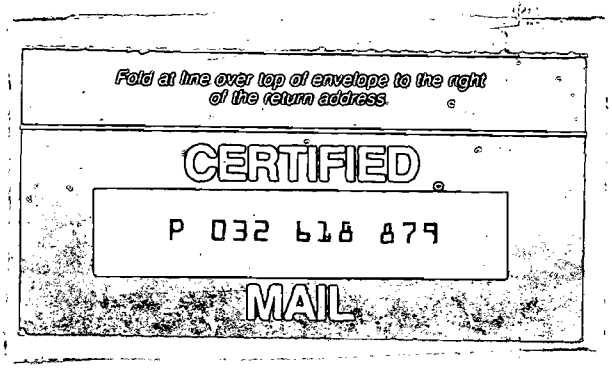
Dear Mr. Fancy:

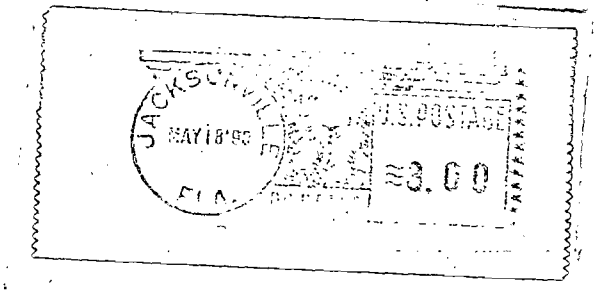
The following information is submitted in response to your completeness review letter of May 2, 1990 and your telephone conversation of May 11, 1990 with Jerry Cox.

The responses in this letter are keyed to your completeness review letter dated May 2, 1990.

1. and 2.
Attachment 1 is a summary of net emission changes showing annual actual emissions from the lime kiln based on the two highest years of operation, actual emission rate as measured by stack tests, or by acceptable emission factors, compared to the calculated emissions from the lime kiln at a production rate of 275 tons per day. Calculations supporting the emission summary of Attachment 1 are included in Attachment 2. In the telephone conversation of May 11, 1990, the Department advised the Company of its willingness to accept as actual the particulate emission rate of 18.4 lbs/hr. based on the particulate compliance test of March 28, 1990.

The summary of emissions shown in Attachment 1 show that the kiln can operate with the proposed precipitator at a rate of 275 TPD of lime and not exceed the de minimus levels of any parameter.





JEFFERSON SMURFIT CORPORATION
1915 Wigmore Street
P. O. Box 150
Jacksonville, FL 32201

MR. C. H. FANCY, P. E.
CHIEF, BUREAU OF AIR REGULATIONS
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

FORM 140
(REV. 10/85)

FIRST CLASS

We believe that the information submitted fulfills the completeness review request of May 2, 1990. The construction schedule for installation of the electrostatic precipitator is extremely tight. Prompt processing with the earliest approval is very important to the Company and will be greatly appreciated.

Should additional information be required, please call Jerry Cox at (904) 353-3611.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
Vice President & General Manager

cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

td/LKMODREV

CERTIFICATION

FACILITY: JEFFERSON SMURFIT CORPORATION
JACKSONVILLE MILL

SOURCE: NO. 3 LIME KILN

APPLICATION NUMBER: AC16-142989

I HEREBY CERTIFY that the engineering features of the referenced source provide reasonable assurance of compliance with the applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Title 17. However, I have not and I do not certify aspects outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

Eugene T. Tonn, P.E. #13188

Eugene T. Tonn 5-18-88

Signature and Seal Date

td/CERTIFLK

ATTACHMENT I

SUMMARY OF NET EMISSION CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

	TONS/YEAR						
	PM	PM10	SO2	TRS	CO	NOX	VOC
Actual Emissions of No. 3 LIME KILN	78.3	77.0	6.3	0.6	6.7	66.2	10.0
Proposed Emissions Based on 275 TPD lime	93.5	91.9	45.6	5.3	13.8	98.6	20.7
Net Change	+15.2	+14.9	+39.3	+4.7	+7.1	+32.4	+10.7
PSD Significance Level	25	15	40	10	100	40	40

ATTACHMENT 2

SUPPORTING CALCULATIONS
NET EMISSIONS CHANGES
JEFFERSON SMURFIT CORPORATION
NO. 3 LIME KILN
PERMIT NO. AC16-142989

Actual Emissions
Based on: 865 TADP
8,508 hours

Proposed Emissions
Based on: 1250 TADP
275 TPD lime
8,760 hours

Particulate Matter (PM)
Particulate Matter (PM) represents total particulate matter emissions from the lime kiln.

Actual PM Emissions
The actual PM emission is calculated from the compliance emission test of March 28, 1990 which determined an emission of 0.12 grs/DSCF or 18.4 lbs/hr. (synopsis of test attached). Actual emission of particulate matter is therefore:

$$18.4 \text{ lbs/hr.} \times 8{,}508 \text{ hrs./yr.} \times \frac{\text{ton}}{2000 \text{ lbs}} = 78.3 \text{ tons/yr.}$$

Proposed PM Emissions
AT: 275 TON CaO/DAY
6.29 MM BTU/TON CaO
8% 02 IN STACK
13,657 DSCF CO2/TON CaO
0.112 GRS/DSCF PARTICULATE

DSCFM FROM CaO =

$$\frac{275 \text{ TON CaO/DAY} \times 13{,}657 \text{ DSCF CO2/TON CaO}}{1440 \text{ MIN./DAY}} = 2{,}608 \text{ DSCFM}$$

DSCFM FROM OIL =

$$\frac{275 \text{ TON CaO/DAY} \times 6.29 \text{ MM BTU/TON CaO} \times 9220 \text{ DSCF/MM BTU}}{1440 \text{ MIN./DAY}} = 11{,}075 \text{ DSCFM}$$

TOTAL @ 0% 02 = 13,683 DSCFM

CALCULATED TO 8% O2 =

$$\frac{13{,}683 \text{ DSCFM} \times (21\% - 0)}{(21\% - 8\%)} = 22{,}103 \text{ DSCFM @ 8\% 02}$$

$$22{,}103 \text{ DSCFM} \times 0.112 \text{ GR/DSCF} \times \frac{\text{LB}}{7000 \text{ GR}} \times \frac{60 \text{ MIN.}}{\text{HR}} = 21.3 \text{ LBS/HR.}$$

$$21.3 \text{ LBS/HR} \times \frac{8760 \text{ HRS}}{\text{YR}} \times \frac{\text{TON}}{2000 \text{ LBS}} = 93.5 \text{ TPY}$$

PM10

That fraction of PM which has an aerodynamic particle size diameter of 10 um and less is referred to as PM10. AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to PM10 emissions from lime kilns. The AP-42 data show that PM10 emissions from such sources represent 98.3% of PM emissions.

Actual PM10 Emissions

Annual emissions = 78.3 TPY X 0.983 = 77.0 TPY

Proposed PM10 Emissions

Annual Emissions = 93.5 TPY X 0.983 = 91.9 TPY

Sulfur Dioxide (SO2)

Actual SO2 Emissions

The actual SO2 emission is calculated from compliance tests of January 15, 1987 and July 28, 1989 which determined an average emission of 1.48 lbs/hr. (Synopsis of tests attached). Actual emission of SO2 is therefore:

$$1.48 \text{ lbs/hr.} \times 8{,}508 \text{ hrs/yr.} \times \frac{\text{ton}}{2000 \text{ lbs.}} = 6.3 \text{ tons/yr}$$

Proposed SO2 Emissions

The proposed SO2 emission is calculated from an emission factor of 0.2 lb/ton ADP derived from AP-42, Section 10.1, Chemical Wood Pulping (10/86). Based on 1250 ADTP the proposed SO2 emission is therefore:

$$0.2 \text{ lb/ton} \times 1{,}250 \text{ ADTP/day} \times \text{day/24 hr.} = 10.4 \text{ lb/hr.}$$

$$10.4 \text{ lb/hr.} \times 8{,}760 \text{ hr/yr} \times \frac{\text{ton}}{2000 \text{ lbs}} = 45.6 \text{ TPY}$$

Total Reduced Sulfur (TRS)

Actual TRS Emissions

The actual TRS emissions is calculated from compliance tests of January 15, 1987, June 2, 1989 and March 28, 1990 which determined an average emission of 0.15 lbs/hr. Actual emission of TRS is therefore:

$$0.15 \text{ lbs/hr} \times 8{,}508 \text{ hrs/yr} \times \frac{\text{ton}}{2000 \text{ lbs}} = 0.6 \text{ TPY}$$

Proposed TRS Emissions

The proposed TRS emissions are based upon the NSPS for lime kilns at draft pulp mills (40 CFR 60, Subpart BB): 8 ppm by volume, dry basis, corrected to 10% O2. Maximum flue gas flow rate at maximum lime production rate of 275 TPD (11.46 TPH) = 28,039 dscfm @ 10% O2 (based upon No. 6 fuel oil burning).

$PVC = mRT \quad m = PVC/RT$

$R = 1{,}545 \text{ ft-lb}_f/\text{lb}_{mole}\text{-}^{o}R$

Molecular weight TRS (as H_2S) = $34 \text{ lb}_m/\text{lb}_{mole}$

$R = 45.44 \text{ ft-lb}_f/\text{lb}_m\text{-}^{o}R$

$C = 8 \text{ ppm}$

$$m = \frac{2116.8 \text{ lb}_f}{\text{ft}^2} \times \frac{28{,}039 \text{ ft}^3}{\text{min.}} \times \frac{8}{10^6} \times \frac{\text{lb}_m\text{-}^{o}R}{45.44 \text{ ft-lbf}} \times \frac{1}{528^{o}R} \times \frac{60 \text{ min.}}{\text{hr.}}$$

$= 1.2 \text{ lb/hr TRS as } H_2S$

$1.2 \text{ lb/hr} \times 8{,}760 \text{ hr/hr} / 2{,}000 \text{ lb/ton} = 5.3 \text{ TPY TRS as } H_2S$

Carbon Monoxide (CO)

Actual CO Emission

The actual CO emission is calculated from an emission factor of 0.04 lb/10^6 Btu which is derived from an NCASI study of CO emissions from lime kilns at pulp mills (Technical Bulletin No. 416). Based on an annual actual heat input to No. 3 Lime Kiln of 334,253 X 10^6 Btu, the actual CO emission is therefore:

$$0.04 \text{ lb}/10^6 \text{ Btu} \times 334{,}253 \times 10^6 \text{ Btu/hr.} \times \frac{\text{ton}}{2000 \text{ lbs.}} = 6.7 \text{ TPY}$$

Proposed Co Emissions

The proposed emissions of CO from the No. 3 Lime Kiln were also based upon the emission factor of 0.04 lb/10^6 Btu, derived from NCASI study of CO emissions from lime kilns at pulp mills (Technical Bulletin No. 416). The factor represents an average emission level. It is therefore considered appropriate for annual emission calculations.

Maximum annual heat input to kiln

$$= 78.62 \times 10^6 \text{ Btu/hr} \times 8{,}760 \text{ hr/yr}$$

$$= 6.89 \times 10^{11} \text{ Btu/yr}$$

Annual emissions

$$= 6.89 \times 10^{11} \text{ Btu/yr} \times .0.4 \text{ lb}/10^6 \text{ Btu}/2{,}000 \text{ lb/ton}$$

$$= 13.8 \text{ TPY}$$

Nitrogen Oxides (NO_x)

The NOx emissions are calculated from an emission factor derived from an emission test conducted on September 21, 1989, which determined an NOx emission of 15.25 lbs/hr. (Synopsis of test attached). Based on an average lime kiln product rate of 7.95 tons/hour during the emission test and a lime consumption of 0.225 ton per air dry ton of pulp, an appropriate Nox emission factor for the No. 3 Lime Kiln is:

$$\frac{15.25 \text{ lbs NOx/hr}}{7.95 \text{ ton kiln product/hr}} \times \frac{0.225 \text{ ton lime}}{\text{ADTP}} = 0.432 \text{ lbs/NOx/ADTP}$$

This emission factor, verified by results of an NOx emission test conducted on a new lime kiln in another kraft pulp mill, is considered appropriate for new, efficient kraft pulp mill lime kilns.

Actual NOx Emissions

The actual NOx emission is therefore:

865 ADTP/day X 0.432 lbs NOx/ADTP = 373.68 lbs/day

373.68 lbs/day X 8508 hrs/yr X day/24 hrs. X ton/2000 lbs = 66.2 TPY

Proposed NOx Emissions

The proposed NOx emission is therefore:

1250 ADTP/day X 0.432 lbs NOx/ADTP = 540.0 lbs/day

540 lbs/day X 8760 hrs/yr X day/24 hrs. X ton/2000 lbs = 98.6 TPY

Volatile Organic Compounds(VOC)

Emissions of VOC from the No. 3 Lime Kiln were based upon a NCASI study (Technical Bulletin No. 358). Of the three kilns tested in this study, Kilns A and C were considered most representative of the No. 3 Lime Kiln. Kilns A and C exhibited average VOC emissions of 0.060 and 0.024 lb/10^6 Btu, respectively. The higher level of 0.060 lb/10^6 Btu was used to estimate annual emissions from the No. 3 Lime Kiln.

Actual VOC Emissions

The actual VOC emissions based on actual heat input to No. 3 Lime Kiln of 334,253 X 10^6 Btu is therefore:

0.060 lb/10^6 Btu X 334,253 X 10^6 Btu/yr X ton/2000 lbs = 10.0 TPY

Proposed VOC Emissions

The proposed VOC emissions based on heat input to No. 3 Lime Kiln of 6.89 X 10^{11} Btu/yr is therefore:

6.89 X 10^{11} Btu/yr X 0.060 lb/10^6 Btu X ton/2000 lbs = 20.7 TPY

Table 1 Particulate Emission Summary
Number 3 Lime Kiln
Jefferson-Smurfit Corporation
Jacksonville, Florida
March 28, 1990

Run Number	Time	Flow Rate ACFM	Flow Rate SCFMD	H_2O %	Stack Temperature °F	O_2 %	Emissions gr/SCF	Emissions lb/Hr	Emissions gr/SCF @ 10% O_2*
1	0942-1120	25349	17001	23.90	149.3	9.2	0.1591	23.19	0.1482
2	1210-1312	24740	16516	24.25	148.9	10.5	0.1066	15.10	0.1117
3	1409-1512	23728	15561	25.44	150.8	8.5	0.1394	18.56	0.1225
4	1532-1634	23235	15337	25.02	150.2	8.6	0.1286	16.91	0.1140
Average	-----	24263	16104	24.65	149.8	9.2	0.1334	18.44	0.1241

* gr/SCF @ 10% O_2 = grains of particulate matter per standard cubic foot (gr/SCF) of stack gas corrected to a flue gas oxygen content of 10 percent using the following equation:

$$\text{gr/SCF @ 10\% } O_2 = (\text{gr/SCF}) \frac{20.9 - 10}{20.9 - \%O_2}$$

Where % O_2 = measured flue gas oxygen content

2.2 SO_2 COMPLIANCE TEST RESULTS

Results of the compliance test for SO_2 performed on January 15, 1987 are summarized in Table 2.3. The mean SO_2 concentration of 0.7 lb/hr was approximately eight percent of the allowable concentration of 8.3 lb/hr. The SO_2 test was comprised of three thirty-minute runs. Measurements for volumetric flow were taken periodically during testing. Applicable field and laboratory data are provided in Appendix C.

TABLE 2.3

SUMMARY OF SO_2 EMISSION

	RUN 1	RUN 2	RUN 3	MEAN	ALLOWABLE LIMIT
Date	1/15/87	1/15/87	1/15/87	---	---
Time Began	1500	1550	1632	---	---
Time End	1531	1620	1702	---	---
Stack Gas,					
Temperature, ^oF	154	153	153	153	---
Velocity, ft/sec	30	29	28	29	---
Moisture, %	28	28	28	28	---
Oxygen concentration, %	7.8	7.8	7.6	7.7	---
Carbon dioxide concentration, %	18.0	18.0	18.0	18.0	---
Volumetric Flow Rate					
At stack conditions, x 10^3 ft^3/min	28.9	27.7	27.1	27.9	---
At standard conditions, x 10^3 ft^3/min	18.0	17.3	16.9	17.4	---
Sulfur dioxide[a] concentration,					
ppm	2.4	4.5	4.8	3.9	
lb/hr	0.4	0.8	0.8	0.7	8.3

[a] A sulfur dioxide audit sample was analyzed and the results are included in Appendix C.

TABLE 1

SUMMARY OF DATA

RUN	DATE	TIME	STACK GAS TEMPERATURE °F	% MOISTURE	EFFLUENT GAS FLOW (SDCFM)	SULFUR DIOXIDE EMISSIONS (LB/SDCF X 10^5)	(LB/HR)
1	7/28	0940-1010	152.8	26.9	17,550	0.165	1.74
2	7/28	1040-1112	149.6	24.8	20,396	0.152	1.86
3	7/28	1148-1219	149.7	24.9	18,786	0.171	1.93
	AVERAGE		150.7	25.5	18,911	0.163	1.84
4	7/28	1250-1320	152.2	26.5	18,761	0.166	1.87
5	7/28	1345-1415	151.0	25.7	19,402	0.168	1.96
6	7/28	1445-1515	153.4	27.3	17,449	0.176	1.84
	AVERAGE		152.2	26.5	18,537	0.170	1.89

Table 1 NO_x Emission Summary
Jefferson-Smurfit Corporation
Number 3 Lime Kiln
Jacksonville, Florida
September 20-21, 1989

Run Number	Flow Rate SCFMD	H_2O %	Stack Temperature °F	NO_x Emissions ppm Dry	NO_x Emissions lb/Hr
1	14978	24.6	151	140	15.02
2	15348	24.8	152	135	14.84
3	15857	27.8	155	140	15.90
Average	15394	25.7	153	138	15.25

Jefferson Smurfit Corp. Meeting @ the BAQM
Re: No.3 lime kiln Issues

Meeting Attendees:

Bruce Mitchell	DER/DARM/BAQM/CAPs	(904)488-1344
MIKE HARLEY	"	"
Ron Roberson	BESD	(904) 630-3666
Clair Fancy	DER/BAQM	904 488 1344
JOHN MILLICAN	J/S.	904-887-0099
EUGENE T. TOWN	JSC	904-353-3611
Bill Thomas	BAQM	

mod
4-27-89, p.m.
RBM

SPECIFIC CONDITION #21: THE LIME KILN SHALL DEMONSTRATE COMPLIANCE WITH THE PERMITTED EMISSIONS LIMITS PURSUANT TO THE PROVISIONS OF RULE 17-2.660(3)(b) AND 40 CFR 60.8 WHILE:

a). OPERATING AT A PRODUCTION RATE OF ~~AT LEAST~~ 90% OF THE PERMITTED CAPACITY OF CALCIUM OXIDE, BURNING NOT MORE THAN 345 GALLONS PER HOUR OF LIQUID FOSSIL FUEL, AND BURNING 100% OF TOTAL REDUCED SULFUR GASES FROM THE NSPS MULTIPLE EFFECT EVAPORATORS.

to @ 100%

b). OPERATING AT A PRODUCTION RATE OF ~~AT LEAST~~ 90% OF THE PERMITTED CAPACITY OF CALCIUM OXIDE, BURNING NOT MORE THAN 54,644 CUBIC FEET PER HOUR @ 68°F OF GASEOUS FOSSIL FUEL, AND BURNING 100% OF THE TOTAL REDUCED SULFUR GASES FROM THE NSPS MULTIPLE EFFECT EVAPORATORS. THE PERMITTEE SHALL SATISFY THE REQUIREMENT OF THIS CONDITION WHEN GASEOUS FOSSIL FUEL BECOMES A FUEL FOR LIME KILN PRODUCTION. THE PERMITTEE SHALL NOTIFY BESD WHEN GASEOUS FOSSIL FUEL BECOMES A FUEL FOR LIME KILN PRODUCTION.

to @ 100%

ett/td
SPECIFIC

● **SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
Mr. J. Franklin Mixson V.P. and General Manager Jefferson Smurfit Corporation 1915 Wigmore Street Jacksonville, Florida 32201	P 052 482 251
	Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
	Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X Frank F. Mixson	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 5/8/90	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

P 052 482 251

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. J. Franklin Mixson, JSC	
Street and No. 1915 Wigmore Street	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 5-4-90 Permit: AC 16-142989	

PS Form 3800, June 1985

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor | Dale Twachtmann, Secretary | John Shearer, Assistant Secretary

May 2, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: Completeness Review of Application to Modify/Construct
Permit No. AC 16-142989

The Department has reviewed the supplementary information received April 9, 1990. Based on a technical review of the information, the application package and supplementary information are deemed incomplete. Please submit to the FDER's Bureau of Air Regulation (BAR) the following information, including all calculations, reference material and assumptions, and the status will, again, be ascertained:

1. Calculate the annual actual particulate matter (PM) and PM_{10} emissions from the lime kiln, which should reflect the average of the actual hours of the two highest years of operation, but within the last 5 years, multiplied times the actual PM emission rate (as measured by a PM mass test and on record with the Department). Please show all of the data used, which must be verifiable. Also, provide the synopsis page of all PM mass tests conducted to date. Note: There are no provisions to allow for proration when calculating a source's actual emissions. A letter from the U.S. EPA, Region IV, which was received April 9, 1990, has been included for your review to provide their policy of the calculation of "actual emissions." This policy is also followed by the FDER BAR.

2. Referencing No. 1 above, apply the same request to all of the pollutants that are emitted from the source. Where stack test data is unavailable, an acceptable emission factor may be used.

3. Please revise any responses in the April 9, 1990 letter, if there are any, due to the recalculation required in Nos. 1 and 2 above.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

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

CHF/plm

Attachment

c: J. Cox, JSC
R. Roberson, BESD
A. Kutyna, NE Dist.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

APR 4 1990

4APT-AEB

RECEIVED

APR 09 1990

DER - BAQM

Mr. C. H. Fancy, P.E., Chief
Bureau of Air Regulation
Florida Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Crushed Stone (PSD-FL-091)

Dear Mr. Fancy:

This is to acknowledge receipt of your letter dated March 15, 1990, transmitting a request by Florida Crushed Stone to amend their prevention of significant deterioration (PSD) permit to allow the burning of tire derived fuel (TDF) in their cement kiln. The current permit for the source limits the fuel of the kiln to coal only. As discussed between Mr. Bruce Mitchell of your staff and Mr. Gregg Worley of my staff on March 30, 1990, we have the following comments.

Under the scenario presented by the source, the switch to the use of TDF in the kiln would not constitute a major modification for the purposes of PSD provided that the increase in pollutants due to the fuel switch did not exceed significant emissions increase levels. It is important to note that the change in emissions must be evaluated from "old actual" to "new allowable" emissions. The old actual emissions must be based on the previous two years of operating data unless some other period is deemed to be more representative of normal operating conditions. The new allowable emissions will be those emissions which are reflected in the amended permit. Also, it was noted that the list of pollutants to be tested did not include benzene. Since benzene is a pollutant regulated under the Clean Air Act for which a significant emissions rate has not been established, any increase of emissions of benzene would subject the source to PSD.

Thank you for the opportunity to review and comment on this package. If you have any further questions or comments, please do not hesitate to contact Mr. Gregg Worley of my staff at 404/347-2864.

Sincerely yours,

Jewell A. Harper, Chief
Air Enforcement Branch
Air, Pesticides and Toxics
Management Division

CM: P 032 618 873
PM: 4-6-90
JAX, FL

File Copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

April 6, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Regulations
Florida Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Florida 32399-2400

RECEIVED
APR 09 1990
DER-BAQM

SUBJECT: COMPLETENESS REVIEW
APPLICATION TO MODIFY/CONSTRUCT
PERMIT NO. AC16-142989
NO. 3 LIME KILN
JEFFERSON SMURFIT CORPORATION

Dear Mr. Fancy:

Jefferson Smurfit Corporation (JSC) appreciate your personal participation in the meeting on March 20, 1990 in your office to review the referenced permit application number AC 16-142989. The meeting was attended by Mr. Mitchell and yourself, for the Department of Environmental Regulation and Messrs Cox, Tonn & Millican for Jefferson Smurfit Corporation.

The intent of this letter is to provide all of the information described in the March 20, 1990 meeting as necessary to satisfy the requirements for completeness so that you can approve the subject permit application. We are encouraged that your suggestions may resolve all remaining issues and for that we are sincerely appreciative.

The responses in this letter are keyed to your completeness review letter dated March 6, 1990.

1. Discussion of this item with you and Mr. Mitchell developed an understanding that we would calculate particulate emissions based on tests performed since the new kiln was started up. As we reviewed, there was limited test data available. Since that meeting one additional compliance test has been performed and is included in the calculation. All of the available data from compliance tests performed after the required notification to BESD is included. Since none of the tests were performed exactly at the permitted rate of 220 tons per day of lime, all of the emission data have been prorated to the permitted rate, as you suggested. Attachment I shows these calculations.

2. It was agreed in the meeting that emissions other than particulate were not a concern and would not change because factors for calculation were based on finished pulp production which is not affected by this application.

3. In the meeting on March 20, 1990, we discussed in detail the basis for the design of the kiln and the maximum rate at which it can be operated. There has been no physical change in the kiln's design, construction, or operation, and there is none in this permit application. Included in the discussion was the facts that the kiln as supplied could be operated at a rate greater than the guaranteed rate of 220 TPD.

4. A copy of the bid information issued to vendors is included as Attachment II.

5. The information requested in item 5 is no longer applicable because the calculation of particulate matter has been changed. Attachment I shows the calculations and the basis for these calculations. Based on these calculations JSC is requesting particulate matter emission limits of 20.1 lbs/hr. at an operating rate of 275 TPD. This emission limit is lower than that currently permitted at 220 TPD.

6. Only on one occasion has the kiln been operated at a rate greater than 220 TPD and then only after prior agreement with BESD. This was for the purpose of identifying the maximum rate at which the unit could operate and demonstrate compliance with NSPS. The test showed compliance with NSPS at 0.13 GDSCF.

The calculations in Attachment I show that the kiln can operate with the proposed precipitator at a rate of 275 TPD of lime while emitting 20.1 lbs/hr. of particulate and not exceed the 25 TPY de minimus for particulate or the 15 TPY de minimus for PM10. Therefore, JSC requests a permit to construct with a particulate emission limit of 20.1 lbs/hr. when burning liquid fossil fuel and operating at 275 TPD.

Your suggestions for meeting the particulate emission permit requirement for PSD appear to us to have resolved this critical issue. We really appreciate this personal participation.

As discussed in the meeting, construction schedules are very tight. Prompt processing with the earliest approval is very important and will be appreciated very much. Should additional information be required, please call Jerry Cox or Gene Tonn at (904) 353-3611.

Thank-you for your personal guidance and assistance.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
Vice President & General Manager

cc: B. Mitchell, DER
R. Roberson, BESD
A. Kutyna, P.E., DER

CHF / JP / BT 4-11-90 RRR

td/LKMODIFY

CR# P 032 618 873

CERTIFICATION

FACILITY: JEFFERSON SMURFIT CORPORATION
JACKSONVILLE MILL

SOURCE: NO. 3 LIME KILN

APPLICATION NUMBER: AC16-142989

I HEREBY CERTIFY that the engineering features of the referenced source provide reasonable assurance of compliance with the applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Title 17. However, I have not and I do not certify aspects outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

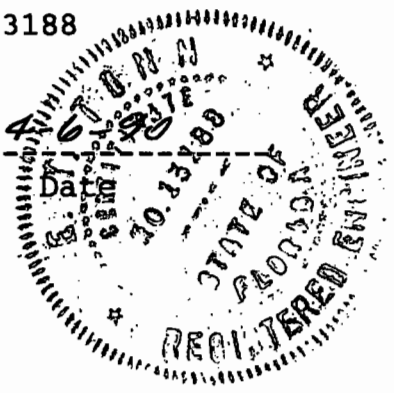
Eugene T. Tonn, P.E. #13188

Eugene T Tonn

Signature and Seal

4/6/88

Date



td/CERTIFLK

ATTACHMENT I

PARTICULATE EMISSION TESTS

COPY OF SYNOPSIS PAGE OF PARTICULATE EMISSION TESTS ATTACHED.

	DATE	EMISSION GRS/DSCF	EMISSION LBS/HR
Initial Compliance	1-16-87	0.13	25.5
Re-test Compliance	5-26-87	0.086	12.3
Compliance	3-28-90	0.12	18.4
Average		0.112	18.7

ACTUAL PARTICULATE EMISSIONS

BASED ON AVERAGE OPERATING HOURS, 1987-1989 = 8,240 AND RECALCULATED TO A PRODUCTION BASIS OF 220 TPD LIME.

EMISSION TEST DATE	LIME PRODUCTION TPD	EMISSION TPY(220TPD)
1-16-87	275	84.0
5-26-87	204	54.7
3-28-90	209	79.8

FROM:

$$25.5 \text{ LBS/HR} \times 8{,}240 \text{ HOURS/YR} \times \text{TON/2000 LBS} \times \frac{220 \text{ TPD}}{275 \text{ TPD}} = 84.0 \text{ TPY}$$

$$12.3 \text{ LBS/HR} \times 8{,}240 \text{ HOURS/YR} \times \text{TON/2000 LBS} \times \frac{220 \text{ TPD}}{204 \text{ TPD}} = 54.7 \text{ TPY}$$

$$18.4 \text{ LBS/HR} \times 8{,}240 \text{ HOURS/YR} \times \text{TON/2000 LBS} \times \frac{220 \text{ TPD}}{209 \text{ TPD}} = 79.8 \text{ TPY}$$

AVERAGE 72.8 TPY

POTENTIAL EMISSION

POTENTIAL EMISSIONS OF STACK GASES FROM LIME KILN PRECIPITATOR

AT: 275 TON CaO/DAY
6.29 MM BTU/TON CaO
8% O2 IN STACK
13,657 DSCF CO2/TON CaO
8% OXYGEN
0.106 GRS/DSCF PARTICULATE

DSCFM FROM CaO =

$$\frac{275 \text{ TON CaO/DAY} \times 13{,}657 \text{ DSCF CO2/TON CaO}}{1440 \text{ MIN./DAY}} = 2{,}608 \text{ DSCFM}$$

DSCFM FROM OIL =

$$\frac{275 \text{ TON CaO/DAY} \times 6.29 \text{ MM BTU/TON CaO} \times 9220 \text{ DSCF/MM BTU}}{1440 \text{ MIN./DAY}} = 11{,}075 \text{ DSCFM}$$

TOTAL @ 0% O2 = 13,683 DSCFM

CALCULATED TO 8% O2 =

$$\frac{13{,}683 \text{ DSCFM} \times (21\% - 0)}{(21\% - 8\%)} = 22{,}103 \text{ DSCFM @ 8\% O2}$$

PARTICULATE EMISSION

$$22{,}103 \text{ DSCFM} \times 0.106 \text{ GR/DSCF} \times \frac{\text{LB}}{7000 \text{ GR}} \times \frac{60 \text{ MIN.}}{\text{HR}} = 20.1 \text{ LBS/HR}$$

$$20.1 \text{ LBS/HR} \times \frac{8760 \text{ HRS}}{\text{YR}} \times \frac{\text{TON}}{2000 \text{ LBS}} = 88.0 \text{ TPY}$$

THEREFORE:

	PARTICULATE MATTER, TPY	PM 10 TPY
ACTUAL EMISSION	72.9	71.7
POTENTIAL EMISSIONS	88.0	86.6
NET CHANGE	+15.1	+14.8

2.3 SUMMARY OF PARTICULATE EMISSION

Results of particulate compliance testing performed on the lime kiln on January 16, 1987 are summarized in Table 2.4. The mean particulate concentration of 0.13 grains/SDCF corrected to ten percent oxygen met the allowable emission concentration. Applicable field and laboratory data are provided in Appendix D.

TABLE 2.4

SUMMARY OF PARTICULATE EMISSION

	RUN 1	RUN 2	RUN 3	MEAN	ALLOWABLE LIMIT
Date	1/16/87	1/16/87	1/16/87	---	---
Time Began	1105	1300	1445	---	---
Time End	1205	1400	1545	---	---
Stack Gas					
Temperature, ^{o}F	152	153	152	152	---
Velocity, ft/sec	29.5	30.3	30.0	29.9	---
Moisture, %	27.0	28.0	29.0	28.0	---
Oxygen concentration, %	7.0	7.4	7.2	7.2	---
Carbon dioxide concentration, %	18.0	19.0	19.2	18.7	---
Volumetric Flow Rate					
At stack conditions, x 10^3 ft^3/min	28.2	29.0	28.7	28.6	---
At standard conditions, x 10^3 ft^3/min	17.7	17.9	17.7	17.8	---
Particulate					
Isokinetic sampling rate, %	97.0	94.4	94.8	95.4	---
Concentration at STP[a], gr/ft^3	0.12	0.14	0.14	0.13	0.13

[a] Corrected to ten percent oxygen

SYNOPSIS PAGE OF PARTICULATE EMISSION TEST 5-26-87

TABLE 1

SUMMARY OF DATA

RUN	1987 DATE	TIME	STACK GAS TEMPERATURE °F	% MOISTURE	EFFLUENT GAS FLOW (SDCFM)	(ACFM)	PARTICULATE CONCENTRATION (gr/SDCF) *	PARTICULATE MASS EMISSION RATE (LB/HR)
1	5-26	1200-1302	146.4	23.0	12,648	18,754	0.086	13.4
2	5-26	1327-1429	142.0	20.6	12,272	17,511	0.086	11.5
3	5-26	1456-1558	145.6	22.3	12,391	18,189	0.086	12.1
AVERAGE			144.7	22.0	12,437	18,151	0.086	12.3

TABLE 2

GAS ANALYSIS

RUN	%O2	%CO2
1	5.2	22.2
2	7.1	19.8
3	6.5	22.0

ALLOWED EMISSIONS

0.13 Gr/SDCF corrected to 10 percent Oxygen

* Gr/SDCF corrected to ten percent Oxygen

SNYOPSIS PAGE OF PARTICULATE EMISSION TEST 3-28-90

Table 1 Particulate Emission Summary
Number 3 Lime Kiln
Jefferson-Smurfit Corporation
Jacksonville, Florida
March 28, 1990

Run Number	Time	Flow Rate ACFM	Flow Rate SCFMD	H_2O %	Stack Temperature °F	O_2 %	Emissions gr/SCF	Emissions lb/Hr	Emissions gr/SCF @ 10% O_2*
1	0942-1120	25349	17001	23.90	149.3	9.2	0.1591	23.19	0.1482
2	1210-1312	24740	16516	24.25	148.9	10.5	0.1066	15.10	0.1117
3	1409-1512	23728	15561	25.44	150.8	8.5	0.1394	18.56	0.1225
4	1532-1634	23235	15337	25.02	150.2	8.6	0.1286	16.91	0.1140
Average	-----	24263	16104	24.65	149.8	9.2	0.1334	18.44	0.1241

* gr/SCF @ 10% O_2 = grains of particulate matter per standard cubic foot (gr/SCF) of stack gas corrected to a flue gas oxygen content of 10 percent using the following equation:

$$\text{gr/SCF @ 10\% } O_2 = (\text{gr/SCF}) \frac{20.9 - 10}{20.9 - \%O_2}$$

Where % O_2 = measured flue gas oxygen content

ATTACHMENT II

REYNOLDS, SMITH AND HILLS
ARCHITECTS · ENGINEERS · PLANNERS
INCORPORATED

MEMORANDUM

TO: Mr. E. R. Burr

DATE: September 4, 1984

FROM: J. Don Lee

SUBJECT: Alton Packaging Company
CLW & Lime Kiln
Lime Kiln Bid Package - RFQ-001
Addendum No. 1
RS&H Job No. 84-624-000

The attached documents were presented to the following today for bids:

1. Ahlstrom Machinery, Inc.
Pruyn's Island, P.O. Box 74
Glens Falls, N. Y. 12801
ATTENTION: Holger Nissen
(518) 798-9541

2. Allis Chalmers
P. O. Box 512
Milwaukee, Wisconsin 53201
ATTENTION: Wallace L. Schultz
(414) 475-3621

3. Fuller Company
P. O. Box 2040
Bethlehem, PA 18001
ATTENTION: Richard R. Shafer
(215) 264-6446

4. F.L. Schmidth & Co.
300 Knickerbocker Road
Cresskill, N. J. 07626
ATTENTION: Jack Leichliter
(201) 871-3300

5. Kennedy Van Saun Corporation
P. O. Box 500
Danville, PA 17821
ATTENTION: Russell L. Boyer, Jr.
(717) 275-3050

6. Polysius Corporation
180 Interstate North
Atlanta, Ga. 30339
ATTENTION: John C. Mann
(404) 955-3660

J. Don Lee
Assistant Project Manager

JDL/cc

cc: Mr. E.R. Burr (1)
Mr. E.F. Rottman (1)
Mr. C.R. Bolt (1)
Mr. J.D. Lee (1)
Mr. W.H. Ver Eecke (1)
CF (1)
RF (1)

ADDENDUM NO. 1
TO
RFQ NO. 001

ALTON PACKAGING COMPANY
Caustic Liquor Works and Lime Kiln
RS&H Job No. 84624000

The following deletions, additions, and/or revisions shall be incorporated into and considered a part of the request for proposals issued under RFQ No. 001 dated August 22, 1984:

I. Additions

A. General

1. Acknowledge receipt of this addedum in your proposal.

2. Alternate proposal in Section 4.00 of the Technical Specifications will be accepted on or before September 20, 1984.

B. Technical Specifications for Rotary Lime Sludge Kiln

1. Section 2.00

2.05 TRS and non-condensable gases:

Base proposal shall be predicated upon incineration of 200 CFM of these gases as received from the pulp mill evaporators.

