

### DER

MAY 27 1982

OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florings

82095 V lephone 904 397-8101

May 21, 1982

Mr. Steve Smallwood Florida Department of Environmental Regulation Northwest District Branch Office TwinTower Office Building 2600 Blair Stone Road Tallahassee, FL 32301

Subject:

Air Construction Permit Applications -

Sulfuric Acid Plants and Auxiliary Boiler

Reference: PSD-FL-082

Dear Mr. Smallwood:

Attached are four (4) copies each of construction permit applications for both existing NSPS Sulfuric Acid plants at Occidental's White Springs, Florida, Swift Creek Chemical Complex. Also included are four copies of an application for an auxiliary boiler.

The intent of the applications is to increase the production rate of the two Sulfuric Acid plants ("E" & "F") from 2000 to 2500 STPD of 100 percent sulfuric acid. The application for the auxiliary boiler requests an increase in fuel oil sulfur from 0.8% to 1.0%. The applications are submitted in conjunction with a request for PSD approval (PSD-FL-082) which is under review by your staff.

Should you have any questions, please contact me at (904) 397-8269 or Dr. J. Koogler at (904) 377-5822.

Sincerely,

OCCIDENTAL CHEMICAL COMPANY

W. W. Atwood

Mr. J. Cole, Jacksonville FDER (w/enc.)

Mr. M. P. McArthur, Occidental Chemical Company, General Manager

Dr. J. Koogler, Sholtes & Koogler Environmental Consultants



OCCIDENTAL CHEMICAL COMPANY, FLORIDA OPERATIONS, Post Office Box 300, White Springs, Florida 32096, Telephone 904 397-8101

May 21, 1982

Mr. Steve Smallwood Florida Department of Environmental Regulation Northwest District Branch Office Twin Towers Office Building 2600 Blair Stone Road Tallahassee, FL 32301

DER

MAY 27 1982

BAOM

Subject: Air Construction Permit Applications -Auxiliary Boilers and No. 2 DAP Plant

Reference:

PSD-FL-083

Dear Mr. Smallwood:

Attached are four (4) copies each of construction permit applications for the existing DAP Plant No. 2 and three (3) auxiliary boilers ("B", "C" & "D") at Occidental's White Springs, Florida, Suwannee River Chemical Complex.

The applications request an increase in fuel oil sulfur from 0.8% to 1.0% for the boilers and from 0.8% to 1.5% for the DAP plant. The applications are submitted in conjunction with a request for PSD Approval (PSD-FL-083) which is under review by your staff.

Should you have any questions, please contact me at (904) 397-8269 or Dr. John Koogler at (904) 377-5822.

Sincerely.

OCCIDENTAL CHEMICAL COMPANY

W. W. Atwood

WWA:sc

cc: Mr. J. Cole, Jacksonville FDER, (w/enc.)

Mr. M. P. McArthur, Occidental Chemical Company, General Manager

Dr. J. Koogler, Sholtes & Koogler, Environmental Consultants

May 7, 1982



# STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION APPLICATION TO EXPERITEYCONSTRUCT

# DER

## APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

MAY 27 1982

AIR POLLU	ITION SOURCES	MM1 ≈ 7 1982
SOURCE TYPE: Sulfuric Acid Production		BAOM
APPLICATION TYPE: [ ] Construction [ ] Operation [	Modification	•
COMPANY NAME: Occidental Chemical Compan	У	COUNTY: Hamilton
Identify the specific emission point source(s) addressed in this No. 2, Gas Fired) Sulfuric Acid Plant E	application (i.e. Lime Kiln No.	4 with Venturi Scrubber; Peeking Unit
SOURCE LOCATION: Street U.S. 41		City White Springs
UTM: East <u>320,860 km</u>	North	3,369.750 km
APPLICANT NAME AND TITLE: Occidental Chemical Ch	'N Longitude _	° ′ ′w
APPLICANT ADDRESS: Post Office 300, Wh	ite Springs, FL 320	096
TOTAL ADDRESS.		
SECTION I: STATEMENTS	BY APPLICANT AND ENGINE	EER
A. APPLICANT		
I am the undersigned owner or authorized representative* o	, Occidental Che	emical Company
I certify that the statements made in this application for a		
permit are true, correct and complete to the best of my pollution control source and pollution control facilities in Florida Statutes, and all the rules and regulations of the digranted by the department, will be non-transferable and by permitted establishment.	knowledge and belief, Furthern such a manner as to complement and revisions there	ly with the provision of Chapter 403,
*Attach letter of authorization	Signed: Miles	2 = grther
	M.P. McArthur, V.F	. & General Manager
	Name and	f Title (Please Type)
	Date: 5/24/82 1	Telephone No. (904) 397-8101
PROFESSIONAL ENGINEER REGISTERED IN FLORIDA		
This is to certify that the engineering features of this pollution be in conformity with modern engineering principles applic permit application. There is reasonable assurance, in my principle and operated, will discharge an effluent that rules and regulations of the department. It is also agreed that can't a set of instructions for the proper maintenance and operations.	on control project have been it able to the treatment and disposessional judgment, that the percent is complied with all applicable states and the undersigned will furnish, tration of the pollution control	primed/examined by me and found to losal of pollutants characterized in the sollution control facilities, when proptatutes of the State of Florida and the if authorized by the owner, the applifacilities and if applicable, pollution
	Signed:	ce 7
	John B. Koøgler, P	Ph.D., P.E.
(Affix Seal)		(Please Type)
in the second se		ENVIRONMENTAL CONSULTANTS
	1213 NW 6th Street	Name (Please Type)  Gainesville, FL 32601
		dress (Please Type)
Florida Registration No. 12925	5/14/87 -	(904) 377-5822

<sup>&</sup>lt;sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.) DER FORM 17-1.122(16) Page 1 of 10

#### SECTION II: GENERAL PROJECT INFORMATION

A.	Describe the nature and extent of the project. Refer to pollution control equipment, and experience as a result of installation. State whether the project will result in full compliance. Att  Sulfur burning sulfuric acid plant is vented through an SC	ach additional sheet if necessary.
	double absorption tower and demister for product recovery	
	sulfuric acid mist emission control. Plant is currently p	permitted to produce
	2000 TPD of 100 percent H2SO4; proposed production rate is	
В.	Schedule of project covered in this application (Construction Permit Application Only)  Start of Construction Completion of Construction	ON PAGE 2a July 1987
<b>C</b> .	Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for in project serving pollution control purposes. Information on actual costs shall be furnished with permit.)	dividual components/units of the rith the application for operation
	There will be no physical modification to the existing abs	orption tower or mist
	eliminators.	
D.	Indicate any previous DER permits, orders and notices associated with the emission point, including dates.  Unit was previously permitted under AC-24-2715 issued 2/28	·
	12/31/80; and A0-24-34847 issued 5/28/81 and expiring 12/3	50/63.
F.	and Chapter 22F-2, Florida Administrative Code?YesXNo  Normal equipment operating time: hrs/day24; days/wk7; wks/yr52; if seasonal, describe: permitted for 8760 hours/year operation	if power plant, hrs/yr;
G.	If this is a new source or major modification, answer the following questions: (Yes or No)	
	1. Is this source in a non-attainment area for a particular pollutant?	No
	a. If yes, has "offset" been applied?	
	b. If yes, has "Lowest Achievable Emission Rate" been applied?	<del></del>
	c. If yes, list non-attainment pollutants.	
	Does best available control technology (BACT) apply to this source? If yes, see Section VI.	Yes
	3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections V1 and VII.	Yes
	4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	Yes
	5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No

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

#### SECTION II: A (Continued)

To achieve the increased production rate the size of the economizer will be increased, the gas handling system will be increased and the catalyst loading will be increased. The absorption towers and mist eliminators will not be modified.

With no modification the plant can operate at a rate of 2,250-2,300 TPD. the physical modifications described will permit a production rate of 2,500 TPD. Because of present market conditions it is planned to operate the plants up to 2,250-2,300 TPD as necessary for the next 2-3 years and then make the modifications necessary to increase the capacity to 2,500 TPD. This schedule explains the July 1987 Completion of Construction Date.

### SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators) (See Attachment 1)

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

Di-sia-	Contaminants Utilization		\i_ii Utilization		D. L
Description	Туре	% Wt	Rate - lbs/hr	Relate to Flow Diagram	
Sulfur	Ash	App. 0.005%	_68,232	A	
				(Attachment 3)	
	<u> </u>				
	1		·		

B. Process Rate, if applicable: (See Section V, Item 1	8.	Process Rate,	if applicable:	(See Section )	V, Item 1	)
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1. Total Process Input Rate (lbs/hr): 68,232

2. Product Weight (lbs/hr): 212,585 (98% acid); 208,333 (100% acid)

#### C. Airborne Contaminants Emitted:

No.	Emission <sup>1</sup>		Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>		Relate
Name of Contaminant	Maximum Ibs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission lbs/hr	lbs/hr	T/yr	to Flow Diagram
Sulfur Dioxide	416.7	1825	NSPS	416.7	416.7	1825	В
H <sub>2</sub> SO <sub>4</sub> Mist	15.6	68.3	NSPS	15.6	15.6	683	В
NO <sub>X</sub>	14.8	64.8	BACT	14.8	14.8	64.8	В
CO	0.1	0.5	BACT	0.1	0.1	0.5	В

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup>
Double Absorption	S0 <sub>2</sub>	99.7%		Design & Te
Contact H2SO4Monsanto				
Plant				
Brink Demister in	H2S04	90 + %		Vendor
exist of absorber				Guarantee

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

<sup>&</sup>lt;sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

<sup>&</sup>lt;sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

E.	Fuels	NOT	APPI	ICABLE
----	-------	-----	------	--------

Type (Be Specific)	Consu	Consumption*		
	avg/hr	max./hr	Maximum Heat Input (MMBTU/hr)	
<del></del>				
<del></del>				
nits Natural Gas, MMCF/hr; Fuel Oils, bar	rels/hr; Coal, lbs/hr			
el Analysis:				
cent Sulfur:	Dec	cent Ash		

Č	Inits Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr				
Fu	el Analysis:				
Pe	rcent Sulfur:	Percent Ash:			
	nsity: Ibs/gal				
He	at Capacity: BTU/Ib				BTU/nal
	her Fuel Contaminants (which may cause air pollution):				
F. G.	If applicable, indicate the percent of fuel used for space heat Indicate liquid or solid wastes generated and method of disposition.	ing. Annual Average _ osal.		Maximum	
1.	Emission Stack Geometry and Flow Characteristics (Provide of Stack Height: 200 ft.	lata for each stack): Stack Diameter:	9.5		
	Gas Flow Rate: 129,700 ACFM	Gas Exit Temperature:	181		o <sub>F.</sub>
	Water Vapor Content: 0 %		30.5		· ·

#### SECTION IV: INCINERATOR INFORMATION

#### NOT APPLICABLE

Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Lbs/hr Incinerated							
Description of Waste						i	
otal Weight Inciner	ated (lbs/hr)			Design Capacity	(lbs/hr)	·	
pproximate Numb							
lanufacturer		<del></del>					

	Volume	Heat Release	Fuel		Temperature
	(ft) <sup>3</sup>	(BTU/hr)	Туре	BTU/hr	(OF)
Primary Chamber					·
Secondary Chamber					
tack Height:		ft. Stack Diameter		Stack Ten	ıp
ias Flow Rate:		ACFM		DSCFM* Velocity	FP:
					t dry gas corrected to 50% ex
ype of pollution control	device: [ ] Cy	clone [ ] Wet Scrub	ber [] Afterb	urner [ ] Other (spe	cify)
Brief description of operat	ing characteristic	s of control devices: _		<u>-</u>	
	<del></del>			<del></del>	
		<del></del>			
			-	<u> </u>	
	<del></del>	<del></del> -			<del></del>
litimate disposal of any ef	fluent other than	that emitted from the	e stack (scrubber	water, ash, etc.):	
		<u></u>			
		<u> </u>			
<del></del> _	_,	<del></del>			<del>-</del>
				· · · · · · · · · · · · · · · · · · ·	
	SE	CTION V: SUPPLEM	ENTAL REQUIR	REMENTS	•
ease provide the following	ş supplements wi	nero required for this a	pplication.		
l. Total process input ra	ite and product v	veight – show derivati	on. ATTACH	IMENT 1	
. To a construction an	ntication attach	luncie of amireion acti			drawings, portinent manufac-
turer's test data, etc.,	) and attach pro	posed methods (e.g.,	FR Part 60 Meth	ods 1, 2, 3, 4, 5) to sh	ow proof of compliance with
applicable standards.	To an operation	application, attach tes	it results or meth	ods used to show prop	f of compliance Information
made.		tion permit from a con	struction permit	shall be indicative of t	he time at which the test was
ATT	ACHMENT 2			477401115117	^
. Attach basis of potent	tial discharge (e.g	emission factor, that	t is, AP42 test).	ATTACHMENT	2
. With construction per	mit application,	include design details	for all air pollution	on control systems (e.c	,, for baghouse include cloth
to air ratio; for scrubb	er include cross-	section sketch, etc.).	N/A		,, == <b>g</b>
. With construction per	mit application	attach derivation of a		afficianas, tanksula sas	st or design data. Items 2, 3,
and 5 should be consis	itent: actual emi	issions = potential (1-e	ffinianou)		st or design data. Items 2, 3,
			ALL	ACHMENT 1	
. An 8½" x 11" flow di cate where raw mater	iagram which wil ials enter where	i, without revealing tra	ode secrets, ident	ify the individual oper	ations and/or processes. Indi- airborne particles are evolved
and where finished pro	ducts are obtain	ed. ATTACHMENT		eous emissions ang/or (	sirporne particles are evolved
		ATTACHMENT			
An 8%" x 11" plot pla	an showing the lo	ocation of the establish	ment, and points	s of airborne emissions	, in relation to the surround- ortion of USGS topographic
w area. ICMUEIR.ES Al					

An 8%" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

ATTACHMENT 5

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

Contaminant S02	Rate or Concentration 4.0 1b S02/ton 100% acid
H <sub>2</sub> SO <sub>4</sub> Mist	0.15 lb mist/ton 100% acid
Has EPA declared the best available control tec	chnology for this class of sources (If yes, attach copy) [] Yes XI No
Vhat emission levels do you propose as best ava	rilable control technology?
Contaminant S02	Rate or Concentration 4.0 1b S02/ton 100% acid
H <sub>2</sub> SO <sub>4</sub> Mist	0.15 1b mist/ton 100% acid
escribe the existing control and treatment tech  1. Control Device/System:  2. Operating Principles:	anology (if any) Double absorption towers for SO2 absorption and Brinks HV mist eliminate for acid mist control
3. Efficiency: *	4. Capital Costs:
5. Useful Life:	6. Operating Costs:
7. Energy:	8. Maintenance Cost:
	Rate or Concentration
Contaminant	
Contaminant S02	<u>4</u> .0 lb SO <sub>2</sub> /ton 100% acid
	4.0 1b S02/ton 100% acid 0.15 1b mist/ton 100% acid

<sup>\*</sup>Explain method of determining D 3 above.