2.06 Atmospheric emissions:

Base proposal shall be for equipment which will meet the following maximum emission standards:

a - TRS - 8 PPM
b - Particulate - 0.13 gr./dry std. cu. ft.

ROTARY LIME SLUDGE KILN

1.00 GENERAL REQUIREMENTS

1.01 The equipment covered in these specifications shall be used to reduce, or convert, the calcium carbonate sludge as produced in a re-causticizing plant when processing the cooking liquor with calcium oxide or lime.

1.02 The proposal shall comply with these specifications in that the equipment as specified will comprise the base proposal. Any deviations from the specifications which are necessary to adapt any vendor's equipment to accomplish the same end results shall be fully explained in the vendor's proposal. The deviations shall be clearly noted in order to avoid any confusion in the review and examination of the proposal. Any changes to the specified process shall be fully described and so marked, and clearly indicated in the proposal as an alternate.

1.03 All references to stainless steel in the specifications shall be acknowledged in the proposal and a statement as to the type of stainless being supplied shall be included.

1.04 All couplings required to drive the prime equipment shall be lubricated, gear type similar to Falk, Fast, or Waldron.

Couplings for smaller auxiliary equipment may be by a different manufacturer. This equipment shall be non-lubricated, flexible type similar to "Paraflex" or "Steel-Flex".

1.05 The following shall apply to all electrical equipment:

A. All electrical motor drives will be supplied with the drivn equipment. The manufacturer of the equipment specified herein shall state in the proposal full information as to the motor characteristics required. All motors shall be the product of one manufacturer.

B. The required drive motors for the equipment shall be tabulated as follows:

Application
Horsepower
Speed
Construction
Torque Characteristic
Induction
Synchronous

C. All motor drive equipment that is specially integrated with the mechanical equipment as part of such equipment shall be furnished with the equipment. The information requested in paragraph 1.05-B shall also apply.

D. All V-belts or chain drives shall be furnished as complete units and shall be included as a part of the equipment.

E. All couplings, drives, and other rotating equipment shall be supplied with O.S.H.A. approved guards.

1.06 The following shall be included as a part of the proposal:

A. The time required to submit approval prints after acceptance of purchase order.

B. The time required to submit final prints and instruction manuals to allow the Engineers to complete the design of the plant.

C. The time required to complete the delivery of the equipment after acceptance of the purchase order and the approval of the preliminary drawings.

D. The shipping weight of each unit of equipment.

2.00 EQUIPMENT PERFORMANCE

2.01 The specified kiln will be located outdoors but will be partially protected from rainfall by a single slope roof extending its entire length. Auxiliary equipment, except I.D. fan and scrubber, will be in the feed or firing buildngs. The entire pulp mill, including the specified kiln, is required to operate continuously, at rated capacity, 24 hours per day throughout the entire year.

2.02 The total capacity (product) of the rotary lime sludge kiln shall be 220 tons per day (24 hours) when being fed the calcium carbonate sludge as produced in the re-causticizing plant of the pulp mill. Discharged product shall have 90% availability. The kiln will be fed the sludge as discharged from a vacuum filter. The sludge density will be 70% B.D. lime mud solids and will have a maximum 0.5% soluble soda expressed as NA_2O.

2.03 The specified kiln will also be utilized to incinerate non-condensable gases collected from the pulping process. Introduction of these gases will be through an auxiliary, separate burner supplied for this purpose or a separate annular space in the primary burner.

2.04 The rotary kiln and the required auxiliaries shall be included as a packaged unit and shall consist primarily of the equipment as set forth in Section 3.00.

3.00 EQUIPMENT

3.01 Kiln Shell

A. The shell shall have approximately 30 to 1 length to diameter ratio, to properly meet the production as set forth in Section 2.00, paragraph 2.01, above. The kiln should be of sufficient size to require a fuel consumption of approximately seven million BTU per ton of kiln product when using product tube coolers. The shell plate shall be of sufficient weight to insure minimum warpage under operating conditions, and shall be further reinforced at the supports to provide a true circular section at all times. Access manhole and sample ports are required in the shell.

B. The shell shall be supported on four supporting tires and rolls, which shall be of your latest design, all trunnion roll bearings shall be oil lubricated and water cooled. The thrust rolls shall be located adjacent to girth gear and the bearings shall be oil lubricated and water cooled.

C. The feed inlet section shall contain a chain system for drying the lime mud sludge. The length of chain section shall be designed for 220 T/D product at 70% solids density of feed. System shall be designed to periodically product 220 T/D product with feed density of 60% solids.

D. A refractory lining will be supplied and installed by others. Longitudinal and circumferential retaining bars shall be furnished by the kiln vendor but installed by others during installation of the lining.

E. Insulating material shall be supplied and installed by the kiln vendor. Each vendor shall recommend his preferred insulation system and shall price this component separately. Full description of cost vs. fuel savings is required.

3.02 Kiln Drive

A. The drive machinery shall be designed to provide the proper number of revolutions per minute to the kiln. The main reducer shall be selected so that a variable speed motor may be used to provide a change of speed to the shell. An auxiliary gasoline engine and a gear reducer shall be included as a part of the machinery to provide a sufficient number of revolutions to the kiln shell in the event of a power failure.

B. The kiln girth gear shall be mounted in such manner as to be a true circle and perpendicular to the longitudinal axis of the shell. The girth gear and main driving pinion shall be enclosed in a gear guard housing, which shall be fitted with an oiling pinion for proper lubrication of the gear drive. The girth gear shall have full width machined teeth for a reversible feature, bolted to a gear ring flange, which shall be welded to the kiln shell. The main driving pinion shall be reversible, mounted on a double bearing jackshaft.

3.03 Product Cooler

Product cooler tubes with material collection chute shall be provided. Grate openings in kiln shell shall be sized to screen oversized lumps and tramp material. Material in the cooler tube will pass directly to the hot lime conveying system. Oversized material will continue to a grate in the kiln firing hood, through the crusher, and then to the conveying system.

3.04 Firing Hood

A. Construction

Welded steel plate. Depth of hood shall be approximately 6'-0". Refractory lining shall be furnished and installed by others. A discharge opening in the bottom, barring doors, observation door, burner and burner light-off openings, and access door in the front, are to be provided.

B. Supports

The firing hood shall be supported independently on four (4) steel wheels to be mounted on Purchaser's rails embedded in the operating floor.

C. Air Seal

A labyrinth type air seal of welded construction with close clearance to limit excess air from entering the kiln.

D. Access

One refractory lined access door of at least 2'-0" x 3'-0" shall be located in the front at the bottom.

E. Inspection

One refractory lined full size walk-in type shall be provided in the side of the firing hood for easy access to the inside of the hood and kiln.

F. Discharge Opening

Removable cast grate bars in the bottom of the firing hood to prevent oversize particles or loose bricks from entering the crusher shall be furnished.

3.05 Hot Lime Crusher

A hot lime crusher shall be supplied and installed under the kiln firing hood discharge opening. Firing hood discharge opening shall be designed to accommodate lump breaker, also to be supplied by kiln vendor will be a torque coupling, zero speed switch and an oil immersible guard. A reversing motor will be supplied by the kiln vendor with controls by others.

3.06 Kiln Burner

A. The kiln will be fired with No. 6 fuel oil as primary fuel and natural gas as secondary fuel. Natural gas is not presently available but is expected within one (1) year.

B. Kiln vendor to supply one (1) dual fuel burner assembly complete with burner, portable lighting torch, flexible oil, gas and air hoses up to Purchaser's manual shut-off valves. A steam atomized type burner is preferred. Burner materials are to be stainless steel.

C. An oil pumping and heating system set shall be included complete with filters, valves, steam fired oil heater, pump, pressure control, and pressure relief system. The equipment shall be mounted on a common baseplate and completely piped. The oil heater shall be supplied for 60 psig steam.

D. The kiln vendor shall quote a separate burner for incineration of non-condensible pulp mill gases. Base proposal shall be furnishing a separate burner assembly. Alternates utilizing a single dual purpose burner assembly are requested.

3.07 Primary Air Fan

The fan shall be of sufficient capacity to supply the required air to the kiln for proper combustion of the fuels. A control damper and the necessary ductwork shall be included as a part of this equipment item. Kiln vendor shall also supply motor and drives. Motor controls by others.

3.08 Flame Management System

Kiln vendor shall furnish Flame Failure System complete including the flame detector, controlling relay, manual reset solenoid safety oil and gas shutoff valves, oil and gas pressure control valves, oil and gas flow control valves, low oil and gas pressure switches, high oil and gas pressure switches, low primary air pressure switch, I.D. fan discharge pressure switch, and required solenoid valves to make a complete system. System must be complete to meet FIA and FM requirements.

3.09 Kiln Feed Hood

The hood shall be of plate steel construction and shall be compete with an air seal which shall be fully described in the proposal. The hood shall be designed to admit the kiln screw feeder conveyor. The hood shall be vendor's latest design with features for removing any solids which may be blown back from the kiln. Minimum two access doors required.

3.10 Kiln Feed Conveyor

A. The conveyor shall be designed to feed the necessary sludge specified under the General Section of these specifications. The moisture content in the feed to the kiln shall be 30% by weight. The conveyor drive and motor shall be included in the proposal.

B. The conveyor may be broken down into two units which shall operate in series, if in the judgment of the vendor the length of the conveyor is too great for proper operation.

3.11 Induced Draft Fan (Hot Fan Position)

A. The fan shall be of sufficient capacity to supply the required draft for the kiln. The necessary ductwork to connect the fan to the system shall be included, as a part of the proposal. The fan shall be of the double suction type with water-cooled bearings and shall be properly designed to withstand the high temperatures which may be present at this point in the system.

B. Fan drive will be variable speed electric motor, supplied by the kiln vendor.

C. Kiln vendor shall furnish an alternate proposal to supply single speed motor and louvered inlet damper with operator.

3.12 Exhaust Gas Scrubber

A. The scrubber to remove the lime dust from the kiln gases shall be included as a part of this proposal. The scrubber shall be of the vendor's design or may be purchased and supplied as a part of the proposal, but shall remain the responsibility of the kiln vendor as to the efficiency of dust removal. The necessary ductwork to connect the scrubber in the system shall be included as a part of the proposal.

B. Type

A variable throat Venturi type scrubber complete with scrubbing liquid weir box assembly, flanged scrubbing liquid inlets, top access ports on weir box at scrubbing liquid inlets and a variable throat positioner, all constructed of 1/4" type 316L stainless steel plate.

C. Capacity

Shall be sized for maximum efficiency at kiln operating rate of 220 T/D product.

D. Interconnecting Elbow

A flanged transition elbow and interconnecting duct from the elbow to the cylcone separator constructed of 1/4" type 316L stainless steel shall be furnished. An access opening of minimum size 2' x 2' shall be included in the entrainment separator tangential inlet connection.

E. Cyclonic Entrainment Separator

Complete with flanged tangential inlet gas connection and centrally located top outlet connection, adequate flanged liquid drain and process make-up inlet connections, hinged access manhole, and furnished with cone bottom and integral recycle reservoir shall be reinforced with collar and ring to receive stack. Internal gunite type lining will be installed by others. Separator shall be shipped completely assembled ready for mounting on foundation installed by Purchaser. Separator to be furnished with support legs. Stack to be complete with 316L SS Liner. Standard EPA gas sampling connections are to be provided in stack. For bid purposes, top of stack will be 90 ft. above grade.

F. Performance

The manufacturer's system shall not permit the emission of particulate matter in excess of .5 lb. of particulate matter per ton of pulp. A performance guarantee shall be given stating that this efficiency shall be met.

3.13 Supervision of Erection

The Contractor shall include the charges and terms for furnishing the services of an erection engineer for 60 calendar days to supervise the installation of all equipment furnished and a start-up engineer for 15 calendar days to instruct the Purchaser's operators during initial operation. A per diem rate shall also be stated for time over and above these specified limits. The Engineer shall have final approval of the Contractor's representatives.

4.00 ALTERNATE PROPOSAL

The kiln vendor shall submit an alternate "turnkey" proposal as follows:

4.01 Vendor shall supply, erect, and start up all items of equipment listed in the base proposal including electric motor drivers.

4.02 In addition to 4.01, above, vendor shall supply and install all refractory items, insulation, and "gunnite" type lining in the scrubber separator.

4.03 To be provided by others:

A. General arrangement and system engineering.

B. Motor controls.

C. Instrument panels and consoles.

D. All pumps, motors, and peripheral equipment not listed in base proposal.

E. All foundations, buildings, concrete paving and pipe bridges.

F. All interconnecting piping and wiring.

4.04 It is the Owner's intent to retain a general contractor for the entire project. If the alternate proposal should be accepted, it will be transferred to the general contractor for administration and coordination when the general is selected.

Attendees

Meeting @ BAQM	April 13, 1988	9:30 a.m.
1. Bill Thomas	BAQM / CAP	(904) 488-1344
2. Bruce Mitchell	"	"
3. Pradeep Raval	"	"
4. GENE TONN	JEFFERSON SMURFIT CORP	904/353-3611
5. JERRY COX	" " "	"
6. JOHN MILLICAN	ENV. SERVICES	904/584-5137

● **SENDER:** Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.
Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.
1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)* 2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:	4. Article Number
Mr. J. Franklin Mixson V.P. and General Manager Jefferson Smurfit Corporation 1915 Wigmore Street Jacksonville, Florida 32201	P 938 762 841
	Type of Service: ☐ Registered ☐ Insured ☒ Certified ☐ COD ☐ Express Mail ☐ Return Receipt for Merchandise
	Always obtain signature of addressee or agent and DATE DELIVERED.
5. Signature — Address X Frank F. Meyer	8. Addressee's Address *(ONLY if requested and fee paid)*
6. Signature — Agent X	
7. Date of Delivery 3-9-90	

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

P 938 762 841

RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to Mr. J. Franklin Mixson, JSC	
Street and No. 1915 Wigmore Street	
P.O. State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 3-6-90 Permit: AC 16-142989	

PS Form 3800, June 1985

File Copy

Florida Department of Environmental Regulation

Twin Towers Office Bldg. ● 2600 Blair Stone Road ● Tallahassee, Florida 32399-2400

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary

March 6, 1990

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
V.P. and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: Completeness Review of Application to Modify/Construct Permit No. AC 16-142989

The Department has reviewed the supplementary information received February 5, 1990. Based on a technical review of the information, the application package and supplementary information are deemed incomplete. Please submit to the FDER's Bureau of Air Regulation the following information, including all calculations, reference material and assumptions, and the status will, again, be ascertained:

1. Calculate the annual actual particulate matter (PM) emissions from the lime kiln, which should reflect the average of the actual hours of the two highest years of operation, but within the last 5 years, multiplied times the actual PM emission rate (as measured by a PM mass test and on record with the Department). Please show all of the data used, which must be verifiable. Also, provide the synopsis page of all PM mass tests conducted to date.

2. Referencing No. 1 above, apply the same request to all of the pollutants that are emitted from the source. Where stack test data is unavailable, an acceptable emission factor may be used.

3. Please explain in detail how the new lime kiln can process an increase in 55 TPD (220 TPD to 275 TPD) of lime mud above the originally permitted processing throughput rate of lime mud without a physical change.

4. Please provide all of the design criteria (i.e., maximum production capacity, etc.) that was submitted to the vendor for the order and purchase of the new lime kiln.

5. In Attachment 2 of the response, provide the basis for and the calculations for the numbers displayed for PM (118.3 TPY) and PM_{10} (116.3 TPY) under the heading, "Emissions From Proposed Source."

6. Since it appears that a federally enforceable restriction in production capacity to avoid nonattainment new source review was taken for the new lime kiln, please submit the date(s), time(s), and duration of each incident that the source exceeded the permitted level of production since the source began production pursuant to 40 CFR 60, Subpart A.

If you have any questions, please call Bruce Mitchell at (904)488-1344 or write to me at the above address.

Sincerely,

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

CHF/BM/t

cc: J. Cox, JSC
R. Roberson, BESD
A. Kutyna, NE District
Reading File
Bruce Mitchell } 3-6-90

Meeting @ BAR w/ FSC reps. on #3 lime kiln issues

3-20-90

@ 10-12:10

C. H. Fancy	FDER/DARM/BAR	(904) 488-1344
Bruce Mitchell	"	(904) 488-1344
John Millican	Oertel & Hoffman	(904) 877-0099
Gene Tonn	FSC	(904) 353-3611
Jerry Cox	FSC	(904) 353-3611

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

February 2, 1990

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

Mr. C. H. Fancy, P.E.
Chief, Bureau of Air Quality Management
Florida Dept. of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Fl. 32399-2400

Re: RESPONSE TO COMPLETENESS REVIEW
JANUARY 7, 1988
APPLICATION TO CONSTRUCT/MODIFY
NO. 3 LIME KILN/LIME SILO
PERMIT NO. AC16-142989
JEFFERSON SMURFIT CORPORATION
JACKSONVILLE MILL

Dear Mr. Fancy:

The purpose of this letter is to respond to the subject review in accordance with discussions between Messrs. Thomas Mitchell and Holladay representing your office and Messrs. Cox, Millican and Tonn representing Jefferson Smurfit Corporation. The group met on January 9, 1990 in your office and reviewed the subject application to determine the appropriate response.

In view of the length of time which had passed since the January 7, 1988 completeness review, we appreciate the cooperation extended to Jefferson Smurfit Corporation in allowing the processing of the application to modify AC16-142989 to be continued from that point. It should be noted that the purpose of that application is to permit the kiln to operate at a higher rate at which compliance with applicable regulations can be demonstrated.

Responses are keyed to the numbers indicated in your letter of January 7, 1988.

1. We understand the basis outlined for revising Table A-1. The requested operating rate is 275 tons per day of lime and the particulate emissions will be controlled by installation of a new high efficiency electrostatic precipitator, (see Attachment 1). As shown in revised Table A-1, (see Attachment 2), PSD is not applicable because no de minimus levels are exceeded.

2. Numbers 1 and 2 lime kilns were induced draft kilns. Number 3 lime kiln is an induced draft kiln. All data relating to kiln leaks has been removed from revised Table A-1. Consideration of data relating to kiln leaks is no longer appropriate.

AIRBILL

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 3030013055

3030013055

Date 2-1-90

RECIPIENT'S COPY

From (Your Name) Please Print	Your Phone Number (Very Important)	To (Recipient's Name) Please Print	Recipient's Phone Number (Very Important)
ONE TONN	(904) 353-3611	BRUCE MITCHELL	(904) 488-13

Company	Department/Floor No.	Company	Department/Floor No.
JEFFERSON SMURFIT CORP		FLA. DEPT. OF ENVIR. REGULATION	

Street Address	Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. # Zip Codes.)
1925 WINCREE STREET	2600 BLAIR STONE RD.

City	State	ZIP Required	City	State	ZIP Required
JACKSONVILLE	FL	32204	TALLAHASSEE	FL	32301

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

4 IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card
☐ Cash

5 SERVICES	DELIVERY AND SPECIAL HANDLING	PACKAGES	WEIGHT IN POUNDS ONLY	YOUR DECLARED VALUE	OVER SIZE
1 ☐ PRIORITY 1 Overnight Delivery	1 ☐ HOLD FOR PICK-UP (Fill in Box 4)				
2 ☐ COURIER-PAK OVERNIGHT ENVELOPE*	2 ☒ DELIVER WEEKDAY				
3 ☐ OVERNIGHT BOX	3 DELIVER SATURDAY (Extra charge) ☐				
4 ☐ OVERNIGHT TUBE	4 ☐ DANGEROUS GOODS (Extra charge)				
5 ☐ STANDARD AIR Delivery not later than second business day	5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Release Signature Not Applicable)				
*Declared Value Limit $100.	6 ☐ DRY ICE ____ Lbs.				
6 ☒ OVERNIGHT LETTER*	7 ☐ OTHER SPECIAL SERVICE ____				
7 ☐	8 ☐				
8 ☐	9 ☐ SATURDAY PICK-UP (Extra charge)				
9 ☐	10 ☐				
10 ☐	11 ☐				
	12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)	Total	Total	Total	

Received At
1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FEDEX Corp. Employee No. 134

Date/Time for FEDEX Use 2/1/90 12:?

Emp. No. Date
☐ Cash Received
☐ Return Shipment ☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold
Street Address
City State Zip
Received By: X
Date/Time Received FedEx Employee Number

6 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use	
Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

PART #111800
REVISION DATE 10/88
PRINTED IN U.S.A. FXEM
009

3. & 4. All data relating to kiln leaks has been removed from revised Table A-1. Consideration of data relating to kiln leaks is no longer appropriate.

5. None of the other sources in the mill will be affected.

6. Based on lime kiln stack tests which were performed before and after incineration of noncondensible gases from the new digester system there was no significant change in SO2 emissions from the lime kiln. These test results were submitted to the BESD and a copy is attached, (see Attachment 3). Continuous emission monitoring reports show that there has been no significant change in TRS emissions from the No. 3 lime kiln before and after incinerating noncondensible gases from the new digester system. These continuous emissions monitoring system quarterly reports have been submitted to the BESD.

7. The SO2 emission factor of 0.2 pounds per ton ADUP came from AP-42, page 10.1-5, 4/77 edition, (see Attachment 4). Yes, tests were conducted, both an initial compliance test, as well as subsequent tests to evaluate SO2 emissions. The results of these tests show a range of SO2 emissions from 0.7 to 1.89 pounds per hour. These test results were submitted to the BESD and a copy of each is attached, (see Attachments 3 and 5). We know of no work which has been done to develop an SO2 emission factor on a per ton of lime produced basis. The calculated SO2 emission factor based on the limited number of tests we performed indicate a range of SO2 per ton of lime to be 0.06 to 0.2.

8. The maximum potential SO2 emissions from the use of fuel oil would be 45.6 tons per year as shown in revised Table A-1. The net change in SO2 emissions is 18.7 tons per year as shown in revised Table A-1.

9. There were no tests conducted for VOC or CO emissions. NOx was tested, (see Attachment 6). The projected NOx emissions are 378.9 tons per year based on NCASI bulletin number 107 which is a much more accurate projection than any single test would be.

10. With the revision of Table A-1, it is no longer necessary to consider fugitive emissions from the old causticizing system as shown in Table C-1.

11. The request for fugitive emissions credit is withdrawn and Table C-1 is no longer necessary. Revised Table A-1 shows no significant increase in any pollutant.

12. All BESD comments appear to be appropriately answered in 1 and 3 above.

A timely processing of this request will be greatly appreciated. Should additional information be required, please call Jerry Cox at (904) 353-3611.

Very truly yours,

J. Franklin Mixson

J. Franklin Mixson
Vice President & General Manager

td/MODIFYLK

cc: RON ROBERSON
BESD
B. Mitchell
A. Kutzner
CHF/JKP/BT

ATTACHMENT 1

CONTROL EQUIPMENT DESIGN INFORMATION

Particulate Control

Electrostatic Precipitator

An electrostatic precipitator has been selected to replace the existing venturi scrubber for the control of particulate matter (PM).

The precipitator is to be a single chamber structure with four fields, three of which will handle load, with rigid electrodes, magnetic rappers, four transformer/rectifier sets, dry bottom hopper with conveyor and insulated to minimize condensation and corrosion. The dry particulate matter collected will be recycled to the causticizing process.

The precipitator is to be designed, constructed, and installed by:

Cleveland Manufacturing Corp.
6409 Barberton Avenue
Cleveland, Ohio

The precipitator is to be developed on the basis of the following:

OPERATING & PERFORMANCE DATA

VOLUME – CFM @ OPERATING CONDITIONS	45,000
TEMP. – °F @ OPERATING CONDITIONS	280°
SCA – COLLECTING AREA (ft)/1000 ACFM	576
GUARANTEED OUTLET LOADING – GR/SDCF	.10
GAS VELOCITY – FT/SEC	2.27
TREATMENT TIME – SEC	15.86

PRECIPITATOR ARRANGEMENT

# OF PRECIPITATORS	1
CHAMBERS PER PRECIPITATOR	1
FIELDS PER PRECIPITATOR	4 electrical/4 mechanical
BUS SECTIONS PER PRECIPITATOR	4
INSULATOR COMP. MATERIAL & THICKNESS – IN.	steel / 12 ga.
# OF INSULATOR COMP. PER PRECIPITATOR	8

COLLECTING SYSTEM–PER ESP

# OF GAS PASSAGES	15
SPACING OF GAS PASSAGES	11 in.
COLLECTING SURFACE MATERIAL & THICKNESS	A366/16 ga
COLLECTING SURFACE EFFECTIVE LENGTH – FT.	9
COLLECTING SURFACE EFFECTIVE HEIGHT – FT.	24
TOTAL COLLECTING SURFACE AREA – SQ. FT.	25,920
MAX. COLLECTING SURFACE AREA RAPPED @ ANY INSTANT – SQ FT	864
TYPE COLLECTING SURFACE RAPPERS	magnetic impulse
# COLLECTING SURFACE RAPPERS/PRECIPITATOR	32

HIGH VOLTAGE SYSTEM

DISCHARGE ELECTRODE -TYPE, MAT'L AND THICKNESS	rigid electrode 1 1/2" ø 11 ga tubing, 12 ga. studs
TYPE OF DISCHARGE ELECTRODE RAPPERS	gravity impact
TOTAL # ELECTRODE RAPPERS PER PRECIPITATOR	8
ELECTRODE LENGTH PER RAPPER - FT	1170

HIGH VOLTAGE ELECTRICAL SET

# OF TRANSFORMER RECTIFIERS	4
COLLECTING PLATE AREA PER T/R SET - SQ FT	6480
VOLTAGE RATING KV (DC) AVERAGE	65
CURRENT RATING mA (DC) AVERAGE	300; 450; 600; 600
# OF T/R CONTROL CABINETS	4
CONSTRUCTION OF T/R CONTROL CABINETS - NEMA	12
TRANSFORMER RECTIFIER INSULATION FLUID	MINERAL OIL
WAVE FORM OF HIGH VOLTAGE	FULL WAVE
# AND TYPE HIGH VOLTAGE SWITCHES	1-(H.V. GROUND)
TYPE TRANSFORMER RECTIFIER CONTROLS	MICROPROCESSOR LOGIC/SCR BASED
POWER DISTRIBUTION - INDIVIDUAL BREAKERS PER CABINET	YES

OTHER AUX. EQUIP. OR SERVICES

INSULATOR COMPARTMENT BLOWER SYSTEM - #	1 / PRECIPITATOR
INSULATION - TYPE & THICKNESS	MINERAL WOOL 4"

TRS Control

The control of TRS emissions is based on appropriate design and good control of the causticizing process. Critical process parameters for TRS emission control are lime kiln combustion conditions and lime mud washing. The No. 3 Lime Kiln has been designed and has demonstrated the process control necessary to assure compliance with the 8 PPM TRS standard, corrected to 10% oxygen, on a continuing basis.

In addition, the operating experience in TRS emission control of an electrostatic precipitator on a lime kiln at the Proctor and Gamble Cellulose Corporation mill in Perry, Florida, confirms that TRS emission below the 8 PPM standard is being achieved on a continuing basis with appropriate process control, good lime kiln combustion conditions, and good lime mud washing.

td/ELECPREC

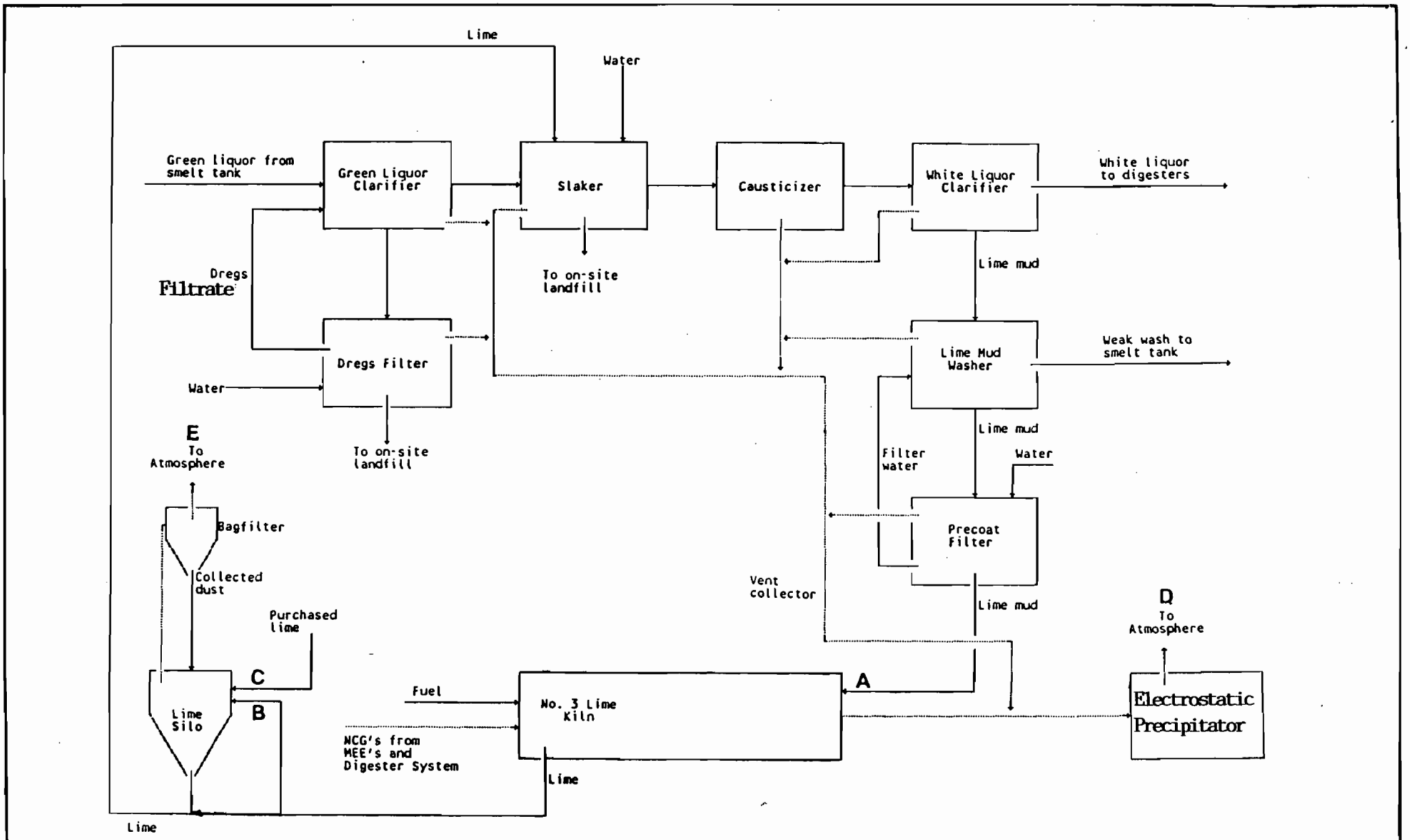


Figure A-1. Process Flow Diagram, No. 3 Lime Kiln System

Notes:
——— Material flow
..... Gas flow

ATTACHMENT 2

REVISED FEBRUARY 2, 1990

Table A-1 Summary of Net Emission Changes, Jefferson Smurfit Corporation No. 3 Lime Kiln

Source	Annual Emission (TPY)						
	PM	PM10	SO2	TRS	CO	NOx	VOC
EMISSIONS FROM SOURCES SHUT DOWN							
No. 1 & 2 Lime Kilns	113.0	111.0	26.9	94.2	12.3	401.3	13.0
EMISSIONS FROM PROPOSED SOURCE							
No. 3 Lime Kiln	118.3	116.3	45.6	5.3	13.8	378.9	20.7
Net change	+5.3	+5.2	+18.7	-88.9	+1.5	-22.2	+7.7
PSD SIGNIFICANCE LEVEL	25	15	40	10	100	40	40

ATTACHMENT 3

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

August 8, 1989

HAND DELIVERED

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

Mr. Wayne Tutt
Associate Engineer
Department of Health, Welfare
& Bio-Environmental Services Division
421 West Church Street, Suite 412
Jacksonville, Florida 32202-4111

SUBJECT: BATCH DIGESTER SYSTEM
SO2 EMISSION TESTS
PERMIT NO. AC16-141869

Dear Mr. Tutt:

Pursuant to Specific Condition 15 of Permit No. AC16-141869, transmitted herewith are two copies of the SO2 emission tests for the No. 3 Lime Kiln in the Jacksonville Mill of Jefferson Smurfit Corporation.

The objective of this test was to determine the SO2 emissions from the No. 3 Lime Kiln with and without the incineration of noncondensible gases from the new batch digester system. During the test conducted while incinerating no noncondensible gases from the new batch digester system, the SO2 emission was 1.84 pounds per hour at a stack gas flow of 18,911 DSCFM. The SO2 emission while incinerating noncondensible gases from the new batch digester system was 1.89 pounds per hour at a stack gas flow of 18,537 DSCFM.

Should there be any question, please call Gene Tonn at 353-3611.

Very truly yours,

O. Franklin Mixson
Vice President & General Manager

td/#9SMELT

EXETER ENGINEERING
ENVIRONMENTAL CONSULTANTS

TELEPHONE
(904) 475-2463

P.O. BOX 123
MELROSE, FL 32666

SOURCE TEST REPORT
EFFECT OF NON CONDENSIBLE GAS INCINERATION ON SULFUR DIOXIDE EMISSIONS NUMBER THREE LIME KILN JEFFERSON SMURFIT CORPORATION JACKSONVILLE, FLORIDA

JULY 28, 1989

PREPARED
BY
ANDREW G.KUTYNA, P.E.

SEPTEMBER, 6, 1989

TABLE OF CONTENTS

I. INTRODUCTION

The main stack on the Number Three Lime Kiln at the Jefferson Smurfit Corporation's pulp mill located in Jacksonville, Florida was sampled for sulfur dioxide emissions on July 28, 1989. The purpose of the test was to determine if and by what amount sulfur dioxide emissions from the kiln would be increased when non condensible gases (NCG) from the digester system were incinerated in the kiln. To this end, 3 tests (1,2 &3) were conducted without NCG incineration and then 3 tests (4,5 &6) were conducted with NCG incineration and the average of both sets of tests were compared.

A total of six runs were made on the stack using EPA Reference Method 6 methodology and test equipment specifications. EPA R.M.6 was modified by using large impingers instead of the mini impingers and 100 ml of absorbing solution were used in the second and third impingers. Sulfur trioxide was not tested.

Stack gas flows were determined using EPA R.M. 2 methodology during each sulfur dioxide run. The stack gases were determined to be moisture saturated by comparing wet and dry bulb thermometer readings.

II. SUMMARY AND DISCUSSION OF RESULTS

Results of the tests are summarized in Table 1 while complete field and laboratory data are found in Appendices A and B, respectively.

The results of the first three runs (without NCG incineration) show an average sulfur dioxide emission rate of 1.84 pounds per hour at a stack gas flow of 18,911 standard dry cubic feet per minute. Moisture content of the saturated stack gases was 25.5 percent. Runs 4,5 and 6 averaged a sulfur dioxide emission rate of 1.89 pounds per hour at a stack gas flow rate of 18,537 standard dry cubic feet per minute and a saturation moisture content of 26.5 percent.

Although an increase of sulfur dioxide was indicated, the amount of increase (approximately 0.05 lb/hr or 2.5 percent) is not significant considering the variations between each test.

TABLE 1

SUMMARY OF DATA

RUN	DATE	TIME	STACK GAS TEMPERATURE °F	% MOISTURE	EFFLUENT GAS FLOW (SDCFM)	SULFUR DIOXIDE EMISSIONS (LB/SDCF X 10^5)	(LB/HR)
1	7/28	0940-1010	152.8	26.9	17,550	0.165	1.74
2	7/28	1040-1112	149.6	24.8	20,396	0.152	1.86
3	7/28	1148-1219	149.7	24.9	18,786	0.171	1.93
	AVERAGE		150.7	25.5	18,911	0.163	1.84
4	7/28	1250-1320	152.2	26.5	18,761	0.166	1.87
5	7/28	1345-1415	151.0	25.7	19,402	0.168	1.96
6	7/28	1445-1515	153.4	27.3	17,449	0.176	1.84
	AVERAGE		152.2	26.5	18,537	0.170	1.89

Table 10.1.2-1. EMISSION FACTORS FOR SULFATE PULPING[a]
(unit weights of air-dried unbleached pulp)
EMISSION FACTOR RATING: A

Source	Type control	Particulates[b]		Sulfur dioxide (SO_2)[c]		Carbon monoxide[d]		Hydrogen sulfide($S^=$)[e]		RSH, RSR, RSSR($S^=$)[e,f]	
		lb/ton	kg/MT	lb/ton	kg/MT	lb/ton	kg/MT	lb/ton	kg/MT	lb/ton	kg/MT
Digester relief and blow tank	Untreated[g]	–	–	–	–	–	–	0.1	0.05	1.5	0.75
Brown stock washers	Untreated	–	–	0.01	0.005	–	–	0.02	0.01	0.2	0.1
Multiple effect evaporators	Untreated[g]	–	–	0.01	0.005	–	–	0.1	0.05	0.4	0.2
Recovery boiler and direct contact evaporator	Untreated[h]	150	75	5	2.5	2 - 60	1 - 30	12[i]	6[i]	1[i]	0.5[i]
	Venturi scrubber[j]	47	23.5	5	2.5	2 - 60	1 - 30	12[i]	6[i]	1[i]	0.5[i]
	Electrostatic precipitator	8	4	5	2.5	2 - 60	1 - 30	12[i]	6[i]	1[i]	0.5[i]
	Auxiliary scrubber	3 - 15[k]	1.5 - 7.5[k]	3	1.5	2 - 60	1 - 30	12[i]	6[i]	1[i]	0.5[i]
Smelt dissolving tank	Untreated	5	2.5	0.1	0.05	–	–	0.04	0.02	0.4	0.2
	Mesh pad	1	0.5	0.1	0.05	–	–	0.04	0.02	0.4	0.2
Lime kilns	Untreated	45	22.5	0.3	0.15	10	5	0.5	0.25	0.25	0.125
	Scrubber	3	1.5	0.2	0.1	10	5	0.5	0.25	0.25	0.125
Turpentine condenser	Untreated	–	–	–	–	–	–	0.01	0.005	0.5	0.25
Miscellaneous sources[l]	Untreated	–	–	–	–	–	–	–	–	0.5	0.25

[a] For more detailed data on specific types of mills, consult Reference 1.

[b] References 1, 7, 8.

[c] References 1, 7, 9, 10.

[d] References 6, 11. Use higher value for overloaded furnaces.

[e] References 1, 4, 7-10, 12, 13. These reduced sulfur compounds are usually expressed as sulfur.

[f] RSH-methyl mercaptan; RSR-dimethyl sulfide; RSSR-dimethyl disulfide.

[g] If the noncondensible gases from these sources are vented to the lime kiln, recovery furnace, or equivalent, the reduced sulfur compounds are destroyed..

[h] These factors apply when either a cyclonic scrubber or cascade evaporator is used for direct contact evaporation with no further controls.

[i] These reduced sulfur compounds (TRS) are typically reduced by 50 percent when black liquor oxidation is employed but can be cut by 90 to 99 percent when oxidation is complete and the recovery furnace is operated optimally.

[j] These factors apply when a venturi scrubber is used for direct contact evaporation with no further controls.

[k] Use 15(7.5) when the auxiliary scrubber follows a venturi scrubber and 3(1.5) when employed after an electrostatic precipitator.

[l] Insludes knotter vents, brownstock seal tanks, etc. When black liquor oxidation is included, a factor of 0.6(0.3) should be used.

ATC Project No. 170-02

LIME KILN EMISSIONS TEST REPORT
JEFFERSON SMURFIT CORPORATION
JACKSONVILLE, FLORIDA
JANUARY 1987

Prepared For

JEFFERSON SMURFIT CORPORATION
P.O. BOX 150
JACKSONVILLE, FL 32201

Bruce B. Ferguson

APPROVED FOR TRANSMITTAL
FEBRUARY 1987

Prepared By

ATC, INC.
1635 Pumphrey Avenue
Auburn, AL 36839-4303

SECTION 1

INTRODUCTION

ATC, Inc. (ATC) was retained by Jefferson Smurfit Corporation to perform compliance testing on the lime kiln at the Jacksonville, Florida Mill. Particulate, sulfur dioxide, and total reduced sulfur were the parameters tested.

Visible emission testing was scheduled but was not performed due to inclement weather.

Testing was performed during the period of January 15-16, 1987 by an ATC test team comprised of Mr. Robert Betts, Mr. Vic Nunn and Mr. Craig Schmitz. Mr. Walter Blair served as ATC Project Manager and Dr. Bruce Ferguson was the ATC Technical Director. Resumes of the ATC personnel participating on the project and a brief project summary are included in Appendix A. Mr. Norman Davis coordinated testing with mill operations and was responsible for collecting process data during the testing. Mr. Allen Luther and Mr. Wayne Tutt from the Jacksonville Department of Health, Welfare and Bioenvironmental Services were present during testing.

Section 2 of this report details the results of compliance testing performed on the lime kiln. Section 3 describes testing procedures and provides guidelines for data interpretation. Field and laboratory data, calculations and general project information is provided in the Appendices.

2.2 SO_2 COMPLIANCE TEST RESULTS

Results of the compliance test for SO_2 performed on January 15, 1987 are summarized in Table 2.3. The mean SO_2 concentration of 0.7 lb/hr was approximately eight percent of the allowable concentration of 8.3 lb/hr. The SO_2 test was comprised of three thirty-minute runs. Measurements for volumetric flow were taken periodically during testing. Applicable field and laboratory data are provided in Appendix C.

TABLE 2.3

SUMMARY OF SO_2 EMISSION

	RUN 1	RUN 2	RUN 3	MEAN	ALLOWABLE LIMIT
Date	1/15/87	1/15/87	1/15/87	---	---
Time Began	1500	1550	1632	---	---
Time End	1531	1620	1702	---	---
Stack Gas,					
Temperature, ^oF	154	153	153	153	---
Velocity, ft/sec	30	29	28	29	---
Moisture, %	28	28	28	28	---
Oxygen concentration, %	7.8	7.8	7.6	7.7	---
Carbon dioxide concentration, %	18.0	18.0	18.0	18.0	---
Volumetric Flow Rate					
At stack conditions, x 10^3 ft^3/min	28.9	27.7	27.1	27.9	---
At standard conditions, x 10^3 ft^3/min	18.0	17.3	16.9	17.4	---
Sulfur dioxide[a] concentration,					
ppm	2.4	4.5	4.8	3.9	
lb/hr	0.4	0.8	0.8	0.7	8.3

[a] A sulfur dioxide audit sample was analyzed and the results are included in Appendix C.

ATTACHMENT 6

Air Consulting and Engineering, Inc.

November 2, 1989
199 89 08

Mr. Gene Tonn
Jefferson-Smurfit Corporation
1915 Wigmore Street
Post Office Box 150
Jacksonville, Florida 32201

Dear Gene:

On September 20-21, 1989, Air Consulting and Engineering, Inc. (ACE), conducted an Oxides of Nitrogen (NO_x) emission testing on the scrubber exhaust stack of the Number 3 Lime Kiln at your Jacksonville, Florida, paper mill. NO_x concentrations were measured using EPA Method 7E. Table 1 summarizes the results of these tests.

Please contact me if you need further information or have any questions concerning these tests.

Sincerely,

AIR CONSULTING AND ENGINEERING, INC.

Peter F. Burnette

PFB:klp

enclosures

2106 N.W. 67th Place, Suite 4 • Gainesville, Florida 32606 • (904) 335-1889

Table 1 NO_x Emission Summary
Jefferson-Smurfit Corporation
Number 3 Lime Kiln
Jacksonville, Florida
September 20-21, 1989

Run Number	Flow Rate SCFMD	H_2O %	Stack Temperature °F	NO_x Emissions ppm Dry	NO_x Emissions lb/Hr
1	14978	24.6	151	140	15.02
2	15348	24.8	152	135	14.84
3	15857	27.8	155	140	15.90
Average	15394	25.7	153	138	15.25

Attendance 1-9-80 @ BAR @ JSC

Bruce Mitchell	FDER/DARM/BAR	(904) 488-1344
Jerry B Cox	Jefferson Smurfit Corp	(904) 353-3611
E.T. TONN	JSC	904/353-3611
JOHN MILLICAN	ENV. SERV.	904/584-5137
Bill Thomas	BAR	
Clem Holladay	FDER/DARM/BAR	904-488-1344

corrugated roll headers to wrap paper rolls. The Trancel Series 3500 Wrapping System, along with the Solbergs line of header cutting systems, is available from Trancel's U.S. agent, Southeast Engineered Products in Atlanta, Georgia.

French Paper, Niles, Mich., has awarded a contract to Lamb-Grays Harbor for a new Lamb-Pasaban Precision Double Rotary folio size sheeting system to be designed and manufactured by Pasaban S.A. of Tolosa, Spain. Lambs is representative for North America and the Pacific Rim for the line of Pasaban sheeters and winders.

This equipment is being custom designed for French Paper to precision sheet the specialty fine papers sold primarily for special graphic design applications. Features include a computerized precision sheet length setting, automatic squaring and automated slitter positioning; four shaftless, roll pick-up unwind stands; dancer automatic tension control; motorized decurl section; high speed vacuum assist, overlapping sheet delivery section; automated reject gate and splice detection; slitter and cross-cut dust collection; and a precision stacking layboy with fully automatic pile change system which produces no pile distortion. Installation of the sheeting system is scheduled for completion in March of 1990.

Fraser Paper, Madawaska, Me., has ordered an Impact Therma-Jet cross-direction caliper system with Impact control. The system will be installed on PM No. 7, a fourdrinier machine manufacturing bond and groundwood papers. Also included in this order is a bridge to a Rosemount distributed control system.

Fraser Paper is also adding two AccuRay 1180 MicroPlus measurement and control systems featuring FirstSight Measurement Technology to No. 1 and No. 4 paper machines, both producing lightweight, uncoated fine paper grades. The order represents one of the first sales of FirstSight—Combustion Engineering's new signal processing capability.

Fraser Paper purchased these systems to improve the quality of the grades used in lightweight book publishing and commercial printing.

White Pigeon Paper, White Pigeon, Mich., has ordered another Black Clawson Bristol Projection Slice Headbox. This additional unit will help improve formation, profile, and runnability.

Jefferson Smurfit, Jacksonville, Fla., will rebuild its linerboard machine. The 232-in. machine will be completely rebuilt from a conventional roll-out fourdrinier equipped with primary and secondary headboxes to a multi-ply configuration featuring an on-top fourdrinier. The rebuild, which will lengthen the base fourdrinier and include new primary and secondary rectifier roll headboxes will be furnished by Tampella.

The press section will also be completely rebuilt to include two Tampella double-felted long nip presses (LNP). The LNP's are both designed to be loaded to 2200 pli, and all press rolls are 63.6 in. diameter. The new press section is an E-frame design for easy felt changes.

The existing dryer section will be bottom-felted in the second and third sections. The first calender stack is to be removed and six 72-in. dryers will be added, followed by a new 2-roll calender stack with variable crown bottom roll and a new reel with overhead reel core storage.

Tampella will also supply a new press pulper and a dry-end pulper with conveyor, both rated at 1200 tons/day.

The machine produces 42-lb and 69-lb linerboard. The rebuild is designed to improve quality and increase machine speed from 1750 to 2150 ft/min.

Michigan Paperboard, Battle Creek, Mich., has ordered five additional Black Clawson Bristol pressure former headboxes for their No. 1 machine. The units will replace existing headboxes to improve formation and profile.

Menasha, Otsego, Mich., will invest $35 million in additional state-of-the-art equipment at its paperboard mill. During the next 24 months, the company will install a new hydraulic headbox, extended nip press, and drive on its No. 1 paper machine. In addition, the fourdrinier will be extended and the reel and winder will be upgraded. A new fiber supply system will also be constructed.

Bruce T. Buchanan, Menasha vice president of Paperboard and Support Services, states that this investment, supported by employees' commitment to an active quality management process, will provide customers with the best quality and service in the industry throughout the 90's.

Menasha Corporation, with headquarters in Neenah, Wis., is a producer of packaging, plastic products, paperboard, product identification items, printed materials, and forest products.

Boise Cascade, Wallulah, Wash., has purchased the first commercial high-angle conveyor (HAC) to elevate wood chips continuously from their screening house to the digester bin. The 60-hp HAC replaces the elevating duties of a 500-hp blowline. Reportedly, there is no damage to wood chips during transport in the HAC—an increase in fines was a problem with the blowline. The 60-hp HAC also provides substantial savings in electrical power.

James River, Clatskanie, Ore., reports a successful startup four days ahead of schedule following the $32-million rebuild of the No. 3 groundwood specialties paper machine at its Wauna mill in Clatskanie, Ore.

Preliminary print trials on the machine's Columbia Web publishing grades indicate the rebuild has brought the quality improvements expected by the company, according to Al Grantham, No. 3 machine superintendent, who headed the rebuild effort.

The rebuild included installation of a new twin-wire forming section from Valmet. Other major components are a Honeywell TDC-3000 shared display system, a Measurex 2002 scanner, and a new General Electric digital electric machine drive. Additionally, upgrades were made to the groundwood screening system and the winders in order to improve roll quality and roll-to-roll consistency.

Major contractors for the rebuild were Harder of Portland, Ore., the mechanical contractor; Electric Construction of Portland, and General Electric, contractor for the machine drive.

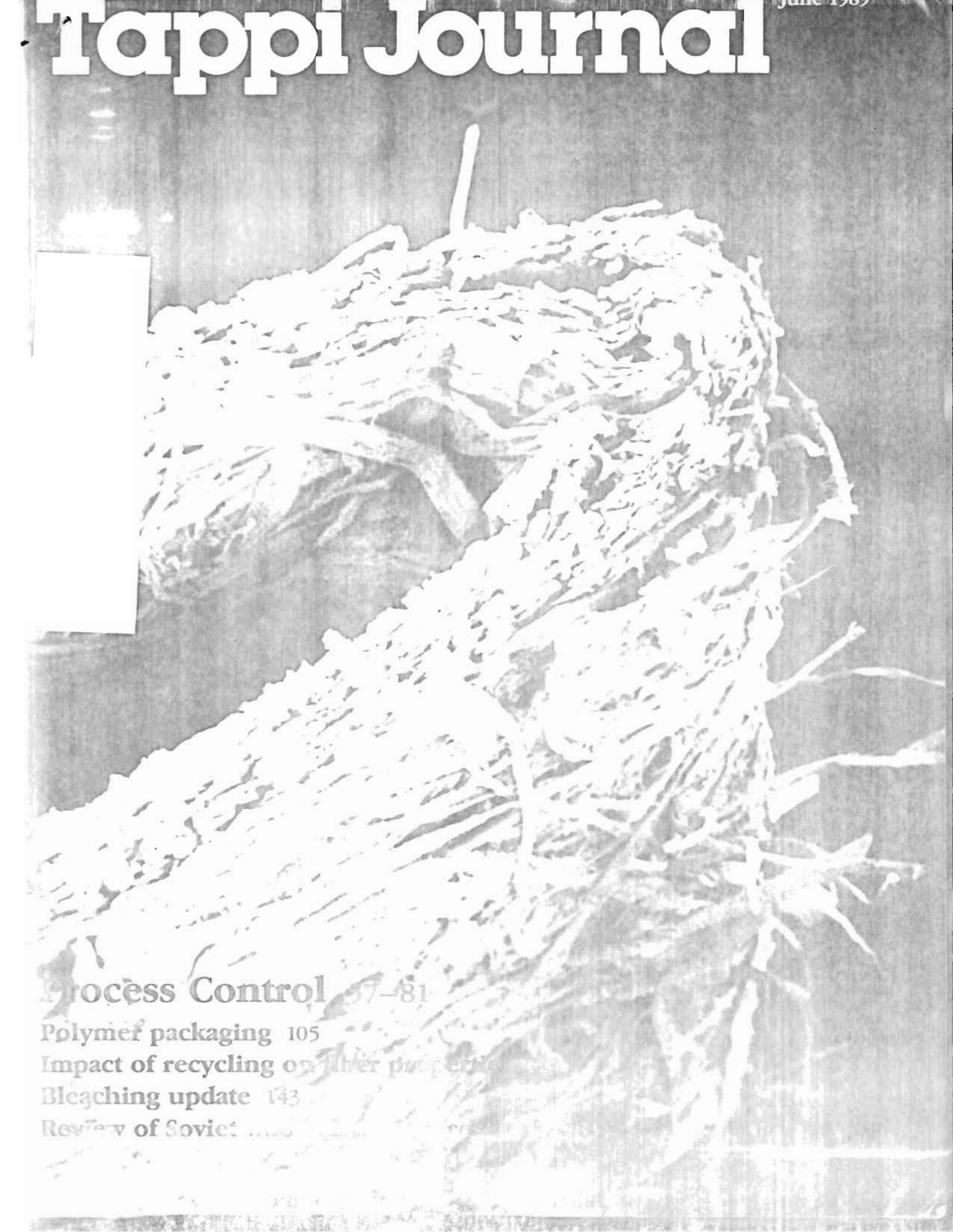
Smurfit Newsprint, Oregon City, Ore., has ordered a Fibreflow repulping drum from Ahlstrom Machinery. The project is part of a millwide upgrading program. The Fibreflow is a horizontal rotating drum system which efficiently reclaims fiber from wastepaper.

Packaging Corporation of America, Griffith, Ind., has ordered a Spectrum-IR infrared gas system from Impact Systems. The gas system will be installed on No. 6 paper machine, a molded paper machine. The Spectrum-IR system frame will be installed in dual rows across the wet end of the machine.

Stone Savannah River Pulp & Paper, Port Wentworth, Ga., has selected Tampella-Carcano to supply the wet end for the 740-ton/day bleached hardwood pulp expansion being built at the mill in Port Wentworth. The pulp machine is designed to process 740 tons/day bleached hardwood at speeds

Tappi Journal

June 1989



Ind. Cf. 3030012904
4-21-89
Jacksonville, FL

file copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276 618/463-6000

April 21, 1989

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

FEDERAL EXPRESS

Mr. Clair Fancy, P.E.
Division of Air Resources Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED
APR 24 1989
DER-BAQM

SUBJECT: NO. 3 LIME KILN
CONSTRUCTION PERMIT NO. AC16-142989
OPERATION PERMIT NO. AO16-144609

Dear Mr. Fancy:

In addition to a discussion of provisions of the construction permit of the No. 3 Lime Kiln in the meeting scheduled for Thursday, April 27 at 1:30 p.m., we wish to discuss certain provisions of the draft of the revised operating permit, a copy of which is attached.

If there should be any questions, please call me at (904) 353-3611.

Very truly yours,

E. T. Tonn, P.E.
Senior Environmental Engineer

enclosures

ETT:td
#3LKCON

cc: J.F.Mixson
John Millican
File(2)

copied: B. Mitchell
M. Harley
CHF
BT

AIRBILL

FEDERAL EXPRESS

USE THIS AIRBILL FOR DOMESTIC SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

PACKAGE TRACKING NUMBER 3030012904

SCSGN 3030012904

RECIPIENT'S COPY

Date 4-21-89

From (Your Name) Please Print	Your Phone Number (Very Important)	To (Recipient's Name) Please Print	Recipient's Phone Number (Very Important)
1 E. T. TONN	(904-333-3611	2 MR. CLAIR FANCY, P.E.	904) 488-4

Company	Department/Floor No.	Company	Department/Floor No.
JEFFERSON SMURFIT CORP		FDER?DIVISION OF AIR RESOURCES MGMT	

Street Address	Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. • Zip Codes.)
935 MCMORE STREET	2600 BLAIR STONE ROAD

City	State	ZIP Required	City	State	ZIP Required
JACKSONVILLE	FL	3 2 2 0 6	Tallahassee	FL	32399

3 YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address
City State ZIP Required

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card
☐ Cash

4 SERVICES	DELIVERY AND SPECIAL HANDLING
1 ☐ PRIORITY 1 Overnight Delivery	1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☐ COURIER-PAK OVERNIGHT ENVELOPE*	2 ☒ DELIVER WEEKDAY
3 ☐ OVERNIGHT BOX	3 ☐ DELIVER SATURDAY (Extra charge)
4 ☐ OVERNIGHT TUBE	4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐ STANDARD AIR Delivery not later than second business day	5 ☐ CONSTANT SURVEILLANCE SERVICE (CSS) (Extra charge) (Release Signature Not Applicable)
6 ☒ OVERNIGHT LETTER*	6 ☐ DRY ICE ____ Lbs.
7 ☐	7 ☐ OTHER SPECIAL SERVICE
8 ☐	8 ☐
9 ☐	9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐	10 ☐
	11 ☐
	12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

*Declared Value Limit $100.

PACKAGES	WEIGHT IN POUNDS ONLY	YOUR DECLARED VALUE	OVER SIZE
Total	Total	Total	

Received At
1 ☐ Regular Stop 2 ☐ On-Call Stop
3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

FEDEX Corp. Employee No. 1995

Date/Time for FEDEX Use 4-21 1520

Emp. No. Date
☐ Cash Received
☐ Return Shipment
☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use

Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

PART #111800
REVISION DATE 10/88
PRINTED IN U.S.A. FXEM
009 Rev. 2/88

Florida Department of Environmental Regulation

Northeast District • 3426 Bills Road • Jacksonville, Florida 32207 • 904-798-4200

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary
Ernest Frey, Deputy Assistant Secretary

Permittee:	**I.D. Number:**	31-16-0003-23, 24
	Permit/Certification Number:	AO16-144609
Jefferson Smurfit Corporation	**Date of Issue:**	February 24, 1989
Post Office Box 150	**Expiration Date:**	December 31, 1993
Jacksonville, Florida 32201	**County:**	Duval
	Latitude/Longitude:	30:22:00/81:37:30
	UTM:	E-7439.50 N-3359.10
	Project:	Causticizing System (No. 3 Lime Kiln)
	Revised:	

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the operation of a Causticizing System, which includes a lime kiln with associated scrubber system, and a lime storage silo with baghouse system. The lime kiln will be heated using natural gas and/or No. 6 fuel oil. Fuel oil maximum sulfur content shall not exceed 2.5% by weight.

DRAFT

Particulate Matter (PM) emissions shall be controlled as follows:

Source	Control Equipment
No. 3 Lime Kiln	Air Pol Venturi Scrubber
Lime Storage Silo	Mikropul Bag Filter, Model 16 S 8TR

jc
File

Emission source(s) shall be as follows:

Point	Source
23	No. 3 Lime Kiln
24	Lime Storage Silo

Located at 1915 Wigmore Street, Jacksonville, Florida 32206

Supporting documents shall be as follows:

(1) Certificate of Completion of Construction received January 27, 1988
(2) Permit AC16-095614
(3) Bio-Environmental Services Division's (BESD) letter dated February 26, 1988
(4) Jefferson Smurfit Corporation's letter dated December 1, 1988

Permittee:	**I.D. Number:**	31-16-0003-23, 24
	Permit/Certification Number:	AO16-144609
Jefferson Smurfit Corporation	**Date of Issue:**	February 24, 1989
	Expiration Date:	December 31, 1993
	Revised:	

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants, or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life, or property and penalties therefore caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:
   a. Having access to and copying any records that must be kept under the conditions of the permit;
   b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
   c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

   Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with, or will be unable to comply with, any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:
   a. A description of and cause of non-compliance; and
   b. the period of non-compliance, including exact dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

   The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

Permittee:	**I.D. Number:**	31-16-0003-23, 24
	Permit/Certification Number:	AO16-144609
Jefferson Smurfit Corporation	**Date of Issue:**	February 24, 1989
	Expiration Date:	December 31, 1993
	Revised:	

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data an other information relating to the construction or operation of this permitted source, which are submitte to the department, may be used by the department as evidence in any enforcement case arising under the Florid Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florid Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable tim for compliance, provided however, the permittee does not waive any other rights granted by Florida Statute or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rule 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitte activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period o construction or operation.

13. This permit also constitutes:
    ( ) Determination of Best Available Control Technology (BACT)
    ( ) Determination of Prevention of Significant Deterioration (PSD)
    ( ) Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500)
    (X) Compliance with New Source Performance Standards

14. The permittee shall comply with the following monitoring and record keeping requirements:
    a. Upon request, the permittee shall furnish all records and plans required under department rules. Th retention period for all records will be extended automatically, unless otherwise stipulated by th department, during the course of any unresolved enforcement action.
    b. The permittee shall retain at the facility or other location designated by this permit records of al monitoring information (including all calibration and maintenance records and all original strip char recordings for continuous monitoring instrumentation), copies of all reports required by this permit and records of all data used to complete the application for this permit. The time period of retentio shall be at least three years from the date of the sample, measurement, report, or application unles otherwise specified by department rule.
    c. Records of monitoring information shall include:
        - the date, exact place, and time of sampling or measurements;
        - the person responsible for performing the sampling or measurements;
        - the date(s) analyses were performed;
        - the person responsible for performing the analyses;
        - the analytical techniques or methods used; and
        - the results of such analyses

15. When requested by the department, the permittee shall within a reasonable time furnish any information require by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevan facts were not submitted or were incorrect in the permit application or in any report to the department, suc facts or information shall be submitted or corrected promptly.

Permittee:	**I.D. Number:**	31-16-0003-23, 24
	Permit/Certification Number:	AO16-144609
Jefferson Smurfit Corporation	**Date of Issue:**	February 24, 1989
	Expiration Date:	December 31, 1993
	Revised:	

SPECIFIC CONDITIONS:

1. Permittee shall notify the Bio-Environmental Services Division (BESD) fifteen (15) days prior to source testing in accordance with Rule 17-2.700(2)(a)5., Florida Administrative Code (FAC), and Rule 2.501, Jacksonville Environmental Protection Board (JEPB).

2. Copies of the test report(s) shall be submitted to BESD within forty-five (45) days of completion of testing in accordance with Rule 17-2.700(7)(b), FAC, and Rule 2.501, JEPB.

3. Testing of emissions shall be accomplished at a minimum of 90% of the permitted capacity. If testing is performed at a rate less than 90% of the permitted capacity, operation shall be limited to a maximum of 110% of the tested capacity until such time as an acceptable test is performed at a minimum of 90% of the permitted capacity. When operation is restricted to a lower capacity because of testing at such a level, BESD, upon advanced notification, will allow operation at higher capacities if such operation is for demonstrating compliance at a higher capacity.

4. Any revision(s) to a permit (and application) shall be submitted and approved prior to implementing.

5. Control equipment shall be provided with a method of access that is safe and readily accessible.

6. Stack sampling facilities shall be required and shall comply with the requirements of Rule 17-2.700(4), FAC, and Rule 2.207, JEPB.

7. Permittee shall submit an annual operation report to BESD for this source on the form supplied for each calendar year on or before March 1 in accordance with Rule 17-4.140, FAC.

8. The following pollutant(s) shall be tested at intervals indicated from the date of April 1, 1988:

Pt. No.	Pollutant	Interval	Test Method
23	Particulate Matter (PM)	6 Months	EPA Reference Method (RM) 5*
	Visible Emissions (VE)	6 Months	EPA RM 9
	Total Reduced Sulfur (TRS)	12 Months	EPA RM 16/16A
	Sulfur Dioxide (SO_2)	Upon Request	EPA RM 6
24	PM	Upon Request	EPA RM 5
	VE	12 Months	EPA RM 9

*In accordance with 40 CFR 60.285

9. The applicable emission limiting rules shall be as follows:

Pt. No.	Pollutant	[1]FAC	[2]JEPB	Other
23	PM	17-2.660(2)	2.208	40 CFR 60.282(a)(3)
	VE	17-2.650(2)(c)9.a.	2.207	
	TRS	17-2.660(2)	2.208	40 CFR 60.283(a)(5)
	Objectionable Odors (OO)	17-2.620(2)	2.205(a)	376.110 Ordinance Code
	SO_2	17-2.500(2)(d)4.	-	
24	PM	17-2.650(2)(c)11.b.(ii)	2.207	
	VE	17-2.650(2)(c)11.b.(i)	2.207	

10. The maximum allowable emissions shall be as follows:

Pt. No	Pollutant	lbs/hr	T/yr	Other	Opacity
23	*PM (Gas-fired)	10.75	47.1		
	*PM (Oil-fired)	21.30	93.3		
	VE				10%
	*TRS (Gas-fired)	0.80	3.49	8 ppm (dry basis)	
	*TRS (Oil-fired)	0.78	3.39	8 ppm (dry basis)	
	OO			None Allowed	
	SO_2	8.33	36.5		
24	PM	0.15	0.65		
	VE				5%

*Emissions are corrected to 50% oxygen

11. Operation shall be limited to 8760 hours per year.

12. All vehicular deliveries of purchased lime to the lime silo shall be verifiable on a per month basis. On an annual basis, the amount of purchased lime shall be submitted as part of the annual operating report (AOR) to Jacksonville's Bio-Environmental Services Division (BESD).

13. The sulfur content of liquid fossil fuel burned in the lime kiln shall not exceed 2.50 percent, by weight, as determined by EPA Method 19.

14. A total reduced sulfur continuous emissions monitoring system shall be installed, certified, operated and maintained pursuant to the provisions of FAC Rules 17-2.660(3)(e), 17-2.660(4)(b), 17-2.710(3)(b), and 40 CFR 60.13, 40 CFR 60.284, 40 CFR 60 Appendix A, and 40 CFR 60 Appendix B.

15. A total reduced sulfur emissions report shall be provided to the department or its designee (BESD) on a quarterly basis pursuant to the provisions of FAC Rules 17-2.660(3)(a) and 17-2.710(4) and 40 CFR 60.7 and 40 CFR 60.284.

Note: 40 CFR 60.7 and 40 CFR 60.284 as adopted by the department require quarterly reporting.

16. Excess emissions of total reduced sulfur shall be determined quarterly pursuant to FAC Rule 17-2.710(4)(c); and 40 CFR 60.284.

17. The causticizing system shall be subject to the provisions of FAC Rule 17-2.250, Excess Emissions.

18. The fuel input to the lime kiln shall not exceed 345 gallons per hour and 3.0222 million gallons per year when liquid fossil fuel is burned; and, 54,644 cubic feet per hour and 478.681 million cubic feet per year when gaseous fossil fuel is burned. Fuel consumption by type shall be verifiable on a per month basis. On an annual basis, fuel consumption by type shall be reported in the AOR and submitted to BESD.

19. Lime production by the lime kiln shall not exceed 9.17 tons per hour, 220 tons per day, and 80,329.2 tons per year. Lime production shall be verifiable on an hourly, daily, and per month basis. On an annual basis, lime production shall be reported in the AOR and submitted to BESD.

20. Input to the lime silo shall not exceed a total of 15.00 tons per hour of lime feed from either, or both, the lime kiln and the delivery of purchased lime. The deliveries of purchased lime shall be verifiable on an hourly, daily, and per month basis. The annual amount of purchased lime shall be reported in the AOR and submitted to BESD.

21. The lime kiln shall demonstrate compliance with the permitted emissions limits pursuant to the provisions of Rule 17-2.600(3)(b) and 40 CFR 60.8 while:

    a. Operating at production rate of 9.17 tons per hour calcium oxide, burning 345 gallons per hour of liquid fossil fuel, and burning 714.53 pounds per hour (590.93 pounds per hour per day) or 10,415 cubic feet per hour @ 68°F (7,770 cubic feet per hour at dry standard conditions and 68°F) of total reduced sulfur gases from the NSPS multiple effect evaporators.

    b. Operating at a production rate of 9.17 tons per hour calcium oxide, burning 54,644 cubic feet per hour @ 68°F of gaseous fossil fuel, and burning 714.53 pounds per hour (590.93 pounds per hour dry) or 10,415 cubic feet per hour @ 68°F (7,770 cubic feet per hour at dry standard conditions and 68°F) of total reduced sulfur gases from the NSPS multiple effect evaporators. The permittee shall satisfy the requirements of this condition when gaseous fossil fuel becomes a fuel for lime kiln production. The permittee shall notify BESD when gaseous fossil fuel becomes a fuel for lime kiln production.

22. Upon receipt of an operation permit for the lime kiln and the lime silo, the permit number AO16-25922 for lime kiln No. 1 and permit number AO16-25924 for lime kiln No. 2 shall be immediately surrendered to the department.

23. Unconfined emissions of particulate matter during construction and operation of the lime kiln and lime silo shall comply with the provisions of FAC Rule 17-2.610(3). Reasonable precautions that might be taken shall include, but are not limited to:

    a) Reduced speeds for vehicular traffic.
    b) Use of liquid resinous adhesives or other liquid dust suppressants or wetting agents.

c) Use of paving or other asphaltic materials.
d) Removal of particulate matter from paved roads and/or other paved areas by vacuum cleaning or otherwise by wetting prior to sweeping.
e) Covering of trucks, trailers, front end loaders, and other vehicles or containers to prevent spillage of particulate matter during transport.
f) Use of mulch, hydroseeding, grassing and/or other vegetative ground cover on barren areas to prevent or reduce windblown particulate matter.
g) Use of hoods, fans, filters, and similar equipment to contain, capture, and vent particulate matter.
h) Enclosure or covering of conveyor systems.

24. The introduction of TRS gases into No. 3 lime kiln from any source other than the presently permitted NSPS multiple effect evaporator system and NSPS batch digester system shall require an amendment to this permit prior to the actual introduction of the TRS gases.

Note: In accordance with Specific Condition 16, Batch Digester System AC16-141869.

25. All process equipment, except for the lime silo, that will be a part of the operational causticizing system shall be vented to the lime kiln.

26. In accordance with FAC Rule 17-2.240, Circumvention, no person shall circumvent any air pollution control device, or allow the emissions of air pollutants without the applicable pollution control device operating properly.

27. In accordance with FAC Rule 17-2.610(3), Unconfined Emissions of Particulate Matter, pollutant abatement equipment must be operating properly during operational production.

28. In accordance with FAC Rule 17-2.650(2)(e), Circumvention, no owner or operator of a source subject to the requirements of FAC Rules 17-2.600 or 17-2.650(c) establishing maximum concentrations of particulate matter in the exhaust gas from the source shall circumvent the provisions of an applicable emission limitation by increasing the volume of gas in any exhaust or group of exhausts for the purpose of reducing the stack gas concentration. This includes allowing diluted air to enter the system through leaks, open vents, or similar means.

29. The lime handling system, i.e., conveyors, chutes, elevators, and storage bins, shall be enclosed and negative pressure maintained within the enclosure.

30. Failure of a control system(s) to meet the applicable and maximum allowable pollutant emission limiting standard and limit shall not be grounds for requesting a variance or relaxation of that standard and limit.

31. In accordance with 40 CFR 60.284(b)(2)(i) and (ii), the owner or operator of the lime kiln's scrubber emission control device shall install, calibrate, main, and operate:

a) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the control equipment. The monitoring device is to be certified by the manufacturer to be accurate to within a gauge pressure of ±500 pascals (ca. ±2 inches water gauge pressure).

b) A monitoring device for the continuous measurement of the scrubbing liquid supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within ±15 percent of design scrubbing liquid supply pressure. The pressure sensor or tap is to be located close to the scrubber liquid discharge point. The Administrator may be consulted for approval of alternative locations.

32. The owner or operator of the lime kiln scrubber emission control device shall comply with the provisions of 40 CFR 60.284(c)(1), (2), and (3).

33. The fuel flow gauge in the fuel lines, i.e. fuel oil and natural gas, and the gas flow gauge in the line carrying TRS-laden gases from the MEE shall be maintained in operable condition on a continuing basis; the flow measurements shall be recorded and be made available for inspection to a BESD or DER representative.

DRAFT

City of Jacksonville
Department of Health, Welfare, and
Bio-Environmental Services

DRAFT

James L. Manning, P.E., Deputy Director

State of Florida
Department of Environmental Regulation

Ernest E. Frey, Deputy Assistant Secretary

[1]Florida Administrative Code
[2]Jacksonville Environmental Protection Board

P 274 010 478

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to J. F. Mixson, V.P. ~~Jefferson Smurfit Corp.~~	
Street and No. P.O. Box 150	
P.O., State and ZIP Code Jacksonville, FL 32201	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date Mailed: 01-07-88 Permit: AC 16-142989	

PS Form 3800, June 1985 ☆ U.S.G.P.O. 1985-480-794

PS Form 3811, July 1983 447-845

SENDER: Complete items 1, 2, 3 and 4.

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. XX Show to whom, date and address of delivery.
2. ☐ Restricted Delivery.
3. Article Addressed to: Mr. J. F. Mixson
   Vice-President and General Mgr.
   Jefferson Smurfit Corporation
   1915 Wigmore Street
   P.O. Box 150
   Jacksonville, FL 32201

4. Type of Service:	Article Number
☐ Registered ☐ Insured XX Certified ☐ COD ☐ Express Mail	P 274 010 478

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
   X
6. Signature – Agent
   X A. Smothers 1-12-88
7. Date of Delivery
   1/12/88
8. Addressee's Address *(ONLY if requested and fee paid)*

DOMESTIC RETURN RECEIPT

File Copy

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

BOB MARTINEZ
GOVERNOR

DALE TWACHTMANN
SECRETARY

January 7, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. Franklin Mixson
Vice President and General Manager
Jefferson Smurfit Corporation
1915 Wigmore Street
Post Office Box 150
Jacksonville, Florida 32201

Dear Mr. Mixson:

Re: Completeness Review of Application to Construct/Modify No. 3 Lime Kiln/Lime Silo: AC 16-142989

The Department received your cover letter and application package dated December 8, 1987, on December 9, 1987. Based on a technical review, the above referenced application package has been deemed incomplete. The following information, including calculations, assumptions and reference material, will have to be submitted to the Department's Bureau of Air Quality Management (BAQM) before the status can again, be ascertained.

1. Since the Department has already relied on the contemporaneous emission decreases from the Nos. 1 and 2 lime kilns for issuing the construction permit for the No. 3 lime kiln/lime silo (AC 16-095614) pursuant to Florida Administrative Code (FAC) Rules 17-2.500 and 17-2.510 and there are no provisions for banking contemporaneous emissions contained in FAC Rule 17-2, contemporaneous emissions from the Nos. 1 and 2 lime kilns are no longer usable. Therefore, Table A-1 should be revised.

2. Were the Nos. 1 and 2 lime kilns forced or induced draft type? Is the No. 3 lime kiln a forced or induced draft type? Also, were the kiln leaks part of the operational design for the Nos. 1 and 2 lime kilns and, if so, please substantiate? Are kiln leaks part of the operational design of the No. 3 lime kiln and, if so, please provide the design documents to substantiate?

3. Regarding kiln leaks, where did the estimated factor of 1/1000 (Nos. 1 and 2 lime kilns) and 1/10,000 (No. 3 lime kiln) of the total air flow rate come from?

4. Regarding kiln leaks, the quantification of these unconfined emissions from the Nos. 1, 2, and 3 lime kilns is not

adequate and reasonable assurance is not provided such that contemporaneous credit is not justifiable. If you can substantiate the losses through previous testing or other acceptable means, the Bureau will review and consider the proposal.