	10. 3	Mack I alatilefer?			
	а	ı. Height:	ft.	b.	Diameter:
	c	:. Flow Rate:	ACFM	d.	Temperature:
	e	. Velocity: ,	FP\$		
E.	Descr	ibe the control and treatment	t technology available (As n	กลกา	types as applicable, use additional pages if necessary).
	1.				
	a.	. Control Device:			
	b	. Operating Principles:			
	c.	Efficiency*:		đ.	Capital Cost:
	e.	Useful Life:		f.	Operating Cost:
	g.	Energy*:		h.	Maintenance Cost:
	i.	Availability of constructio	n materials and process che	emic	als:
	j.	Applicability to manufactu	uring processes:		
	k.	Ability to construct with o	control device, install in ava	iilab	le space, and operate within proposed levels:
	2.				
	a.	Control Device:			
	b.	Operating Principles:			
	c.	Efficiency*:		d.	Capital Cost:
	e.	Useful Life:		f.	Operating Cost:
	g.	Energy * *:		h.	Maintenance Costs:
	i.	Availability of construction	n materials and process che	mica	als:
	j.	Applicability to manufactu	ring processes:		
	k.	Ability to construct with co	ontrol device, install in avai	ilabl	e space, and operate within proposed levels:
*Exp	lain me	ethod of determining efficien	cy.		
*Ene	rgy to l	be reported in units of electri	cal power – KWH design ra	ate.	
	3.		•		
	a.	Control Device:			•
	b.	Operating Principles:			
	c.	Efficiency*:		d.	Capital Cost:
	e.	Life:	•	f.	Operating Cost:
	g.	Energy:	ı	h.	Maintenance Cost:

ft. OF

<sup>\*</sup>Explain method of determining efficiency above.

		i. Av	vailability of construction materials and process	chemi	cals:
		j. Ar	pplicability to manufacturing processes:		
		k. At	pility to construct with control device, install in	availal	ble space and operate within proposed levels:
	4.		•		
		a. Co	introl Device		
		b. Op	perating Principles:		
		c. Eff	ficiency*:	d.	Capital Cost:
	•	e. Lif	e:	f.	Operating Cost:
	9	g. En	ergy:	h.	Maintenance Cost:
	i	i. Av	ailability of construction materials and process of	chemi	cals:
	j	ј. Ар	plicability to manufacturing processes:		
	ı	k. Ab	ility to construct with control device, install in	availat	ole space, and operate within proposed levels:
F.	Desc	ribe the	control technology selected:		
	1. (	Control	Device:		
	2. 8	Efficien	cy*:	3.	Capital Cost:
	4. l	Life:		5.	Operating Cost:
	6. 8	Energy:	•	7.	Maintenance Cost:
	8. N	/lanufa	cturer:		
•	9. (	Other Ic	ocations where employed on similar processes:		
	a				
		(1)	Company:		·
		(2)	Mailing Address: .		,
		(3)	City:	(4)	State:
		(5)	Environmental Manager:		
		(6)	Telephone No.:		
*Ex	plain n	nethod	of determining efficiency above.		
		(7)	Emissions*:		
			Contaminant :		Rate or Concentration
				_	
		<del></del>		<u></u>	
		(8)	Process Rate*:		
	b.				
		(1)	Company:		
		(2)	Mailing Address:		
		(3)	City:	(4)	State:
*Арр	licant r	nust pi	rovide this information when available. Should	this i	nformation not be available, applicant must state the reason(s)

(5)	Environmental Manager:	
(6)	Telephone No.:	
(7)	Emissions*:	
	Contaminant	Rate or Concentration
<del></del>		
(8)	Process Rate*:	
10. Reason	for selection and description of systems:	•

See PSD-FL-082

<sup>\*</sup>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

See PSD-FL-082

A.	Company Monitored Data .			
	1 no sites	TSP	( ) so <sup>2</sup> *	Wind spd/dir
	Period of monitoring mont	/ / h day year	to / / month day yea	<del></del>
	Other data recorded	····		
	Attach all data or statistical summario	us to this applicat	ion.	
	2. Instrumentation, Field and Laborator	ry		
	a) Was instrumentation EPA referen	enced or its equiv	alent?Yes	No
	b) Was instrumentation calibrated	in accordance wit	th Department procedures?	Yes No Unknown
B.	Meteorological Data Used for Air Quality	y Modeling		
	1 Year(s) of data from month	/ / n day year	to / / month day year	<del></del>
	2. Surface data obtained from (location)	)	<del></del>	
	3. Upper air (mixing height) data obtain	ed from (location	)	
	4. Stability wind rose (STAR) data obtain	ined from (locatio	on)	<u> </u>
C.	Computer Models Used			
	1		<del>-</del>	Modified? If yes, attach description.
	2	<del>-</del>		Modified? If yes, attach description.
	3		· · · · · · · · · · · · · · · · · · ·	Modified? If yes, attach description.
	4	•	<u> </u>	Modified? If yes, attach description.
	Attach copies of all final model runs show			
D.	Applicants Maximum Allowable Emission	n Data		
	Pollutant		Emission	Rate
	TSP			grams/sec
	so <sup>2</sup>			grams/sec
Ε.	Emission Data Used in Modeling			
	Attach list of emission sources. Emission UTM coordinates, stack data, allowable en	data required is missions, and norr	source name, description o nal operating time,	n point source (on NEDS point number),
₹.	Attach all other information supportive to	the PSD review.		
'Spe	cify bubbler (B) or continuous (C).			
3.	Discuss the social and economic impact of duction, taxes, energy, etc.). Include asses	of the selected te sment of the envi	chnology versus other appli ronmental impact of the sou	cable technologies (i.e., jobs, payroll, pro- urces.

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.

#### PRODUCTION RATE CALCULATION

PRODUCT:

Sulfuric Acid as 98% H<sub>2</sub>SO<sub>4</sub>

PRODUCT RATE:

2500 Short tons per day (STPD) of 100% H<sub>2</sub>SO<sub>4</sub>

as 98% H<sub>2</sub>S04

-or-

212,585 lbs/hr (2500 ÷ 0.98 x 2,000 ÷ 24) of

98% Sulfuric Acid

PROCESS LOSSES:

0.005% equivalent to ash content of sulfur (consider

negligible). Recovery is 99.7% equivalent to emission

of 4# SO2 per ton of 100% H2SO4 produced.

PROCESS INPUT:

SULFUR:

2500 STPD of 100% H2SO4 equivalent to 816 STPD of Sulfur (2000 x 32/98) which at an efficiency of 99.7% requires 819 STPD of Sulfur (816 ± 0.997).

-or-

 $68,232 \text{ lbs/hr} (819 \times 2,000 \div 24)$ 

SULFUR RECOVERY EFFICIENCY:

Input - 68,232 1b/hour

Stack - 416.7 1b/hr of SO2 or 208.4 1b/hr or S

Efficiency =  $(68,232 - 208.4)/68,232 \times 100$ 

= 99.7%

#### POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr

PRODUCTION RATE = 2,500 TPD 100% H<sub>2</sub>SO<sub>4</sub>

SULFUR DIOXIDE @ 4.0 lb/ton acid

Hourly =  $4.0 \times 2,500/24$ 

= 416.7 1b/hr

Annual =  $416.7 \times 8,760/2000$ 

= 1,825 TPY

MIST @ 0.15 lb/ton acid

Hourly =  $0.15 \times 2,500/24$ 

= 15.6 lb/hr

Annual =  $15.6 \times 8,760/2000$ 

= 68.3 TPY

 $NO_X$  @ 2.1 x 10-6 1b/SCF (test results on an existing sulfuric acid plant)

Typical Stack Gas Characteristics

SO<sub>2</sub> - 230 ppm O<sub>2</sub> - 7%

GAS FLOW RATE

= 11,800/[0.263 - 0.0126(02%)]

= 11,800/[0.263 - 0.0126(7)]

= 67,500 SCF/ton of acid

**EMISSION RATE** 

Hourly =  $2,500/24 \times 67,500 \times 2.1 \times 10^{-6}$ 

= 14.8 1b/hr

Annual =  $14.8 \times 8,760/2000$ 

= 64.8 TPY

Sulfur consumption = 0.335 tons/ton Acid including losses.

Carbon content of sulfur  $\sim$  0.25% (assume to be "petroleum")

"Petroleum" content of Sulfur

- = 2,500/4 x 0.335 x 0.0025
  - x 2000 1b/ton
- = 174.5 lb/hr x 1/8 lb/gal
- = 21.8 equivalent gal/hr

#### EMISSION RATE @ 5 1b CO/1000 gal

Hourly =  $21.8/1000 \times 5$ 

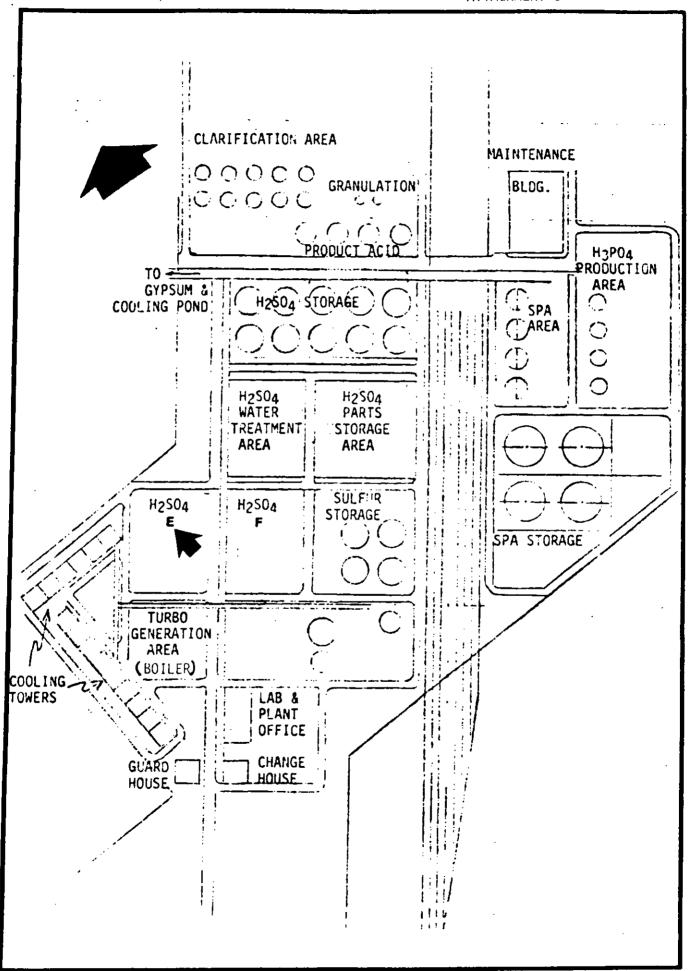
= 0.11 1b/hr

Annual = 0.118,760/2000

= 0.5 TPY

ATTACHMENT 3

ATTACHMENT 4



0.0000



May 6, 1982

### 

DER

SOURCE TYPE: Auxiliary Boiler	MAY 27 1982
APPLICATION TYPE: [ ] Construction [ ] Operation [ ]	
COMPANY NAME: Occidental Chemical Company	1 1 2 1 1 1 1 1
	oplication (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit
HC A7	Hillian Continue
OCCUPATION: ORIGINAL CONTRACTOR OF THE CONTRACTO	Olly
	North3,369.830 km
APPLICANT NAME AND TITLE: Occidental Chemi	
APPLICANT ADDRESS: Post Office Box 300,	White Springs, Florida 32096
SECTION I: STATEMENTS BY	Y APPLICANT AND ENGINEER
I am the undersigned owner or authorized representative* of	Occidental Chemical Company
f certify that the statements made in this application for a	A
pollution control source and pollution control facilities in Florida Statutes, and all the rules and regulations of the degranted by the department, will be non-transferable and I w permitted establishment.	knowledge and belief. Further, I agree to maintain and operate the such a manner as to comply with the provision of Chapter 403, epartment and revisions thereof. I also understand that a permit, if will promptly notify the department upon sale or legal transfer of the
*Attach letter of authorization	Signed: My San San Manager
	M. P. McArthur, V.P. & General Manager  Name and Title (Please Type)
	Date: 5/24/82 Telephone No. (904) 397-8101
B. PROFESSIONAL ENGINZER REGISTERED IN FLORIDA	(where required by Chapter 471, F.S.)
be in conformity with modern engineering principles application. There is reasonable assurance, in my program maintained and operated, will discharge an effluent that rules and regulations of the department. It is also agreed that	an control project have been deligible to the treatment and disposal of pollutants characterized in the offessional judgment, that the pollution control facilities, when propcomplies with all applicable statutes of the State of Florida and the table the undersigned will furnish, if authorized by the owner, the application of the pollution control facilities and, if applicable, pollution
(Affix Seal)	John B. Koogler, P.E.  Name (Please Type) SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
• • •	Company Name (Please Type) 1213 NW 6th Street, Gainesville, FL 32601
Florida Registration No12925	Mailing Address (Please Type)  Date: 5/14/87 Telephone No. (904) 377-5822

<sup>&</sup>lt;sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.) DER FORM 17-1.122(16) Pege 1 of 10

#### SECTION II: GENERAL PROJECT INFORMATION

Describe the nature and extent of the project. Refer to pollution control equipment, and formance as a result of installation. State whether the project will result in full compliance oil fired auxiliary steam boiler will be used to augment steam.	2. Attach additional sheet if necessary
sulfuric acid plants to provide operating flexibility in	
and evaporation process. It is proposed to increase the su	
to the boiler from 0.8% to 1.0%.	THE THE THE THE
Schedule of project covered in this application (Construction Permit Application Only)  Start of Construction July; 1982 Completion of Construction	· · · · · · · · · · · · · · · · · · ·
Costs of pollution control system(s): (Note: Show breakdown of estimated costs only project serving pollution control purposes. Information on actual costs shall be furnish permit.)	for individual components/units of the
NOT APPLICABLE - No add on pollution control equipmen	t.
Indicate any previous DER permits, orders and notices associated with the emission point tion dates.  Unit was previously permitted under FDER No. AC-24-2717 is	•
12/31/80 and A0-24-34846 issued 5/7/81 and expiring 9/30/8	
Normal equipment operating time: hrs/day 24; days/wk 7; wks/yr 5 if seasonal, describe: Annual operating factor is 97.5%.	•
<u> </u>	
If this is a new source or major modification, answer the following questions. (Yes or No)	
1. Is this source in a non-attainment area for a particular pollutant?	NO
a. If yes, has "offset" been applied?	
b. If yes, has "Lowest Achievable Emission Rate" been applied?	
c. If yes, list non-attainment pollutants.	,
Does best available control technology (BACT) apply to this source? If yes, see Section VI.	YES
<ol><li>Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.</li></ol>	YES
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	NO
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	NO .

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

DER FORM 17-1.122(16) Page 2 of 10

considered questionable.