5. Pursuant to paragraph 3 on page A-5 and unless the permitted (allowable) pollutant emissions have been subjected to review pursuant to FAC Rules 17-2.500(5) or 17-2.510(4), New Source Review, then the changes in the actual pollutant emissions of any source are subject to review. If any source or system will be affected by this modification request, please calculate the net changes of all pollutants on a per source or system basis.

6. Since the tons per day of air dried unbleached pulp (ADUP) in the proposed new batch digester system is increasing from 1087 (interim operating permit (IOP) - existing batch digester system) to 1250, the net change in the TRS emissions and its equivalent SO_2 emissions will have to be reviewed pursuant to FAC Rule 17-2.500. Please submit this analysis.

7. Where did the SO_2 emission factor of 0.2 lb/ton ADUP come from? Please substantiate. During the initial compliance testing or subsequent testing of the No. 3 lime kiln, was a test done to evaluate SO_2 emissions? If so, what were the final results and please provide such results? What is the SO_2 emission factor on a per ton of lime produced?

8. What is the maximum potential SO_2 emissions from the use of fuel oil? What is the net change from the previous permitted level?

9. On the initial compliance test(s) or subsequent test(s), did the mill test the No. 3 lime kiln for VOC, NOx and CO? If so, please provide the results. Also, recalculate the projected annual emissions on these results, if tests were performed.

10. Contemporaneous emissions credit might be considered for the drag chain conveyors by quantifying the emissions associated with the appropriate RACT standard for similar type of operations, which is FAC Rule 17-2.650(2)(c)11. The emission limiting standards are 5% opacity (no visible emissions) and 0.03 gr/dscf. Therefore, if you can quantify the pollutant

emissions pursuant to these standards, then the Bureau will review and consider the proposal. Otherwise, contemporaneous emissions credit does not appear justifiable and Table C-1 should be revised.

11. If, after revising Tables A-1 and C-1, the total net change in any pollutant is significant pursuant to Table 500-2, FAC Rule 17-2, please submit the appropriate analysis for each affected pollutant pursuant to FAC Rule 17-2.500(5) or FAC Rule 17-2.510(4). If necessary, submit the appropriate fee according to the potential pollutant emissions (worst case pollutant) less the $100.00 already submitted.

12. Please address all of the comments provided by the BESD, which is attached. If any response or question is repetitive, please only respond once and reference it any subsequent response required.

If there are any questions, please call Bruce Mitchell at (904)488-1344, or write to me at the above address.

Sincerely,

C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/ks

Attachment

cc: J. Woosley, BESD
B. Pittman, Esq.
J. Cox, JSC
D. Buff, P.E., KBN

PM
29 Dec 1987
Jacksonville, FL

file Copy

DEPARTMENT OF HEALTH, WELFARE
& BIO-ENVIRONMENTAL SERVICES
Bio-Environmental Services Division
Air and Water Pollution Control

December 22, 1987

Mr. Claire Fancy, P.E.
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Bldg.
Tallahassee, Florida 32077

DER
DEC 31 1987
BAQM

Re: Jefferson Smurfit Corporation
Lime Kiln No. 3
Construction Permit Application - Dated December 8, 1987
AC 16- 142989

Dear Mr. Fancy:

The Bio-Environmental Services Division (BESD) provides the following comments on the captioned permit application.

1. Page 5, Paragraph 1:
Particular attention should be given this paragraph. Emission credits already used cannot now be recalculated for this modification. In addition the request to only use a portion of the creditable emission reductions must be carefully studied to determine if this request is in accordance with current Environmental Protection Agency (EPA) and Department of Environmental Regulation (DER) regulations and policy.

2. Page 5 Paragraph 3:
The comment on year to year actual emission variability not being used in determining if a source is subject to new source review requirements does not appear to be in accord with the contemporaneous increase/decrease actual emission requirements. Nor does the modification definition appear to exclude these sources emissions in determining the contemporaneous emission increase/decrease(s).

3. Table I, Attachment B and C:
The above tables and paragraphs provide calculations and rational for determining contemporaneous increase/decrease of particulate matter at the mill from the lime processing area. The information presented on the new lime processing system appears in order, however, the following comments are provided on the existing system:

   A. Existing Kiln Leaks: Quantifying the leaks at this time is very questionable and is not supportable by testing data or generally accepted emission data. The fugitive gas leakage determination is strictly a guesstimate and should not be considered quantifiable fugitive emissions.

12-31-87

~~CHF~~ ~~BE~~ > FYI

B. Existing Lime Slaker: Although this source was not permitted the information presented appears to be reasonable and should be given consideration for inclusion in the contemporaneous emissions calculations.

C. Existing Lime Bins-Conveying, Transferring and Storage: Although this material handling operation was not permitted, the general concept proposed seems reasonable. The exception taken to the calculations presented are to the Drag Chain Conveyor (DCC) and Waste Lime Disposal (WLD). The DCC estimations are very rough and should not be considered as quantifiable fugitive emissions. WLD drop height seems excessive and should be verified or credit be given for only a maximum drop height of 5 feet.

If BESD may be of further assistance in this matter, please advise.

Very truly yours,

Jerry E. Woosley

Jerry E. Woosley
Associate Pollution Control Engineer

JEW/ecr

cc: Mr. Bill Stewart, P.E., DER
Mr. Gene Tonn, P.E., JSC
BESD File 1010-N
Disc 1, 48

Copied: Bruce Mitchell } 12.31.87
CHF | BT

BIO-ENVIRONMENTAL SERVICES
Air and Water Pollution Control
515 West 6th Street
Jacksonville, Florida 32206-4397

CITY OF JACKSONVILLE, FLORIDA

Mr. Claire Fancy, P.E.
Department of Environmental Regulation
2600 Blair Stone Road
Twin Towers Office Bldg.
Tallahassee, Florida 32077

Federal Express
Mailed 12/8/87

File Copy

JEFFERSON SMURFIT CORPORATION
401 ALTON STREET, P.O. BOX 276
ALTON, ILLINOIS 62002-2276
618/463-6000

Reply to: **Containerboard Mill Division**
1915 WIGMORE STREET
P.O. BOX 150
JACKSONVILLE, FL 32201
TELEPHONE: 904/353-3611

December 8, 1987

DER
DEC 9 1987
BAQM

RECEIVED
DER - MAIL ROOM
1987 DEC -9 AM 10: 12

By Federal Express

Mr. Clair Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
Florida Department of Environmental Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Jefferson Smurfit Corporation
No. 3 Lime Kiln Permit AC16-095614

Dear Mr. Fancy:

Enclosed are 4 copies of the application to modify the subject permit. Also enclosed is a check for $100 to cover the fee for filing the application.

The purpose of this application is to increase the maximum operating rate of the No. 3 Lime Kiln from 220 TPD to 275 TPD and to correct the allowance for fuel consumption per ton of lime produced. There are no physical or process changes to the kiln, and the only other changes in the application are the changes in permitted emissions resulting from the rate increase. This rate increase will have no effect on any other operation within the JSC facility.

The emissions analysis for PSD applicability for the construction permit has been revised to correct errors of omission, the usage of improper emission factors, and to include the requested rate. In addition, the increase in rate has been presented as if this were one project. This is as directed in EPA's correspondence and as discussed with BAQM staff. Also, although not required by Florida regulations, PM10 emissions have been included. The analysis clearly shows that PSD review is not applicable.

This application is being filed after extensive and intensive discussion with BAQM staff. We believe the application follows the guidance from these discussions, provides all of the information necessary to issue the permit, and meets the test for completeness. Therefore, we respectfully request expeditious processing and we anticipate your early favorable response. In order to facilitate early approval of the application, if you have any questions, please call Mr. Jerry Cox at (904) 353-3611.

Copied: BT ICHF - 12/15/87 mb

Very truly yours,

J. F. Mixson

J. Franklin Mixson
Vice President and
General Manager

cc: Khurshid Mehta, P.E. - BESD

28

F

00

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL NUMBER [redacted]7157[redacted]

70438M

[redacted]

DATE 12/8/87

AIRBILL NUMBER [redacted]7157[redacted]

1 From (Your Name): Mr. E. T. Tenni | Your Phone Number (Very Important): (904) 353-3611

Company: JEFFERSON SMURFIT CORP | Department/Floor No.

Street Address: 1915 WIGMORE STREET

City: JACKSONVILLE | State: FL | **ZIP** Required For Correct Invoicing: 32206

2 To (Recipient's Name): Mr. Claire Fancy, P.E. | Recipient's Phone Number (Very Important): ( )

Company: Florida Dept of Environmental Regulation | Department/Floor No.

Exact Street Address (Use of P.O. Boxes or P.O. ® Zip Codes Will Delay Delivery And Result In Extra Charge.): 2600 Blair Stone Rd.

City: Tallahassee | State: FL | **ZIP** Street Address Zip Required: -2400

3 **YOUR BILLING REFERENCE INFORMATION (FIRST 24 CHARACTERS WILL APPEAR ON INVOICE.)**

PAYMENT ☒ Bill Sender ☐ Bill Recipient's FedEx Acct. No. ☐ Bill 3rd Party FedEx Acct. No. ☐ Bill Credit Card ☐ Cash

[redacted]

H **HOLD FOR PICK-UP AT THIS FEDERAL EXPRESS LOCATION:** Street Address (See Service Guide or Call 800-238-5355)

City | State

ZIP ® Zip Code of Street Address Required

4 **SERVICES CHECK ONLY ONE BOX**

1 ☒ **PRIORITY 1** Overnight Delivery Using Your Packaging

6 ☐ **OVERNIGHT LETTER*** (Our Packaging) 9½"x12½"

OVERNIGHT DELIVERY USING OUR PACKAGING

2 ☐ Courier-Pak Overnight Envelope* 12"x 15½"

3 ☐ Overnight Box 12¼"x 17½"x 3" A ☐

4 ☐ Overnight Tube 38"x 6"x 6"x 6" B ☐

*Declared Value Limit $100.

STANDARD AIR

5 ☐ Delivery not later than second business day

SERVICE COMMITMENT

PRIORITY 1 - Delivery is scheduled early next business morning in most locations. It may take two or more business days if the destination is outside our primary service areas.

STANDARD AIR - Delivery is generally next business day or not later than second business day. It may take three or more business days if the destination is outside our primary service areas.

DELIVERY AND SPECIAL HANDLING CHECK SERVICES REQUIRED

1 ☐ **HOLD FOR PICK-UP** (Fill in Section H at right)

2 ☒ **DELIVER WEEKDAY**

3 ☐ **DELIVER SATURDAY** (Extra charge)

4 ☐ **DANGEROUS GOODS** (P-1 and Standard Air Packages only. Extra charge)

5 ☐ **CONSTANT SURVEILLANCE SERVICE (CSS)** (Extra charge) (Do Not Complete Section 5)

6 ☐ **DRY ICE** ______ Lbs.

7 ☐ **OTHER SPECIAL SERVICE** ______

8 ☐

9 ☐ **SATURDAY PICK-UP** (Extra charge)

10 ☐

PACKAGES	WEIGHT	YOUR DECLARED VALUE	OVER SIZE
1	6 LBS		
	LBS		
	LBS		
	LBS		
Total 1	Total 6	Total	

Received At: 1 ☐ Regular Stop 2 ☐ On-Call Stop 3 ☐ Drop Box 4 ☐ B.S.C. 5 ☐ Station

Federal Express Corp. Employee No.

Date/Time For Federal Express Use

5 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Emp. No. | Date

☐ Cash Received

☐ Return Shipment

☐ Third Party ☐ Chg. To Del. ☐ Chg. To Hold

Street Address

City | State | Zip

Received By:

X

Date/Time Received | FedEx Employee Number

Federal Express Use
Base Charges
Declared Value Charge
Origin Agent Charge
Other
Total Charges

PART #106001 FEC-S-751-1000 REVISION DATE 10/86 PRINTED U.S.A. WCSE

RECIPIENT'S COPY

Subcode: 15 $100.00

AC16-142989

Receipt # 117506

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

DER

DEC 09 1987

BAQM

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: No. 3 Lime Kiln [ ] New[1] [XX] Existing[1]

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

COMPANY NAME: Jefferson Smurfit Corporation COUNTY: Duval

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) No.3 Lime Kiln/Lime Silo

SOURCE LOCATION: Street 1915 Wigmore Street City Jacksonville

UTM: East Zone 17: 439.8 North 3359.4

Latitude 30 ° 22 ' 00 "N Longitude 81 ° 37 ' 30 "W

APPLICANT NAME AND TITLE: J. F. Mixson, Vice-President and General Manager

APPLICANT ADDRESS: P.O. Box 150, Jacksonville, Florida 32201

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Jefferson Smurfit 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: J. F. Mixson

J. F. Mixson, Vice-President and General Manager

Name and Title (Please Type)

Date: 12-8-87 Telephone No. (904) 353-3611

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)

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)

KBN Engineering and Applied Sciences, Inc.

Company Name (Please Type)

P.O. Box 14288, Gainesville, Florida 32604

Mailing Address (Please Type)

Florida Registration No. 19011 Date: 12-7-87 Telephone No. (904) 375-8000

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 Attachment A

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

Start of Construction upon permit issuance Completion of Construction 6 months after permit issuance

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.)

Venturi scrubber: $580,000

Lime silo baghouse: $55,000

TRS collection system including ductwork: $375,000

TRS monitoring system: $250,000

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

Permit: AC 16-095614

Issued: 10/1/85

Expires: 4/30/88

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) Not Applicable

1. Is this source in a non-attainment area for a particular pollutant? _____

   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. _____

3. Does the State "Prevention of Significant Deterioriation" (PSD) requirement apply to this source? If yes, see Sections VI and VII. _____

4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? _____

5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this scurce? _____

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	Contaminants		Utilization Rate - lbs/hr	Relate to Flow Diagram
	Type	% Wt		
Lime mud	Particulate	100	57,300	A
Lime from kiln	Particulate	100	22,920	B
Purchased Lime	Particulate	100	42,400	C

B. Process Rate, if applicable: (See Section V, Item 1) To Lime Silo
From Kiln: 22,920
From Truck: 42,400

1. Total Process Input Rate (lbs/hr): 57,300 lime mud

2. Product Weight (lbs/hr): 22,920 lime

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	
PM(TSP)	31.2	136.7	0.13 gr/dscf*	31.2	31.2	136.7	D
PM10	30.7	134.4	NA	NA	30.7	134.4	D
TRS	1.2	5.3	8 ppm, dry*	1.2	1.2	5.3	D
SO_2	10.4	45.6	NA	NA	10.4	45.6	D
NO_x	86.5	378.9	NA	NA	86.5	378.9	D

*Corrected to 10% O_2

[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).

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		

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/hr	T/yr	
CO	34.4	13.8	NA	NA	34.4	13.8	D
VOC	7.0	20.7	NA	NA	7.0	20.7	D
PM(TSP)	0.15	0.66	NA	0.15	0.15	0.66	E
PM10	0.15	0.66	NA	NA	0.15	0.66	E

[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).

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles Size Collected (in microns) (If applicable)	Basis for Efficiency (Section V Item 5)
Airpol Venturi Scrubber	Particulates	99.3%	Submicron and above	See Att.D
	TRS	50%	NA	See Att.D
Lime Silo Baghouse:	Particulate	99.9 %	Submicron and above	See Att.D

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
No.6 Fuel Oil	430	535 gal/hr	78.62
Natural gas	0.063	0.07862	78.62

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

Fuel Analysis: No.6 Fuel Oil

Percent Sulfur: 2.5% max Percent Ash: 0.1 typical

Density: 8.1 lbs/gal Typical Percent Nitrogen: 0.5 typical

Heat Capacity: 18,150 BTU/lb 147,000 BTU/gal

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

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

Annual Average Not Applicable Maximum _____

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

All liquid wastes are recycled back into process. Small amounts of solid waste from the dregs filter and lime slaker are disposed of in an existing on-site landfill

Lime Kiln Scrubber/Lime Silo Baghouse

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 199/85 ft. Stack Diameter: 4.5/1.1 ft.

Gas Flow Rate: 38,256/600 ACFM 23,725/570 DSCFM Gas Exit Temperature: 153/Ambient °F.

Water Vapor Content: 28/5 % Velocity: 40.1/16.7 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 B
3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).
   See Attachment B
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 D
5. With construction permit application, attach derivation of control device(s) efficiency. Include test or design data. Items 2, 3 and 5 should be consistent: actual emissions = potential (1-efficiency).
   See Attachment D
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 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).
   Attached
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.
   Attached

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

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.

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

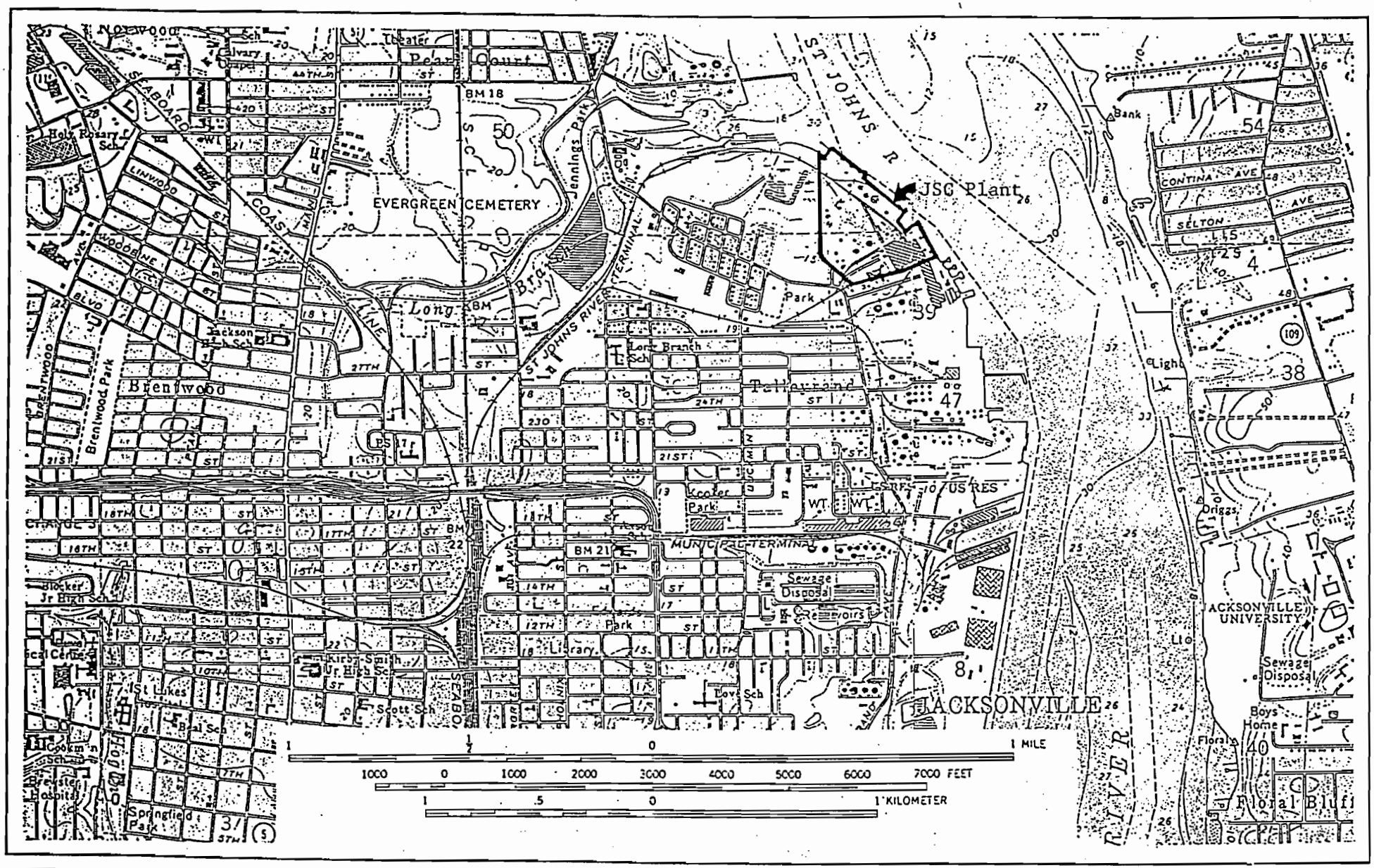
E. Emission Data Used in Modeling

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.

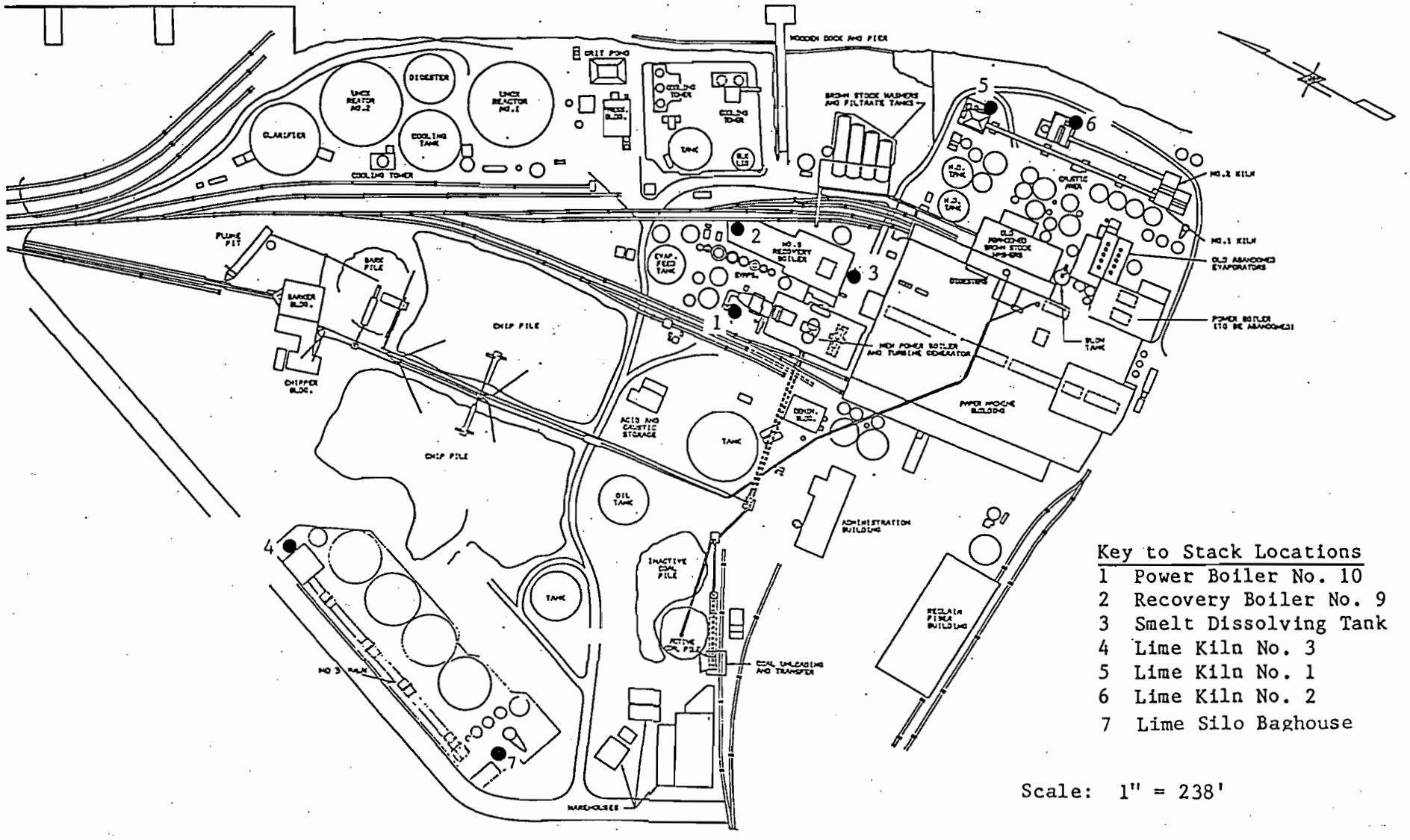
G. Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

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.



Site Location Map of Jefferson Smurfit Corporation

KBN



Key to Stack Locations

1 Power Boiler No. 10
2 Recovery Boiler No. 9
3 Smelt Dissolving Tank
4 Lime Kiln No. 3
5 Lime Kiln No. 1
6 Lime Kiln No. 2
7 Lime Silo Baghouse

Scale: 1" = 238'

Plot Plan of Jefferson Smurfit Facility and Stack Locations

KBN

ATTACHMENT A

PROJECT DESCRIPTION

1.0 INTRODUCTION

Jefferson Smurfit Corporation (JSC) of Jacksonville, Florida is requesting an increase in the permitted capacity of the No. 3 Lime Kiln from 220 tons per day (TPD) of lime to 275 TPD of lime. The lime kiln is now operating under the Florida Department of Environmental Regulation (FDER) Construction Permit No. AC16-095614, which was issued on October 1, 1985 and modified on November 14, 1986. Associated with the proposed increase in lime production capacity of the No. 3 Lime Kiln will be an increase in the maximum process rate of the Lime Silo.

A complete, new construction permit application has been prepared to support the requested production rate increase. This permitting approach was considered to be the best for several reasons. First, the new No. 3 Lime Kiln is still operating under the construction permit issued by the FDER. An operating permit has not yet been issued. Secondly, review of the basis of the emission rates for several pollutants revealed that more appropriate emission factors should have been used to estimate maximum emissions. As a result, the basis for all regulated pollutant emissions have been reviewed, and revised emission estimates are presented in Attachment B. The requested higher production rate results in minor changes to the information presented in the original application. A flow diagram of the process is presented in Figure A-1.

The No. 3 Lime Kiln at JSC replaced two old, inefficient lime kilns which previously supported the pulp manufacturing operation. The old lime bins, slaker, and associated causticizing equipment were also replaced. Emission reductions from the shutdown of these sources have been developed and are presented in Attachment C. Creditable emission reductions from several of these sources, such as the lime bins and lime slaker, were not quantified in the original application for the No. 3 Lime Kiln.

A comparison of the emission increases from the No. 3 Lime Kiln system and the contemporaneous emission reductions at the JSC facility was performed to determine Prevention of Significant Deterioration (PSD) and nonattainment area (NA) new source review applicability. The applicable rules of FDER and the U.S. Environmental Protection Agency (USEPA) were considered in developing the PSD source applicability analysis. This analysis is presented in Section 2.0 which follows.

This application also requests approval to vent non-condensible total reduced sulfur (TRS) gases from the proposed new digesting system at JSC to the No. 3 Lime Kiln for incineration. Design information related to the TRS gases expected from the new digesting system were presented in the air construction permit application for the digesting system submitted recently to FDER. Additional information is provided in Attachment D to this application for the No. 3 Lime Kiln.

2.0 NEW SOURCE REVIEW APPLICABILITY

A comparison of the maximum annual emissions from the No. 3 Lime Kiln system, operating at 275 TPD, and the creditable emission offsets from the shutdown of the old equipment, is presented in Table A-1. Also shown are the net changes in emissions resulting from the project. The net emissions increases were based upon the definition of "net emissions increase" in Rule 17-2.500(2)(e)1, which reads:

> A modification to a facility results in a net emissions increase when, for a pollutant regulated under the Act, the sum of all of the contemporaneous creditable increases and decreases in the actual emissions of the facility, including the increase in emissions of the modification itself and any increases and decreases in quantifiable fugitive emissions, is greater than zero.

The definition of "net emissions increase" under the NA new source review rules [Rule 17-2.510(2)(e)1] is essentially identical to the above definition.

As indicated in Table A-1, the No. 3 Lime Kiln project results in net increases in emissions which are all below the PSD and NA new source review significant emission rates. The PSD and NA new source review significant emission rates are defined in FAC, Rule 17-2.500 and Rule 17-2.510. Since the net emission increases resulting from the project are all less than the significant emission rates for all pollutants, the No. 3 Lime Kiln system is not subject to PSD/NA new source review.

The last line of Table A-1 shows the "unused" emission reductions which can be credited towards future projects at JSC, within the defined contemporaneous period. The basis for this conclusion lies in the definition of "contemporaneous emissions changes" and "creditable emissions changes". "Contemporaneous emissions changes" is defined in Rule 17-2.500(2)(e)3 as:

> An increase in the actual emissions or in the quantifiable fugitive emissions of a facility is contemporaneous with a particular modification if it occurs within the period beginning five years prior to the date on which the owner or operator of the facility submits a complete application for a permit to modify the facility and ending on the date on which the owner or operator of the modified facility projects the new or modified sources to begin operation. The date on which any increase in the actual emissions or in the quantifiable fugitive emissions of the facility occurs is the date on which the owner or operator of the facility begins, or projects to begin, operation of the source(s) resulting in the increase. The date on which any decrease in the actual emissions or in the quantifiable fugitive emissions of the facility occurs is the date on which the owner or operator of the facility completes, or is committed to complete through a federally enforceable permit condition, a physical change in or change in the method of operation of the facility resulting in the decrease.

The definition of "contemporaneous emissions decreases" under NA new source review requirements, Rule 17-2.510(2)(e)3, is identical to the above definition.

In regards to a request to modify the No. 3 Lime Kiln permit, the associated contemporaneous period would begin five years prior to the date on which JSC submits a complete application to modify the source. Assuming a complete application is submitted by January 1, 1988, the contemporaneous period would extend back to at least January 1, 1983. The contemporaneous period would end when the new No. 3 Lime Kiln begins operating at the higher production rate. Within this period, Lime Kilns 1 and 2 and the old causticizing system will have shut down as required by the federally enforceable No. 3 Lime Kiln construction permit. Therefore, all of the emissions reductions from the Nos. 1 and 2 Lime Kilns and old causticizing system, as shown in Table A-1, have occurred during the "contemporaneous" period associated with this request to modify the No. 3 Lime Kiln permit.

Concerning "creditable emissions changes", Rule 17-2.500(4)(a) requires that:

> An increase or decrease in the actual emissions or in the quantifiable fugitive emissions of a facility is creditable if:
>
> (i) The Department has not relied on it in issuing a permit under the provisions of Rule 17-2.500 or EPA has not relied on it in issuing a permit under the provisions of 40 CFR 52.21, which permit is in effect when the increase in emissions of the modification occurs; or
>
> (ii) The Department has not relied on it in demonstrating attainment, defining reasonable further progress, or issuing a permit under the provisions of Rule 17-2.17 (repealed), 17-2.510, or 17-2.650, which permit is in effect when the increase in emissions of the modification occurs.

Rule 17-2.500(e)(4)(c)(ii) further requires that a decrease in emissions be federally enforceable in order to be creditable. Rule 17-2.510(e)(4) provides requirements for nonattainment areas which parallel the above rules for attainment areas.

In issuing a new construction permit for the No. 3 Lime Kiln system at JSC, FDER only needs to rely on that portion of the creditable emission reductions which resulted in the net emissions increases being below the significant emission rates (and therefore not subject to new source review). Therefore, the unused emission reductions shown in Table A-1 are creditable reductions which can be used by JSC on a future modification, if the modification occurs within the contemporaneous time period.

Other sources operating normally under their respective permits at the JSC facility have not been included in the source applicability analysis. Changes in actual emissions at such sources are specifically excluded from the definition of modification by Rule 17-2.100(118). This rule defines "modification" as:

> Any physical change in, change in the method of operation of, or addition to a stationary source or facility which increases the actual emissions of any air pollutant regulated under this Chapter, including any not previously emitted, from any source or facility. A physical change in or change in the method of operation shall not include:
>
> > (b) An increase in the hours of operation or in production rate of a source, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975.

As a result, increases or decreases in actual emissions at other sources at JSC due to year-to-year variability are not considered in determining if the proposed modification is subject to new source review requirements, as long as such sources were operated within their respective permit limitations.

3.0 NSPS APPLICABILITY

The No. 3 Lime Kiln is subject to and will comply with the New Source Performance Standards for lime kilns under 40 CFR 60, Subpart BB. The following emission limitations must be met under the NSPS:

Particulate matter: 0.13 gr/dscf, corrected to 10% O_2, liquid fuel
0.067 gr/dscf, corrected to 10% O_2, gaseous fuel

Total reduced sulfur: 8 ppm by volume, dry basis, corrected to 10% O_2

The No. 3 Lime Kiln has been tested at the higher 275 TPD (11.46 TPH) production rate, and has demonstrated it can meet the NSPS limits.

4.0 PROCESS INPUT AND OUTPUT RATES

A. Lime Kiln

Maximum lime production rate = 275 TDP = 11.46 TPH

Production factor = 0.4 to 0.55 lb lime product/lb lime mud feed

Maximum lime mud feed rate = 11.46 TPH lime x lb lime mud/0.4 lb lime
= 28.65 TPH lime mud (dry)
= 57,300 lb/hr lime mud (dry)

B. Lime Silo

1. From Lime Kiln

Maximum loading rate from the kiln is the maximum lime kiln production rate of 11.46 TPH.

2. From Truck Unloading (purchased lime)

Maximum truck unloading rate of purchased lime is 42,400 lb/hr

5.0 HEAT INPUT AND FUEL CONSUMPTION RATES

Maximum heat rate = 6.86×10^6 Btu/ton lime produced

Maximum lime production = 275 TPD = 11.46 TPH

Maximum heat input rate = 6.86×10^6 Btu/ton lime x 11.46 TPH
= 78.62×10^6 Btu/hr

Minimum No. 6 Fuel Oil heating value = 147,000 Btu/gal

Minimum natural gas heating value = 1,000 Btu/scf

Maximum No. 6 Fuel oil consumption:

78.62×10^6 Btu/hr / 147,000 Btu/gal = 535 gal/hr

Maximum natural gas consumption:

78.62×10^6 Btu/hr / 1,000 Btu/scf = 78,620 scf/hr

Table A-1 Summary of Net Emission Changes, Jefferson Smurfit Corporation No. 3 Lime Kiln Project

Source	Annual Emissions (TPY)						
	PM	PM10	SO_2	TRS	CO	NO_x	VOC
PSD SIGNIFICANCE LEVEL	25	15	40	10	100	40	40
EMISSIONS FROM EXISTING SOURCES SHUT DOWN							
No. 1 and 2 Lime Kilns	113.0	111.1	26.9	94.2	12.3	401.1	13.0
Kiln Leaks	9.8	1.6	-	-	-	-	-
Slaker	3.8	3.6	-	-	-	-	-
Lime Conveying, Transfer & Storage	12.9	4.8	-	-	-	-	-
Subtotal	139.5	121.1	26.9	94.2	12.3	401.1	13.0
TOTAL EMISSIONS AVAILABLE FOR NEW SOURCES WITHOUT CAUSING PSD REVIEW	164.5	136.1	69.9	104.2	112.3	441.1	53.0
PROPOSED NEW SOURCES							
No. 3 Lime Kiln	136.7	134.4	45.6	5.3	13.8	378.9	20.7
Kiln Leaks	2.2	0.4	-	-	-	-	-
Lime Silo	0.7	0.7	-	-	-	-	-
Subtotal	139.6	135.5	45.6	5.3	13.8	378.9	20.7
UNUSED CONTEMPORANEOUS EMISSIONS REDUCTIONS AVAILABLE FOR FUTURE USE	24.9	0.6	24.3	98.9	98.5	62.2	32.3

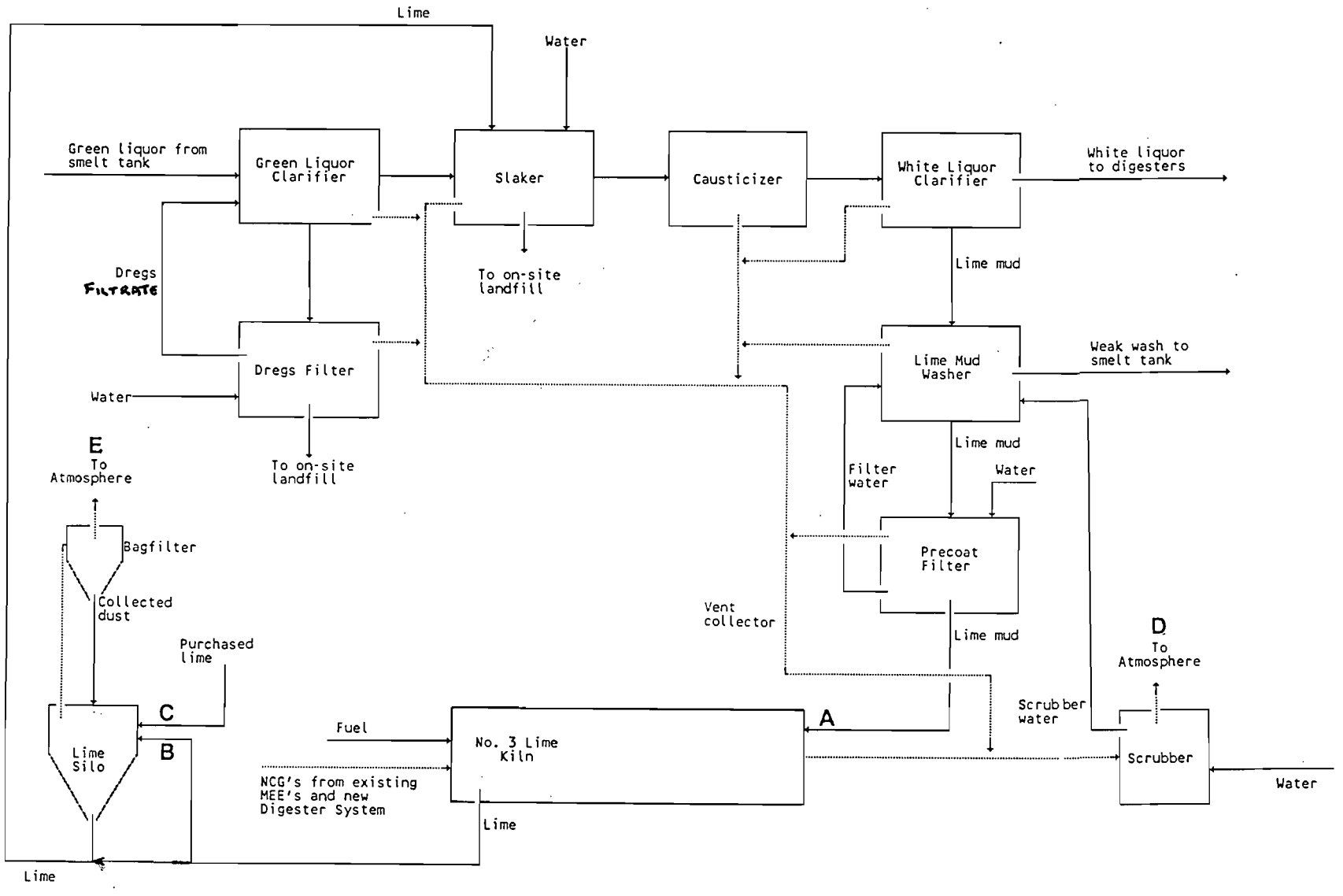


Figure A-1. Process Flow Diagram, No. 3 Lime Kiln System

Notes:
——— Material flow
····· Gas flow

ATTACHMENT B

BASIS FOR MAXIMUM EMISSIONS FROM NO.3 LIME KILN AND LIME SILO BAG FILTER

I. PARTICULATE MATTER

A. PM (TSP)

PM(TSP) represents total particulate matter emissions from the lime kiln. The NSPS for lime kilns at kraft pulp mills (40 CFR 60, Subpart BB) is 0.13 gr/dscf, corrected to 10% O_2, when burning fuel oil, and 0.067 gr/dscf, corrected to 10% O_2, when burning natural gas. The NSPS level will not be exceeded by the new kiln.

1. Maximum Hourly Emissions

Total gas flow from kiln @ 275 TPD lime and 6.86 x 10^6 Btu/ton lime:

No. 6 Fuel oil - 14,687 dscfm @ 0% O_2

= 28,039 dscfm @ 10% O_2

PM(TSP) = 28,039 dscfm x 0.13 gr/dscf / 7,000 gr/lb x 60 min/hr

= 31.2 lb/hr

Natural gas - 14,058 dscfm @ 0% O_2

= 26,838 dscfm @ 10% O_2

PM(TSP) = 26,838 dscfm x 0.067 gr/dscf / 7,000 gr/lb x 60 min/hr

= 15.4 lb/hr

2. Maximum Annual Emissions

Maximum annual emissions are based upon emitting at the maximum hourly rate for each hour of the year:

31.2 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 136.7 TPY

B. PM10

That fraction of PM(TSP) which has an aerodynamic particle size diameter of 10 um and less is referred to as PM10. AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to PM10 emissions from lime kilns controlled by a venturi scrubber. The AP-42 data show that PM10 emissions from such sources represent 98.3% of PM(TSP) emissions.

Maximum hourly emissions = 31.2 lb/hr x 0.983 = 30.7 lb/hr

Maximum annual emissions = 136.7 TPY x 0.983 = 134.4 TPY

II. TOTAL REDUCED SULFUR

Maximum emissions are based upon the NSPS for lime kilns at kraft pulp mills (40 CFR 60, Subpart BB): 8 ppm by volume, dry basis, corrected to 10% O_2. Maximum flue gas flow rate at maximum lime production rate of 275 TPD (11.46 TPH) = 28,039 dscfm @ 10% O_2 (based upon No. 6 fuel oil burning).

PVC = mRT m = PVC/RT

R = 1,545 ft-lb_f/lb_{mole}-^oR

Molecular weight TRS (as H_2S) = 34 lb_m/lb_{mole}

R = 45.44 ft-lb_f/lb_m-^oR

C = 8 ppm

$$m = \frac{2116.8\ lb_f}{ft^2} \times \frac{28{,}039\ ft^3}{min} \times \frac{8}{10^6} \times \frac{lb_m\text{-}^oR}{45.44\ ft\text{-}lb_f} \times \frac{1}{528^oR} \times \frac{60\ min}{hr}$$

= 1.2 lb/hr TRS as H_2S

1.2 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 5.3 TPY TRS as H_2S

III. SULFUR DIOXIDE

An SO_2 emission factor of 0.2 lb/ton ADUP produced is considered a maximum for the No. 3 Lime Kiln. The proposed new digesting system at JSC is designed for a total pulp production of 1250.

Maximum hourly SO_2 = 1,250 TPD / 24 hr/day x 0.2 lb/ton

= 10.4 lb/hr

10.4 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 45.6 TPY

An SO_2 emission test conducted on the No. 3 Lime Kiln shows SO_2 emissions to be well below the 10.4 lb/hr level. TRS gases from the proposed new digester system at JSC will be tied into the No. 3 Lime Kiln for incineration at a later date. The SO_2 generated in the kiln due to incineration of TRS gases is expected to increase SO_2 emissions only slightly above present levels, due to the SO_2 absorbing capacity of the lime kiln. If test data indicate that SO_2 emissions are exceeding the 10.4 lb/hr level, caustic addition to the scrubber water will be implemented to lower SO_2 emissions to acceptable levels.

IV. NITROGEN OXIDES

NO_x emissions from the No. 3 Lime Kiln were based upon the same emission factor equation as used to calculate NO_x from the existing lime kilns. The equation was taken from a study performed by NCASI on lime kilns at pulp mills. The study found a linear relationship between NO_x emissions and combustion zone temperature over the range of 1,850°F to 2,250°F. The relationship is expressed according to the following equation:

$$\text{lb } NO_x/10^6 \text{ Btu} = [2.17 \times 10^{-3} \times T(^\circ F)] - 3.58$$

The operating combustion zone temperature for the No. 3 Lime Kiln is 2,150°F. Substituting this temperature into the above equation yields an emission factor of 1.1 lb/10^6 Btu. This emission factor is considered to be the most appropriate factor for the No. 3 Lime Kiln. Refer to Attachment C regarding NO_x emission estimates for the existing kilns at JSC for a further discussion. Maximum heat input to the No. 3 Lime Kiln will be 78.62 x 10^6 Btu/hr, based upon a maximum lime production rate of 275 TPD (11.46 TPH) and a maximum heat rate of 6.86 x 10^6 Btu/ton of lime produced.

Maximum hourly NO_x emissions = 78.62 x 10^6 Btu/hr x 1.1 lb/10^6 Btu
= 86.5 lb/hr

Maximum annual NO_x = 86.5 lb/hr x 8,760 hr/yr / 2,000 lb/ton
= 378.9 TPY

V. CARBON MONOXIDE

Maximum annual emissions of CO from the No. 3 Lime Kiln were based upon an emission factor of 0.04 lb/10^6 Btu. This is the same emission factor used to estimate CO from the existing kilns. The factor was derived from NCASI study of CO emissions from lime kilns at pulp mills (Technical Bulletin No. 416). The factor represents an average emission level. It is therefore considered appropriate for annual emission calculations.

Maximum annual heat input to kiln
= 78.62 x 10^6 Btu/hr x 8,760 hr/yr
= 6.89 x 10^{11} Btu/yr

Annual emissions
= 6.89 x 10^{11} Btu/yr x 0.04 lb/10^6 Btu / 2,000 lb/ton
= 13.8 TPY

The NCASI study found that the maximum 1-hour CO emission rate measured from the kilns, where adequate data were obtained (Kilns A and B), was approximately 3.0 lb/ton lime produced. This emission factor and the maximum lime production rate of 11.46 TPH was used to estimate the maximum 1-hour CO emission rate from the No. 3 Lime Kiln.
11.46 TPH lime x 3.0 lb/ton = 34.4 lb/hr

VI. VOLATILE ORGANIC COMPOUNDS

Maximum emissions of VOC from the No. 3 Lime Kiln were based upon a NCASI study (Technical Bulletin No. 358). Of the three kilns tested in this study, Kilns A and C were considered most representative of the No. 3 Lime Kiln. All three kilns were equipped with wet scrubbers for particulate control but only Kilns A and C used fresh water for scrubbing. Kilns A and C exhibited average VOC emissions of 0.060 and 0.024 lb/10^6 Btu, respectively. The higher level of 0.060 lb/10^6 Btu was used to estimate annual emissions from the No. 3 Lime Kiln.

6.89 x 10^{11} Btu/yr x 0.060 lb/10^6 Btu / 2,000 lb/ton = 20.7 TPY

The maximum 1-hour VOC emission rate was based upon the highest measured emission rate from either Kiln A or C when burning oil (NCASI study). This maximum emission rate was 0.089 lb/10^6 Btu.

Maximum heat input for kiln = 78.62 x 10^6 Btu/hr
78.62 x 10^6 Btu/hr x 0.089 lb/10^6 Btu = 7.0 lb/hr

VII. KILN LEAKS

A. PM (TSP)

The No. 3 Lime Kiln has seals at the ends of the kiln which are much improved over those on the existing kilns. In addition, air leaks at the I.D. fan and in ductwork is negligible. For the existing

kilns, kiln leaks were estimated to be 1/1000 of the total air flow from the kilns (see Attachment C). Air leakage from the No. 3 Lime Kiln is estimated to be at least a factor of 10 lower than the existing kilns, or 1/10,000 of the total air flow through the No. 3 Lime Kiln.

Maximum air flow through kiln = 23,725 dscfm
Maximum kiln air leakage = 23,725 / 10,000 = 2.4 dscfm
Kiln design outlet dust loading = 22 gr/dscf
PM(TSP) emissions = 2.4 dscfm x 22 gr/dscf / 7,000 gr/lb x 60 min/hr
= 0.5 lb/hr
0.5 lb/hr x 8,760 hr/hr / 2,000 lb/ton = 2.2 TPY

B. PM10

AP-42, Section 10.1, Chemical Wood Pulping (10/86), contains information related to uncontrolled PM emissions from lime kilns. The AP-42 data show that PM10 emissions represent 16.8% of uncontrolled PM(TSP) emissions.

0.5 lb/hr x 0.168 = 0.08 lb/hr
2.2 TPY x 0.168 = 0.4 TPY

VIII. LIME SILO BAG FILTER

A. PM(TSP)

Maximum emissions from the bag filter serving the lime silo are based upon the design flow rate of 600 acfm (570 dscfm) and 0.03 gr/dscf

570 dscfm x 0.03 gr/dscf / 7,000 gr/lb x 60 min/hr
= 0.15 lb/hr
0.15 lb/hr x 8,760 hr/yr / 2,000 lb/ton = 0.66 TPY

B. PM10

It was conservatively assumed that all the PM(TSP) emissions are of the PM10 size category. Therefore, PM10 emissions are the same as the PM(TSP) emissions calculated above.

ATTACHMENT C

QUANTIFICATION OF CONTEMPORANEOUS
EMISSIONS REDUCTIONS

I. NO. 1 AND NO. 2 LIME KILNS

A. PARTICULATE MATTER (TSP)

In the original application, actual total particulate matter [PM(TSP)] emissions from No. 1 and No. 2 Lime Kilns at JSC were based on compliance test data from 1984 and actual kiln operating hours for calendar year 1984. Emissions from No. 1 Lime Kiln were 34.36 TPY, while those from No. 2 Lime Kiln were 78.65 TPY, for a total of 113.0 TPY from both kilns. These are considered to be the creditable PM(TSP) emission reductions for the kilns. The emissions were based upon the following:

No. 1 Lime Kiln - 9.13 lb/hr avg., 44.8 wks/yr
No. 2 Lime Kiln - 19.63 lb/hr avg., 47.7 wks/yr

B. PARTICULATE MATTER (PM10)

PM10 emissions represent that portion of total particulate matter having an aerodynamic particle size diameter of 10 um and less. Since PM10 was not a regulated pollutant at the time of the original application, PM10 emissions were not addressed in the original application. USEPA has recently published information in AP-42, Section 10.1, Chemical Wood Pulping (10/86), which allows PM10 emissions to be estimated from lime kilns in the pulp and paper industry (reference attached). The lime kilns at JSC were controlled by venturi scrubbers. The USEPA document indicates that 98.3% of PM emissions from lime kilns equipped with venturi scrubbers are less than 10 um in diameter. Based upon this information, PM10 emissions from the lime kilns are estimated as follows:

No. 1 Lime Kiln - 34.36 TPY x 0.983 = 33.78 TPY
No. 2 Lime Kiln - 78.65 TPY x 0.983 = 77.31 TPY
Total both kilns = 33.78 + 77.31 = 111.1 TPY

C. TOTAL REDUCED SULFUR (TRS)

TRS emissions were estimated in the original application on the basis of AP-42 emission factors. The factor used was from Section 10.1, Chemical Wood Pulping (4/77), and was 0.75 lb/ton of air-dried unbleached pulp (ADUP) produced by the mill (0.5 lb/ton H_2S, and 0.25 lb/ton reduced sulfur compounds). Total pulp produced at the mill in 1984 was 269,140 tons ADUP, as reported on the Annual Operation Report to FDER. This resulted in a total TRS emission rate from the kilns of 100.93 TPY.

Section 10.1 in AP-42 was revised in 10/86 and now contains a slightly lower factor for TRS of 0.7 lb/ton ADUP. Applying this revised factor to the 1984 pulp production results in the following TRS emissions:

269,140 TPY ADUP x 0.7 lb/ton / 2,000 lb/ton = 94.2 TPY

D. SULFUR DIOXIDE (SO_2)

Actual emissions of SO_2 from the lime kilns were estimated in the original application on the basis of the AP-42 emission factor [Section 10.1 (4/77)] and pulp production. The AP-42 factor was 0.2 lb/ton ADUP, and the resulting SO_2 emissions were 26.92 TPY. This AP-42 factor has not been revised and the original SO_2 emission estimates remain valid.

E. NITROGEN OXIDES (NOx)

The original application presented NOx emission estimates for the lime kilns based upon a factor of 1 lb/ton ADUP. This factor resulted in NOx emissions of 134.59 TPY, based upon 1984 pulp production. The present version of AP-42, Section 10.1, Chemical Wood Pulping (10/86), states that indications are that NOx emissions from lime kilns are on the order of 1 lb/ton. The AP-42 section references a NCASI study conducted to investigate NOx emissions from lime kilns at pulp mills (Technical Bulletin No. 107). Review of

the NCASI study, however, indicates NOx emissions to be much higher than would result from the AP-42 factor. The NCASI study was evaluated therefore to develop a more appropriate factor for the JSC lime kilns.

JSC's old lime kilns were oil-fired. Five lime kilns at different locations were evaluated in the NCASI study, two of which were oil-fired (Site 1 and Site 2 kilns). NOx emissions from the two kilns averaged 0.85 $lb/10^6$ Btu and 0.155 $lb/10^6$ Btu, respectively. Combustion zone temperature in these two kilns was not measured.

Because the dynamics of thermal NOx generation demonstrate that NOx emissions increase with increasing combustion zone temperature, NCASI studied the relationship between NOx emissions and combustion zone temperature at one site (Site 5 kiln). This kiln was gas fired. The kiln exhibited a mean NOx emission rate of 0.78 $lb/10^6$ Btu at a mean combustion zone temperature of 2053°F. NOx emissions were found to vary linearly with combustion zone temperature over the range of 1850°F to 2250°F, according to the following equation:

$$lb\ NOx/10^6\ Btu = [2.17 \times 10^{-3} \times T(^{\circ}F)] - 3.58$$

A high correlation coefficient of 0.965 was obtained based upon the measured data.

Because of the strong correlation between NOx emissions and combustion zone temperature found in the NCASI study, the above equation was considered to be the most representative factor for the JSC kilns. The equation may actually underestimate NOx emissions since it is based upon gas firing, and oil firing would contribute additional fuel NOx to the thermal NOx emissions. In regard to the Site 1 and Site 2 kilns evaluated in the NCASI study, combustion zone temperature was not measured, and therefore there is

no way to determine the representativeness of the NOx data from these kilns.

The combustion zone temperature in the lime kilns at JSC were maintained between 2250°F and 2300°F. Substituting the lower temperature into the above equation yields an NOx emission factor of 1.30 lb/10^6 Btu. Heat input to the JSC kilns were based upon the fuel oil consumption reported in the 1984 Annual Operation Report submitted to FDER. Calculations are presented below:

No. 1 Lime Kiln - 2,004,000 gal x 149,900 Btu/gal = 3.00 x 10^{11} Btu
No. 2 Lime Kiln - 2,113,000 gal x 149,900 Btu/gal = 3.17 x 10^{11} Btu
Total = 6.17 x 10^{11} Btu

NOx emissions = 6.17 x 10^{11} Btu/yr x 1.30 lb/10^6 Btu / 2,000 lb/ton
= 401.TPY

F. CARBON MONOXIDE (CO)

CO emissions from the No. 1 and No. 2 Lime Kilns at JSC were originally based upon the old AP-42 factor of 10 lb/ton ADUP [AP-42, Section 10.1 (4/77)]. This resulted in CO emissions of 1,345.9 TPY. However, the recently revised Section 10.1 of AP-42 (10/86) indicates much lower emissions from lime kilns (0.1 lb/ton ADUP). The revised AP-42 factor is based upon a recent NCASI study (Technical Bulletin No. 416). This document was therefore reviewed to determine a more appropriate CO emissions factor for the old kilns at JSC.

The NCASI study presented CO emission data from two lime kilns. Emissions from the two kilns were very similar, averaging 0.038 lb/10^6 Btu and 0.041 lb/10^6 Btu heat input. The average factor for the two kilns is 0.04 lb/10^6 Btu, and this factor was considered to be representative of the old JSC lime kilns. Revised

emission calculations, based upon the heat input to the kilns in 1984, are presented below:

6.17×10^{11} Btu/yr x 0.04 lb/10^6 Btu / 2,000 lb/ton = 12.3 TPY

G. VOLATILE ORGANIC COMPOUNDS (VOC)

USEPA Publication AP-42, Section 10.1, Chemical Wood Pulping (10/86) does not contain a VOC emission factor for lime kilns. NCASI, however, has conducted a study of non-methane VOC emissions from kraft process lime kilns (Technical Bulletin No. 358). Three kilns were tested. Kilns A and C were most like the old JSC kilns, as they had venturi scrubbers for PM control which used fresh water. The kilns exhibited average VOC emissions of 0.06 lb/10^6 Btu (Kiln A) and 0.024 lb/10^6 Btu (Kiln C). The average VOC emission rate for the two kilns, 0.042 lb/10^6 Btu, was used as the basis of VOC emissions from the JSC kilns:

6.17×10^{11} Btu/yr x 0.042 lb/10^6 Btu / 2,000 lb/ton = 13.0 TPY

II. EXISTING KILN LEAKS

Discussions with JSC personnel and inspection of the No. 1 and No. 2 Lime Kilns at JSC indicate that leaks of exhaust gases occurred at the cold end of the kilns. Visible emissions of dust were observed at the kiln seals, I.D. fan and at man-hole covers when the kilns were operating. Fugitive PM emissions were estimated for these leaks by first estimating the uncontrolled PM entrained in the exhaust gases, and then estimating the fraction of total kiln exhaust gases which escaped through the leaks.

A. PM(TSP)

PM entrained in the kiln exhaust gases (before the venturi scrubber) were estimated using emission factors presented in AP-42, Section 8.15, Lime Manufacturing (10/86). This section presents an uncontrolled PM emission rate for rotary kilns of 350 lb/ton lime produced. Applying this factor to the total 1984 lime production from the two kilns at JSC yields the following:

No. 1 Lime Kiln production:	27,355 TPY
No. 2 Lime Kiln production:	28,815 TPY
Total:	56,170 TPY

Uncontrolled PM emissions:

56,170 TPY x 350 lb/ton / 2,000 lb/ton = 9,830 TPY

Based upon compliance tests conducted on the kilns in 1984, the exhaust flow from the No. 1 Kiln was approximately 14,000 dscfm and from the No. 2 Kiln was approximately 17,000 dscfm, or an average of 15,500 dscfm. It is estimated that the kiln leaks accounted for at least 1/1000 of the total gas flow, or 15.5 dscfm from each kiln. Therefore, the total fugitive PM emissions due to kiln leaks are 1/1000 of the total uncontrolled PM emissions entrained in the exhaust gas stream:

9,830 TPY / 1,000 = 9.8 TPY

B. PM10

Particle size data for lime kilns are presented in AP-42, Section 10.1, Chemical Wood Pulping (10/86). AP-42 states that 16.8% of uncontrolled PM emissions from lime kilns are less than 10 um in diameter. Based upon this information, PM10 emissions due to kiln leaks were estimated as follows:

9.8 TPY x 0.168 = 1.6 TPY

III. EXISTING LIME SLAKER

One slaker operated at the JSC mill. The slaker was an atmospheric hydrator and was controlled by a water spray. All lime produced from the lime kiln, as well as all purchased lime, was processed by the slaker.

A. PM(TSP)

Presented in AP-42, Section 8.15, Lime Manufacturing, is a PM emission factor of 0.1 lb/ton lime produced for atmospheric hydrators, or 0.125 lb/ton of lime feed to the hydrator. The emission factor based upon lime feed was used to estimate actual emissions from the slaker. Lime production from the lime kiln in 1984 and actual purchased lime amounts for 1984 were used, as shown below:

Lime production - No. 1 Lime Kiln:	27,355 TPY
Lime production - No. 2 Lime Kiln:	28,815 TPY
Purchased lime:	3,991 TPY
Total:	60,161 TPY

60,161 TPY x 0.125 lb/ton / 2,000 lb/ton = 3.8 TPY

B. PM10

Information related to the particle size distribution of PM emissions from slakers was not found in the available literature. Therefore, Appendix C.2 of AP-42 (10/86), Generalized Particle Size Distributions, was reviewed and was found to contain general particle size distribution data for hydration processes (Category 9). The particle size data indicates that PM10 emissions constitute approximately 94% of total PM emissions from hydration processes. These data are considered to be the best currently available to estimate PM10 emissions from the lime slakers. The calculation of PM10 emissions, based upon the total PM emissions, is as follows: 3.8 TPY x 0.94 = 3.6 TPY

IV. EXISTING LIME BINS - CONVEYING, TRANSFER AND STORAGE

The two old lime kilns at JSC were supported by drag chain conveyors which conveyed the dry lime product from the kilns to the slaker and lime bins. Two lime bins located adjacent to each other received lime from the kilns by means of a bucket elevator. The lime bins also received purchased lime pneumatically. The lime bins were uncontrolled and vented directly to the atmosphere. The lime bins also fed a small day bin, which supplied lime feed to the slaker.

A schematic of the system is shown in Figure C-1. Lime from No. 1 Kiln dropped into the drag conveyor, passed through one transfer point, dropped into a reversible drag conveyor, and then dropped into one of two bucket elevators. Lime from No. 2 Kiln dropped into the drag conveyor, passed through two transfer points, and then dropped into the reversible drag conveyor before entering the bucket elevator.

All lime produced in the kilns passed through one of the bucket elevators and then was routed either directly to the slaker day bin or to the lime bins via a common header. Lime stored in the lime bins would drop from the bins onto a drag conveyor and then onto the reversible drag conveyor which fed the bucket elevators. The bucket elevators would lift the lime to the common header and the lime would fall by gravity to the day bin. A screw conveyor was used to feed lime from the day bin to the slaker.

Approximately 80% of lime produced in the kilns was routed directly to the day bin which fed the slaker. The remaining 20% of total lime production was routed to the slaker through the lime bins. All purchased lime was fed pneumatically to the lime bins.

Fugitive dust emissions from the lime transfer, conveying and storage operations were estimated using the generalized emissions factor equation for a continuous drop operation contained in USEPA Publication

AP-42, Section 11.2.3, Aggregate Handling and Storage Piles (10/86). The recommended equation for a continuous drop operation is as follows:

$$E = k\ (0.0018)\ \frac{\frac{s}{5}\ \frac{U}{5}\ \frac{H}{10}}{\left(\frac{M}{2}\right)^2} \quad \text{lb/ton}$$

where,

E = emission factor

k = particle size multiplier

s = material silt content (%)

U = mean wind speed (mph)

H = drop height (ft)

M = material moisture content (%)

The particle size multiplier, k, is 1.0 for total suspended particulate [PM(TSP)], and 0.37 for PM10. The moisture content (M) and silt content (s) of lime produced from the kilns is 0.5% and 60%, respectively. The mean wind speed, U, in Jacksonville is 8.6 mph. These parameters remain the same for each of the transfer operations. The drop height varies for several of the transfer points, resulting in a different emission factor for the operations. The resulting uncontrolled emission factors for each operation are shown in Table C-1.

The control technology utilized in the lime system consisted solely of enclosures. Enclosures were used on each transfer point. Estimated control efficiencies for enclosures applied to material transfer operations range from 70% to 90% (refer to "Workbook on Estimation of Emissions and Dispersion Modeling for Fugitive Particulate Sources" - reference attached). On the basis of JSC operator observations, the most significant dust source associated with the system was the reversible drag conveyor-to-bucket elevator transfer point. The enclosure for this operation was considered to result in a 70% control efficiency, while all other enclosures were estimated to achieve an 85% control efficiency.

The drag chain conveyors used to convey the lime throughout the system were extremely dusty operations. The chains in the conveyor literally drag the lime in the direction of flow. The lime is continually disturbed and abraded, which has the potential to create significant amounts of fugitive dust due to the low moisture content and high silt content of the lime. The enclosures surrounding the conveyors were not airtight and leaked in several places.

A literature review of fugitive dust emission factors revealed no factors are available for drag chain conveyors. As a result, uncontrolled dust emissions from the conveyors were assumed to be equivalent to two additional conveyor transfer points. As shown in Table C-1, each conveyor transfer point results in an uncontrolled emission factor of 0.119 lb/ton for PM(TSP) and 0.044 lb/ton for PM10. Thus, the total emission factor for conveying is 0.238 lb/ton for PM(TSP) and 0.088 lb/ton for PM10. Enclosures surrounding the drag conveyors are considered to have provided a 90% control efficiency. Emission estimates are shown in Table C-1.

Lime balls were frequently formed in the old kilns. These lime balls were required to be raked out of the kiln discharge point, and then hauled to a nearby dumpster for disposal. Lime ball losses from the old kilns are conservatively estimated at 2 tons/day lime (730 TPY). Disposal of the lime balls caused significant dust emissions when removed from the kilns and when dropped into a dumpster for disposal. Fugitive emissions were estimated for the drop operation based upon the AP-42 factor for a batch drop operation:

$$E = k\,(0.0018)\,\frac{\left(\frac{s}{5}\right)^{\frac{s}{5}}\left(\frac{U}{5}\right)^{\frac{U}{5}}\left(\frac{H}{5}\right)^{\frac{H}{5}}}{\left(\frac{M}{2}\right)^{2}\left(\frac{Y}{6}\right)^{0.33}} \quad \text{lb/ton}$$

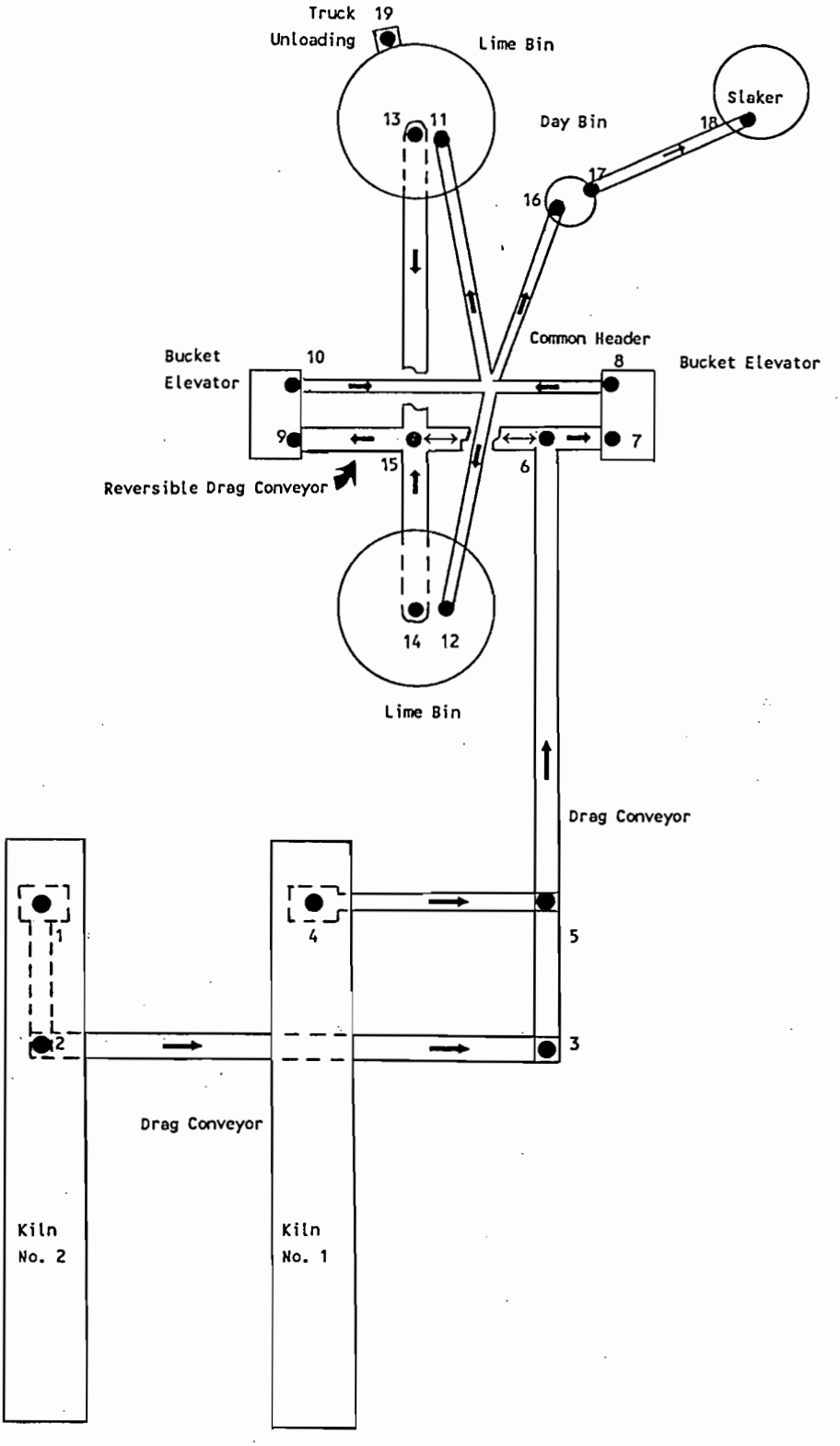
where, Y = dumping device capacity (yd^3)

All other parameters are the same as defined in the previously discussed AP-42 factor for a continuous drop operation. Each lime ball comprised a volume of about 0.75 ft^3. However, a volume of 2.75 yd^3 was used as the value for Y in the above equation, since this is the minimum volume which the equation is based upon. A control efficiency of 50% was considered appropriate for a dumpster which is enclosed on three sides but is open on top.

Fugitive PM(TSP) and PM10 emissions from the lime handling system, based upon the estimated emission factors, control efficiencies, and actual lime processed in 1984, are presented in Table C-1.

Table C-1. Fugitive PM and PM10 Emissions From Old Causticizing System

Source No.	Description	Drop Height (ft)	Uncontrolled Emission Factor (lb/ton) PM(TSP)	Uncontrolled Emission Factor (lb/ton) PM10	Control Eff. (%)	Controlled Emission Factor (lb/ton) PM(TSP)	Controlled Emission Factor (lb/ton) PM10	Lime Processsed (TPY)	Fugitive Emissions (TPY) PM(TSP)	Fugitive Emissions (TPY) PM10
Lime From Kilns to Load Chute										
1	No. 2 LK Discharge	5	0.297	0.110	85	0.045	0.016	28,815	0.64	0.24
2	Conveyor transfer point	3	0.178	0.066	85	0.027	0.010	28,815	0.39	0.14
3	Conveyor transfer point	3	0.178	0.066	85	0.027	0.010	28,815	0.39	0.14
4	No. 1 LK Discharge	5	0.297	0.110	85	0.045	0.016	27,355	0.61	0.23
5	Conveyor transfer point	3	0.178	0.066	85	0.027	0.010	27,355	0.37	0.14
6	Transfer to reversible drag conveyor	3	0.178	0.066	85	0.027	0.010	56,170	0.75	0.28
7,9	Conveyor to bucket elevator	5	0.297	0.110	70	0.089	0.033	56,170	2.50	0.93
8,10	Bucket elev. to load chute	3	0.178	0.066	85	0.027	0.010	56,170	0.75	0.28
Lime Directly to Day Bin										
16	Load chute to Day Bin	5	0.297	0.110	85	0.045	0.016	44,936	1.00	0.37
17	Day Bin to screw conveyor	3	0.178	0.066	85	0.027	0.010	44,936	0.60	0.22
18	Screw conveyor to Slaker	5	0.297	0.110	85	0.045	0.016	44,936	1.00	0.37
Lime to Lime Bins										
11,12	Load chute to Lime Bin	10	0.594	0.220	85	0.089	0.033	11,234	0.50	0.19
13,14	Lime Bins to conveyor	5	0.297	0.110	85	0.045	0.016	11,234	0.25	0.09
15	Transfer to reversible drag conveyor	3	0.178	0.066	85	0.027	0.010	11,234	0.15	0.06
7,9	Conveyor to bucket elevator	5	0.297	0.110	70	0.089	0.033	11,234	0.50	0.19
8,10	Bucket elev. to load chute	3	0.178	0.066	85	0.027	0.010	11,234	0.15	0.06
16	Load chute to Day Bin	5	0.297	0.110	85	0.045	0.016	11,234	0.25	0.09
17	Day Bin to screw conveyor	3	0.178	0.066	85	0.027	0.010	11,234	0.15	0.06
18	Screw conveyor to Slaker	5	0.297	0.110	85	0.045	0.016	11,234	0.25	0.09
Purchased Lime from Trucks										
19	Purchased lime to Lime Bin	10	0.594	0.220	85	0.089	0.033	3,991	0.18	0.07
13,14	Lime Bins to conveyor	5	0.297	0.110	85	0.045	0.016	3,991	0.09	0.03
15	Transfer to reversible drag conveyor	3	0.178	0.066	85	0.027	0.010	3,991	0.05	0.02
7,9	Conveyor to bucket elevator	5	0.297	0.110	70	0.089	0.033	3,991	0.18	0.07
8,10	Bucket elev. to load chute	3	0.178	0.066	85	0.027	0.010	3,991	0.05	0.02
16	Load chute to Day Bin	5	0.297	0.110	85	0.045	0.016	3,991	0.09	0.03
17	Day Bin to screw conveyor	3	0.178	0.066	85	0.027	0.010	3,991	0.05	0.02
18	Screw conveyor to Slaker	5	0.297	0.110	85	0.045	0.016	3,991	0.09	0.03
Drag Chain Conveyors										
	Lime conveying	-	0.238	0.088	90	0.024	0.009	56,170	0.67	0.25
Waste Lime Disposal										
	Lime balls	10	1.538	0.569	50	0.769	0.285	730	0.28	0.10
								TOTALS =	12.94	4.79



Note: ● Indicates transfer point

Figure C-1. Schematic of Old Lime Transfer System at JSC

ATTACHMENT D

CONTROL EQUIPMENT DESIGN INFORMATION

I. VENTURI SCRUBBER

Scrubber design data

Attached drawing is schematic of Airpol, Inc., venturi scrubber system.