<u>.</u>, '

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

A. Raw Materials and Chemicals Used in your Process, if applicable: NOT APPLICABLE

Danielia	Contaminants		Utilization	Datas as Flow Disease	
Description	Туре	% Wt	Rate - lbs/hr	Relate to Flow Diagram	
			····		
			·		

В.	Process Rate, if applicable: (See Section V, Item 1	)	
	1. Total Process Input Rate (lbs/hr):	NOT APPLICABLE	
	2. Product Weight (lbs/hr):		

#### C. Airborne Contaminants Emitted:

	Emission <sup>1</sup>		Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>		Relate
Name of Contaminant	Maximum lbs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission lbs/hr	lbs/hr	T/yr	to Flow Diagram
Sulfur Dioxide	170.7	729	BACT	170.7	170.7	729	1 (Att.3)
Part. Matter	13.9	59	BACT	13.9	13.9	59	
NO <sub>X</sub>	64.0	273	BACT	64.0	64.0	273	
CO	5.3	23	BACT	5.3	5.3	23	
НС	1.1	5	BACT	1.1	1.1	5	

D. Control Devices: (See Section V, Item 4) NOT APPLICABLE

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup>
				·

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

DER FORM 17-1.122(16) Page 3 of 10

<sup>&</sup>lt;sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

<sup>&</sup>lt;sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5</sup>If Applicable

	ıel	

Torre (De Consiste)	Consu	mption*	Maximum Heat Input
Type (Be Specific)	avg/hr	max./hr	(MMBTU/hr)
0il	6.0	25	156
· · · · · · · · · · · · · · · · · · ·			

Percent Sulfur:					<u> </u>			
Percent Sulfur:	_		el Oils, barrels/hr;	Coal, fbs/hr				
Percent Asi:		•	1.0			0.0	ng	
theat Capacity:			<del></del>					
Stack Height: 50								
If applicable, indicate the percent of fuel used for space heating. Annual Average N/A Maximum  Indicate liquid or solid wastes generated and method of disposal.  I. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):  Stack Height: 50								=
I. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):  Stack Height: 50	Other Fuel Contam	inants (which m	ay cause air poiit	ution):			·	· · · · · · · · · · · · · · · · · · ·
I. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):  Stack Height: 50	F. If applicable,	indicate the per	cent of fuel used	for space heati	ng. Annual Ave	erage N/A	Maximum	
I. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):  Stack Height: 50								
Stack Height: 50				·	•			
Stack Height: 50  ft. Stack Diameter: 5.25  ft.  Gas Flow Rate: 67,000  ACFM Gas Exit Temperature: 311  of.  Water Vapor Content: 9  % Velocity: 51.8  FPS  SECTION IV: INCINERATOR INFORMATION  NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (lbs/hr) Design Capacity (lbs/hr) pproximate Number of Hours of Operation per day days/week			·		• <u>•</u>			
Stack Height: 50  ft. Stack Diameter: 5.25  ft.  Gas Flow Rate: 67,000  ACFM Gas Exit Temperature: 311  of.  Water Vapor Content: 9  % Velocity: 51.8  FPS  SECTION IV: INCINERATOR INFORMATION  NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (lbs/hr) Design Capacity (lbs/hr) pproximate Number of Hours of Operation per day days/week	<del> </del>	<u>-</u> -						
Gas Flow Rate: 67,000 ACFM Gas Exit Temperature: 311 oF.  Water Vapor Content: 9 % Velocity: 51.8 FPS  SECTION IV: INCINERATOR INFORMATION  NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) Type II (Refuse) (Garbage) (Pathological) (Solid By-prod.)  Lbs/hr Incinerated Provided Hours of Operation per day Design Capacity (Ibs/hr) pproximate Number of Hours of Operation per day days/week	H. Emission Stac	k Geometry and	d Flow Character	istics (Provide o	data for each stac	k):		
SECTION IV: INCINERATOR INFORMATION  NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Solid By-prod.)  Lbs/hr Incinerated (Ibs/hr) Design Capacity (Ibs/hr) pproximate Number of Hours of Operation per day days/week	Stack Height:							
SECTION IV: INCINERATOR INFORMATION  NOT APPLICABLE  Type of Waste	Gas Flow Ra	te:67 <b>,</b> 00	00	ACFM	Gas Exit Tempe	erature:31	1	of.
NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (lbs/hr)	Water Vapor (	Content:	9	<u> </u>	Velocity:	51	8	FPS
NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (lbs/hr)			•					
NOT APPLICABLE  Type of Waste Type O (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (lbs/hr)								
Type of Waste  Type O (Plastics)  Type I (Refuse)  Type II (Garbage)  Type IV (Liq & Gas By-prod.)  Type V (Liq & Gas By-prod.)  Ebs/hr Incinerated  Pescription of Waste  Design Capacity (Ibs/hr)  pproximate Number of Hours of Operation per day  Type II (Garbage)  Type II (Liq & Gas By-prod.)  Type V (Liq & Gas By-prod.)  Type V (Liq & Gas By-prod.)  Design Capacity (Ibs/hr)  days/week			SECTION	I IV: INCINER	IATOR INFORM	IATION		
Type of Waste (Plastics) (Rubbish) (Refuse) (Garbage) (Pathological) (Liq & Gas By-prod.)  Lbs/hr Incinerated (Ibs/hr)			<u></u>	NOT APP	LICABLE		<del> </del>	
Lbs/hr Incinerated  escription of Waste	Type of Waste	(Plastics)					(Liq & Gas	(Śolid
pproximate Number of Hours of Operation per day Design Capacity (lbs/hr) days/week	Lbs/hr Incinerated	•						
pproximate Number of Hours of Operation per day days/week	Description of Waste	)	<u> </u>		_			
	Total Weight Incine	rated (lbs/hr)			Design Capacity	r (lbs/hr)		
aoufacturur	Approximate Numb	er of Hours of C	Operation per day	·		days/w	/eek	
GIUI (CLUI CL	Vianufacturer					· .		

Model No. \_

Date Constructed .....

	Volume	Heat Release	· Fuel		Temperature	
	(ft)3	(BTU/hr)	Туре	BTU/hr	(OF)	
Primary Chamber						
Secondary Chamber						
Stack Height:		ft. Stack Diameter _		Stack Temp		
Gas Flow Rate:		ACFM		_ DSCFM® Velocity	FP:	
*If 50 or more tons per o cess air.	day design capac	ity, submit the emissio	ns rate in grains p	er standard cubic foot dr	y gas corrected to 50% ex	
Type of pollution control	device: [ ] Cy	clone [ ] Wet Scrubl	per [] Afterbu	rner [ ] Other (specify	)	
Brief description of operation	ting characteristi	cs of control devices:				
sile adsorption of opera	cong on a dotor is to				·-	
	<del> </del>					
				<u></u>		
·		· <del>-</del> - ·- ·			<del></del>	
Ultimate disposal of any e	ffluent other tha	in that.emitted from the	stack (scrubber v	vater, ash, etc.):		
- · · - · · · · · · · · · · · · · · · ·						
					<del> </del>	
	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·		
					-	

#### SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

- 1. Total process input rate and product weight show derivation. NOT APPLICABLE
- 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.

ATTACHMENT 2

- 3. Attach basis of potential discharge (e.g., emission factor, that is, AP42 test).)
- 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, etc.). NOT APPLICABLE
- 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). NOT APPLICABLE
- 6. An 8%" 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. ATTACHMENT 3
- An 8%" 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).
- 8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

  ATTACHMENT 5

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

Contaminant	Rate or Concentration
Has EPA declared the best available control technology for th  Contaminant	is class of sources (If yes, attach copy) [ ] Yes 【X No Rate or Concentration
What emission levels do you propose as best available control Contaminant Sulfur Dioxide	Rate or Concentration 1.1 1b/10 <sup>6</sup> BTU input; use of 1.0% sulfur fuel oil.
Describe the existing control and treatment technology (if any 1. Control Device/System:  2. Operating Principles:	Presently No. 6 fuel oil with an 0.8% su content is used to control sulfur dioxide emissions.
3. Efficiency: • 4.	Capital Costs:
5. Useful Life: 6.	Operating Costs:
7. Energy: 8.	Maintenance Cost:
9. Emissions:  Contaminant Sulfur Dioxide	Rate or Concentration 0.9 1b/10 <sup>6</sup> BTU input; 0.8% sulfur fuel oil

<sup>\*</sup>Explain method of determining D 3 above.

	10. S	tack Parameters			•	
	a.	. Height:	ft.	b.	Diameter:	ft.
	C.	. Flow Rate:	ACFM	d.	Temperature:	٥F
	е.	. Velocity:	FPS			
E.	Descri	be the control and treatment	technology available (As i	nan	y types as applicable, use additional pages if necessary).	
	1.					
	8.	Control Device:				
	b.	Operating Principles:				
	C.	Efficiency*:	,	d.	Capital Cost:	
	€.	Useful Life:		f.	Operating Cost:	
	9.	Energy*:		h.	Maintenance Cost:	
	i.	Availability of construction	n materials and process ch	emic	als:	
	j.	Applicability to manufactu	uring processes:			
	k.	Ability to construct with o	control device, install in av	ailab	le space, and operate within proposed levels:	
	2.					
	8.	Control Device:				
	b.	Operating Principles:			·	
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Useful Life:		f.	Operating Cost:	
	g.	Energy**:		h.	Maintenance Costs:	
	i.	Availability of construction	n materials and process che	mic	als:	
	J.	Applicability to manufactu	ring processes:			
	k.	Ability to construct with o	ontrol device, install in ava	ilabl	e space, and operate within proposed levels:	
*Ex	plain me	ethod of determining efficien	су.			
**En	ergy to I	be reported in units of electri	cal power – KWH design r	ate.		
	3.	·				
	<b>a</b> .	Control Device:				
	b.	Operating Principles:				
	¢.	Efficiency*:		ď.	Capital Cost:	
•	€.	Life:		f.	Operating Cost:	
	g.	Energy:		h.	Maintenance Cost:	

<sup>\*</sup>Explain method of determining efficiency above.

	i.	Av	valiability of construction materials and process chemicals:							
	j.	Ар	pplicability to manufacturing processes:							
	k.	Ab	bility to construct with control device, install in available space and operate within proposed levels:							
	4.									
	a.	Co	ntrol Device							
	b.	Ор	erating Principles:							
	c.	Eff	iciency*:	d.	Capital Cost:					
	e.	Life	e:	f.	Operating Cost:					
	g.	End	argy:	h.	Maintenance Cost:					
	i.	Ava	silability of construction materials and proc	ess chemic	als:					
	j.	Apı	plicability to manufacturing processes:							
	k.	Abi	lity to construct with control device, install	l in availab	le space, and operate within proposed levels:					
F.	Describ	e the	control technology selected:							
	1. Co	ntrol	Device:							
	2. Eff	ficien	cy*:	3.	Capital Cost:					
	4. Lif	e:	·	5.	Operating Cost:					
	6. En	ergy:		7.	Maintenance Cost:					
	8. Ma	nufac	cturer:		,					
	9. Otl	ner lo	cations where employed on similar processe	es:						
	a.				•					
		(1)	Company:							
		(2)	Mailing Address:							
		(3)	City:	(4)	State:					
	•	(5)	Environmental Manager:							
		(6)	Telephone No.:							
*Exp	lain me	thod	of determining efficiency above.							
		(7)	Emissions*:		•					
			Contaminant		Rate or Concentration					
•					-					
•										
		(8)	Process Rate*:	•						
	b.									
		(1)	Company:							
		(2)	Mailing Address:							
		(3)	City:	(4)	State:					
*Appli why.	cant mu	ust pr	rovide this information when available. Sho	ould this in	formation not be available, applicant must state the reason(s)					

(5)	Environmental Manager:	
(6)	Telephone No.:	
(7)	Emissions*:	•
	Contaminant	Rate or Concentration
(8)	Process Rate*:	
10. Reason	for selection and description of systems:	•

SEE PSD APPLICATION PSD-FL-082.

<sup>\*</sup>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

(SEE PSD-FL-082)

A.	Company Monitored Data								
	1 no sites	TSP	so <sup>2</sup> *	Wind spd/dir					
	Period of monitoring		to/	<u>/</u>					
	mon	,		year					
	Other data recorded		· · · · · ·						
	Attach all data or statistical summar	ies to this applicat	tion.						
	2. Instrumentation, Field and Laborato	ory							
	a) Was instrumentation EPA refe	renced or its equiv	valent?Yes .	No					
	b) Was instrumentation calibrated	d in accordance wi	ith Department proced	ures? Yes	No Unknown				
В.	Meteorological Data Used for Air Quali	ty Modeling							
	1 Year(s) of data from mont	1 1	to/	<i></i>					
		•							
	2. Surface data obtained from (location	n)							
	3. Upper air (mixing height) data obtai	ned from (location	n)	·					
	4. Stability wind rose (STAR) data obt	ained from (locati	ion)	· · · · · · · · · · · · · · · · · · ·	····				
C.	Computer Models Used			•					
	1			Modified?	If yes, attach description.				
	2			Modified?	If yes, attach description.				
	3			Modified?	If yes, attach description.				
	4,	•							
	Attach copies of all final model runs sho	•							
D.	Applicants Maximum Allowable Emission	•	receptor rocations, and	pi meipie output tubit	•				
U.		on Data	£	nission Rate					
	Pollutant				,				
	TSP			gra					
	so <sup>2</sup>			gra	ims/sec				
E.	Emission Data Used in Modeling								
	Attach list of emission sources. Emissic UTM coordinates, stack data, allowable			otion on point source	(on NEDS point number),				
F.	Attach all other information supportive	to the PSD review	v.						
*Spe	ecify bubbler (B) or continuous (C).								
G.	Discuss the social and economic impact duction, taxes, energy, etc.). Include ass	t of the selected sessment of the en	technology versus othe vironmental impact of	er applicable technolog the sources.	ies (i.e., jobs, payroll, pro-				

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.

#### ATTACHMENT 1

#### FUEL USE RATES

FUEL:

0il at 0.8% Sulfur

PRODUCT:

125,000 lbs/hr steam @ 1,000 BTU/lb.

**EFFICIENCY:** 

80%

**HEAT INPUT** 

156 MM BTU/hr.

 $(125,000 \pm 0.8 \times 1000)$ 

FUEL INPUT:

0il:

8538 lbs/hr (156 MM  $\div$  18,300) or 25 BBLS/hr (156 MM  $\div$  146,000  $\div$  42)

#### ATTACHMENT 2

#### POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr x 0.975

PRODUCTION RATE (STEAM) = 125,000 lbs/hr.

#### SULFUR DIOXIDE:

Hourly: = 1.0% Sulfur fuel

= 125,000 lbs steam/hr x 1000 BTU/lb steam x 1/0.8 efficiency

x 1/18,300 BTU/1b 0.1 x (0.01 x 2) 1bs \$02/1b oil

= 170.7 lbs/hr.

Annual: =  $170.7 \times 8,760/2000 \times 0.975$ 

= 729 TPY.

#### PARTICULATE MATTER:

Hourly: = 8,538 lbs fuel/hr (from above) x 1/8 lb/qal x 1/1000 x

[10(1.0) + 3] = 13.9 lbs/hr.

Annual: =  $13.9 \text{ lbs/hr} \times 8,760/2000 \times 0.975$ 

= 59 TPY.

### NO<sub>X</sub>:

Hourly: = 8,538 lbs fuel/hr x 1/8 x 1/1000 x 60 lb  $NO_X/1000$  gal.

= 64.0 lbs/hr.

Annual: =  $64.0 \times 8,760/2,000 \times 0.975$ 

= 273 TPY.

#### CO:

Hourly =  $8.538 \times 1/8 \times 1/1000 \times 5$  lbs CO/1000 gal.

= 5.3 lbs/hr.

Annual: =  $5.3 \times 8,760/2000 \times 0.975$ 

= 23 TPY.

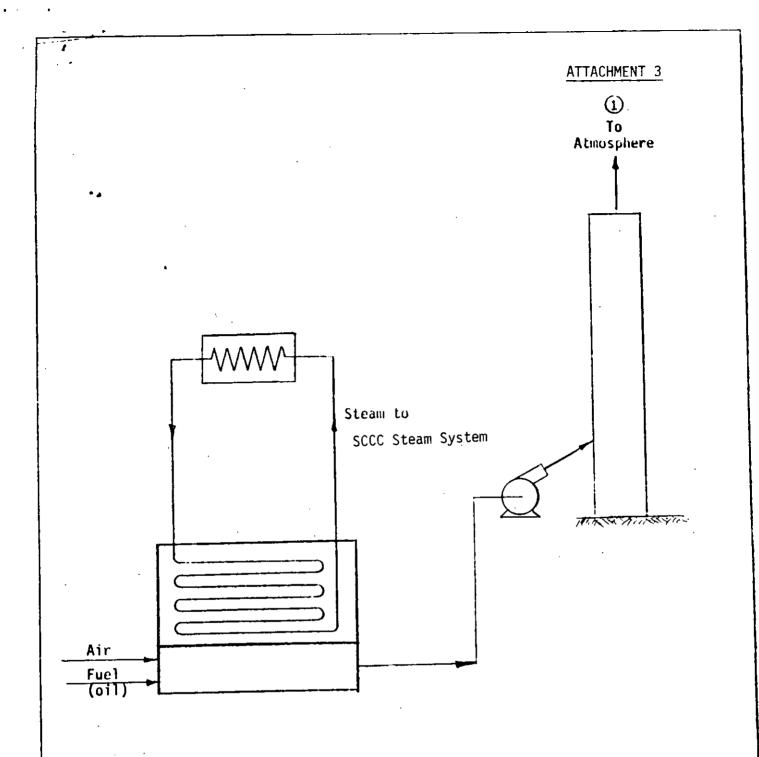
#### HYDROCARBONS:

Hourly: =  $8,538 \times 1/8 \times 1/1000 \times 1 \text{ lb/1000 gal.}$ 

= 1.1 lbs/hr.