Design parameters are presented below:

Scrubbing water flow rate to venturi section: 375 gpm @ 350 psig
175 gpm @ 2 psig

Make-up water requirements: 140 gpm

Pressure drop across venturi = 3-10 in. H_2O

Maximum inlet gas flow rate: 40,300 acfm @ 350 °F
18,400 dscfm

Maximum inlet particulate loading = 22 gr/dscf

Maximum outlet particulate loading = 0.13 gr/dscf (oil-firing)
= 0.067 gr/dscf (gas-firing)

Scrubber efficiency calculation

1. Particulate Matter

   Kiln design outlet grain loading = 22 gr/dscf

   Maximum outlet gas flow rate (burning fuel oil)
   = 23,725 dscfm

   Particulate to scrubber:
   23,725 dscfm x 22 gr/dscf / 7,000 gr/lb x 60 min/hr
   = 4,474 lb/hr

   Maximum particulate emissions at scrubber outlet = 31.2 lb/hr

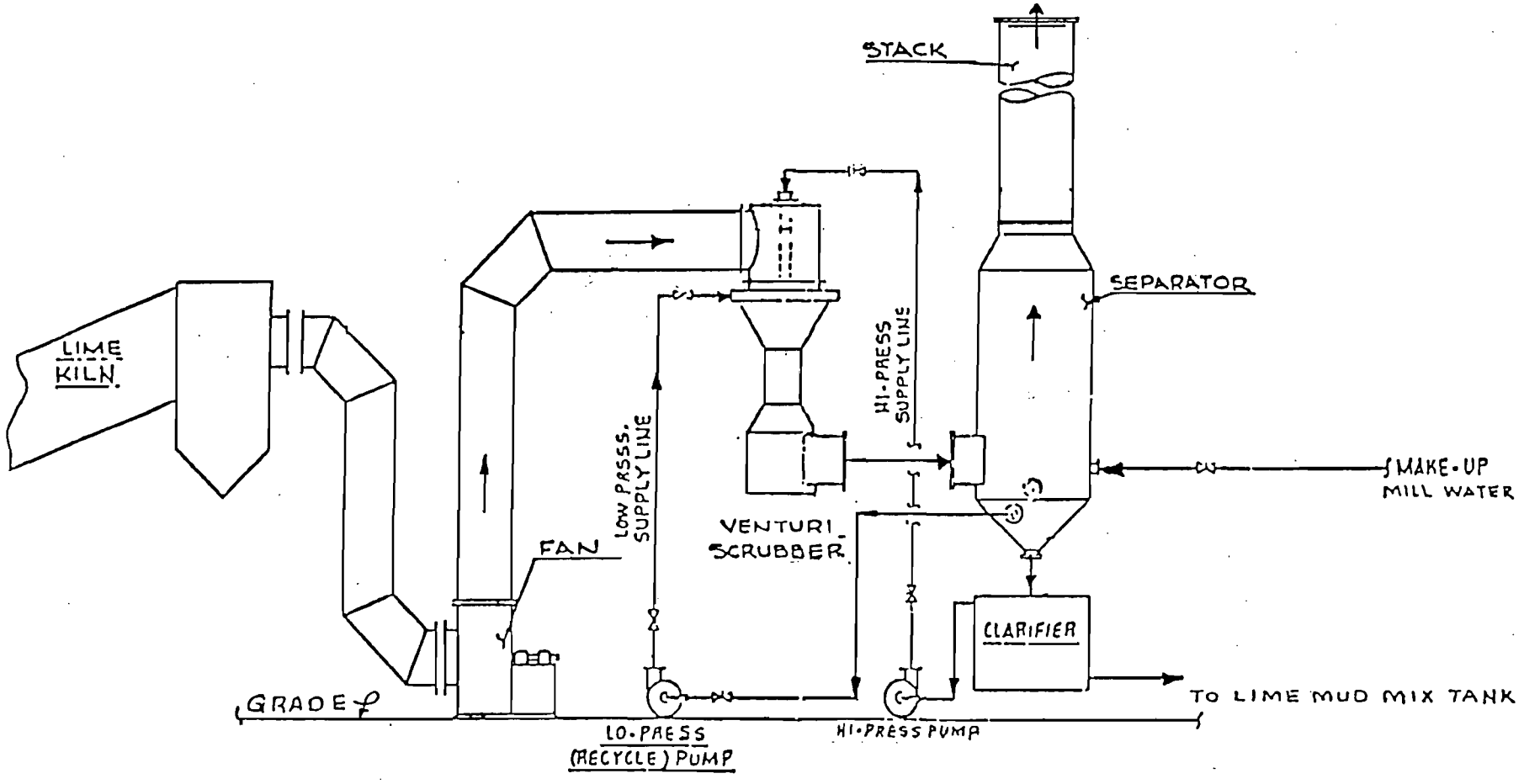
   Removal Efficiency = [(4,474 - 31.2) / 4,474] x 100 = 99.3%

2. Total Reduced Sulfur

   Kiln design outlet TRS loading = 16 ppm dry @ 10% O_2

   Scrubber outlet maximum TRS loading = 8 ppm dry @ 10% O_2

   Removal efficiency = [(16-8) / 16] x 100 = 50%



Schematic of No. 3 Lime Kiln Venturi Scrubber System

KBN

II. LIME SILO BAGHOUSE

A schematic of the lime silo baghouse and associated control points is presented in the attached drawing.

Manufacturer: MikroPul

Model No: 16S8TR

Design flow rate = 600 acfm @ ambient temperature
= 570 dscfm

Filter area = 151 ft^2

Air/Cloth ratio = 4:1

Bag material = Nomex, 16 oz

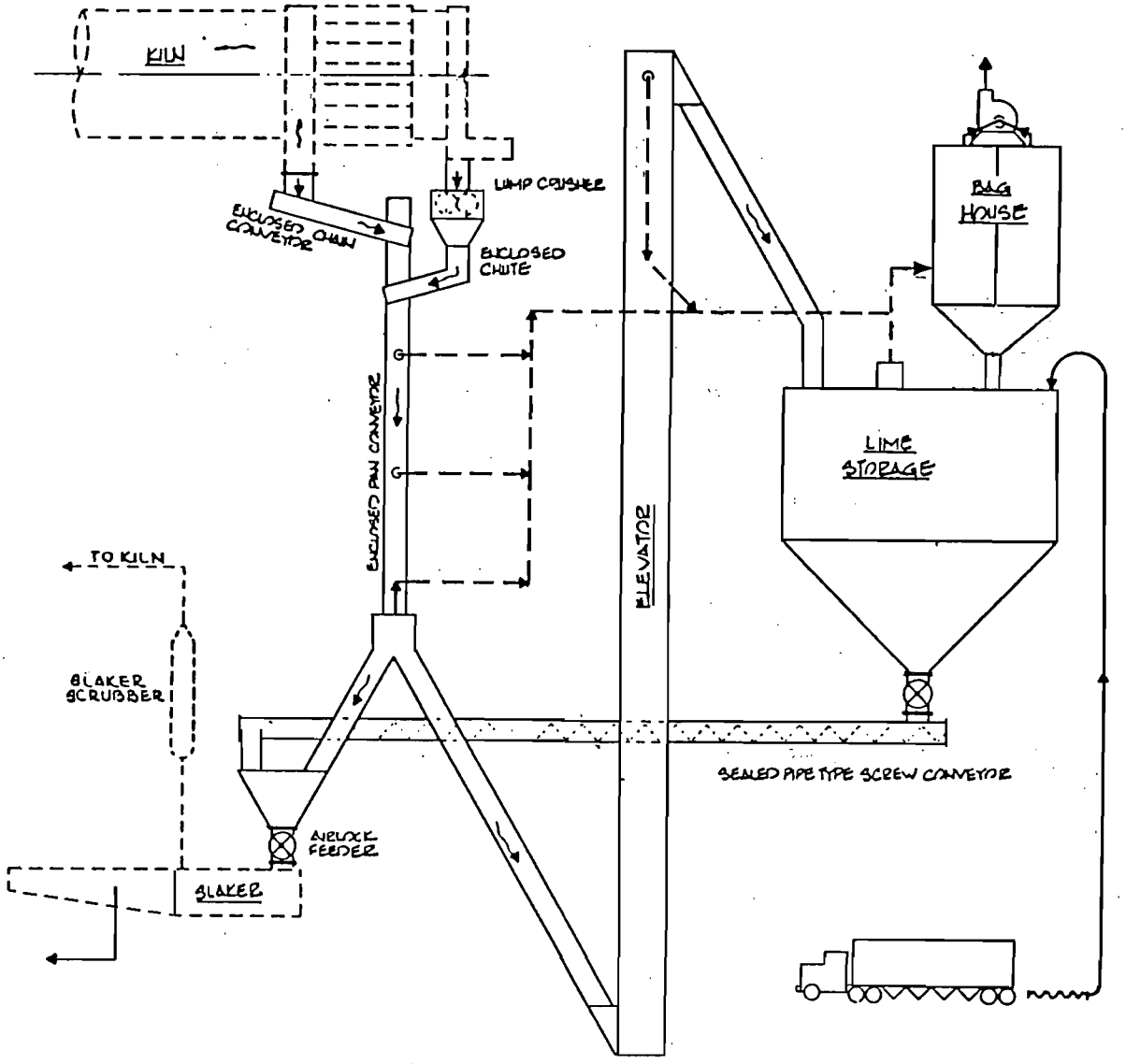
Maximum inlet dust loading = 43 gr/acf

43 gr/acf x 600 acfm / 7,000 gr/lb x 60 min/hr = 221.1 lb/hr

Cleaning method = Reverse pulse air

Maximum outlet dust loading = 0.03 gr/dscf
= 0.15 lb/hr

Removal efficiency = [(221.1 - 0.15) / 221.1] x 100 = 99.9%



Notes: ——— Material flow
– – – Gas flow

Schematic of Lime Silo Baghouse System

KBN

III. TRS INCINERATION

Non-condensible TRS gases from the new digesting system at JSC will be vented to the No. 3 Lime Kiln for incineration. The existing Multiple Effect Evaporators at the plant are already vented to the No. 3 Lime Kiln for incineration. The following design flows of non-condensible gases and TRS have been estimated for the new digesting system:

	Maximum Hourly Rate (@89.08 TPH pulp)	Maximum Daily Rate (@52.08 TPH pulp)
Gas flow rate	1,326 acfm	775 acfm
TRS flow rate from digesters	935 lb/hr	547 lb/hr

The estimated TRS flow rate from the new digesting system is taken from the New Digesters 1-5 permit application, and are based upon a conventional hot blow system. As a result, the TRS flow is considered to be overestimated for the cold blow system. TRS emissions from the No. 3 Lime Kiln will not exceed the 8 ppm, dry basis, corrected to 10% O_2, when incinerating the TRS from the new digester system.

REFERENCES

EXCERPTS FROM AP-42 SECTIONS

10.1 CHEMICAL WOOD PULPING

10.1.1 General

Chemical wood pulping involves the extraction of cellulose from wood by dissolving the lignin that binds the cellulose fibers together. The four processes principally used in chemical pulping are kraft, sulfite, neutral sulfite semichemical (NSSC), and soda. The first three display the greatest potential for causing air pollution. The kraft process alone accounts for over 80 percent of the chemical pulp produced in the United States. The choice of pulping process is determined by the desired product, by the wood species available, and by economic considerations.

10.1.2 Kraft Pulping

Process Description[1] - The kraft pulping process (See Figure 10.1-1) involves the digesting of wood chips at elevated temperature and pressure in "white liquor", which is a water solution of sodium sulfide and sodium hydroxide. The white liquor chemically dissolves the lignin that binds the cellulose fibers together.

There are two types of digester systems, batch and continuous. Most kraft pulping is done in batch digesters, although the more recent installations are of continuous digesters. In a batch digester, when cooking is complete, the contents of the digester are transferred to an atmospheric tank usually referred to as a blow tank. The entire contents of the blow tank are sent to pulp washers, where the spent cooking liquor is separated from the pulp. The pulp then proceeds through various stages of washing, and possibly bleaching, after which it is pressed and dried into the finished product. The "blow" of the digester does not apply to continuous digester systems.

The balance of the kraft process is designed to recover the cooking chemicals and heat. Spent cooking liquor and the pulp wash water are combined to form a weak black liquor which is concentrated in a multiple effect evaporator system to about 55 percent solids. The black liquor is then further concentrated to 65 percent solids in a direct contact evaporator, by bringing the liquor into contact with the flue gases from the recovery furnace, or in an indirect contact concentrator. The strong black liquor is then fired in a recovery furnace. Combustion of the organics dissolved in the black liquor provides heat for generating process steam and for converting sodium sulfate to sodium sulfide. Inorganic chemicals present in the black liquor collect as a molten smelt at the bottom of the furnace.

The smelt is dissolved in water to form green liquor, which is transferred to a causticizing tank where quicklime (calcium oxide) is added to convert the solution back to white liquor for return to the digester system. A lime mud precipitates from the causticizing tank, after which it is calcined in a lime kiln to regenerate quicklime.

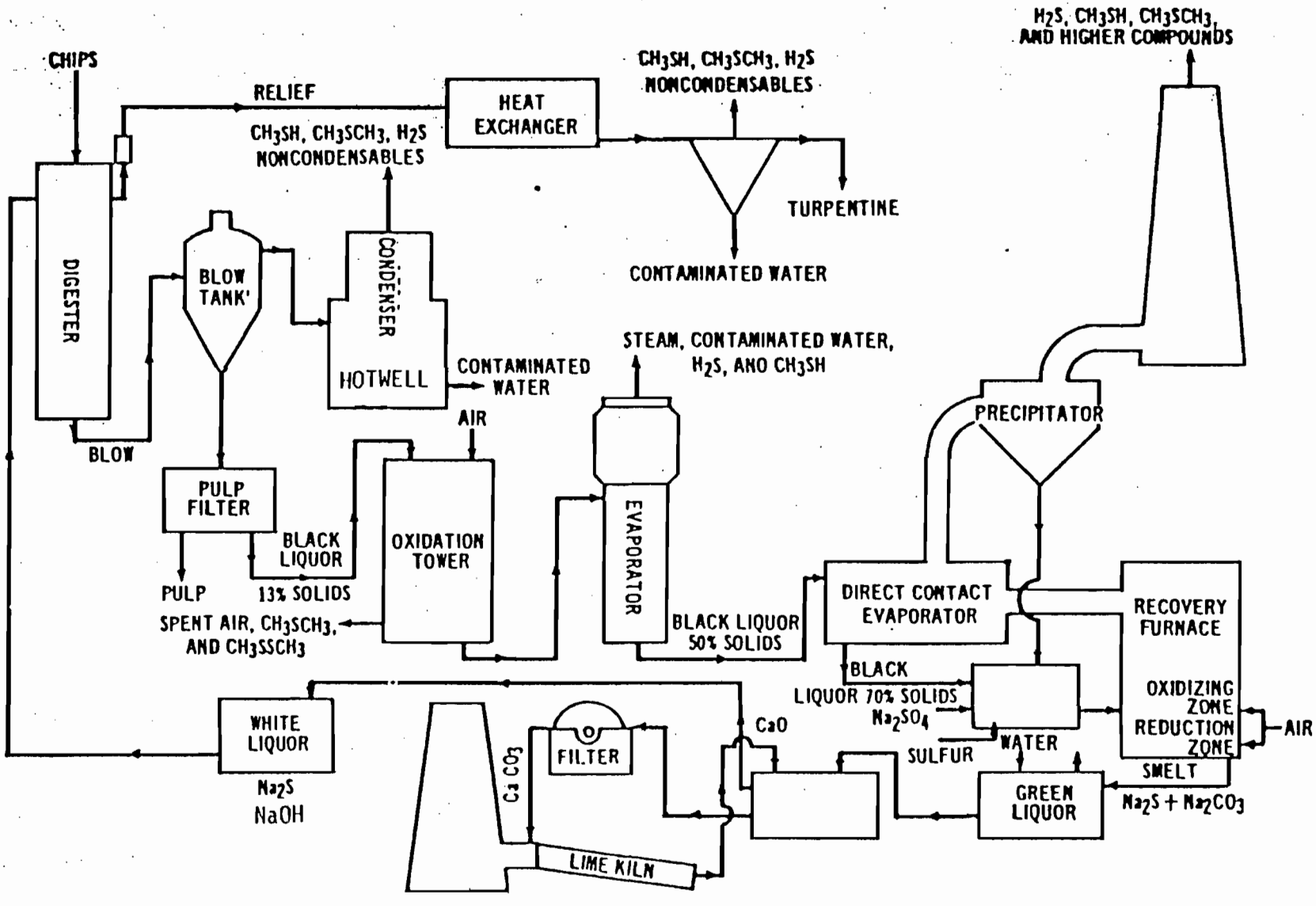


Figure 10.1-1. Typical kraft sulfate pulping and recovery process.

For process heating, for driving equipment, for providing electric power, etc., many mills need more steam than can be provided by the recovery furnace alone. Thus, conventional industrial boilers that burn coal, oil, natural gas, or bark and wood are commonly used.

Emissions And Controls[1-7] - Particulate emissions from the kraft process occur largely from the recovery furnace, the lime kiln and the smelt dissolving tank. These emissions are mainly sodium salts, with some calcium salts from the lime kiln. They are caused mostly by carryover of solids and sublimation and condensation of the inorganic chemicals.

Particulate control is provided on recovery furnaces in a variety of ways. In mills with either a cyclonic scrubber or cascade evaporator as the direct contact evaporator, further control is necessary, as these devices are generally only 20 to 50 percent efficient for particulates. Most often in these cases, an electrostatic precipitator is employed after the direct contact evaporator, for an overall particulate control efficiency of from 85 to more than 99 percent. Auxiliary scrubbers may be added at existing mills after a precipitator or a venturi scrubber to supplement older and less efficient primary particulate control devices.

Particulate control on lime kilns is generally accomplished by scrubbers. Electrostatic precipitators have been used in a few mills. Smelt dissolving tanks usually are controlled by mesh pads, but scrubbers can provide further control.

The characteristic odor of the kraft mill is caused by the emission of reduced sulfur compounds, the most common of which are hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide, all with extremely low odor thresholds. The major source of hydrogen sulfide is the direct contact evaporator, in which the sodium sulfide in the black liquor reacts with the carbon dioxide in the furnace exhaust. Indirect contact evaporators can significantly reduce the emission of hydrogen sulfide. The lime kiln can also be a potential source of odor, as a similar reaction occurs with residual sodium sulfide in the lime mud. Lesser amounts of hydrogen sulfide are emitted with the noncondensible offgasses from the digesters and multiple effect evaporators.

Methyl mercaptan and dimethyl sulfide are formed in reactions with the wood component, lignin. Dimethyl disulfide is formed through the oxidation of mercaptan groups derived from the lignin. These compounds are emitted from many points within a mill, but the main sources are the digester/blow tank systems and the direct contact evaporator.

Although odor control devices, per se, are not generally found in kraft mills, emitted sulfur compounds can be reduced by process modifications and improved operating conditions. For example, black liquor oxidation systems, which oxidize sulfides into less reactive thiosulfates, can considerably reduce odorous sulfur emissions from the direct contact evaporator, although the vent gases from such systems become minor odor sources themselves. Also, noncondensible odorous gases vented from the digester/blow tank system and multiple effect evaporators can be destroyed by thermal oxidation, usually by passing them through the lime kiln. Efficient operation of the recovery furnace, by avoiding overloading and by maintaining sufficient oxygen, residence time and turbulence, significantly reduces emissions of reduced sulfur compounds from

this source as well. The use of fresh water instead of contaminated condensates in the scrubbers and pulp washers further reduces odorous emissions.

Several new mills have incorporated recovery systems that eliminate the conventional direct contact evaporators. In one system, heated combustion air, rather than fuel gas, provides direct contact evaporation. In another, the multiple effect evaporator system is extended to replace the direct contact evaporator altogether. In both systems, sulfur emissions from the recovery furnace/direct contact evaporator can be reduced by more than 99 percent.

Sulfur dioxide is emitted mainly from oxidation of reduced sulfur compounds in the recovery furnace. It is reported that the direct contact evaporator absorbs about 75 percent of these emissions, and further scrubbing can provide additional control.

Potential sources of carbon monoxide emissions from the kraft process include the recovery furnace and lime kilns. The major cause of carbon monoxide emissions is furnace operation well above rated capacity, making it impossible to maintain oxidizing conditions.

Some nitrogen oxides also are emitted from the recovery furnace and lime kilns, although amounts are relatively small. Indications are that nitrogen oxide emissions are on the order of 0.5 and 1.0 kilograms per air dried megagrams (1 and 2 lb/air dried ton) of pulp produced from the lime kiln and recovery furnace, respectively.[5-6]

A major source of emissions in a kraft mill is the boiler for generating auxiliary steam and power. The fuels used are coal, oil, natural gas or bark/wood waste. See Chapter 1 for emission factors for boilers.

Table 10.1-1 presents emission factors for a conventional kraft mill. The most widely used particulate control devices are shown, along with the odor reductions through black liquor oxidation and incineration of noncondensible offgases. Tables 10.1-2 through 10.1-7 present cumulative size distribution data and size specific emission factors for particulate emissions from sources within a conventional kraft mill. Uncontrolled and controlled size specific emission factors[7] are presented in Figures 10.1-2 through 10.1-7. The particle sizes presented are expressed in terms of the aerodynamic diameter.

10.1.3 Acid Sulfite Pulping

Process Description - The production of acid sulfite pulp proceeds similarly to kraft pulping, except that different chemicals are used in the cooking liquor. In place of the caustic solution used to dissolve the lignin in the wood, sulfurous acid is employed. To buffer the cooking solution, a bisulfite of sodium, magnesium, calcium or ammonium is used. A diagram of a typical magnesium base process is shown in Figure 10.1-8.

Digestion is carried out under high pressure and high temperature, in either batch mode or continuous digesters, and in the presence of a sulfurous acid/bisulfite cooking liquid. When cooking is completed, either the digester is discharged at high pressure into a blow pit, or its contents are pumped into a dump tank at a lower pressure. The spent sulfite liquor (also called red liquor) then drains through the bottom of the tank and is treated and discarded,

TABLE 10.1-1. EMISSION FACTORS FOR SULFITE PULPING[a]

EMISSION FACTOR RATING: A

Source	Type of control	Particulate		Sulfur dioxide (SO_2)		Carbon monoxide (CO)		Hydrogen sulfide ($S^=$)		RSH, RSR, RSSR ($S^=$)	
		kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton	kg/Mg	lb/ton
Digester relief and blow tank	Untreated[b]	-	-	-	-	-	-	0.02	0.03	0.6	1.2
Brown stock washer	Untreated[b]	-	-	-	-	-	-	0.01	0.02	0.2[c]	0.4[c]
Multiple effect evaporator	Untreated[b]	-	-	-	-	-	-	0.55	1.1	0.05	0.1
Recovery boiler and direct evaporator	Untreated[d]	90	180	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	Venturi scrubber[f]	24	48	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	ESP	1	2	3.5	7	5.5	11	6[e]	12[e]	1.5[e]	3[e]
	Auxiliary scrubber	1.5-7.5[g]	3-15[g]					6[e]	12[e]	1.5[e]	3[e]
Noncontact recovery boiler without direct contact evaporator	Untreated	115	230	-	-	5.5	11	0.05[h]	0.1[h]	-	-
	ESP	1	2	-	-	5.5	11	0.05[h]	0.1[h]	-	-
Smelt dissolving tank	Untreated	3.5	7	0.1	0.2	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
	Mesh pad	0.5	1	0.1	0.2	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
	Scrubber	0.1	0.2	-	-	-	-	0.1[j]	0.2[j]	0.15[j]	0.3[j]
Lime kiln	Untreated	28	56	0.15	0.3	0.05	0.1	0.25[m]	0.5[m]	0.1[m]	0.2[m]
	Scrubber or ESP	0.25	0.5	-	-	0.05	0.1	0.25[m]	0.5[m]	0.1[m]	0.2[m]
Turpentine condenser	Untreated	-	-	-	-	-	-	0.005	.01	0.25	0.5
Miscellaneous[n]	Untreated	-	-	-	-	-	-	-	-	0.25	0.5

[a]References 8-10. Factors expressed in unit weight of air dried unbleached pulp (ADP). RSH = Methyl mercaptan. RSR = Dimethyl sulfide. RSSR = Dimethyl disulfide. ESP = Electrostatic precipitator. Dash = No data.

[b]If noncondensible gases from these sources are vented to lime kiln, recovery furnace or equivalent, the reduced sulfur compounds are destroyed.

[c]Apply with system using condensate as washing medium. When using fresh water, emissions are 0.05 (0.1).

[d]Apply when cyclonic scrubber or cascade evaporator is used for direct contact evaporation, with no further controls.

[e]Usually reduced by 50% with black liquor oxidation and can be cut 95 - 99% when oxidation is complete and recovery furnace is operated optimally.

[f]Apply when venturi scrubber is used for direct contact evaporation, with no further controls.

[g]Use 7.5 (15) when auxiliary scrubber follows venturi scrubber, and 1.5 (3) when it follows ESP.

[h]Apply when recovery furnace is operated optimally to control total reduced sulfur (TRS) compounds.

[j]Usually reduced to 0.01 g/kg (0.02 lb/ton) ADP when water low in sulfides is used in smelt dissolving tank and associated scrubber.

[m]Usually reduced to 0.015 g/kg (0.03 lb/ton) ADP with efficient mud washing, optimal kiln operation and added caustic in scrubbing water. With only efficient mud washing and optimal process control, TRS compounds reduced to 0.04 g/kg (0.08 lb/ton) ADP.

[n]Includes knotter vents, brownstock seal tanks, etc. When black liquor oxidation is included, emissions are 0.3 (0.6).

TABLE 10.1-2. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A RECOVERY BOILER WITH A DIRECT CONTACT EVAPORATOR AND AN ESP[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	95.0	-	86	-
10	93.5	-	84	-
6	92.2	68.2	83	0.7
2.5	83.5	53.8	75	0.5
1.25	56.5	40.5	51	0.4
1.00	45.3	34.2	41	0.3
0.625	26.5	22.2	24	0.2
Total	100	100	90	1.0

[a]Reference 7. Dash = no data.

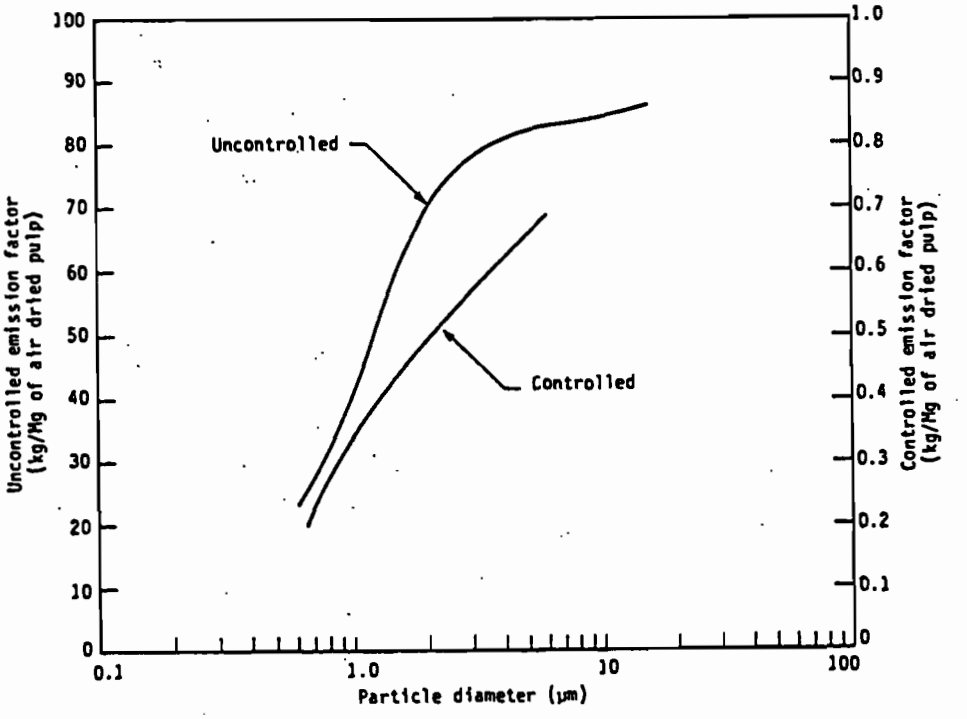


Figure 10.1-2. Cumulative particle size distribution and size specific emission factors for recovery boiler with direct contact evaporator and ESP.

TABLE 10.1-3. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A RECOVERY BOILER WITHOUT A DIRECT CONTACT EVAPORATOR BUT WITH AN ESP[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	-	78.8	-	0.8
10	-	74.8	-	0.7
6	-	71.9	-	0.7
2.5	78.0	67.3	90	0.6
1.25	40.0	51.3	46	0.5
1.00	30.0	42.4	35	0.4
0.625	17.0	29.6	20	0.3
Total	100	100	115	1.0

[a]Reference 7. Dash = no data.

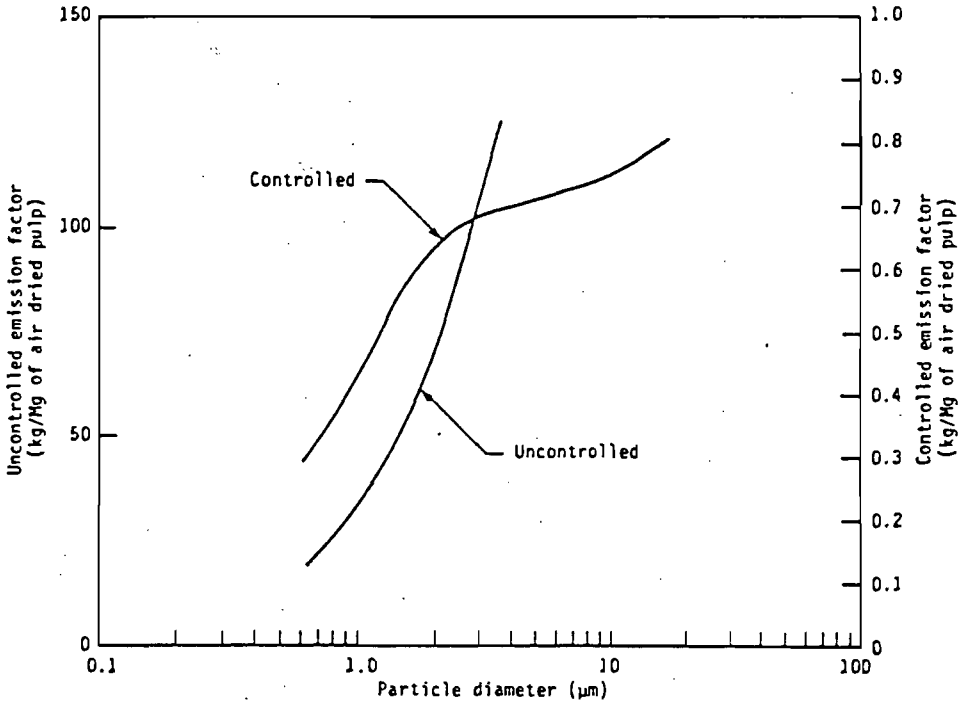


Figure 10.1-3. Cumulative particle size distribution and size specific emission factors for recovery boiler without direct contact evaporator but with ESP.

TABLE 10.1-4. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A LIME KILN WITH A VENTURI SCRUBBER[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	27.7	98.9	7.8	0.24
10	16.8	98.3	4.7	0.24
6	13.4	98.2	3.8	0.24
2.5	10.5	96.0	2.9	0.24
1.25	8.2	85.0	2.3	0.21
1.00	7.1	78.9	2.0	0.20
0.625	3.9	54.3	1.1	0.14
Total	100	100	28.0	0.25

[a]Reference 7.

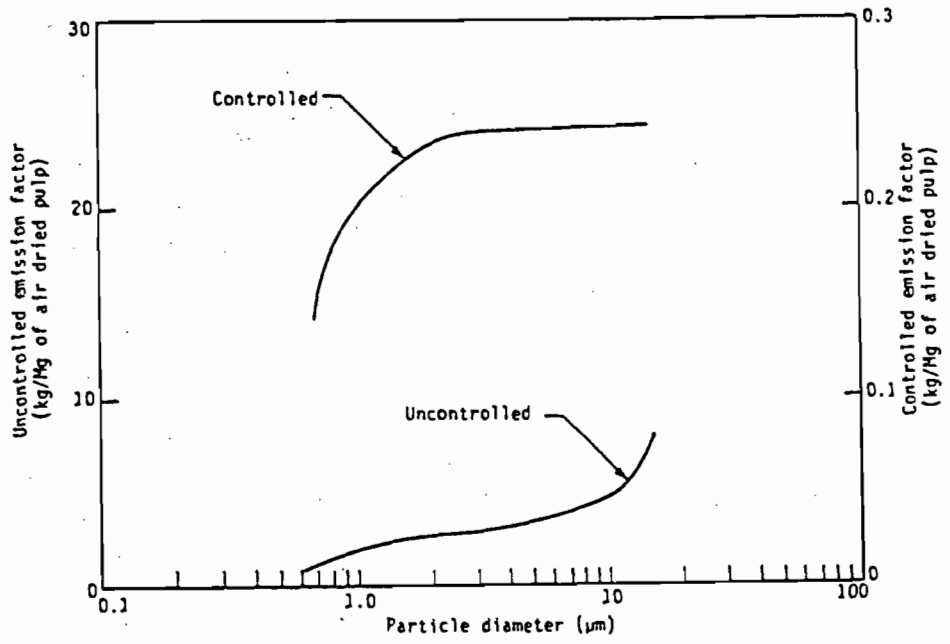


Figure 10.1-4. Cumulative particle size distribution and size specific emission factors for lime kiln with venturi scrubber.

TABLE 10.1-5. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A LIME KILN WITH AN ESP[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	27.7	91.2	7.8	0.23
10	16.8	88.5	4.7	0.22
6	13.4	86.5	3.8	0.22
2.5	10.5	83.0	2.9	0.21
1.25	8.2	70.2	2.3	0.18
1.00	7.1	62.9	2.0	0.16
0.625	3.9	46.9	1.1	0.12
Total	100	100	28.0	0.25

[a]Reference 7.

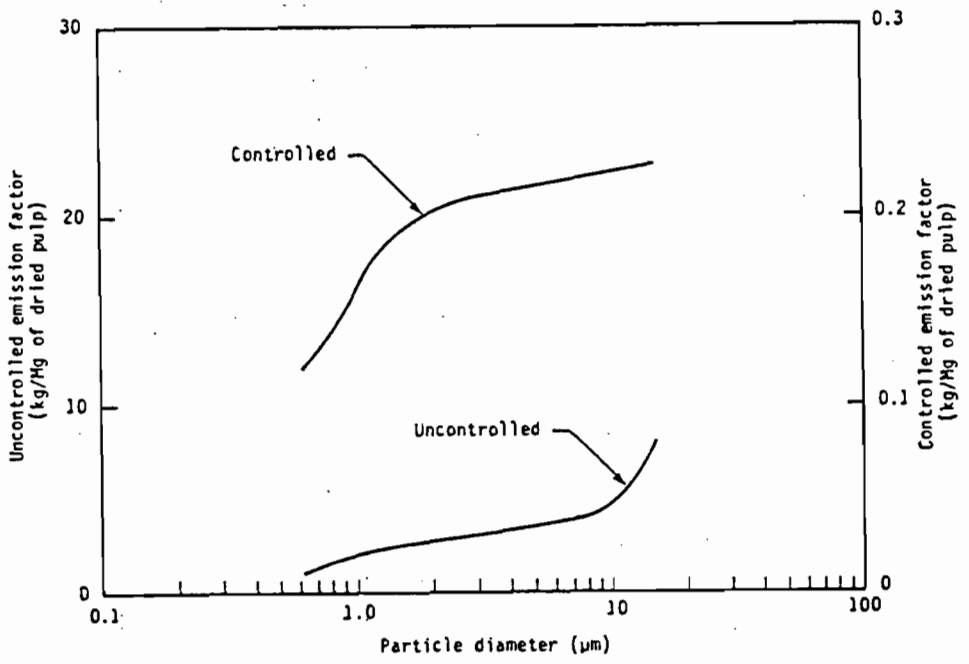


Figure 10.1-5. Cumulative particle size distribution and size specific emission factors for lime kiln with ESP.

TABLE 10.1-6. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A SMELT DISSOLVING TANK WITH A PACKED TOWER[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	90.0	95.3	3.2	0.48
10	88.5	95.3	3.1	0.48
6	87.0	94.3	3.0	0.47
2.5	73.0	85.2	2.6	0.43
1.25	47.5	63.8	1.7	0.32
1.00	40.0	54.2	1.4	0.27
0.625	25.5	34.2	0.9	0.17
Total	100	100	3.5	0.50

[a]Reference 7.

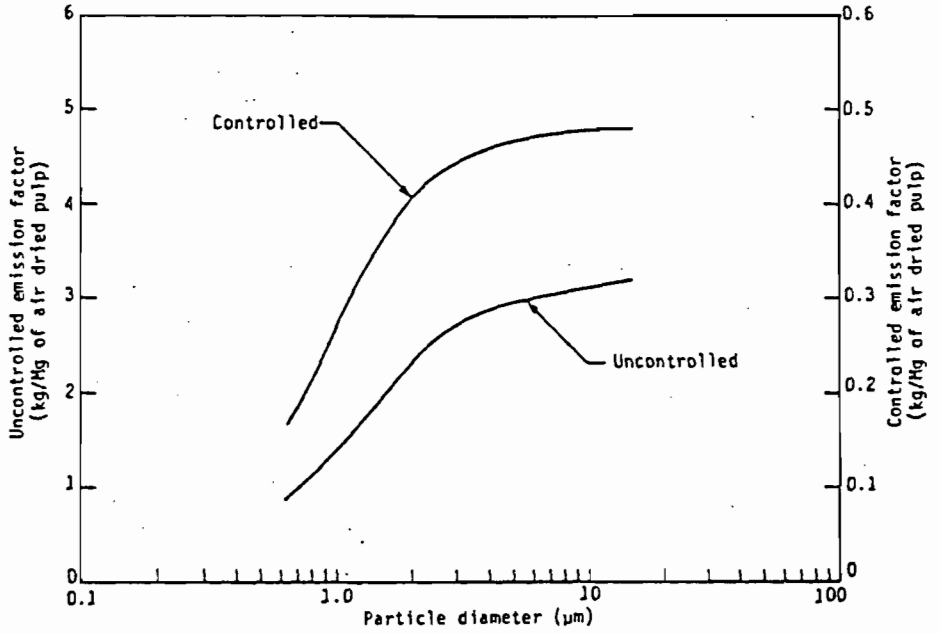


Figure 10.1-6. Cumulative particle size distribution and size specific emission factors for smelt dissolving tank with packed tower.

TABLE 10.1-7. CUMULATIVE PARTICLE SIZE DISTRIBUTION AND SIZE SPECIFIC EMISSION FACTORS FOR A SMELT DISSOLVING TANK WITH A VENTURI SCRUBBER[a]

EMISSION FACTOR RATING: C

Particle size (um)	Cumulative mass % ≤ stated size		Cumulative emission factor (kg/Mg of air dried pulp)	
	Uncontrolled	Controlled	Uncontrolled	Controlled
15	90.0	89.9	3.2	0.09
10	88.5	89.5	3.1	0.09
6	87.0	88.4	3.0	0.09
2.5	73.0	81.3	2.6	0.08
1.25	47.5	63.5	1.7	0.06
1.00	54.0	54.7	1.4	0.06
0.625	25.5	38.7	0.9	0.04
Total	100	100	3.5	0.09

[a]Reference 7.