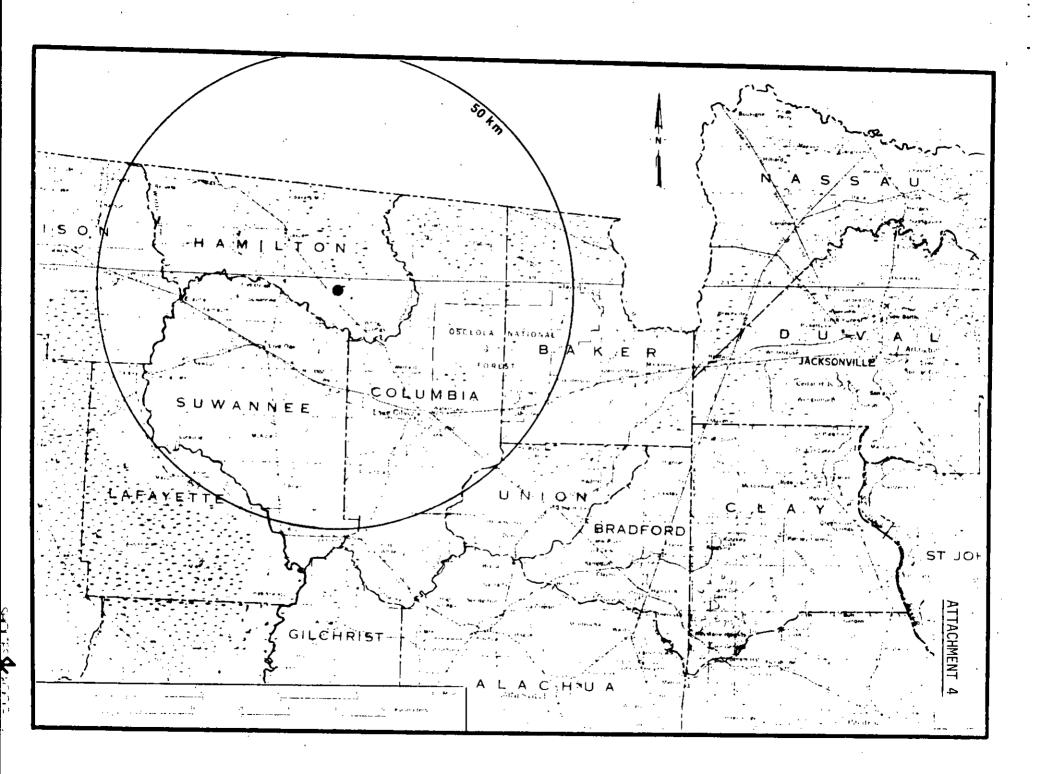
Annual: =  $1.1 \times 8,760/2000 \times 0.975$ 

= 5 TPY.



PROCESS FLOW DIAGRAM

SULFURIC ACID PLANT AUXILIARY BOILER OXY/SPA CHEMICAL COMPLEX



ATTACHMENT 5 CLARIFICATION AREA MAINTENANCE 00000 GRANULATION! BLDG. 00000  $(\cdot, \cdot)$ H3PO4 ₽RODUCTION TO 🟯 AREA GYPSUM & H2504 STORAGE SPA COULING POND AREA H2SO4 PARTS H2S04 WÄTER TREATMENT STORAGE **AREA** AREA SULFIR H<sub>2</sub>S0<sub>4</sub> H<sub>2</sub>S0<sub>4</sub> **STORAGE** SPA STORAGE **TURBO** GENERATION AREA (BOILER) COOLING. TOWERS LAB & PLANT OFFICE GUARD ! CHANGE HOUSE

May 7, 1982



#### STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

# MAY 27 1982

### 

DER

AIR PC	DLLUTION SOURCES RAOM
SOURCE TYPE: Sulfuric Acid Production	{ ] New[ X[X] Existing 1 }
APPLICATION TYPE: [ ] Construction [ ] Operation	n [X] Modification
COMPANY NAME: Occidental Chemical C	ompany COUNTY: Hamilton
Identify the specific emission point source(s) addressed in No. 2, Gas Fired) Sulfuric Acid Plant "F"	this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit
SOURCE LOCATION: Street U.S. 41	City White Springs
UTM: East <u>321,110 km</u>	North 3,369.800 km
Latitude o	"N Longitude 0 ' "W
APPLICANT NAME AND TITLE: Occidental	Chemical Company
APPLICANT ADDRESS Post Office Box 300,	White Springs, FL 32096
2507.01.4	
	NTS BY APPLICANT AND ENGINEER
A. APPLICANT	Occidental Chemical Company
I am the undersigned owner or authorized representat	ive* of Occidental Chemical Company
permit are true, correct and complete to the best of pollution control source and pollution control facilities. Florida Statutes, and all the rules and regulations of granted by the department, will be non-transferable apermitted establishment.	of my knowledge and belief. Further, I agree to maintain and operate the ities in such a manner as to comply with the provision of Chapter 403. I the department and revisions thereof. I also understand that a permit, if and I will promptly notify the department upon sale or legal transfer of the
*Attach letter of authorization	Signed: An Sm Squtha
	M.P. McArthur, V.P. & General Manager  Name and Title (Please Type)
•	Date: 5/24/72 Telephone No. (904) 397-8101
B. PROFESSIONAL ENGINEER REGISTERED IN FLO	•
This is to certify that the engineering features of this p be in conformity with modern engineering principles permit application. There is reasonable assurance, in rerly maintained and operated, will discharge an effluer rules and regulations of the department. It is also agree	collution control project have been assigned/examined by me and found to applicable to the treatment and disposal of pollutants characterized in the my professional judgment, that the pollution control facilities, when proport that complies with all applicable statutes of the State of Florida and the red that the undersigned will furnish, if authorized by the owner, the application of the pollution control facilities and, if applicable, pollution
	Signed:
•	John B. Koogler, Ph.D., P.E.
(Affix Seal)	Name (Pléase Type) SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
$\mathcal{Z}_{i,j} = I_{i,j} N_{i,j}$	Company Name (Please Type) 1213 NW 6th Street, Gainesville, FL 32601
Florida Registration No. 12925	Mailing Address (Please Type)  Date: 5/ 14/82 Telephone No. (904) 377-5822
Florida Registration No 14949	Date: J / ' / / C Telephone No. \3U41 3//=3066

<sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.) DER FORM 17-1.122(16) Page 1 of 10

#### SECTION II: GENERAL PROJECT INFORMATION

Д	A. Describe the nature and extent of the project. Refer to pollution control equipment, an formance as a result of installation. State whether the project will result in full compliance.  Sulfur burning sulfuric acid plant is vented through a	e. Attach additional sheet if necessary.							
	double absorption tower and demister for product recov	very and sulfur dioxide and							
	sulfuric acid mist emission control. Plant is current	tly permitted to produce							
	2000 TPD of 100 percent H2SO4; proposed production rat								
8.	3. Schedule of project covered in this application (Construction Permit Application Only)	ON PAGE 2a							
	Start of Construction July 1982 Completion of Construction	July 1987							
· C.	<ol> <li>Costs of pollution control system(s): (Note: Show breakdown of estimated costs only project serving pollution control purposes. Information on actual costs shall be furnis permit.)</li> </ol>	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.)							
	There will be no physical modification to the existing	absorption tower or mist							
	eliminators.	<u> </u>							
D.	. Indicate any previous DER permits, orders and notices associated with the emission poin tion dates.	t, including permit issuance and expira-							
	Unit was previously permitted under AC-24-2715 issued 2/28/78 and expiring								
	12/31/80; and A0-24-34847 issued 5/28/81 and expiring	12/30/85.							
F.	Normal equipment operating time: hrs/day <u>24</u> ; days/wk <u>7</u> ; wks/yr <u>52</u> ; if power plant, hrs/yr; seasonal, describe: <u>permitted for 8760 hours/year operation</u>								
G.	If this is a new source or major modification, answer the following questions. (Yes or No)	Na							
	1. Is this source in a non-attainment area for a particular pollutant?	No							
	a. If yes, has "offset" been applied?								
	b. If yes, has "Lowest Achievable Emission Rate" been applied?								
	c. If yes, list non-attainment pollutants.								
	<ol><li>Does best available control technology (BACT) apply to this source? If yes, see Section VI.</li></ol>	Yes							
	<ol><li>Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.</li></ol>	Yes							
	4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	Yes							
	5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No							

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

### SECTION II: A (Continued)

To achieve the increased production rate the size of the economizer will be increased, the gas handling system will be increased and the catalyst loading will be increased. The absorption towers and mist eliminators will not be modified.

With no modification the plant can operate at a rate of 2,250-2,300 TPD. the physical modifications described will permit a production rate of 2,500 TPD. Because of present market conditions it is planned to operate the plants up to 2,250-2,300 TPD as necessary for the next 2-3 years and then make the modifications necessary to increase the capacity to 2,500 TPD. This schedule explains the July 1987 Completion of Construction Date.

# SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators) (See Attachment 1)

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

0	Co	ntaminants	Utilization	Poloso so Elevy Diagram
Description	Туре	% Wt	Rate - ibs/hr	Relate to Flow Diagram
Sulfur	Ash	App. 0,005%	68,232	A (Attachment 3)
	<del> </del>			
	į			i
			<u>-</u> -	

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

1. Total Process Input Rate (lbs/hr): 68,232

2 Product Weight (lbs/hr): 212,585 (98% acid); 208,333 (100% acid)

#### C. Airborne Contaminants Emitted:

	Emission <sup>1</sup>		Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>		Refate
Name of . Contaminant	Maximum lbs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission Ibs/hr	lbs/hr	T/yr	to Flow Diagram
Sulfur Dioxide	416.7	1825	NSPS	416.7	416.7	1825	В
H <sub>2</sub> SO <sub>4</sub> Mist	15.6	68.3	NSPS	15.6	15.6	683	<u>B</u>
NO <sub>X</sub>	14.8	64.8	BACT	14.8	14.8	64.8	В
CO	0.1	0.5	BACT	0.1	0.1	0.5	В
					į	į	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup>
Double Absorption	S0 <sub>2</sub>	99.7%		Design & Test
Contact H2SO4Monsanto				1
Plant				
Brink Demister in	H2S04	90 + %		Vendor
exist of absorber	1			Guarantee

See Section V. Item 2.

<sup>&</sup>lt;sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 0.1 pounds per million BTU heat input)

<sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

## E. Fuels NOT APPLICABLE

1	Type (Be Specific) Consumption*		Maximum He		deat Input		
		"	avg/hr		ax./hr	(MMBT	
						· · · · · · · · · · · · · · · · · · ·	
						· ····	<del></del>
		<del></del>	<del></del>			<del> </del>	<del></del>
			<del></del>				
			<del>- ·</del>				
*Units Natural G	as, MMCF/hr; F	uel Oils, barrels/h	nr; Coal, Ibs/hr			-	
Fuel Analysis:							
Percent Sulfur: _	<u> </u>			Percent Ash:	····		
					nt Nitrogen:		
,er , der Conta	minants (Which				<del></del>		•
	<del></del>		<del></del>				
. If applicable	e, indicate the p	ercent of fuel use	ed for space heat	ing. Annual A	verage	Maximum	١
		es generated and			•		•
			•				
						<del></del>	
				<del></del>			
<del></del>	<del></del>		<del></del>		<del></del>	·	
Emission Sta	ck Geometry an	nd Flow Characte	ristics (Provide d	data for each sta	ck):	·	
Emission Sta Stack Height	ck Geometry an	nd Flow Characte	ristics (Provide d	data for each sta	ck):		
Stack Height	ck Geometry an	nd Flow Characte	ristics (Provide o	data for each sta Stack Diamete	ck): r:9.5	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	nd Flow Characte	ristics (Provide c	data for each sta Stack Diamete Gas Exit Temp	ck): r:9.5 erature:1	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	nd Flow Characte	ristics (Provide c	data for each sta Stack Diamete Gas Exit Temp	ck): r:9.5 erature:1	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	nd Flow Characte	ristics (Provide c	data for each sta Stack Diamete Gas Exit Temp	ck): r:9.5 erature:1	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	nd Flow Characte	ristics (Provide c	data for each sta Stack Diamete Gas Exit Temp	ck): r:9.5 erature:1	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	700	ristics (Provide c	data for each sta Stack Diamete Gas Exit Temp Velocity:	ck): r:1 erature:1 30.5	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	700	ristics (Provide d	Stack Diamete Gas Exit Temp Velocity:	ck): r:1 erature:1 30.5	81	
Stack Height Gas Flow Ra Water Vapor	ck Geometry and 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of the Community of the	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM	erature: 1 30.5	81	
Stack Height Gas Flow Ri	ck Geometry and 200 ate: 129.	700	ristics (Provide of the Community of the	Stack Diamete Gas Exit Temp Velocity:	ck): r:1 erature:1 30.5	Type V	Type VI
Stack Height Gas Flow Ra Water Vapor	ck Geometry and 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of the control of t	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III	9.5 r: 9.5 rerature: 1 30.5	81 Type V	Type VI
Stack Height Gas Flow Ra Water Vapor  Type of Waste	ck Geometry and 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of the Community of the	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III	9.5 r: 9.5 rerature: 1 30.5	Type V	Type VI
Stack Height Gas Flow Ra Water Vapor	ck Geometry and 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of the Community of the	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III	9.5 r: 9.5 rerature: 1 30.5	Type V	Type VI
Stack Height Gas Flow Ra Water Vapor  Type of Waste	ck Geometry and 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of the Community of the	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III	9.5 r: 9.5 rerature: 1 30.5	Type V	Type VI
Stack Height Gas Flow Ra Water Vapor  Type of Waste  is/hr cinerated	ck Geometry an 200 ate: 129 Content: 0	700 SECTION	ristics (Provide of fix	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III (Garbage)	9.5 r: 9.5 rerature: 1 30.5	Type V	Type VI
Stack Height Gas Flow Ra Water Vapor  Type of Waste  Is/hr cinerated	ck Geometry and 200 ate: 129, Content:0  Type O (Plastics)	SECTION Type 1 (Rubbish)	ristics (Provide of fixed provide of fix	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III (Garbage)	erature: 9.5  erature: 1 30.5  IATION  Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By prod.
Stack Height Gas Flow Ri Water Vapor  Type of Waste  is/hr cinerated  cription of Waste	Type O (Plastics)	SECTION Type 1 (Rubbish)	ristics (Provide of ft. ACFM %  VIV: INCINER  NOT APPLIC  Type II (Refuse)	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM (ABLE  Type III (Garbage)  Design Capacity	erature: 1 30.5  IATION  Type IV (Pathological)	Type V (Liq & Gas By prod.)	Type VI (Solid By prod.)
Stack Height Gas Flow Ri Water Vapor  Type of Waste  is/hr cinerated  cription of Waste  il Weight Incinerated	Type O (Plastics)	SECTION Type 1 (Rubbish)	ristics (Provide of fit.  ACFM  %  NIV: INCINER  NOT APPLIC  Type II (Refuse)	Stack Diamete Gas Exit Temp Velocity:  ATOR INFORM ABLE  Type III (Garbage)  Design Capacity	erature: 9.5  erature: 1 30.5  IATION  Type IV (Pathological)	Type V (Liq & Gas By prod.)	Type VI (Solid By prod.

	Volume	Heat Release	F	uel	Temperature	
	(ft)3	(BTU/hr)	Туре	BTU/hr	(OF)	
Primary Chamber						
Secondary Chamber	<u> </u>					
tack Height:	1	ft. Stack Diameter _		Stack Temr	D	
ias Flow Rate:		ACFM		DSCFM* Velocity	FP.	
					dry gas corrected to 50% ex	
ype of pollution control	device: [ ] Cy	clone [ ] Wet Scrubt	er [] Afterbur	ner I I Other Jenes	fy)	
iner description of opera	ung characteristic	is or control devices:	<del></del>			
	<del></del>	<u></u>	<u>:</u>			
		<del></del>		·		
<del></del>	<del></del>	· <del>_</del>				
<del></del>	<del></del>	<del> </del>				
Itimate disposal of any a	ffluant other than		A			
Itimate disposal of any e	ingent ofter frau	i that emitted from the	stack (scrubber w	ater, ash, etc.):		
	<del></del>	<del></del>				
				<del></del>		
					<del></del>	
		•				
	SF6	CTION V: SUPPLEME	NTAL DECIMAL	MENTO		
	Ş.	CITOR V. SUPPLEME	MINE REGUIRE	MENIS		
ase provide the following	supplements wh	ero required for this ap	plication,			
Total process input ra	te and product w	eight — show derivation	۰. ATTACHME	ENT 1		
applicable standards. provided when applyimade.	To an operation a ng for an operati	DOSEG METHOGS (e.g., F. Application, attach test	R Part 60 Method	is 1, 2, 3, 4, 5) to show	ewlngs, pertinent manufac- v proof of compliance with of compliance. Information time at which the test was	
	ACHMENT 2 ial discharge (e.g.,	, emission factor, that i	s. AP42 test)	ATTACHMENT (	2	
•					for baghouse include cloth	
to air ratio; for scrubb	er include cross-se	ection sketch, etc.).	N/A	control systems (e.g.,	For pagnouse include cloth	
With construction per and 5 should be consis	mit application, a tent: actual emis	ettach derivation of co sions = potential (1-eff	ntrol device(s) eff	ficiency. Include test	or design data. Items 2, 3,	
An 8½" x 11" flow di- cate where raw materi and where finished pro	ais enter, where s	Pilo and liquid waste (	e secrets, identify exit, where gaseou	the individual operati	ions and/or processes. Indi- borne particles are evolved	
An 8½" x 11" plot plaing area, residences an map).	n showing the loc d other permane	ation of the establishm	ent, and points of ways (Example: (	fairborne emissions, i Copy of relevant port	n relation to the surround- tion of USGS topographic	

8. An 8½" x 11" plot plan of facility showing the location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.

ATTACHMENT 5

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

Contaminant S0 <sub>2</sub>	Rate or Concentration 4.0 1b S02/ton 100% acid
H <sub>2</sub> SO <sub>4</sub> Mist	0.15 lb mist/ton 100% acid
Has EPA declared the best available control to Contaminant	echnology for this class of sources (If yes, attach copy) [] Yes No
Vhat emission levels do you propose as best a	vailable control technology?
Contaminant	Rate or Concentration
S0 <sub>2</sub>	
H <sub>2</sub> SO <sub>4</sub> Mist	0.15 lb mist/ton 100% acid
escribe the existing control and treatment te 1. Control Device/System: 2. Operating Principles:	chnology (if any) Double absorption towers for SO2 absorption and Brinks HV mist eliminators for acid mist control
3. Efficiency: *	4. Capital Costs:
i. Useful Life:	6. Operating Costs:
. Energy:	8. Maintenance Cost:
. Emissions:	
Contaminant	Rate or Concentration
S02	4.0 1b SO <sub>2</sub> /ton 100% acid

<sup>\*</sup>Explain method of determining D 3 above.

	10. 3	Stack Parameters				
	а	. Height:	ft.	b.	Diameter:	ft.
	c	:. Flow Rate:	ACFM	d.	Temperature:	٥Ł
	e	. Velocity:	FPS		•	
E.	Descr	ibe the control and treatment technol	ogy available (As r	many	types as applicable, use additional pages if necessary).	
	1.					
	a.	. Control Device:				
	b	. Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	€.	Useful Life:		f.	Operating Cost:	
	g.	Energy*:		h.	Maintenance Cost:	
	i,	Availability of construction materi	als and process che	emic	als:	
	j.	Applicability to manufacturing pro	cesses:			
	k.	Ability to construct with control d	evice, install in ava	ailab	le space, and operate within proposed levels:	
	2.					
	à.	Control Device:				
	b.	Operating Principles:			·	
	c.	Efficiency*:		d.	Capital Cost:	
	· e.	Useful Life:		f,	Operating Cost:	
	g.	Energy **:		<b>h</b> . ,	Maintenance Costs:	
	i.	Availability of construction materia	Is and process che	mica	ils:	
	j.	Applicability to manufacturing prod	esses:			
	k.	Ability to construct with control de	vice, install in avai	ilable	e space, and operate within proposed levels:	
Ехр	lain me	thod of determining efficiency.				
Enei	rgy to b	pe reported in units of electrical powe	r — KWH design ra	ate.		
	3.		•			
	<b>a.</b>	Control Device:			•	
	b.	Operating Principles:				
	c.	Efficiency*:	•	d.	Capital Cost:	
	e.	Life:	•	f.	Operating Cost:	
	_	Footsy:			Maintenance Cost:	•

<sup>\*</sup>Explain method of determining efficiency above.

	f. <i>F</i>	Availability of construction mater	ials and process chemi	icals:
	j. A	Applicability to manufacturing pro	ocesses:	
	k. A	ability to construct with control of	device, install in availa	ble space and operate within proposed levels:
	4.			
	a. C	ontrol Device		
	<b>b</b> . O	perating Principles:		
	c. E	· fficiency*:	d.	Capital Cost:
	e. Li	ife:	f.	Operating Cost:
	g. Ei	nergy:	h.	Maintenance Cost:
	i. A	vailability of construction materia	als and process chemic	cals:
	j. A	oplicability to manufacturing pro-	cesses:	
	k. Al	pility to construct with control de	evice, install in availat	ple space, and operate within proposed levels:
F.	Describe th	e control technology selected:		•
	1. Contro	I Device:		
	2. Efficier	ncy*:	<b>3</b> .	Capital Cost:
	4. Life:		5.	Operating Cost:
	6. Energy	:	7.	Maintenance Cost:
	8. Manufa	cturer:	•	
	9. Other lo	ocations where employed on simi	lar processes:	
	a.			
	(1)	Company:		
	(2)	Mailing Address:		
	(3)	City:	(4)	State:
	(5)	Environmental Manager:		•
	(6)	Telephone No.:	-	
*Ex	plain method	of determining efficiency above.		
	(7)	Emissions*:		
		Contaminant		Rate or Concentration
	(8)	Process Rate*:	, <del></del>	
	b.			
	(1)	Company		
	(2)	Mailing Address:		
	(3)	City:	(4)	State:
Appli why.	(1) (2) (3)	Mailing Address: City:		State: formation not be available, applicant must state the reaso

(5)	Environmental Manager:	
(6)	Telephone No.:	
(7)	Emissions*:	
	Contaminant	Rate or Concentration
<del></del>		
	· · · · · · · · · · · · · · · · · · ·	
(8)	Process Rate*:	
10. Reason f	or selection and description of systems:	

See PSD-FL-082

<sup>\*</sup>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

See PSD-FL-082 Company Monitored Data ( ) SO2+ Wind sod/dir Period of monitoring month day year Other data recorded \_\_ Attach all data or statistical summaries to this application. 2. Instrumentation, Field and Laboratory Was instrumentation EPA referenced or its equivalent? \_\_\_\_\_ Yes \_\_\_\_\_ No Was instrumentation calibrated in accordance with Department procedures? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Unknown B. Meteorological Data Used for Air Quality Modeling Year(s) of data from month 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 \_\_\_\_\_ Modified? If yes, attach description. 2. \_\_\_\_\_ Modified? If yes, attach description. \_\_\_\_\_ Modified? If yes, attach description. ...... 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 Emission Data Used in Modeling Attach list of emission sources. Emission data required is source name, description on point source (on NEDS point number), UTM coordinates, stack data, allowable emissions, and normal operating time.

E.

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

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.

<sup>\*</sup>Specify bubbler (B) or continuous (C).

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.

### PRODUCTION RATE CALCULATION

PRODUCT:

Sulfuric Acid as 98% H<sub>2</sub>SO<sub>4</sub>

PRODUCT RATE:

2500 Short tons per day (STPD) of 100% H<sub>2</sub>SO<sub>4</sub>

as 98% H2SO4

-or-

212,585 lbs/hr (2500 ÷ 0.98 x 2,000 ÷ 24) of

98% Sulfuric Acid

PROCESS LOSSES:

0.005% equivalent to ash content of sulfur (consider

negligible). Recovery is 99.7% equivalent to emission

of 4# SO2 per ton of 100% H2SO4 produced.

PROCESS INPUT:

SULFUR:

2500 STPD of 100% H2SO4 equivalent to 816 STPD of Sulfur (2000 x 32/98) which at an efficiency

of 99.7% requires 819 STPD of Sulfur (816 ± 0.997).

-or-

 $68,232 \text{ lbs/hr} (819 \times 2,000 \div 24)$ 

SULFUR RECOVERY EFFICIENCY:

Input - 68,232 1b/hour

Stack - 416.7 1b/hr of SO2 or 208.4 1b/hr or S

Efficiency =  $(68,232 - 208.4)/68,232 \times 100$ 

= 99.7%

### POLLUTANT EMISSION RATE CALCULATIONS

OPERATING FACTOR = 8,760 hrs/yr

PRODUCTION RATE = 2,500 TPD 100% H<sub>2</sub>SO<sub>4</sub>

SULFUR DIOXIDE @ 4.0 lb/ton acid

Hourly =  $4.0 \times 2,500/24$ 

= 416.7 lb/hr

Annual =  $416.7 \times 8,760/2000$ 

= 1,825 TPY

MIST @ 0.15 lb/ton acid

Hourly =  $0.15 \times 2,500/24$ 

15.6 lb/hr

Annual =  $15.6 \times 8.760/2000$ 

= 68.3 TPY

 $\underline{NO_X}$  @ 2.1 x 10-6 lb/SCF (test results on an existing sulfuric acid plant)

Typical Stack Gas Characteristics

SO<sub>2</sub> - 230 ppm O<sub>2</sub> - 7%

GAS FLOW RATE

= 11,800/[0.263 - 0.0126(02%)]

= 11,800/[0.263 - 0.0126(7)]

= 67,500 SCF/ton of acid

**EMISSION RATE** 

Hourly =  $2,500/24 \times 67,500 \times 2.1 \times 10^{-6}$ 

= 14.8 1b/hr

Annual =  $14.8 \times 8,760/2000$ 

= 64.8 TPY

Sulfur consumption = 0.335 tons/ton Acid including losses.

Carbon content of sulfur ~ 0.25% (assume to be "petroleum")

"Petroleum" content of Sulfur

- $2,500/4 \times 0.335 \times 0.0025$
- x 2000 1b/ton
- 174.5 lb/hr x 1/8 lb/gal
- 21.8 equivalent gal/hr

## EMISSION RATE @ 5 1b CO/1000 gal

Hourly 21.8/1000 x 5

0.11 1b/hr

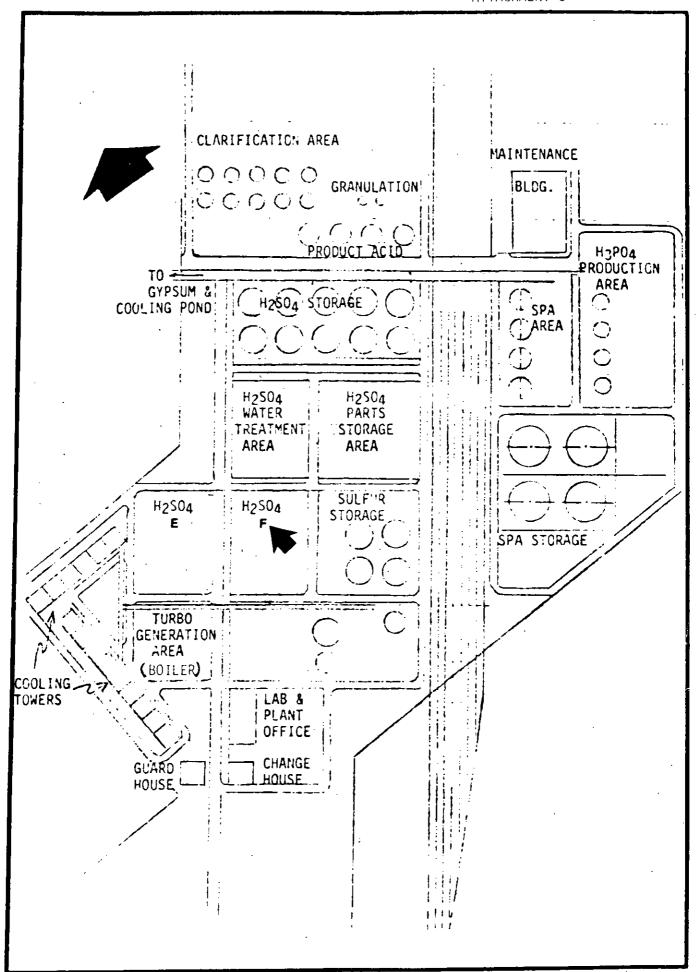
0.11 8,760/2000 Annua 1

0.5 TPY

ATTACHMENT 3

DOUBLE CONTACT/DOUBLE ABSORPTION - SULFURIC ACID MANUFACTURE

ATTACHMENT 4





May 10, 1982

# STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

# DER

# APPLICATION TO CONSTRUCT AIR POLLUTION SOURCES

MAY 27 1982

		AIIIIOEEO		OLU	136	) <u>Z</u>
SOURCE TYPE: Auxi	liary <u>B</u> oiler		_ [] New <sup>1</sup>	XX Existing1	BAOM	··· }
APPLICATION TYPE: [ ]	Construction [	Operation (KX)	Modification		DI IGIAI	
COMPANY NAME: Occio	<u>dental Chemic</u>	al Company		c	OUNTY: Hamilton	<u> </u>
Identify the specific emission No. 2, Gas Fired)AUX1	n point source(s) a	ddressed in this a	pplication (i.e.	Lime Kiln No. 4	with Venturi Scrubbe	r; Peeking Unit
	treet SR 137			с	UIL 2 A C	rings
····• ·		8.320 km		North3,3	68.810 km	
La	atitude o		N	Longitude	° ,	_ ′w
APPLICANT NAME AND TO						
APPLICANT ADDRESS:	Post Office	Box 300, Wh	ite Sprin	gs, FL 320	96	
	·					
	SECTION I:	STATEMENTS B	Y APPLICAN	T AND ENGINE	ER	
A. APPLICANT	-		Occidon	tal Chemica	1 Company	
I am the undersigned or	wner or authorized	representative* of		·	1 Company	
I certify that the statem permit are true, correct pollution control source Florida Statutes, and a granted by the departm permitted establishmen	ct and complete to ce and pollution co all the rules and reg nent, will be non-tr	the best of my ontrol facilities in ulations of the d	such a mann epartment and	belief. Further, ner as to comply revisions thereo	with the provision of if, I also understand th	Chapter 403, at a permit, if
*Attach letter of authorizatio	on		Signed: 🚄	mpm:	antho	
			<u>M. P. M</u>	<u>cArthur, V.</u>	P. & General Ma	anager
			- 1		Title (Please Type)	007 0101
		•	Date: <u>5/</u>	24/82 To	elephone No. (904)	397-8101
B. PROFESSIONAL ENG	INEER REGISTER	ED IN FLORIDA	(where requir	ed by Chapter 47	1, F.S.)	
This is to certify that the bear in conformity with permit application. The erly maintained and op rules and regulations of cant a set of instruction	modern engineering ere is reasonable ass perated, will discharg f the department. It	principles applic urance, in my pri e an effluent that is also agreed tha	able to the tre ofessional judg t complies with it the undersign	atment and dispo ment, that the po all applicable sta ned will furnish, i	osal of pollutants chara ollution control faciliti atutes of the State of F if authorized by the ow	cterized in the es, when prop- lorida and the mer, the appli-
sources.			61		Lace S	
			Signed: John B.	Koogler, P	.E. /	
				Name	(Please Type)	
(Affix Seal)			SHOLTES		ENVIRONMENTAL	CONSULTANT
5			1010 101		Name (Please Type)	FL 32601
			1213 NW		, Gainesville, dress (Please Type)	
Florida Registration No.	12925		Date: _5/		elephone No. (904)	377-5822