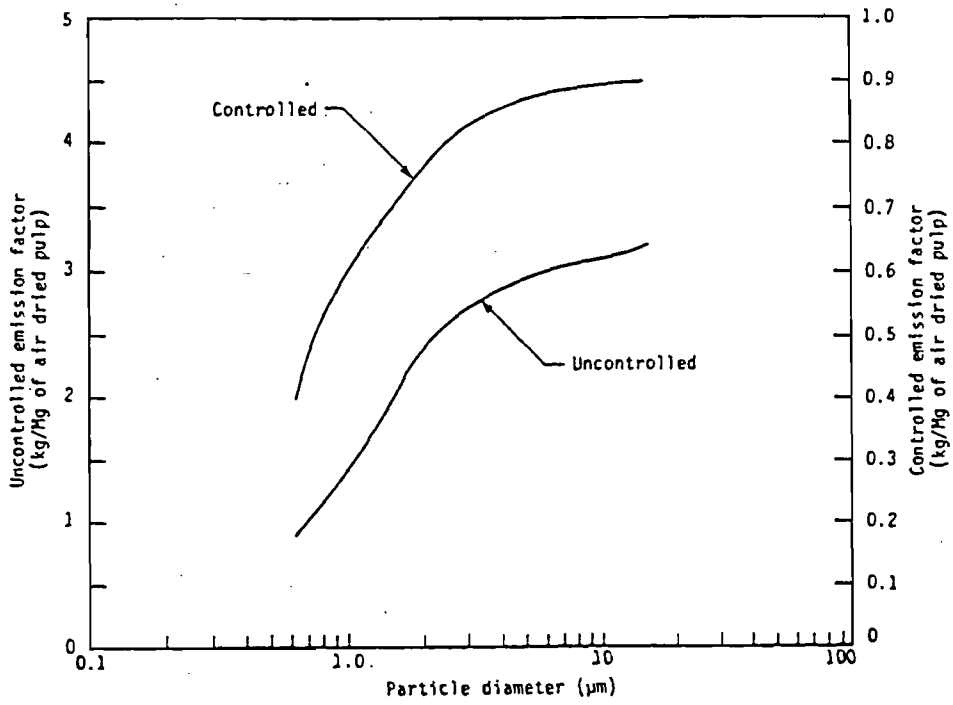


Figure 10.1-7. Cumulative particle size distribution and size specific emission factors for smelt dissolving tank with venturi scrubber.

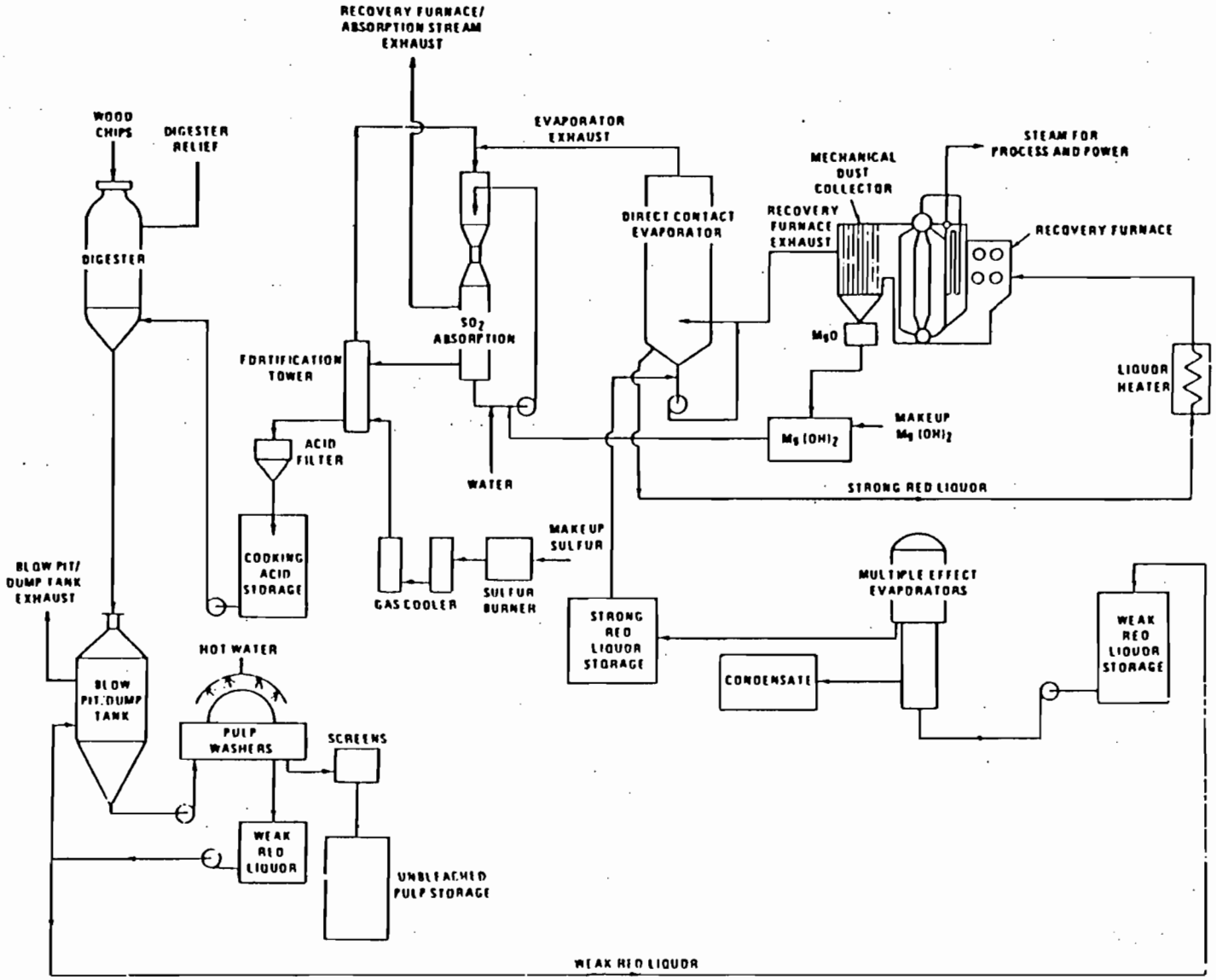


Figure 10.1-8. Simplified process flow diagram of magnesium-base process employing chemical and heat recovery.

incinerated, or sent to a plant for recovery of heat and chemicals. The pulp is then washed and processed through screens and centrifuges to remove knots, bundles of fibers and other material. It subsequently may be bleached, pressed and dried in papermaking operations.

Because of the variety of cooking liquor bases used, numerous schemes have evolved for heat and/or chemical recovery. In calcium base systems, found mostly in older mills, chemical recovery is not practical, and the spent liquor is usually discharged or incinerated. In ammonium base operations, heat can be recovered by combusting the spent liquor, but the ammonium base is thereby consumed. In sodium or magnesium base operations, the heat, sulfur and base all may be feasibly recovered.

If recovery is practiced, the spent (weak) red liquor (which contains more than half of the raw materials as dissolved organic solids) is concentrated in a multiple effect evaporator and a direct contact evaporator to 55 to 60 percent solids. This strong liquor is sprayed into a furnace and burned, producing steam to operate the digesters, evaporators, etc. and to meet other power requirements.

When magnesium base liquor is burned, a flue gas is produced from which magnesium oxide is recovered in a multiple cyclone as fine white power. The magnesium oxide is then water slaked and is used as circulating liquor in a series of venturi scrubbers, which are designed to absorb sulfur dioxide from the flue gas and to form a bisulfite solution for use in the cook cycle. When sodium base liquor is burned, the inorganic compounds are recovered as a molten smelt containing sodium sulfide and sodium carbonate. This smelt may be processed further and used to absorb sulfur dioxide from the flue gas and sulfur burner. In some sodium base mills, however, the smelt may be sold to a nearby kraft mill as raw material for producing green liquor.

If liquor recovery is not practiced, an acid plant is necessary of sufficient capacity to fulfill the mill's total sulfite requirement. Normally, sulfur is burned in a rotary or spray burner. The gas produced is then cooled by heat exhangers and a water spray and is then absorbed in a variety of different scrubbers containing either limestone or a solution of the base chemical. Where recovery is practiced, fortification is accomplished similarly, although a much smaller amount of sulfur dioxide must be produced to make up for that lost in the process.

Emissions And Controls[11] - Sulfur dioxide is generally considered the major pollutant of concern from sulfite pulp mills. The characteristic "kraft" odor is not emitted because volatile reduced sulfur compounds are not products of the lignin/bisulfite reaction.

A major SO_2 source is the digester and blow pit (dump tank) system. Sulfur dioxide is present in the intermittent digester relief gases, as well as in the gases given off at the end of the cook when the digester contents are discharged into the blow pit. The quantity of sulfur dioxide evolved and emitted to the atmosphere in these gas streams depends on the pH of the cooking liquor, the pressure at which the digester contents are discharged, and the effectiveness of the absorption systems employed for SO_2 recovery. Scrubbers can be installed that reduce SO_2 from this source by as much as 99 percent.

Another source of sulfur dioxide emissions is the recovery system. Since magnesium, sodium, and ammonium base recovery systems all use absorption systems to recover SO_2 generated in recovery furnaces, acid fortification towers, multiple effect evaporators, etc., the magnitude of SO_2 emissions depends on the desired efficiency of these systems. Generally, such absorption systems recover better than 95 percent of the sulfur so it can be reused.

The various pulp washing, screening, and cleaning operations are also potential sources of SO_2. These operations are numerous and may account for a significant fraction of a mill's SO_2 emissions if not controlled.

The only significant particulate source in the pulping and recovery process is the absorption system handling the recovery furnace exhaust. Ammonium base systems generate less particulate than do magnesium or sodium base systems. The combustion productions are mostly nitrogen, water vapor and sulfur dioxide.

Auxiliary power boilers also produce emissions in the sulfite pulp mill, and emission factors for these boilers are presented in Chapter 1.

Table 10.1-8 contains emission factors for the various sulfite pulping operations.

10.1.4 Neutral Sulfite Semichemical (NSSC) Pulping

Process Description[9, 12-14] - In this method, wood chips are cooked in a neutral solution of sodium sulfite and sodium carbonate. Sulfite ions react with the lignin in wood, and the sodium bicarbonate acts as a buffer to maintain a neutral solution. The major difference between all semichemical techniques and those of kraft and acid sulfite processes is that only a portion of the lignin is removed during the cook, after which the pulp is further reduced by mechanical disintegration. This method achieves yields as high as 60 to 80 percent, as opposed to 50 to 55 percent for other chemical processes.

The NSSC process varies from mill to mill. Some mills dispose of their spent liquor, some mills recover the cooking chemicals, and some, when operated in conjunction with kraft mills, mix their spent liquor with the kraft liquor as a source of makeup chemcials. When recovery is practiced, the involved steps parallel those of the sulfite process.

Emissions And Controls[9,12-14] - Particulate emissions are a potential problem only when recovery systems are involved. Mills that do practice recovery but are not operated in conjunction with kraft operations often utilize fluidized bed reactors to burn their spent liquor. Because the flue gas contains sodium sulfate and sodium carbonate dust, efficient particulate collection may be included for chemical recovery.

A potential gaseous pollutant is sulfur dioxide. Absorbing towers, digester/blower tank system, and recovery furnace are the main sources of SO_2, with amounts emitted dependent upon the capability of the scrubbing devices installed for control and recovery.

Hydrogen sulfide can also be emitted from NSSC mills which use kraft type recovery furnaces. The main potential source is the absorbing tower, where a

TABLE 10.1-8. EMISSION FACTORS FOR SULFITE PULPING[a]

Source	Base	Control	Emission factor[b]				Emission Factor Rating
			Particulate		Sulfur dioxide		
			kg/ADUMg	lb/ADUT	kg/ADUMg	lb/ADUT	
Digester/blow pit or dump tank[c]	All	None	Neg	Neg	5 to 35	10 to 70	C
	MgO	Process change[d]	Neg	Neg	1 to 3	2 to 6	C
	MgO	Scrubber	Neg	Neg	0.5	1	B
	MgO	Process change and scrubber	Neg	Neg	0.1	0.2	B
	MgO	All exhaust vented through recovery system	Neg	Neg	0	0	A
	NH_3	Process change	Neg	Neg	12.5	25	D
	NH_3	Process change and scrubber	Neg	Neg	0.2	0.4	B
	Na	Process change and scrubber	Neg	Neg	1	2	C
	Ca	Unknown	Neg	Neg	33.5	67	C
Recovery system[e]	MgO	Multicyclone and venturi scrubbers	1	2	4.5	9	A
	NH_3	Ammonia absorption and mist eliminator	0.35	0.7	3.5	7	B
	Na	Sodium carbonate scrubber	2	4	1	2	C
Acid plant[f]	NH_3	Scrubber	Neg	Neg	0.2	0.3	C
	Na	Unknown[g]	Neg	Neg	0.1	0.2	D
	Ca	Jenssen scrubber	Neg	Neg	4	8	C
Other[h]	All	None	Neg	Neg	6	12	D

[a]Reference 11. All factors represent long term average emissions. ADUMg = Air dried unbleached megagram. ADUT = Air dried unbleached ton. Neg = negligible.

[b]Expressed as kg (lb) of pollutant/air dried unbleached ton (mg) of pulp.

[c]Factors represent emissions after cook is completed and when digester contents are discharged into blow pit or dump tank. Some relief gases are vented from digester during cook cycle, but these are usually transferred to pressure accumulators and SO_2 therein reabsorbed for use in cooking liquor. In some mills, actual emissions will be intermittent and for short periods.

[d]May include such measures as raising cooking liquor pH (thereby lowering free SO_2), relieving digester pressure before contents discharge, and pumping out digester contents instead of blowing out.

[e]Recovery system at most mills is closed and includes recovery furnace, direct contact evaporator, multiple effect evaporator, acid fortification tower, and SO_2 absorption scrubbers. Generally only one emission point for entire system. Factors include high SO_2 emissions during periodic purging of recovery systems.

[f]Necessary in mills with insufficient or nonexistent recovery systems.

[g]Control is practiced, but type of system is unknown.

[h]Includes miscellaneous pulping operations such as knotters, washers, screens, etc.

significant quantity of hydrogen sulfite is liberated as the cooking liquor is made. Other possible sources, depending on the operating conditions, include the recovery furnace, and in mills where some green liquor is used in the cooking process, the digester/blow tank system. Where green liquor is used, it is also possible that significant quantities of mercaptans will be produced. Hydrogen sulfide emissions can be eliminated if burned to sulfur dioxide before the absorbing system.

Because the NSSC process differs greatly from mill to mill, and because of the scarcity of adequate data, no emission factors are presented for this process.

References for Section 10.1

1. Review of New Source Performance Standards for Kraft Pulp Mills, EPA-450/3-83-017, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1983.

2. Standards Support and Environmental Impact Statement, Volume I: Proposed Standards of Performance for Kraft Pulp Mills, EPA-450/2-76-014a, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1976.

3. Kraft Pulping - Control of TRS Emissions from Existing Mills, EPA-450/78-003b, U. S. Environmental Protection Agency, Research Triangle Park, NC, March 1979.

4. Environmental Pollution Control, Pulp and Paper Industry, Part I: Air, EPA-625/7-76-001, U. S. Environmental Protection Agency, Washington, DC, October 1976.

5. A Study of Nitrogen Oxides Emissions from Lime Kilns, Technical Bulletin Number 107, National Council of the Paper Industry for Air and Stream Improvement, New York, NY, April 1980.

6. A Study of Nitrogen Oxides Emissions from Large Kraft Recovery Furnaces, Technical Bulletin Number 111, National Council of the Paper Industry for Air and Stream Improvement, New York, NY, January 1981.

7. Source Category Report for the Kraft Pulp Industry, EPA Contract Number 68-02-3156, Acurex Corporation, Mountain View, CA, January 1983.

8. Source test data, Office Of Air Quality Planning And Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC, 1972.

9. Atmospheric Emissions from the Pulp and Paper Manufacturing Industry, EPA-450/1-73-002, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1973.

10. Carbon Monoxide Emissions from Selected Combustion Sources Based on Short-Term Monitoring Records, Technical Bulleting Number 416, National Council of the Paper Industry for Air and Stream Improvement, New York, NY, January 1984.

11. Backgound Document: Acid Sulfite Pulping, EPA-450/3-77-005, U. S. Environmental Protection Agency, Research Triangle Park, NC, January 1977.

12. E. R. Hendrickson, et al., Control of Atmospheric Emissions in the Wood Pulping Industry, Volume I, HEW Contract Number CPA-22-69-18, U. S. Environmental Protection Agency, Washington, DC, March 15, 1970.

13. M. Benjamin, et al., "A General Description of Commercial Wood Pulping and Bleaching Processes", Journal of the Air Pollution Control Association, 19 (3):155-161, March 1969.

14. S. F. Galeano and B. M. Dillard, "Process Modifications for Air Pollution Control in Neutral Sulfite Semi-chemical Mills", Journal of the Air Pollution Control Association, 22(3):195-199, March 1972.

8.15 LIME MANUFACTURING

8.15.1 General[1-4]

Lime is the high temperature product of the calcination of limestone. There are two kinds, high calcium lime (CaO) and dolomitic lime (CaO · MgO). Lime is manufactured in various kinds of kilns by one of the following reactions:

$$CaCO_3 + \text{heat} \rightarrow CO_2 + CaO \text{ (high calcium lime)}$$
$$CaCO_3 \cdot MgCO_3 + \text{heat} \rightarrow CO_2 + CaO \cdot MgO \text{ (dolomitic lime)}$$

In some lime plants, the resulting lime is reacted (slaked) with water to form hydrated lime.

The basic processes in the production of lime are 1) quarrying raw limestone; 2) preparing limestone for the kilns by crushing and sizing; 3) calcining limestone; 4) processing the lime further by hydrating; and 5) miscellaneous transfer, storage and handling operations. A generalized material flow diagram for a lime manufacturing plant is given in Figure 8.15-1. Note that some operations shown may not be performed in all plants.

The heart of a lime plant is the kiln. The prevalent type of kiln is the rotary kiln, accounting for about 90 percent of all lime production in the United States. This kiln is a long, cylindrical, slightly inclined, refractory lined furnace, through which the limestone and hot combustion gases pass countercurrently. Coal, oil and natural gas may all be fired in rotary kilns. Product coolers and kiln feed preheaters of various types are commonly used to recover heat from the hot lime product and hot exhaust gases, respectively.

The next most common type of kiln in the United States is the vertical, or shaft, kiln. This kiln can be described as an upright heavy steel cylinder lined with refractory material. The limestone is charged at the top and is calcined as it descends slowly to discharge at the bottom of the kiln. A primary advantage of vertical kilns over rotary kilns is higher average fuel efficiency. The primary disadvantages of vertical kilns are their relatively low production rates and the fact that coal cannot be used without degrading the quality of the lime produced. There have been few recent vertical kiln installations in the United States because of high product quality requirements.

Other, much less common, kiln types include rotary hearth and fluidized bed kilns. Both kiln types can achieve high production rates, and neither can operate with coal. The "calcimatic" kiln, or rotary hearth kiln, is a circular shaped kiln with a slowly revolving donut shaped hearth. In fluidized bed kilns, finely divided limestone is brought into contact with hot combustion air in a turbulent zone, usually above a perforated grate. Because of the amount of lime carryover into the exhaust gases, dust collection equipment must be installed on fluidized bed kilns for process economy.

TABLE 8.15-1. EMISSION FACTORS FOR LIME MANUFACTURING[a]

EMISSION FACTOR RATING: B

Source	Particulate[b] kg/Mg	Particulate[b] lb/ton	Nitrogen oxides kg/Mg	Nitrogen oxides lb/ton	Carbon monoxide kg/Mg	Carbon monoxide lb/ton	Sulfur dioxide kg/Mg	Sulfur dioxide lb/ton
Crushers, screens, conveyors, storage piles, unpaved roads, etc.	c	c	Neg	Neg	Neg	Neg	Neg	Neg
Rotary kilns[d]								
Uncontrolled[e]	180	350	1.4	2.8	1	2	f	f
Large diameter cyclone	81	160	1.4	2.8	1	2	f	f
Multiple cyclone	42	83	1.4	2.8	1	2	f	f
Electrostatic precipitator[g]	2.4	4.8	1.4	2.8	1	2	h	h
Venturi scrubber	2.4	4.8	1.4	2.8	1	2	h	h
Gravel bed filter[g]	0.53[i]	1.1[i]	1.4	2.8	1	2	h	h
Multiclone and venturi scrubber[g]	0.44	0.87	1.4	2.8	1	2	h	h
Baghouse	0.45[j]	0.89[j]	1.4	2.8	1	2	h	h
Cyclone and baghouse	0.055	0.11	1.4	2.8	1	2	h	h
Vertical kilns								
Uncontrolled	4	8	NA	NA	NA	NA	NA	NA
Calcimatic kilns[k]								
Uncontrolled	25	50	0.1	0.2	NA	NA	NA	NA
Multiple cyclone	3	6	0.1	0.2	NA	NA	NA	NA
Secondary dust collection[l]	NA	NA	0.1	0.2	NA	NA	NA	NA
Fluidized bed kilns	m	m	NA	NA	NA	NA	NA	NA
Product coolers								
Uncontrolled	20[n]	40[n]	Neg	Neg	Neg	Neg	Neg	Neg
Hydrators (atmospheric)[p]								
Wet scrubber	0.05	0.1	Neg	Neg	Neg	Neg	Neg	Neg
Crusher, screen, hammermill								
Baghouse	0.0005	0.001	Neg	Neg	Neg	Neg	Neg	Neg
Final screen								
Baghouse	0.0004	0.0008	Neg	Neg	Neg	Neg	Neg	Neg
Uncontrolled truck loading								
Limestone								
Open truck	0.75	1.5	Neg	Neg	Neg	Neg	Neg	Neg
Closed truck	0.38	0.76	Neg	Neg	Neg	Neg	Neg	Neg
Lime - closed truck	0.15[i]	0.30[i]	Neg	Neg	Neg	Neg	Neg	Neg

TABLE 8.15-1 (cont.).

[a] References 4-7. Factors for kilns and coolers are per unit of lime produced. Divide by two to obtain factors per unit of limestone feed to the kiln. Factors for hydrators are per unit of hydrated lime produced. Multiply by 1.25 to obtain factors per unit of lime feed to the hydrator. Neg = negligible. NA = not available.

[b] Emission Factor Rating = D.

[c] Factors for these operations are presented in Sections 8.20 and 11.2 of this document.

[d] For coal fired rotary kilns only.

[e] No particulate control except for settling that may occur in stack breeching and chimney base.

[f] Sulfur dioxide may be estimated by a material balance using fuel sulfur content.

[g] Combination coal/gas fired rotary kilns only.

[h] When scrubbers are used, < 5% of the fuel sulfur will be emitted as SO_2 even with high sulfur coal. When other secondary collection devices are used, about 20% of the fuel sulfur will be emitted as SO_2 with high sulfur fuels, and < 10% with low sulfur fuels.

[i] Emission Factor Rating = E.

[j] Emission Factor Rating = C.

[k] Calcimatic kilns generally have stone preheaters. Factors are for emissions after the kiln exhaust passes through a preheater.

[l] Fabric filters and venturi scrubbers have been used on calcimatic kilns. No data are available on particulate emissions after secondary control.

[m] Fluidized bed kilns must have sophisticated dust collection equipment for process economics, hence particulate emissions will depend on efficiency of the control equipment installed.

[n] Some or all cooler exhaust typically is used in kiln as combustion air. Emissions will result only from that fraction not recycled to kiln.

[p] Typical particulate loading for atmospheric hydrators following water sprays or wet scrubbers. Limited data suggest particulate emissions from pressure hydrators may be approximately 1 kg/Mg (2 lb/ton) of hydrate produced, after wet collectors.

References for Section 8.15

1. C. J. Lewis and B. B. Crocker, "The Lime Industry's Problem Of Airborne Dust", Journal Of The Air Pollution Control Association, 19(1):31-39, January 1969.

2. Kirk-Othmer Encyclopedia Of Chemical Technology, 2d Edition, John Wiley And Sons, New York, 1967.

3. Screening Study For Emissions Characterization From Lime Manufacture, EPA Contract No. 68-02-0299, Vulcan-Cincinnati, Inc., Cincinnati, OH, August 1974.

4. Standards Support And Environmental Impact Statement, Volume I: Proposed Standards Of Performance For Lime Manufacturing Plants, EPA-450/2-77-007a, U. S. Environmental Protection Agency, Research Triangle Park, NC, April 1977.

5. Source test data on lime plants, Office Of Air Quality Planning And Standards, U. S. Environmental Protection Agency, Research Triangle Park, NC, 1976.

6. Air Pollutant Emission Factors, APTD-0923, U. S. Environmental Protection Agency, Research Triangle Park, NC, April 1970.

7. J. S. Kinsey, Lime And Cement Industry - Source Category Report, Volume I: Lime Industry, EPA-600/7-86-031, U. S. Environmental Protection Agency, Cincinnati, OH, September 1986.

11.2.3 AGGREGATE HANDLING AND STORAGE PILES

11.2.3.1 General

Inherent in operations that use minerals in aggregate form is the maintenance of outdoor storage piles. Storage piles are usually left uncovered, partially because of the need for frequent material transfer into or out of storage.

Dust emissions occur at several points in the storage cycle, during material loading onto the pile, during disturbances by strong wind currents, and during loadout from the pile. The movement of trucks and loading equipment in the storage pile area is also a substantial source of dust.

11.2.3.2 Emissions and Correction Parameters

The quantity of dust emissions from aggregate storage operations varies with the volume of aggregate passing through the storage cycle. Also, emissions depend on three correction parameters that characterize the condition of a particular storage pile: age of the pile, moisture content and proportion of aggregate fines.

When freshly processed aggregate is loaded onto a storage pile, its potential for dust emissions is at a maximum. Fines are easily disaggregated and released to the atmosphere upon exposure to air currents from aggregate transfer itself or high winds. As the aggregate weathers, however, potential for dust emissions is greatly reduced. Moisture causes aggregation and cementation of fines to the surfaces of larger particles. Any significant rainfall soaks the interior of the pile, and the drying process is very slow.

Field investigations have shown that emissions from aggregate storage operations vary in direct proportion to the percentage of silt (particles < 75 μm in diameter) in the aggregate material.[1 3] The silt content is determined by measuring the proportion of dry aggregate material that passes through a 200 mesh screen, using ASTM-C-136 method. Table 11.2.3-1 summarizes measured silt and moisture values for industrial aggregate materials.

11.2.3.3 Predictive Emission Factor Equations

Total dust emissions from aggregate storage piles are contributions of several distinct source activities within the storage cycle:

1. Loading of aggregate onto storage piles (batch or continuous drop operations).
2. Equipment traffic in storage area.
3. Wind erosion of pile surfaces and ground areas around piles.
4. Loadout of aggregate for shipment or for return to the process stream (batch or continuous drop operations).

TABLE 11.2.3-1. TYPICAL SILT AND MOISTURE CONTENT VALUES OF MATERIALS AT VARIOUS INDUSTRIES

Industry	Material	Silt (%)			Moisture (%)		
		No. of test samples	Range	Mean	No. of test samples	Range	Mean
Iron and steel production[a]	Pellet ore	10	1.4 - 13	4.9	8	0.64 - 3.5	2.1
	Lump ore	9	2.8 - 19	9.5	6	1.6 - 8.1	5.4
	Coal	7	2 - 7.7	5	6	2.8 - 11	4.8
	Slag	3	3 - 7.3	5.3	3	0.25 - 2.2	0.92
	Flue dust	2	14 - 23	18.0	0	NA	NA
	Coke breeze	1		5.4	1		6.4
	Blended ore	1		15.0	1		6.6
	Sinter	1		0.7	0	NA	NA
	Limestone	1		0.4	0	NA	NA
Stone quarrying and processing[b]	Crushed limestone	2	1.3 - 1.9	1.6	2	0.3 - 1.1	0.7
Taconite mining and processing[c]	Pellets	9	2.2 - 5.4	3.4	7	0.05 - 2.3	0.96
	Tailings	2	NA	11.0	1		0.35
Western surface coal mining[d]	Coal	15	3.4 - 16	6.2	7	2.8 - 20	6.9
	Overburden	15	3.8 - 15	7.5	0	NA	NA
	Exposed ground	3	5.1 - 21	15.0	3	0.8 - 6.4	3.4

[a] References 2-5. NA = not applicable.
[b] Reference 1.
[c] Reference 6.
[d] Reference 7.

among the piles (which may differ from the silt values for the stored materials) should be used.

For emissions from wind erosion of active storage piles, the following total suspended particulate (TSP) emission factor equation is recommended:

$$E = 1.9 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \quad \text{(kg/day/hectare)} \qquad (3)$$

$$E = 1.7 \left(\frac{s}{1.5}\right) \left(\frac{365-p}{235}\right) \left(\frac{f}{15}\right) \quad \text{(lb/day/acre)}$$

where: E = total suspended particulate emission factor
s = silt content of aggregate (%)
p = number of days with ≧ 0.25 mm (0.01 in.) of precipitation per year
f = percentage of time that the unobstructed wind speed exceeds 5.4 m/s (12 mph) at the mean pile height

The coefficient in Equation 3 is taken from Reference 1, based on sampling of emissions from a sand and gravel storage pile area during periods when transfer and maintenance equipment was not operating. The factor from Test Report 1, expressed in mass per unit area per day, is more reliable than the factor expressed in mass per unit mass of material placed in storage, for reasons stated in that report. Note that the coefficient has been halved to adjust for the estimate that the wind speed through the emission layer at the test site was one half of the value measured above the top of the piles. The other terms in this equation were added to correct for silt, precipitation and frequency of high winds, as discussed in Reference 2. Equation 3 is rated C for application in the sand and gravel industry and D for other industries.

Worst case emissions from storage pile areas occur under dry windy conditions. Worst case emissions from materials handling (batch and continuous drop) operations may be calculated by substituting into Equations 1 and 2 appropriate values for aggregate material moisture content and for anticipated wind speeds during the worst case averaging period, usually 24 hours. The treatment of dry conditions for vehicle traffic (Section 11.2.1) and for wind erosion (Equation 3), centering around parameter p, follows the methodology described in Section 11.2.1. Also, a separate set of nonclimatic correction parameters and source extent values corresponding to higher than normal storage pile activity may be justified for the worst case averaging period.

11.2.3.4 Control Methods

Watering and chemical wetting agents are the principal means for control of aggregate storage pile emissions. Enclosure or covering of inactive piles to reduce wind erosion can also reduce emissions. Watering is useful mainly to reduce emissions from vehicle traffic in the storage pile area. Watering of the storage piles themselves typically has only a very temporary slight effect on total emissions. A much more effective technique is to apply chemical wetting agents for better wetting of fines and

longer retention of the moisture film. Continuous chemical treatment of material loaded onto piles, coupled with watering or treatment of roadways, can reduce total particulate emissions from aggregate storage operations by up to 90 percent.[8]

References for Section 11.2.3

1. C. Cowherd, Jr., et al., Development of Emission Factors for Fugitive Dust Sources, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

2. R. Bohn, et al., Fugitive Emissions from Integrated Iron and Steel Plants, EPA-600/2-78-050, U. S. Environmental Protection Agency, Research Triangle Park, NC, March 1978.

3. C. Cowherd, Jr., et al., Iron and Steel Plant Open Dust Source Fugitive Emission Evaluation, EPA-600/2-79-103, U. S. Environmental Protection Agency, Research Triangle Park, NC, May 1979.

4. R. Bohn, Evaluation of Open Dust Sources in the Vicinity of Buffalo, New York, U. S. Environmental Protection Agency, New York, NY, March 1979.

5. C. Cowherd, Jr., and T. Cuscino, Jr., Fugitive Emissions Evaluation, Equitable Environmental Health, Inc., Elmhurst, IL, February 1977.

6. T. Cuscino, et al., Taconite Mining Fugitive Emissions Study, Minnesota Pollution Control Agency, Roseville, MN, June 1979.

7. K. Axetell and C. Cowherd, Jr., Improved Emission Factors for Fugitive Dust from Western Surface Coal Mining Sources, 2 Volumes, EPA Contract No. 68-03-2924, PEDCo Environmental, Inc., Kansas City, MO, July 1981.

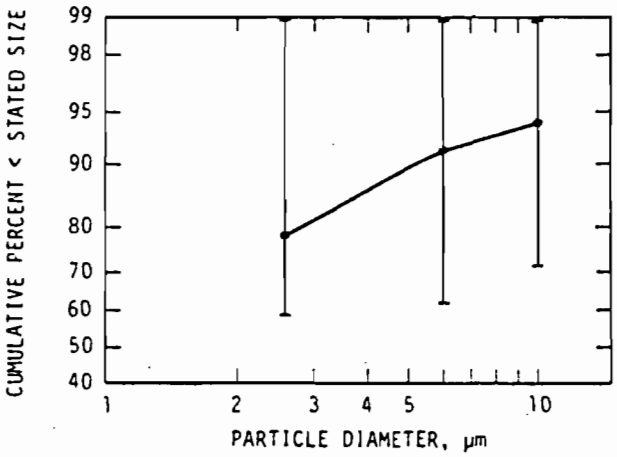
8. G. A. Jutze, et al., Investigation of Fugitive Dust Sources Emissions and Control, EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

TABLE C.2-2 (continued).

Category: 9
Process: Condensation, Hydration, Absorption, Prilling and Distillation
Material: All

Category 9 covers condensation, hydration, absorption, prilling, and distillation of all materials. These processes involve the physical separation or combination of a wide variety of materials such as sulfuric acid and ammonium nitrate fertilizer. (Coke ovens are included since they can be considered a distillation process which separates the volatile matter from coal to produce coke.)

REFERENCE: 1, 3



Particle size, μm	Cumulative % less than or equal to stated size (uncontrolled)	Minimum Value	Maximum Value	Standard Deviation
1.0[a]	60			
2.0[a]	74			
2.5	78	59	99	17
3.0[a]	81			
4.0[a]	85			
5.0[a]	88			
6.0	91	61	99	12
10.0	94	71	99	9

[a] Value calculated from data reported at 2.5, 6.0, and 10.0 μm. No statistical parameters are given for the calculated value.

C.2.3 How To Use The Generalized Particle Size Distributions For Controlled Processes

To calculate the size distribution and the size specific emissions for a source with a particulate control device, the user first calculates the uncontrolled size specific emissions. Next, the fractional control efficiency for the control device is estimated, using Table C.2-3. The Calculation Sheet provided (Figure C.2-2) allows the user to record the type of control device and the collection efficiencies from Table C.2-3, the mass in the size range before and after control, and the cumulative mass. The user will note that the uncontrolled size data are expressed in cumulative fraction less than the stated size. The control efficiency data apply only to the size range indicated and are not cumulative. These data do not include results for the greater than 10 μm particle size range. In order to account for the total controlled emissions, particles greater than 10 μm in size must be included.

C.2.4 Example Calculation

An example calculation of uncontrolled total particulate emissions, uncontrolled size specific emissions, and controlled size specific emission is shown on Figure C.2-1. A blank Calculation Sheet is provided in Figure C.2-2.

TABLE C.2-3 TYPICAL COLLECTION EFFICIENCIES OF VARIOUS PARTICULATE CONTROL DEVICES.[a,b]
(percent)

Type of collector	Particle size, μm		
	0 - 2.5	2.5 - 6	6 - 10
Baffled settling chamber	NR	5	15
Simple (high-throughput) cyclone	50	75	85
High-efficiency and multiple cyclones	80	95	95
Electrostatic precipitator (ESP)	95	99	99.5
Packed-bed scrubber	90	95	99
Venturi scrubber	90	95	99
Wet-impingement scrubber	25	85	95
Fabric filter	99	99.5	99.5

[a] The data shown represent an average of actual efficiencies. The efficiencies are representative of well designed and well operated control equipment. Site specific factors (e.g., type of particulate being collected, varying pressure drops across scrubbers, maintenance of equipment, etc.) will affect the collection efficiencies. The efficiencies shown are intended to provide guidance for estimating control equipment performance when source-specific data are not available.

[b] Reference: 10

NR = Not reported.

EXCERPTS FROM NCASI PUBLICATIONS

ncasi technical bulletin

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC., 260 MADISON AVENUE, NEW YORK, N.Y. 10016

A STUDY OF NITROGEN OXIDES EMISSIONS FROM LIME KILNS

ATMOSPHERIC QUALITY IMPROVEMENT
TECHNICAL BULLETIN No. 107

APRIL 1980

Encl. #5

$$E_{NO_2} = \frac{w(86) + x(130) + y(210) + z(260)}{100}$$

where:

E_{NO_2} = is the applicable standard for nitrogen oxides when multiple fuels are combusted simultaneously (ng/J heat input);

w = is the percentage of total heat input derived from the combustion of fuels subject to the 86 ng/J heat input standard;

x = is the percentage of total heat input derived from the combustion of fuels subject to the 130 ng/J heat input standard;

y = is the percentage of total heat input derived from the combustion of fuels subject to the 210 ng/J input standard; and

z = is the percentage of total heat input derived from the combustion of fuels subject to the 260 ng/J heat input standard.