<sup>&</sup>lt;sup>1</sup>See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.) DER FORM 12-1.122(16) Page 1 of 10

## SECTION II: GENERAL PROJECT INFORMATION

<b>A</b> .	Describe the nature and extent of the project. Refer to pollution control equipment, and e formance as a result of installation. State whether the project will result in full compliance. Gas fired auxiliary steam boiler with stand-by oil firing,	expected improvements in source per- Attach additional sheet if necessary Capability will be used to
	augment steam produced from the sulfuric acid plants to pro	
	in the phosphoric acid production and evaporation process. sulfur content of the stand-by fuel from 0.8% to 1.0%.	
В.	Schedule of project covered in this application (Construction Permit Application Only)  Start of Construction	July, 1982
C.	Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for project serving pollution control purposes. Information on actual costs shall be furnished permit.)  No pollution control equipment	r individual components/units of the d with the application for operation
D.	Indicate any previous DER permits, orders and notices associated with the emission point, in tion dates.  Unit was previously permitted under FDER A0-24-2500 issued  9/30/80 and A0-24-34186 issued 10/10/80 and expiring 9/30/8	ncluding permit issuance and expira-
F.	Is this application associated with or part of a Development of Regional Impact (DRI) pursua and Chapter 22F-2, Florida Administrative Code? YesX No  Normal equipment operating time: hrs/day24; days/wk7; wks/yr52 if seasonal, describe:8,760_hours_per_year	_; if power plant, hrs/yr;
	If this is a new source or major modification, answer the following questions. (Yes or No)	
	1. Is this source in a non-attainment area for a particular pollutant?	NO
	<ul><li>a. If yes, has "offset" been applied?</li><li>b. If yes, has "Lowest Achievable Emission Rate" been applied?</li></ul>	
	c. If yes, list non-attainment pollutants.	
2	2. Does best available control technology (BACT) apply to this source? If yes, see Section VI.	YES
3	3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.	YES
4	3. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?  The source of the sourc	NO
5	5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	NO

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

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

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

	Contaminants		Utilization	Relate to Flow Diagram	
Description	Туре	% Wt	Rate - Ibs/hr		
NOT APPLICAB	E				

B.	Process Rate, if applicable: (See Section V, Itain 1)	NOT ADDITOADIE	
	1. Total Process Input Rate (lbs/hr):	NOT APPLICABLE	
	2. Product Weight (lbs/hr):		

### C. Airborne Contaminants Emitted:

	Emiss	ion <sup>1</sup>	Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential I	Emission <sup>4</sup>	Relate
Name of Contaminant	Maximum Ibs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission lbs/hr	lbs/hr	T/yr	to Flow Diagram
Sulfur Dioxide	174.8	765.8	BACT	174.8	174.8	765.8	1
Part. Matter	14.2	62.3	N/A	14.2	14.2	62.3	1
NOx	65.6	287.2	N/A	65.6	65.6	287.2	1
CO	5.5	23.9	N/A	5.5	5.5	23.9	1
Hydrocarbons	1.1	4.8	N/A	1.1_	1.1	4.8	1

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup>
NOT APPLICABLE				

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

<sup>&</sup>lt;sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. – 0.1 pounds per million BTU heat input)

<sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

### E. Fuels

Type (Be Specific)	Consum	Maximum Heat Inout	
	avg/hr	max./hr	Maximum Heat Input (MMBTU/hr)
0i1	6.5	26.0	160
Gas	0.04	0.160	160

•	(0il)	uel Oils, barrels/h			0.00			
Percent Sulfur: 1.0  Density: 8  Heat Capacity: 18,300		<del></del>	<del></del>	Percent Ash: .		0.09		
					nt Nitrogen: N	rogen: Nil		
		<u> </u>	BTU/Ib	<del></del>	146,400	)	BTU/g	
Other Fuel Contar	ninants (which		•					
F. If applicable	, indicate the p				verage <u>N/A</u>			
		es generated and r						
<del> </del>			-					
	<del></del>		_			<del> </del>		
H. Emission Sta	ck Geometry ar	nd Flow Character						
Stack Height	· ———	35	ft.	Stack Diamete	r:4.		f	
Gas Flow Rate:			ACFM	Gas Exit Temp	erature:38	30	0	
Water Vapor	Content:	9	<b></b> %	Velocity:	31		FP	
		SECTION	IIV: INCINER NOT APPL	NATOR INFORM	MATION			
Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)	
Lbs/hr Incinerated								
escription of Waste	·				· · · · · · · · · · · · · · · · · · ·			
otal Weight Inciner	ated (lbs/hr) _			Design Capacity	(lbs/hr)			
	er of Hours of (	Operation per day			days/w	eek		
pproximate Numb								

	Volume	Heat Release		Fuel	Temperature
	(ft)3	(BTU/hr)	Туре	BTU/hr	(oF)
Primary Chamber					
Secondary Chamber					
Stack Height:		ft. Stack Diameter		Stack Temp	
Gas Flow Rate:					
*If 50 or more tons per o					
cess air.		,	roto iii granis	ber stangard CODIC 100f C	iry gas corrected to 50%
Type of pollution control	device: [ ] Cy	clone [ ] Wet Scrubt	er [] Afterb	urner [] Other (specif	y)
Brief description of operat	ing characteristic	s of control devices:			
·					
				· · · · · · · · · · · · · · · · · · ·	
	<del></del>	-		<del> </del>	
Ultimate disposal of any ef	fluent other thai	that emitted from the	stack (scrubber	water, ash, etc.):	
<del></del>	<del></del> -	<del></del>			
<del> </del>	<u></u>		<u></u>		
·					
	•	•			
	\$F	CTION V: SUPPLEME	MTAL DEADLE	CHERNTO	
	JL	CITON V. SUPPLEME	MIAL REGUIR	SEMEN12	
ease provide the following	supplements wi	neru required for this ap	plication.		
I. Total process input ra	ite and product v	veight — show derivatio	n. ATTACHM	MENT 1.	
		-			
turer's test (lata, etc.,	) and attach pro	posed methods (e.a. F	R Part 60 Meth	ods 1 2 3 4 5) to show	wings, pertinent manufa proof of compliance wit
applicable standards.	to an operation	application, attach test	results or metha	ade used to show aroof a	f compliance. Informatio
made.	ATTACHM	IENT ]	truction permit	shall be indicative of the	time at which the test wa
B. Attach basis of potent	ial discharge (e.g	., emission factor, that	is AP42 test1	ATTACHMENT 1	
<ul> <li>With construction per to air ratio; for scrubb</li> </ul>	mit application, er include cross-	include design details fi section sketch, etc.).	or all air pollutic NOT APP	on control systems (e.g., LICABLE	for baghouse include clot
With construction per	mit application	attach designation of a			andada, da
<ul> <li>With construction per and 5 should be consis</li> </ul>	tent: actual emi	ssions = potential (1-ef	ficiency). NO	etticiency. Include test o	or design data. Items 2, :
. An 8½" x 11" flow di	agram which wil	l without revealing trac			
cate where raw materi	als enter, where	solid and liquid waste	exit, where gase	ous emissions and/or airl	ons and/or processes. Ind Porne particles are evolve
and where finished pro	ducts are obtain	ed. ATTACHMENT 2	-		
An 8½" x 11" plot pla	in showing the lo	cation of the establish	nent, and points	of airborne emissions, in	relation to the surround
ing area, residences ar	nd other perman ttachment 3	ent structures and road	ways (Example	: Copy of relevant port	ion of USGS topographi
An 8½" x 11" plot place all flows to the flow dia		owing the location of right $\Lambda$	nanufacturing p	rocesses and outlets for	airborne emissions. Relat

ATTACHMENT 4

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

(Also See PSD-FL-083)

Contaminant	Rate or Concentration
	chnology for this class of sources (If yes, attach copy) [ ] Yes [X] No
Contaminant	Rate or Concentration
What emission levels do you propose as best ava	•
S0 <sub>2</sub>	Rate or Concentration 1.1 1b/10 <sup>6</sup> Btu input (1% Sulfur 0il)
1. Control Device/System:	hnology (if any). Presently No. 6 fuel oil with 0.8% sulfur is used to control sulfur dioxid emissions.
2. Operating Principles:	
3. Efficiency: * 5. Useful Life:	4. Capital Costs:
7. Energy:	Operating Costs:     Maintenance Cost:
3. Emissions:	o. Mantenanco Gost.
Contaminant	Rate or Concentration 0.9 1b/10 <sup>6</sup> Btu (0.8% Sulfur 0il)

<sup>\*</sup>Explain method of determining D 3 above.

	10. 3	Mack Faranielers				
	a	. Height:	fŧ.	b.	Diameter:	ft.
	C.	. Flow Rate:	ACFM	d.	Temperature:	o <sub>F</sub>
	e.	. Velocity:	FPS			
€.	Descri	ibe the control and treatment technological	ogy available (As r	many	types as applicable, use additional pages if necessary	y).
	1.				·	
	a.	Control Device:				
	b.	Operating Principles:			•	
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Useful Life:		f.	Operating Cost:	
	g.	Energy *:		h.	Maintenance Cost:	
	i.	Availability of construction materia	als and process ch	emic	als:	
	j.	Applicability to manufacturing pro-	cesses:			
	k.	Ability to construct with control de	evice, install in ava	ailab	e space, and operate within proposed levels:	
	2.				· ·	
	a.	Control Device:				
	b.	Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Useful Life:		f,	Operating Cost:	
	g.	Energy **:		h.	Maintenance Costs:	
	i.	Availability of construction materia	ls and process che	emica	ils:	
	j.	Applicability to manufacturing prod	esses:			
	k.			ilabl	e space, and operate within proposed levels:	
•Ex	plain me	ethod of determining efficiency.				
••En	ergy to l	be reported in units of electrical powe	r — KWH design ı	rate.		
	3.					
	a.	Control Device:				
	b.	Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Life:		f.	Operating Cost:	
	g.	Energy:		h.	Maintenance Cost:	

<sup>\*</sup>Explain method of determining efficiency above.

	i.	Av	ailability of construction materials a	nd process chemi	cals:
	j.	Αp	plicability to manufacturing process	es:	
	k.	Ab	ifity to construct with control device	e, install in availat	ple space and operate within proposed levels:
	4.				
	a.	Cor	ntrol Device		
	b.	Оре	erating Principles:		
	c.	Eff	iciency*:	d.	Capital Cost:
	e.	Life	<b>e</b> :	f.	Operating Cost:
•	g.	Ene	ergy:	h.	Maintenance Cost:
	i.	Ava	illability of construction materials ar	nd process chemic	cals:
	j.	App	oficability to manufacturing processe	<b>!s</b> :	
	k.	Abi	lity to construct with control device	, install in availab	ele space, and operate within proposed levels:
F.	Describe	the	control technology selected:		
	1. Cor	trol	Device:		
	2. Effi	cien	cy*:	3.	Capital Cost:
	4. Life:				Operating Cost:
	6. Ene	rgy:		7.	Maintenance Cost:
	8. Mar	ufac	turer:		
	9. Oth	er lo	cations where employed on similar p	processes:	
	a.				•
		(1)	Company:		
		(2)	Mailing Address:		
		(3)	City:	(4)	State:
		(5)	Environmental Manager:		
		(6)	Telephone No.:		
*Exp	lain met	hoa	of determining efficiency above.		
		<del>(</del> 7)	Emissions*:		
			Contaminant		Rate or Concentration
-					
-				<u> </u>	
-	<del>.</del>				<u> </u>
		(8)	Process Rate*:		
	b.				
	,	(1)	Company:		
		(2)	Mailing Address:		
	,	(3)	City:	(4)	State:

No.: : entaminant	Rate or Concentration
	• · · · · · · · · · · · · · · · · · · ·
ntaminant	• · · · · · · · · · · · · · · · · · · ·
	ne*:

See PSD-FL-083

<sup>&</sup>quot;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

(See PSD-FL-083) Company Monitored Data \_\_\_\_\_ TSP \_\_\_\_\_ ( ) SO<sup>2</sup>\* \_\_\_\_\_ Wind sod/dir \_ no sites \_ Period of monitoring month day month day Other data recorded \_ Attach all data or statistical summaries to this application. 2. Instrumentation, Field and Laboratory Was instrumentation EPA referenced or its equivalent? \_\_\_\_\_ Yes \_\_\_\_\_ No Was instrumentation calibrated in accordance with Department procedures? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Unknown ы Meteorological Data Used for Air Quality Modeling ... Year(s) of data from ... 2. Surface data obtained from (location) \_\_\_ 3. Upper air (mixing height) data obtained from (location) 4. Stability wind rose (STAR) data obtained from (location) Computer Models Used 1. \_\_\_\_\_\_ Modified? If yes, attach description. 2. \_\_\_\_\_ Modified? If yes, attach description. 3. \_\_\_\_\_\_ Modified? If yes, attach description. \_\_\_\_\_\_ Modified? If yes, attach description. Attach copies of all final model runs showing input data, receptor locations, and principle output tables. Applicants Maximum Allowable Emission Data **Pollutant Emission Rate** TSP

 $SO^2$ 

**Emission Data Used in Modeling** 

B.

C.

D.

F

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

\_ grams/sec

- Attach all other information supportive to the PSD review,
- \*Specify bubbler (B) or continuous (C).
- Discuss the social and economic impact of the selected technology versus other applicable technologies (i.e., jobs, payroll, pro-G. duction, 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.

FUEL:

Gas or oil at 1.0% S

**HEAT INPUT:** 

160.0 MM BTU/hr

**FUEL INPUT:** 

0il:

8743 lbs/hr (160MM ÷ 18,300) or 26.0 BBLS/hr

 $(160 \text{ MM} \div 146,000 \mp 42) \text{ or } 1093 \text{ gal/hr}$ 

Gas:

0.160 MM CF/hr (160 ÷ 1000) (NOTE: "Average" usage

@ 25% of maximum)

**OPERATING** 

**FACTOR:** 

8760 hours/year

**EMISSIONS:** 

\$02

(8743 lb/hr) x (0.01 x 2 lb S02/lb fuel)

= 174.8 1b/hr

765.8 ton/yr

Part. Matter

 $(1093 \text{ gal/hr}) \times ((10 \times 1.0) + 3)/1000 \text{ lb PM/gal}$ 

= . 14.2 1b/hr

62.3 ton/yr

 $N0_X$ 

 $(1093 \text{ gal/hr}) \times (60/1000 \text{ lb } NO_X/\text{gal})$ 

65.6 1b/hr 287.2 ton/yr

CO

 $(1093 \text{ gal/hr}) \times (5/1000 \text{ lb } CO/\text{gal})$ 

5.5 lb/hr

23.9 ton/yr

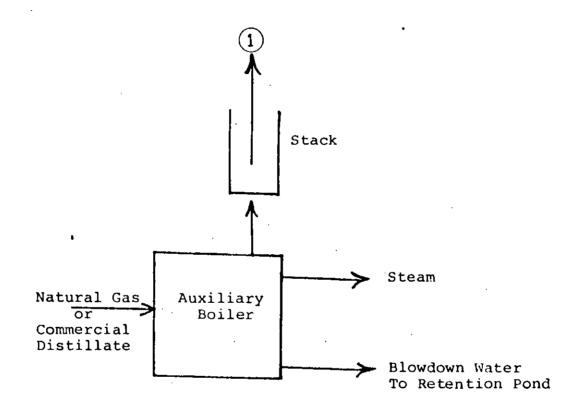
Hydrocarbons

 $(1093 \text{ gal/hr}) \times (1/1000 \text{ lb HC/gal})$ 

1.1 lb/hr

=

4.8 ton/yr



NEW ACIXILIARY BOILER

FLOW DIAGRAM

ATTACHMENT 4



May 14, 1982

# DER

### STATE OF FLORIDA **DEPARTMENT OF ENVIRONMENTAL REGULATION**

# MAY 27 1982 **BAQM**

### APPLICATION TO YOME KYNYEY CONSTRUCT **AIR POLLUTION SOURCES**

SOURCE TYPE: Auxiliary Boiler	_ [] New <sup>1</sup> [X] Existing <sup>1</sup>
APPLICATION TYPE: [ ] Construction [ ] Operation [X]	K Modification
COMPANY NAME: Occidental Chemical Compar	ny county: Hamilton
Identify the specific emission point source(s) addressed in this a No. 2, Gas Fired)Auxillary Boiler "D"	pplication (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit
SOURCE LOCATION: Street S.R. 137	City White Springs
	North3,368.810 km
Latitude 0 ""	
APPLICANT NAME AND TITLE: Occidental Chemi	
APPLICANT ADDRESS: Post Office Box 300,	White Springs, Florida 32096
SECTION I: STATEMENTS B	Y APPLICANT AND ENGINEER
A. APPLICANT	
f am the undersigned owner or authorized representative® of	
I certify that the statements made in this application for a	CONSTRUCTION  knowledge and belief. Further, I agree to maintain and operate the
Pollution control source and pollution control facilities in Florida Statutes, and all the rules and regulations of the de	epartment and revisions thereof. I alree to maintain and operate the new such a manner as to comply with the provision of Chapter 403, epartment and revisions thereof. I also understand that a permit, if will promptly notify the department upon sale or legal transfer of the
*Attach letter of authorization	Signed: 1271117 : Challes
	M.P. McArthur, V.P. & General Manager
	Name and Title (Please Type)
	Date: $5/24/82$ Telephone No. (904) 397-8101
3. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA	
pe in conformity with modern engineering principles applic permit application. There is reasonable assurance, in my pro- erly maintained and operated, will discharge an effluent that rules and regulations of the department. It is also agreed that	on control project have been control project have been control project have been control project have been control facilities, when proportional judgment, that the pollution control facilities, when proportional project complies with all applicable statutes of the State of Florida and the tithe undersigned will furnish, if authorized by the owner, the application of the pollution control facilities and if applicable, pollution
	J.B. Koogler, Ph.D., P.E.
	Name (Please Type)
(Affix Seat)	SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
( 11.1	Company Name (Please Type)
	1213 NW 6th Street, Gainesville, FL 32601
Florida Registration No. 12925	Mailing Address (Please Type)  Date: 5/14/82 Telephone No. (904) 377-5822

## SECTION II: GENERAL PROJECT INFORMATION

Α	formance as a result of installation. State whether the project	flution control equipment, and expected improvements in source per it will result in full compliance. Attach additional sheet if necessary.							
	Gas fired auxiliary steam boiler wi	th stand-by oil firing capability is used							
	to augment steam produced from the	sulfuric acid plants to provide operating							
	flexibility in the phosphoric acid	production and evaporation process. Sulfur							
	content of oil will be increased fr	om 0.8% to 1.0%.							
В.	. Schedule of project covered in this application (Construction	Permit Application Only)							
	Start of ConstructionJuly 1982								
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.)								
	No pollution control equipment.								
		·							
D.		ciated with the emission point, including permit issuance and expira							
	FDER Construction Permit No. Ac-24-2700 and 2701 issued 7/6/77 and expiring								
	12/31/79; A0-24-21059 issued 3/6/80	for boilers C and D and expiring 1/31/85.							
F.		/wk7; wks/yr52; if power plant, hrs/yr;							
G.	If this is a new source or major modification, answer the follow								
	1. Is this source in a non-attainment area for a particular pollu	itant? No							
	a. If yes, has "offset" been applied?								
	b. If yes, has "Lowest Achievable Emission Rate" been app	olied?							
	c. If yes, list non-attainment pollutants.								
	Does best available control technology (BACT) apply to to Section VI.	his source? If yes, see Yes							
	3. Does the State "Prevention of Significant Deterioriation" apply to this source? If yes, see Sections VI and VII.	(PSD) requirements Yes							
	4. Do "Standards of Performance for New Stationary Source this source?	ces" (NSPS) apply to NO							
	5. Do "National Emission Standards for Hazardous Air Po apply to this source?	Ilutants" (NESHAP) No							

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	Relate to Flow Diagram
	Туре	% Wt	Rate · lbs/hr	Trouge to From Bragadin
		NOT APPLICA	BLE	
				,

В.	Process Rate, if applicable: (See Section V, Item 1)
	1. Total Process Input Rate (lbs/hr): Not Applicable

Airborne Contaminants Emitted: Gas/011

2. Product Weight (lbs/hr): \_\_\_

C.

Name of Contaminant	Emission <sup>1</sup>		Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>		Relate	
	Maximum Ibs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission lbs/hr	lbs/hr	T/yr	to Flow Diagram	
Sulfur Dioxide	0.1/128.7	7 0.3/564	BACT	0.1/128.7	0.1/128.7	0.3/564	1	
Part. Matter	1.2/10.7	5.3/47	BACT	1.2/10.7	1.2/10.7	5.3/47	1	
NO <sub>X</sub>	21.0/49.2	2 92/215	NA	21.0/49.2	21.0/49.2	92/215	1	
CO	2.0/4.1	9/18	NA	2.0/4.1	2.0/4.1	9/18	1	
HC	0.4/0.8	2/4	NA	0.4/0.8	0.4/0.8	2/4	1	

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

Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It5
NOT APPLICA	BLE		
	<u> </u>	<del> </del>	
-		· · · · · · · · · · · · · · · · · · ·	-
		Contaminant Efficiency  NOT APPLICABLE	(in microns)

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

<sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 0.1 pounds per million BTU heat input)

<sup>&</sup>lt;sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

Type (Be Specific)	Consu	Maximum Heat Innut	
	avg/hr	max./hr	Maximum Heat Inpu (MMBTU/hr)
0il	5	19.5	120
Gas	0.03	0.12	120

Fuel Analysis: Percent Sulfur:	1000*/18	300	lbs/gal BTU/lb	Typical Percei -/146 None	nt Nitrogen:	/Nil	BTU/yal
G. Indicate liqu	id or solid wast er water b	ercent of fuel used es generated and n olow-down to	nethod of dispo water rec	ing. Annual Avosal.	pond		
Stack Height	:	_104	ft.	Stack Diameter	6.5		"C" and "D"
Gas Flow Ra Water Vapor *BTU/ft <sup>3</sup>		(50,000 ea. boiler)	%	Velocity:	50		FPS
		•	IV: INCINER	ATOR INFORM			FPS
		•		ATOR INFORM		Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
*BTU/ft <sup>3</sup>	Type O	SECTION	IV: INCINER. NOT APPLI Type II	ATOR INFORM CABLE Type III	Type IV	Type V (Liq & Gas	Type V1 (Solid
*BTU/ft <sup>3</sup> Type of Waste	Type O (Plastics)	SECTION  Type I (Rubbish)	IV: INCINER NOT APPLI Type II (Refuse)	ATOR INFORM CABLE Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas	Type V1 (Solid

Date Constructed \_

	Volume	Heat Release	F	uel	Temperature
	(ft)3	(BTU/hr)	Туре	BTU/hr	(OF)
Primary Chamber			<del></del>		
Secondary Chamber					
tack Height:		ft. Stack Diameter		Stack Tem	р
					FP
					dry gas corrected to 50% e
ype of pollution control	device: [ ] Cy	rclone [ ] Wet Scrub	ber [] Afterbui	rner [] Other (spec	ify)
	<del> </del>	<del> </del>			<u> </u>
<del> </del>		<del></del>			
		<del></del>			<del></del>
		<del></del>	·		
Itimate disposal of any ef					
• • • • • • • • • • • • • • • • • • • •					
				` ` `	<del></del>
	<del></del>				<del></del>
				<del></del>	
	SE	CTION V: SUPPLEM	ENTAL REQUIRI	EMENTS	
ease provide the following	r cunnismente wi	haru raquirad for this as	nolisation		
			· ·		
		weight — show derivation	ATTACAM		
applicable standards.	) and attach pro To an operation	oposed methods (e.g., f application, attach tes	FR Part 60 Metho t results or method	ds 1, 2, 3, 4, 5) to sho is used to show proof	rewings, pertinent manufac w proof of compliance with of compliance. Information to time at which the test was
	ATTACH				_
Attach basis of potent	rial discharge (e.g	g., emission factor, that	is, AP42 test).	ATTACHMENT	]
With construction per to air ratio; for scrubb	mit application, er include cross-	include design details ( section sketch, etc.).	for all air pollution	o control systems (e.g.	, for baghouse include cloth
With construction pen and 5 should be consis	mit application, tent: actual em	attach derivation of cissions = potential (1-ef	ontrol device(s) et		or design data. Items 2, 3
An 8%" x 11" flow di cate where raw materi and where finished pro	als enter, where	solid and liquid waste led.	exit, where gaseo	y the individual opera us emissions and/or a	tions and/or processes. Indi irborne particles are evolved
An 8%" x 11" plot pla	an abassia a stati	ATTACH	MENT 2		
An 8½" x 11" plot pla ing area, residences an map).	in snowing the lo nd other permar	nent structures and roa	dways (Example:	of airborne emissions, Copy of relevant po	in relation to the surround- rtion of USGS topographic
• •		ATTACH			
all flows to the flow dia	an of facility sh agram.	owing the location of ATTACH	manufacturing pro MENT 4	ocesses and outlets fo	r airborne emissions. Relate

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

Contaminant	Rate or Concentration
Has EPA declared the best available control te	chnology for this class of sources (If yes, attach copy) [ ] Yes [ K ] No  Rate or Concentration
Vhat emission levels do you propose as best av Contaminant S02	Rate or Concentration
	1.0% Sulfur Content.
Describe the existing control and treatment ted  1. Control Device/System:  2. Operating Principles:	chnology (if any). Presently No. 6 fuel oil with 0.8% sulfuing is used to control sulfur dioxide emissi
3. Efficiency: *	4. Capital Costs:
5. Useful Life:	6. Operating Costs:
7. Energy:	8. Maintenance Cost:
9. Emissions:	
Contaminant S02	Rate or Concentration 0.9 1b/10 <sup>6</sup> BTU; use of oil
	0.9 10/10° BIU; use of off

<sup>\*</sup>Explain method of determining D 3 above.

	10. 5	tack Parameters				
	- <b>a</b> .	. Height:	ft.	b.	Diameter:	ft.
	c.	Flow Rate:	ACFM	d.	Temperature:	٥F
	e.	Velocity:	FPS			
Ξ.	Descri	be the control and treatment techn	ology available (As r	nany	types as applicable, use additional pages if necessary).	
	1.					
	a.	Control Device:				
	b.	Operating Principles:				
	c.	Efficiency*:		ď.	Capital Cost:	
	e.	Useful Life:		f.	Operating Cost:	
	g.	Energy*:		h.	Maintenance Cost:	
	i.	Availability of construction mate	erials and process ch	emic	als:	
	j.	Applicability to manufacturing p	rocesses:			
	k.	Ability to construct with control	device, install in ava	ailab	le space, and operate within proposed levels:	
	2.					
	a.	Control Device:				
	b.	Operating Principles:				
	C.	Efficiency*:		d.	Capital Cost:	
	e.	Useful Life:		f,	Operating Cost:	
	g.	Energy **:		h.	Maintenance Costs:	
	i.	Availability of construction mate	rials and process che	mic	als:	
	j.	Applicability to manufacturing po	rocesses:			
	k.	Ability to construct with control	device, install in ava	ilabl	e space, and operate within proposed levels:	
'Exj	olain me	ethod of determining efficiency.				
Ene	ergy to l	be reported in units of electrical po	wer – KWH design i	rate.		
	3.					
	a.	Control Device:			·	
	Ь.	Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Life:		f,	Operating Cost:	
	g.	Energy:		h.	Maintenance Cost:	

<sup>\*</sup>Explain method of determining efficiency above.

		plicability to manufacturing processes:	
ple space and operate within proposed levels:	availab	ility to construct with control device, install in	
			4
•		ntrol Device	
		erating Principles:	
Capital Cost:	d.	ciency*:	
Operating Cost:	f.	:	
Maintenance Cost:	h.	rgy:	
als:	hemica	ilability of construction materials and process	
		dicability to manufacturing processes:	
le space, and operate within proposed levels:	vailabl	lity to construct with control device, install in	
		control technology selected:	F. De
		Device:	1.
Capital Cost:	3.	y*:	2.
Operating Cost:	<b>5</b> .		4.
Maintenance Cost:	7.	·	6.
•		turer:	. 8.
		cations where employed on similar processes:	9.
		•	
		Company:	
		Mailing Address:	
State:	(4)	City:	
		Environmental Manager:	
		Telephone No.:	
		of determining efficiency above.	*Explain
		Emissions":	
Rate or Concentration		Contaminant	
 		,	
		Process Rate*:	
		Company:	
		Mailing Address:	
State:	(4) 5	City:	
 Maintenance Cost: cals:  cle space, and operate within proposed levels:  Capital Cost: Operating Cost: Maintenance Cost:  State:  Rate or Concentration	h. hemica vailabl  3. 5. 7.  (4)	ilability of construction materials and process slicability to manufacturing processes: lity to construct with control device, install in control technology selected: Device:  turer: cations where employed on similar processes:  Company: Mailing Address: City: Environmental Manager: Telephone No.: of determining efficiency above. Emissions*: Contaminant  Process Rate*:  Company: Mailing Address: City: Company: Mailing Address: City: Company: Mailing Address: City:	1. 2. 4. 6. 8. 9. *Explain

(5)	Environmental Manager:	
(6)	Telephone No.:	
(7)	Emissions*:	
	Contaminant	Rate or Concentration
		<del></del>
<del></del>		
(8)	Process Rate*:	·
10. Reason f	or selection and description of systems:	

See PSD-FL-083

<sup>\*</sup>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

See PSD-FL-083

A.	Company Monitored Data
	1 no sites TSP ( ) SO <sup>2</sup> * 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.
	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
В.	Meteorological Data Used for Air Quality Modeling
	1 Year(s) of data from/ to to to
	2. Surface data obtained from (location)
	Upper air (mixing height) data obtained from (location)
	4. Stability wind rose (STAR) data obtained from (location)
C.	Computer Models Used
<b>O</b> .	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 <sup>2</sup> grams/sec
E.	Emission Data Used in Modeling
	Attach list of emission sources. Emission data required is source name, description on 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.
*Spe	cify bubbler (B) or continuous (C).
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.