Since the NOx emissions on any source are determined as nitrogen dioxide (NO_2) on a parts per million (ppm) concentration basis, the data must be converted to the appropriate units of pounds NOx as NO_2 per million Btu heat input. This can be accomplished through the measurement of (a) excess oxygen, (b) the combustion gas flow rate, and (c) the quantity and heat content of the fuel burned. As specified in the Federal Register (116), the TRS and particulate matter concentrations determined after a kraft mill lime kiln control device must be adjusted to ten percent excess oxygen content whether it is greater or less than ten percent. This adjustment addresses the need to normalize pollutant emission concentration data for various degrees of gas stream dilution through transport ducts, fans and control devices. For this reason, the NOx three-hour average concentration data in this bulletin is presented on both a measured stack concentration and also adjusted to ten percent oxygen. At all sites tested, the stack flue gas oxygen level at the point of measurement was less than ten percent oxygen.

B. Lime Kiln Sites

The oxides of nitrogen emission results for the five kilns sampled are presented in Table 3. As specified in the Federal Register (34), the data was compiled into first, hourly averages and then into three-hour averages. The mean and range for each site are noted in the table. The NOx concentration in parts per million, measured at stack conditions, is directly above the NOx concentration mean adjusted to ten percent excess oxygen. Both the three-hour mean and range are given in Table 3 with units of pounds NOx per million Btu heat input and nanograms NOx per Joule

TABLE 3 OXIDES OF NITROGEN FIELD MEASUREMENTS FOR LIME KILNS SAMPLED

Location & Fuel Type	NOx (3) Hour Average Mean (ppm)	NOx (3) Hour Average Mean ($lb/10^6$ Btu)	NOx (3) Hour Average Mean (ng/J)[1]	NOx (3) Hour Average Range (ppm)	NOx (3) Hour Average Range ($lb/10^6$ Btu)	NOx (3) Hour Average Range (ng/J)[1]
1: Oil	185 (130)*	0.850	365	165-215	0.750-0.990	325-425
2: Oil	80 (55)*	0.155	65	35-145	0.065-0.285	30-120
3: Oil	50 (45)*	0.160	70	25-65	0.085-0.215	35-90
4A: Oil	150 (100)*	0.310	135	110-260	0.230-0.545	100-235
4B: Gas	145 (100)*	0.290	125	95-195	0.195-0.390	85-165
5: Gas	310 (275)*	0.780	335	145-430	0.334-1.125	150-485

1. 1 $lb/10^6$ Btu = 430 nanograms per Joule heat input.
* Adjusted to 10 percent oxygen in the flue gas. The other ppm oxygen concentration data corresponds to actual stack oxygen levels shown in Table 2.

heat input for each of the five sites and six combustion modes studied. These NOx emission values correspond to the time testing interval noted in Table 2. The NOx mean and upper range found for each site in units of pounds NOx per million Btu are depicted in Figure 3. All of the lime kiln sources represented in this figure except Nos. 4B and 5 corresponded to 100 percent oil fuel firing. The two exceptions were kiln sites fired on 100 percent natural gas during the study period.

The dashed line at 0.30 pounds NOx per million Btu in Figure 3 indicates the standard for oil fired boilers. The lower dashed line at 0.20 pounds NOx per million Btu corresponds to the standard for natural gas fired boilers. As shown in the figure, three out of four of the kilns fired on oil had at least one three-hour interval over 0.30 pounds NOx per million Btu. Two of these three sites were found to have data means over the oil fired boiler standard. Both of the kilns which fired natural gas had a majority of their three-hour NOx averages which were above the standard for natural gas fired boilers.

The wide range and high three-hour average NOx emission levels found for the natural gas fired kiln at site No. 5 point toward a potential dependence of NOx concentrations over the normal range of this particular burner operation. A relationship between combustion zone temperature and NOx emission rate was obtained in a study by NCASI personnel with the use of an optical pyrometer and is presented in Figure 4. The relationship in the figure was based on a total of 37 data points. The solid portion of the curve indicates the use of linear regression techniques performed on 33 of these data points which were judged to follow a close linear distribution to give the following equation having a correlation coefficient, R, of 0.965:

$$\frac{\text{lb NOx}}{10^6 \text{ Btu}} = 2.17 \times 10^{-3} \text{ (Temperature, °F)} - 3.58$$

The dashed portion of the center curve was a smooth fit approximation through the remaining four data points. Based on the data collected encompassing various modes of burner operation at this site, there was judged to be a potential for reduction of NOx emissions to less than 0.4 pounds per million Btu. Adjustment of the gas firing rate and the excess air levels supplied to the kiln's burner may enable the combustion zone temperature as measured by the optical pyrometer to be controlled at less than 1850°F. Below this temperature the NOx to combustion zone temperature relationship was judged to be insignificant for the limited amount of data collected. The normal combustion zone temperature for long kilns usually averages about 2000°F with as much as 2375°F required for short kilns. The minimum temperature at which calcium carbonate dissociates and the partial pressure of carbon dioxide reaches one atmosphere is 1670°F (123). Heat and radiation losses of up to 40% in combination with the energy required to evaporate 30 to 40% water carried in the lime mud charged to the kiln, makes the minimum combustion zone temperature somewhat higher than this value.

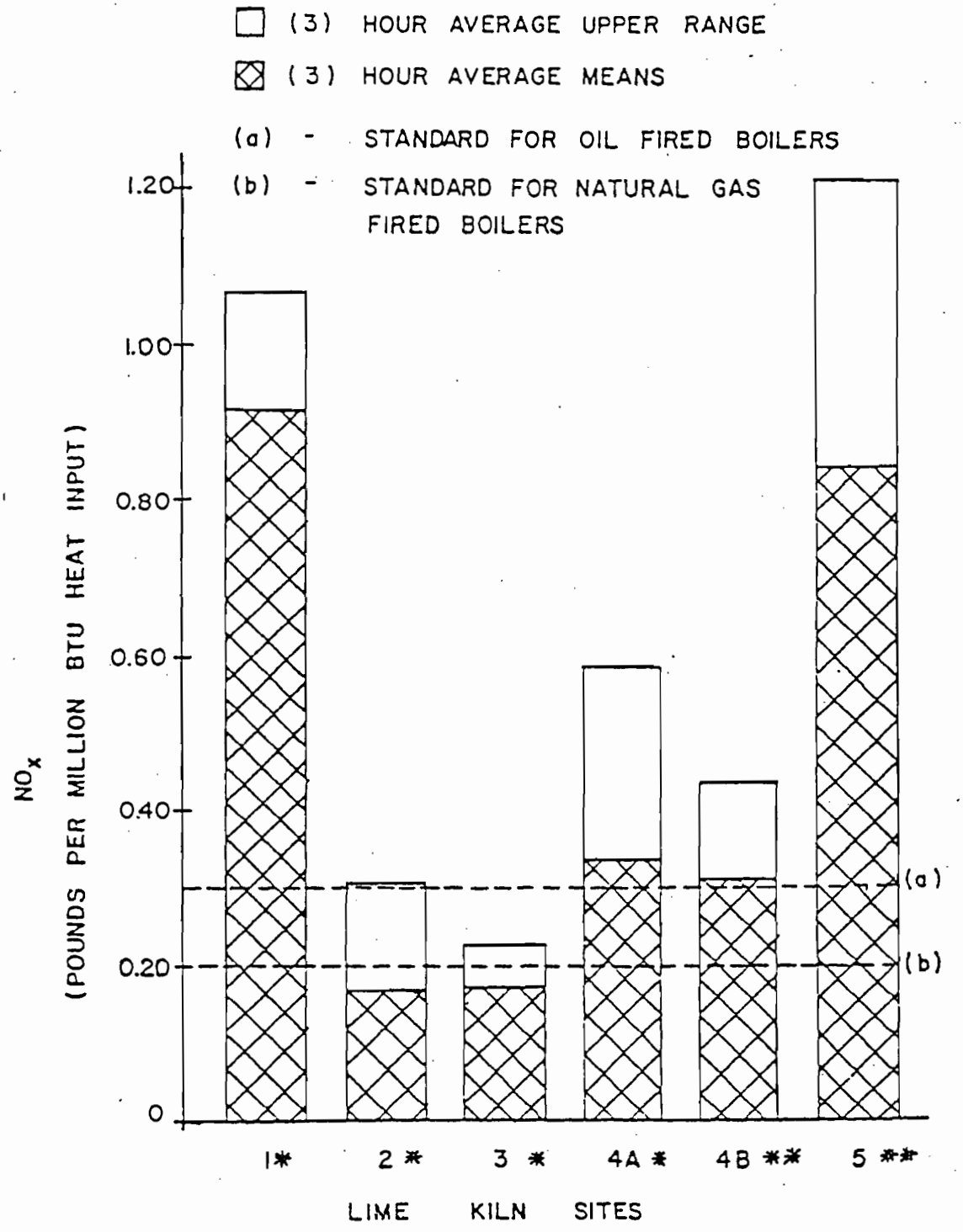


FIGURE 3. NOx EMISSION LEVELS FOR KRAFT MILL LIME KILNS SAMPLED

* OIL FIRED

** NATURAL GAS FIRED

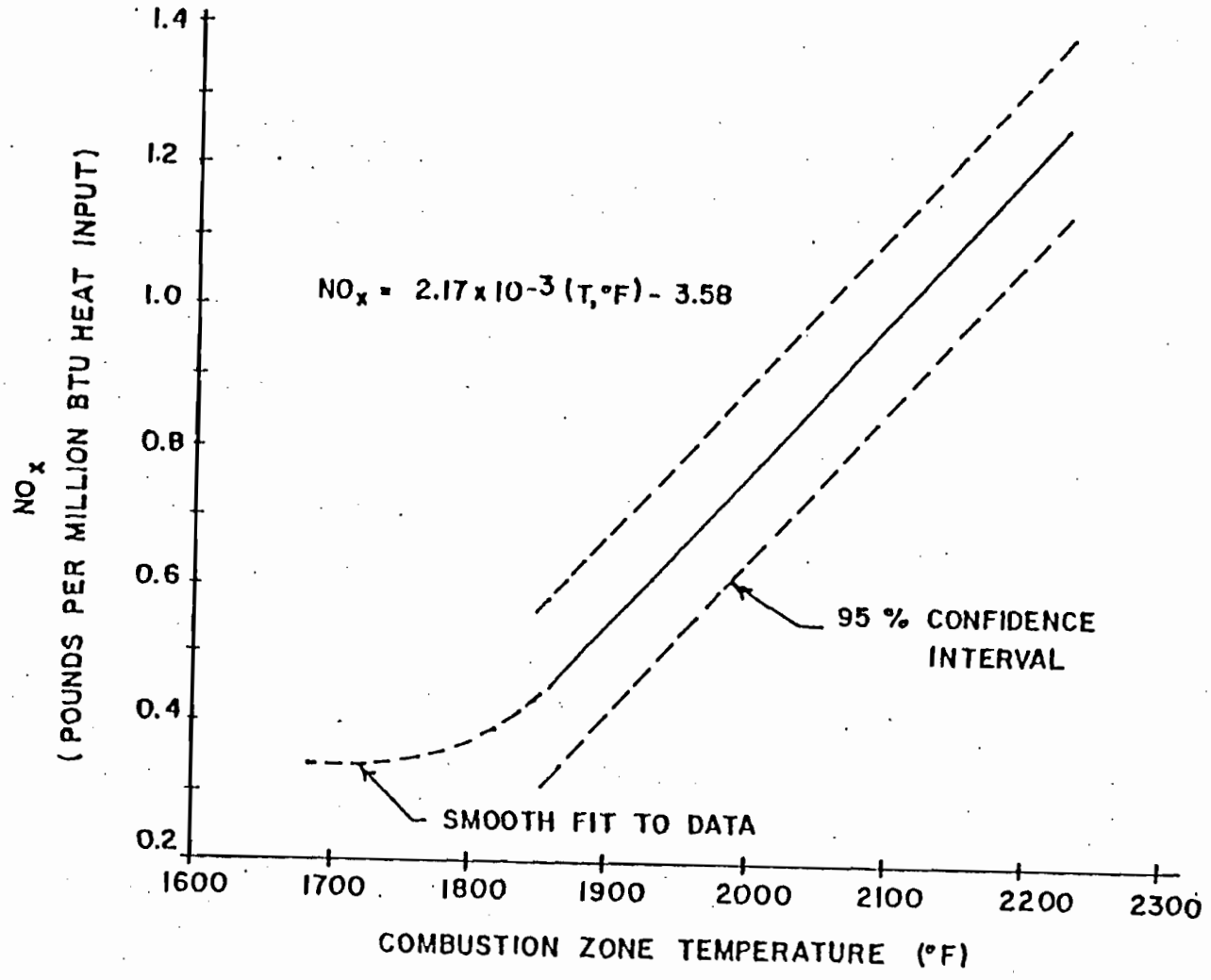


FIGURE 4. THE RELATIONSHIP BETWEEN COMBUSTION ZONE TEMPERATURE AND NOx EMISSIONS

B. Kraft Recovery Furnaces

Carbon monoxide monitoring records from five kraft recovery furnaces were collected and analyzed. These recovery furnaces represent both DCE and non-DCE units with construction dates ranging from 1964 to 1977. Table 2 lists characteristics of these furnaces.

TABLE 2 RECOVERY FURNACE DESIGN INFORMATION

Furnace	Manufacturer	Installment Date	Type	Rated Black Liquor Firing Rate lb/hr	Average Black Liquor Firing Rate lb/hr	Black Liquor Heat Value Btu/lb Dry Solids
A	CE	1970	NDCE	100,000	80,000	5,717
B	CE	1964	DCE	100,000	103,000	5,955
C	CE	1977	NDCE	190,000	148,000	6,600
D	CE	1975	DCE	137,500	137,000	6,000
E	B & W (short)	1965	DCE	96,000	79,000	--

C. Lime Kilns

Carbon monoxide monitoring data from two recently constructed lime kilns were collected.

(1) Kiln A - Kiln A was a rotary kiln manufactured by Allis Chalmers and began operation in 1968. The kiln has a 9 ft diameter and 250 ft length with provisions for firing on either gas or oil. Noncondensible gases from the pulp mill were not burned in the kiln. The kiln was designed to produce 106 tons lime as CaO per day for the equivalent production of 425 TPD unbleached pulp. Particulate emissions were controlled with a Chemico venturi type scrubber, which used fresh water for makeup.

(2) Kiln B - Kiln B was rotary kiln manufactured by F. L. Smidth and Co., Inc. and began operation in early 1982. The kiln has a diameter of 11.83 ft (less 1.75 ft for the brick lining at the hot end) and a length of 341 ft. The kiln fires No. 6 oil or natural gas and has a lime production capacity of 325 tons per day as CaO. This kiln used lime product coolers to preheat the combustion air. Noncondensible gases from the pulp mill were not burned in this kiln.

increase. This was at about 350 ppm carbon monoxide. The kraft recovery furnaces studied that were equipped with non-direct contact evaporators operated with higher furnace exit gas oxygen concentrations than the NDCE-equipped furnaces. These furnaces maintained carbon monoxide below 400 ppm and TRS emissions were below 5 ppm throughout the study period.

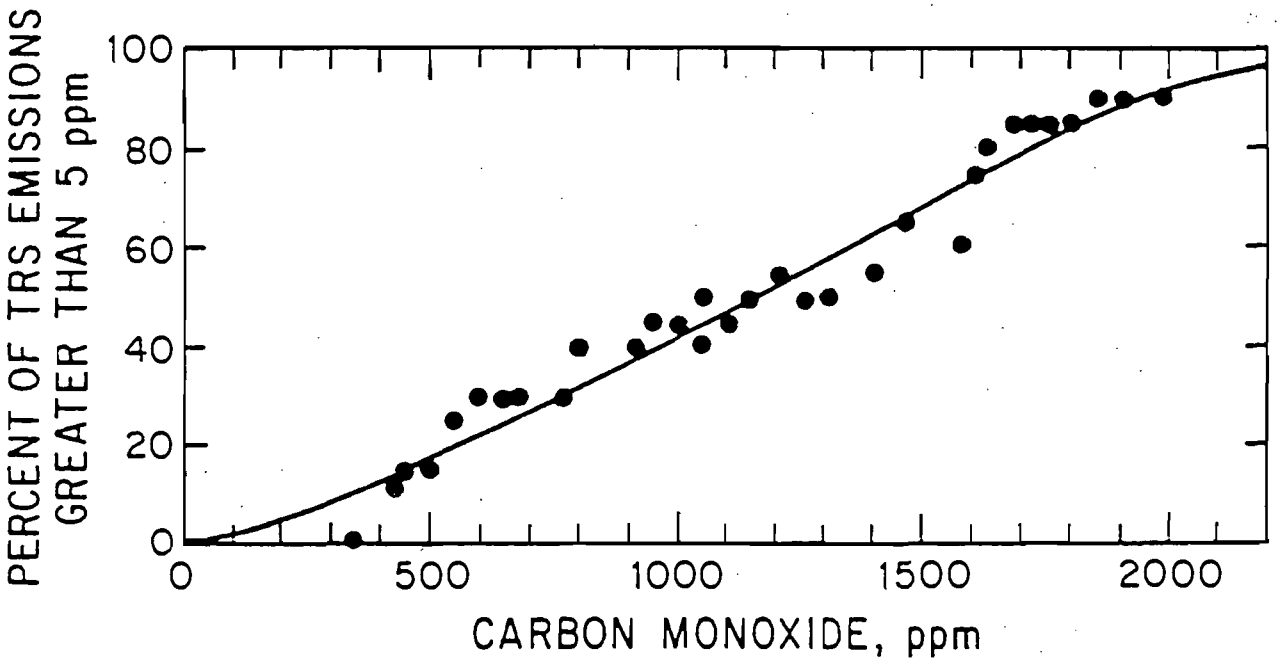


FIGURE 23

PERCENT OF TRS EMISSIONS GREATER THAN 5 ppm AS A FUNCTION OF CARBON MONOXIDE CONCENTRATIONS IN THE STACK GASES AT RECOVERY FURNACE C

Carbon monoxide-TRS emission relationships for these five units were inadequate to determine if carbon monoxide monitoring could serve as a surrogate for TRS monitoring. An additional study is required to determine if this is the case. Carbon monoxide monitoring, however, was indicated to be an effective tool to assist the furnace operator in reducing TRS emissions excursions from the furnace.

E. Lime Kiln Carbon Monoxide Emission

Averages of carbon monoxide emission data collected from two lime kilns during this survey, kilns A and B, representing 200 and 60 hours of data respectively, and two lime kilns during TGNMO emissions survey (5), kilns C and D, are listed in Table 6. Cumulative frequency distributions of 1 hr and 8 hr average

carbon monoxide emissions from kilns A and B are shown in Figures 24 and 25. Average 1 hr carbon monoxide emissions from kilns A and B were less than 0.03 lb/10^6 Btu heat input greater than 70 percent of the time. Occasional process upsets, such as too little excess combustion air or unstable flame conditions resulted in occasional short-term, high concentrations of carbon monoxide. Carbon monoxide emissions during these momentary aberrations increased average emissions from baseline levels. Median 1 hr average carbon monoxide emissions were at 0.008 and 0.023 lb/10^6 Btu for kilns A and B respectively. Lime kiln C was an older unit and did not have an operating oxygen monitor when sampled. This may have been in part responsible for the higher carbon monoxide emission rates measured.

TABLE 6 AVERAGE LIME KILN CARBON MONOXIDE EMISSIONS

Kiln	Hours of Data	lb CO/10^6 Btu	lb CO/ton Lime	lb CO/ADT Pulp
A	60	0.038	0.17	0.051
B	200	0.041	0.19	0.058
C	14	0.080	0.41	0.120
D	8	0.020	0.12	0.035

F. Carbon Monoxide Emissions at Optimum Energy Recovery Efficiency

Recovery furnaces and wood-residue fired boilers can be optimized for energy recovery by balancing reduced stack heat losses from low excess combustion air use against energy losses from uncombusted carbon monoxide in the flue gases. Figure 26 shows stack energy losses from three kraft recovery furnaces as a function of the stack gas oxygen concentration and CO concentrations typical of the flue gas oxygen concentration shown for the indicated furnace. Each recovery furnace is indicated to have an optimum operating range. The carbon monoxide emission concentrations in the exit gas at maximum energy recovery were between 300 to 1000 ppm, which corresponded to between 1.1 to 3.8 lb CO/10^3 lb bls. These values will vary somewhat with stack gas temperature. A higher stack gas temperature should result in a narrower range in carbon monoxide emission rates at maximum energy recovery. If recovery furnaces are optimized for energy recovery, it would be expected that carbon monoxide emission rate will be within the range mentioned above. A carbon monoxide concentration of 300 ppm or about 1 lb CO/10^3 lb bls was

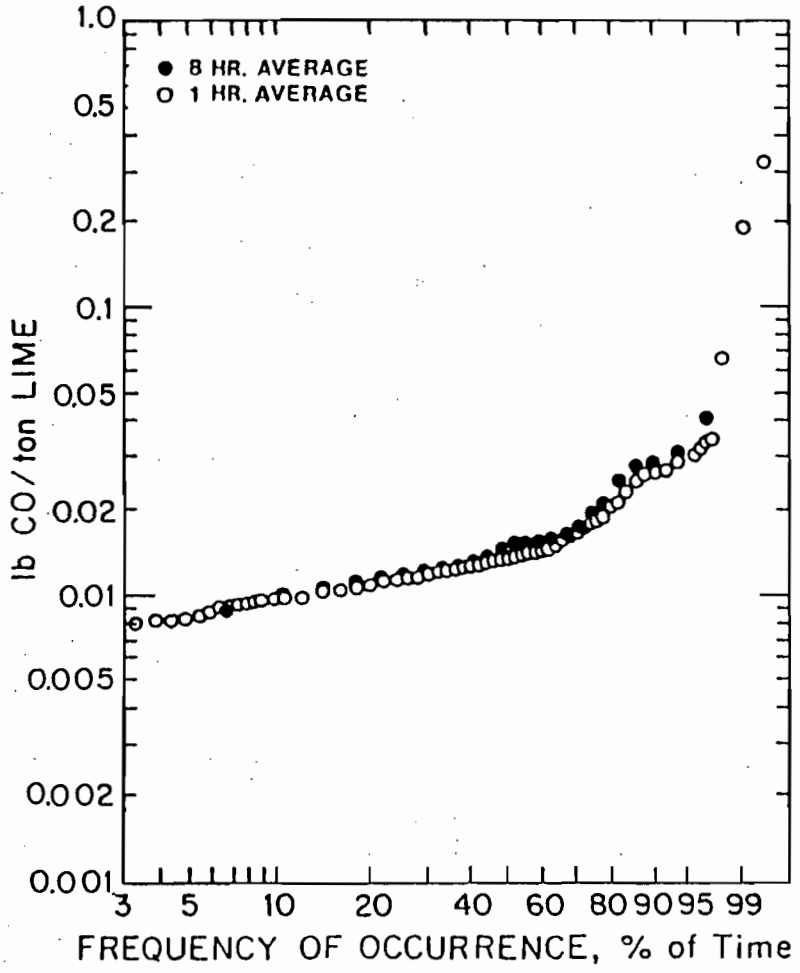


FIGURE 24

FREQUENCY OF OCCURRENCE OF CO EMISSIONS MEASURED AT LIME KILN A

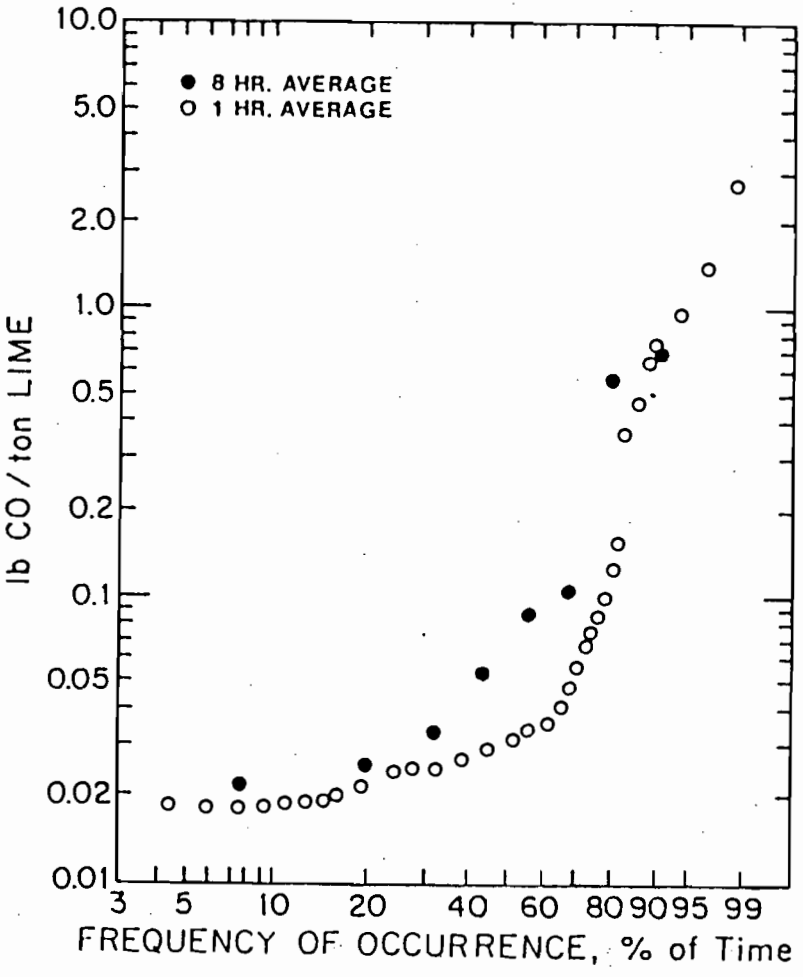


FIGURE 25

FREQUENCY OF OCCURRENCE OF CO EMISSIONS MEASURED AT LIME KILN B

ncasi technical bulletin

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC., 260 MADISON AVENUE, NEW YORK, N.Y. 10016

A STUDY OF KRAFT PROCESS LIME KILN TOTAL GASEOUS NON-METHANE ORGANIC EMISSIONS

TECHNICAL BULLETIN NO. 358

SEPTEMBER 1981

The National Council is currently surveying total gaseous non-methane organic emissions from selected sources in the forest products industry to provide a data base on potential emissions to be expected from various sources. It is the aim of this project to produce data consistent with the EPA reference method to be selected for the measurement of total gaseous non-methane organic compounds (TGNMO). The sampling and analysis procedures used in this study were in accordance with proposed EPA Method 25, published in the Federal Register October 3, 1980 (Appendix A) (2).

The EPA analytical procedure yields values for carbon monoxide, carbon dioxide, methane and total gaseous non-methane organics. The analytical procedure was altered to produce results for ethane and ethylene. Methane and ethane are not photoreactive and were not included in the results. The total gaseous non-methane organics (TGNMO) results are reported as methane. The following presents and discusses the sampling equipment, the procedures used, and results obtained from the kraft process lime kiln portion of this study. The kilns sampled were considered as representative of current kiln design and operating practices.

II KILN DESCRIPTIONS

Three lime kilns were sampled for TGNMO emissions both before and after wet scrubbers.

Kiln A is a rotary kiln manufactured by Allis Chalmers and began operation in 1968. The kiln is 9 ft. in diameter and 250 ft. long and can be fired on either gas or oil. Noncondensible gases from the pulp mill are not burned in the kiln. The kiln was designed to produce lime for production of 106 tons per day CaO (425 TPD of unbleached pulp). Fresh water was used throughout the causticizing system. Particulate emissions were controlled with a Chemico venturi type scrubber, which used fresh water for makeup.

Kiln B is a rotary kiln manufactured by Allis Chalmers and began operation in 1964. The kiln is 8 ft. in diameter and 250 ft. long and can be fired with either gas or oil. Noncondensible gases from the pulp mill were burned in the kiln. The kiln was designed to produce 90 tons per day CaO (360 tons pulp per day) but normally operated at 120 to 140 tons per day CaO. Evaporator condensates are used as makeup water throughout the causticizing system and in the scrubber. Particulate emissions were controlled with a Peabody bubble tray falling film scrubber.

Kiln C is a rotary kiln manufactured by Taylor Co. and began operation in 1980. The kiln is 11 ft. 6 in. in diameter and 330 ft. long. Combustion air was preheated by flowing over the outside of the hot end of the kiln. Noncondensible gases were burned in the kiln. The kiln was designed to produce 245 tons per day product (980 tons pulp per day). Fresh water was used for makeup throughout the causticizing system. Particulate emissions were controlled by

an Air Pollution Industries venturi scrubber operating at a 30 to 32 in. pressure drop. Fresh water was used throughout the causticizing system for makeup.

III SAMPLING AND ANALYSIS METHOD

The procedure used for data collection was similar to the one developed by the Southern California Air Pollution Control District and EPA method 25 (Appendix A) procedures. The principle of the procedure is to separate organic compounds at the time of collection into high and low molecular weight fractions using a cold trap (-78°C). The light components are captured in an evacuated tank. The trap containing condensed organics is burned to convert organics to CO_2 for analysis in the laboratory. The light organics captured in the evacuated tank are separated on a chromatographic column yielding concentrations for CO, CH_4, CO_2, C_2H_6 and C_2H_4. All other organics are eluted in one peak. Summation of the trap and tank organic results gives TGNMO stack concentrations. All results are reported as methane.

A. Sampling

Field samples were taken simultaneously in duplicate through separate 1/2 in. stainless steel probes. The stack end of the probes were filled with glass wool before each sample was drawn to prevent collection of particulates in the traps. Six feet of 1/8 in. stainless steel tubing ran from the probes to the traps which were submerged in granular dry ice. The connection between the probe and sampling line was kept inside the stack during sampling. Skematics of the trap construction and sampling assembly are presented in Figures 1 and 2, respectively. Condensible organics and water vapor were captured in the traps. From the traps the gas flowed through a rotometer, a flow control valve, and into a 17-liter evacuated stainless steel tank.

All screw connections in the sampling system were checked for leaks in the field before sampling by pressurizing with air at 30 psi and soaking the joints individually with soapy water. Leaks detected were eliminated prior to sampling.

Sampling flow rates were set at about 230 ml/min so that about 13 liters of sample were collected in the one hour sampling period. When a trap froze due to condensation of stack moisture, the trap inlet was heated momentarily with a propane torch to melt the ice. The sampling system was watched closely to maintain the proper flow rate. After sampling, the trap and 6-foot section of line to the probe were capped and transported to the laboratory packed in dry ice. Tank pressures were measured before and after sampling to determine sample size. Orsat analyses were made for CO_2 and O_2 during sampling.

$$SSc = \frac{Tc^2}{n} - \frac{T^2}{N}$$

$$SSt = \Sigma x^2 - \frac{T^2}{N}$$

$$SSr = SSt - SSc$$

Shown below is a table to calculate the mean squares and separate estimates of variance due to analytical or wood-residue boiler sources.

Source of Variation	Squares (SS)	Freedom (DF)	Square,(MS) (MS=SS/DF)	Mean Square Ratio (MSR)	Parameters Estimated
Boilers	SSc	c-1		$\frac{MSc}{MSr}$	$\sigma^2 + n\sigma_a^2$
Experimental	SSr	c(n-1)			σ^2

When the MSR is less than the appropriate F statistic from the F distribution tables, the variation appearing in the data is due to the randomness resulting from the analytical procedures and not necessarily from the source.

An estimate of the variance of the TGNMO from the boilers is calculated by:

$$S_a^2 = \frac{SSc/(c-1) - SSr/c(n-1)}{n}$$

An estimate of the variance of the analytical procedure (S_r^2) is given by σ^2.

VI RESULTS

All the TGNMO ppm results were corrected for the CO_2 interference as shown in Appendix B. Average CO_2 interferences were 73, 62, and 34 ppm, which represented 75%, 19%, and 109% of the corrected TGNMO for kilns A-C, respectively. The subsequent data presented in this report has been corrected for the CO_2 interference.

Table 6 presents TGNMO emission data in terms of ppm CH_4, lb/ton lime produced, and lb/ton unbleached pulp, along with kiln operation information. The TGNMO emissions expressed as lb/ton unbleached pulp was calculated by assuming 0.3 tons of lime are required to produce 1 ton of pulp. Average TGNMO emissions from the kilns were 0.41, 1.6, and 0.24 lb/ton CaO produced or 0.12, 0.48, and 0.07 lb/ton pulp produced for kilns A-C, respectively. In terms of energy input to the kilns, the TGNMO emissions were 0.060, 0.30, and 0.037 $lb/10^6$ Btu, respectively.

Kiln B produced the highest emissions. The high TGNMO emission rate from this kiln likely resulted from organics introduced to the lime mud by the use of evaporator condensates in the lime mud washing system and at the scrubber. These organics were driven into the gas stream at the cold end of the kiln where the lime mud is dried at the scrubber.

Fresh water was being used in sprays to further wash the mud on the lime mud filter for the first 5 data entries for lime kiln B in Table 6. The TGNMO emissions were higher when fresh water was being used than when evaporator condensates were being used on the lime mud filter sprays. This result is contrary to what may be expected if the organic compounds emitted were introduced to the process through the wash water.

The TGNMO emissions from kiln A could also be due in part to organic compounds contained in the water associated with the lime mud rather than from uncombusted fuel. This kiln and causticizing system was operating over capacity and there were green liquor dregs in the lime mud. Dregs are composed of unburned carbon and products of corrosion contained in the smelt from the recovery furnace. Between 40 to 56% of dregs are lost upon ignition (6). It is possible that the unburned carbon contained volatile organic compounds and were emitted at the cold end of the kiln during drying.

To assess if the TGNMO emissions were associated with the lime mud or a product of combustion, a laboratory study on the lime mud organic content was performed. A measured quantity of lime mud from kiln A was heated to drive off water and organic compounds into the sample preparation system in the TGNMO analysis procedure. Results showed a potential emission rate of 0.44 lb TGNMO per ton lime produced when heated. Corrected field sampling results showed emissions of 0.37 lb/ton lime produced at the time the lime mud sample was collected.

It appears that organics present in the lime mud may be responsible for a significant portion of TGNMO emissions from this kiln. More studies of a similar nature on other lime kilns and a variety of lime muds are advisable to better define this potential relationship.

TGNMO emissions from kiln C were the lowest of the three kilns studied. This kiln burned noncondensible gases. It is not known whether burning of noncondensible gases contributes to TGNMO

TABLE 6 LIME KILN TGNMO EMISSIONS AND OPERATING PARAMETERS

ppm CH_4	TGNMO lb/Ton CaO	lb/Ton Pulp	Stack Flow DSCFM	Lime Produced Tons/hr	Gas Burned cfm	Oil Burned gpm	10^6 Btu Input Ton CaO	TGNMO lb/10^6 Btu
Kiln A								
112	0.52	0.16	10,700	7.0	650		5.7	0.091
214	0.96	0.29	12,200	8.2	-	-		
82	0.37	0.11	12,200	8.2	-	-		
126	0.49	0.15	9,400	7.2		4.4	5.5	0.089
62	0.24	0.07	9,400	7.2		4.4	5.5	0.043
1	0.01	0.00	13,200	4.8		4.5	8.5	0.001
121	0.52	0.16	8,000	5.6	550		6.1	0.086
56	0.20	0.06	10,300	8.6		3.8	4.0	0.050
Avg. 97	0.41	0.12						0.060
Kiln B								
570	2.5	0.75	8,600	5.9	500		5.2	0.48
360	2.0	0.60	9,700	5.4	470		5.4	0.37
340	1.8	0.54	9,700	5.4	470		5.4	0.33
180	0.8	0.24	8,700	6.0	546		5.6	0.14
360	1.6	0.49	9,000*	6.0	460		4.7	0.34
250	1.6	0.49	10,400*	4.8	470		6.0	0.26
320	1.2	0.36	8,600	6.8	495		4.5	0.27
240	0.9	0.27	7,300	6.2	500		5.0	0.18
Avg.328	1.6	0.48						0.30
Kiln C								
38	0.35	0.11	16,800	6.1		5.0	7.4	0.047
26	0.15	0.04	22,000	9.9		5.4	4.9	0.031
43	0.33	0.10	17,800	7.4		4.6	5.6	0.045
18	0.14	0.04	18,600	7.4		4.8	5.9	0.024
Avg. 31	0.24	0.07						

* Flow rates calculated from material balance

emissions. Possible contribution to TGNMO emission from lime mud contaminants was not investigated at this kiln.

TGNMO emission changes across the scrubbers on each lime kiln were monitored by simultaneous sampling before and after the scrubber. Table 7 shows the results. All three kilns showed a slight increase in emissions across the scrubber. The increases found, however, were not statistically significant. A large number of samples would be required to show a definite trend.

TABLE 7 CHANGE IN TGNMO EMISSIONS ACROSS SCRUBBER

	TGNMO Before Scrubber ppm	TGNMO After Scrubber ppm	TGNMO Change
Kiln A	1	63	+62
	122	163	+41
	56	90	+34
Avg.	60	105	+45
Kiln B	195	225	+30
	361	264	-97
	246	263	+17
	198	272	+74
Avg.	250	206	+ 6
Kiln C	20	40	+20
	44	57	+13
Avg.	32	48	+16

The precision of the data as indicated by duplicate samples was obtained from an analysis of variance. Results of the analysis of variance on the TGNMO data in terms of lb/ton CaO produced are listed in Table 8. These results indicated: (1) significant variation in the results not caused by random sampling and analysis error exist in the data from kilns A and B, (2) that the average of a single paired sample is within ±0.14, ±0.64, and ±0.19 lb/ton CaO produced of the true value at the 95% confidence level for kilns A-C respectively, and (3) that the average TGNMO emissions reported for each lime kiln are within ±0.22, ±1.33, and ±0.08 lb/ton lime produced of the true average at the 95% confidence level for kilns A-C respectively.