FUEL:

Gas

Oil at 1.0% Sulfur

**HEAT INPUT:** 

120 x 10<sup>6</sup> BTU/hr

**EUEL INPUT:** 

Gas =  $120 \times 10^6 \text{ BTU/hr} \times 1/1000 \text{ ft}^3/\text{BTU}$ =  $0.12 \times 10^6 \text{ ft}^3/\text{hr}$ 

 $0i1 = 120 \times 10^6 BTU/hr \times 1/146,400 ga1/BTU$ 

= 820 gal/hr

**OPERATING** 

FACTOR:

8760 hour/year

**EMISSIONS:** 

# Sulfur Dioxide (Potential and Actual)

Gas:  $S02 = 0.6 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$  $= 0.1 \, lb/hr$ 

= 0.3 TPY

0il:  $SO_2 = (0.157 \times 1.0) \text{ lb/gal } \times 820 \text{ gal/hr}$ 

= 128.7 lb/hr= 564 TPY

# Particulate Matter (Potential and Actual)

 $= 10 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ 

= 1.2 lb/hr= 5.3 TPY

Oil: PM = [10(1.0) + 3]/1000 lb/gal x 820 gal/hr

= 10.7 lb/hr= 46.7 TPY

# Nitrogen Oxides (Potential and Actual)

 $NO_X = 175 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ 

= 21.0 lb/hr= 92.0 TPY

0il:  $NO_X = 0.060 \text{ lb/gal } \times 820 \text{ gal/hr}$ 

 $= 49.2 \, lb/hr$ = 215.5 TPY

# Carbon Monoxide (Potential and Actual)

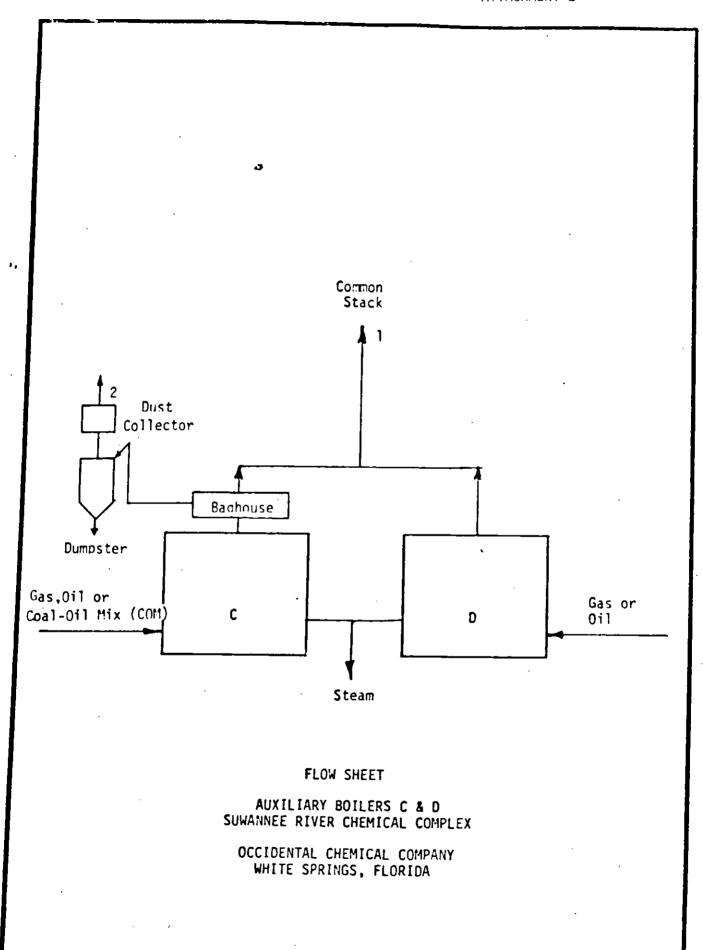
Gas:  $CO = 17 \times 10^{-6} \text{ lb/rt}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ = 2.0 lb/hr = 8.9 TPY

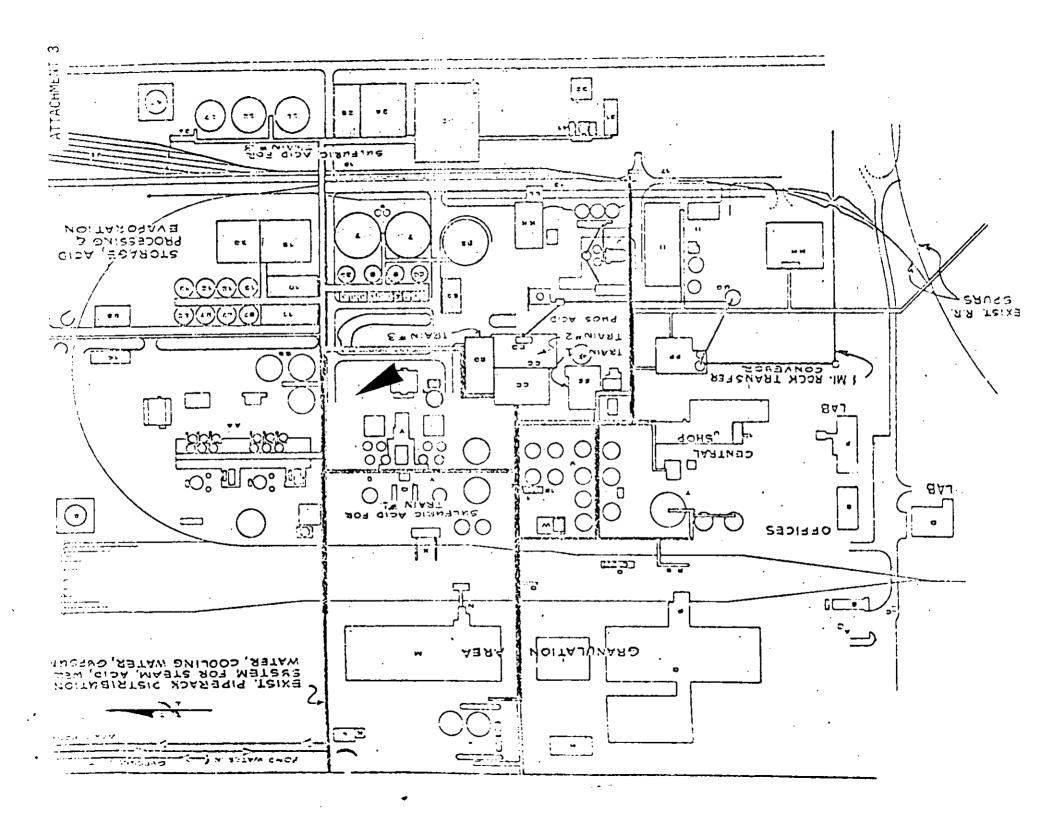
Oil: CO = 0.005 lb/gal x 820 gal/hr = 4.1 lb/hr = 18.0 TPY

# Hydrocarbons (Potential and Actual)

Gas: HC =  $3 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ = 0.4 lb/hr= 1.6 TPY

Oil: HC = 0.001 lb/gal x 820 gal/hr = 0.8 lb/hr = 3.6 TPY





ATTACHMENT 4

May 14, 1982



# STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

# DER

# APPLICATION TO WRENATE/CONSTRUCT AIR POLLUTION SOURCES

MAY 27 1982

AIR POLL	UTION SOURCES
SOURCE TYPE: Auxiliary Boiler	[] New <sup>1</sup> XX Existing <sup>1</sup> BAQM
APPLICATION TYPE: [ ] Construction [ ] Operation	以来 Modification
COMPANY NAME:Occidental Chemical Com	pany COUNTY: Hamilton
Identify the specific emission point source(s) addressed in this No. 2, Gas Fired)Auxillary Boiler "C"	s application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit
SOURCE LOCATION: Street S.R. 137	City White Springs
UTM: East 328,320 km	North 3,368.810 km
Latitude o , APPLICANT NAME AND TITLE: Occidental Ch	_ "N Longitude o , , w
APPLICANT ADDRESS Post Office Box 300, Wh	
yar closury aboutcos.	
SECTION I: STATEMENTS	BY APPLICANT AND ENGINEER
A. APPLICANT	
I am the undersigned owner or authorized representative*	ofOccidental Chemical Company
pollution control source and pollution control facilities  Florida Statutes, and all the rules and regulations of the	y knowledge and belief. Further, I agree to maintain and operate the in such a manner as to comply with the provision of Chapter 403, department and revisions thereof. I also understand that a permit, if I will promptly notify the department upon sale or legal transfer of the
*Attach letter of authorization	Signed: 1378mg -Ch Thu
	M.P. McArthur, V.P. & General Manager
	Name and Title (Please Type)
	Date: 5/24/72 Telephone No. (904) 397-8101
B. PROFESSIONAL ENGINEER REGISTERED IN FLORID	A (where required by Chapter 471, F.S.)
pe in conformity with modern engineering principles app permit application. There is reasonable assurance, in my perly maintained and operated, will discharge an effluent thrules and regulations of the department. It is also agreed to	tion control project have been at the state of pollutants characterized in the disposal of pollutants characterized in the professional judgment, that the pollution control facilities, when proposal complies with all applicable statutes of the State of Florida and the hat the undersigned will furnish, if authorized by the owner, the appliance of the pollution control facilities and, if applicable, pollution
	Signed:
	J.B. Koogler, Ph.D. P.E. Name (Please Type)
(Affix Seal)	SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
	Company Name (Please Type)
355.	1213 NW 6th Street, Gainesville, FL 32601
Florida Registration No. 12925	Mailing Address (Please Type)  Date: 5/14/8/Talephone No. (904) 377-5822
count menistration ivo 16363	11970' : ) /     / / / / Tolophone No.   U7U41   3//43066

# SECTION II: GENERAL PROJECT INFORMATION

A.	formance as a result of installation. State whether the project will result in full compliance. A	Attach additional sheet if necessary
	Existing gas fired auxiliary steam boiler with stand-by oil	
	to augment steam produced from the sulfuric acid plants to	
	in the phosphoric acid production and evaporation process.	
В.	accept a mix of ground coal and oil (COM) with same sulfur dust collector has been installed to reduce particulate mat schedule of project covered in this application (Construction Permit Application Only) posed to increase the sulfur content of the oil from 0.8% to start of Construction	content but increased ash. A ter emissions. It is now pro- e 1.0% and the COM from 0.7% to July 1982 0.9%.
C.	Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for project serving pollution control purposes. Information on actual costs shall be furnished permit.)	individual components/units of the with the application for operation
	340,000 Enclosed Ash Removal System	
		· · · · · · · · · · · · · · · · · · ·
<b>D</b>	tion dates.	
	Construction Permit No. AC-24-2700 and 2701 issued 7/6/7	7 and expiring 12/31/79;
	Operating Permit No. A0-24-21059 issued 3/6/80 and expiring	
	and "D"; AC-24-40968 issued 6/30/81 to cover COM modificatio	n and expiring 7/31/82.
Ε.	Is this application associated with or part of a Development of Regional Impact (DRI) pursuar and Chapter 22F-2, Florida Administrative Code? Yes	
F.	Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52	. X market by I
	if seasonal, describe: 8760 hr/year	
G.	If this is a new source or major modification, answer the following questions. (Yes or No)	
<b>U</b> .	this is a new source or major mounication, answer the following questions. (Yes or No)     this source in a non-attainment area for a particular pollutant?	No .
	a. If yes, has "offset" been applied?	
	b. If yes, has "Lowest Achievable Emission Rate" been applied?	
	c. If yes, list non-attainment pollutants.	
	<ol><li>Does best available control technology (BACT) apply to this source? If yes, see Section VI.</li></ol>	Yes
	3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.	Yes
	4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	No
	5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No
ć	Attach all supportive information related to any answer of "Yes". Attach any justification for a considered questionable.	iny answer of "No" that might be

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

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

Dannintian	Cont	aminants	Utilization	Balance Co.
Description .	Туре	% Wt	Rate - lbs/hr	Relate to Flow Diagram
		NOT APPLICAB	LE	
		·		· ·

1	Total Process Input Rate (lbs/hr):	Not Applicable		
	Total / rocess input mate (103/111).	<del></del>	·	

2. Product Weight (lbs/hr):

#### C. Airborne Contaminants Emitted:

None of	Emission <sup>1</sup>	Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>	Relate
Name of Contaminant	Maximum Actual lbs/hr T/yr	Rate per Ch. 17-2, F.A.C.	Emission lbs/hr	lbs/hr T/yr	to Flow Diagram
	See Page	3A			
·		·			<del></del>
	+				
				1 .	

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

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It5
Baghouse (4 modules)	Part.	90+%	10% < 20 u	Design
·			90% > 20 u	
			50% > 30 u	
Bin Vent Dust Collector	(6)	90+%		Design
				<u> </u>

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

6Bin Vent Dust Collector will emit approx. 10% Baghouse Emissions. When burning gas and oil the baghouse will not be used.

<sup>&</sup>lt;sup>2</sup>Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. — 0.1 pounds per million BTU heat input)

<sup>&</sup>lt;sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

Page 3A

Sect. III, C Airborne Contaminants Emitted

GAS/OIL/COM

			Allowable Emissions	Potential	Emission
(lb/hr)	(TPY)	Standard	(1b/hr)	(1b/hr)	(TPY)
0.1/128.7/130.6	0.3/563.9/572.1	BACT	0.1/128.7/130.6	0.1/128.7/130.6	0.3/563.9/572.1
1.2/10.7/3.8	5.3/46.7/16.6	BACT	1.2/10.7/3.8	1.2/10.7/37.9	5.3/46.7/165.9
21.0/49.2/54.6	92.0/215.5/239.2	NA	21.0/49.2/54.6	21.0/49.2/54.6	92.0/215.5/239.2
2.0/4.1/4.2	8.9/18.0/18.4	NA	2.0/4.1/4.2	2.0/4.1/4.2	8.9/18.0/18.4
0.4/0.8/1.0	1.6/3.6/4.5	NA	0.4/0.8/1.0	0.4/0.8/1.0	1.6/3.6/4.5
	(Tb/hr)  0.1/128.7/130.6  1.2/10.7/3.8  21.0/49.2/54.6  2.0/4.1/4.2	(Tb/hr) (TPY)  0.1/128.7/130.6 0.3/563.9/572.1  1.2/10.7/3.8 5.3/46.7/16.6  21.0/49.2/54.6 92.0/215.5/239.2  2.0/4.1/4.2 8.9/18.0/18.4	Emissions           (Tb/hr)         (TPY)         Standard           0.1/128.7/130.6         0.3/563.9/572.1         BACT           1.2/10.7/3.8         5.3/46.7/16.6         BACT           21.0/49.2/54.6         92.0/215.5/239.2         NA           2.0/4.1/4.2         8.9/18.0/18.4         NA	Emissions         Allowable Emissions           (1b/hr)         (TPY)         Standard         (1b/hr)           0.1/128.7/130.6         0.3/563.9/572.1         BACT         0.1/128.7/130.6           1.2/10.7/3.8         5.3/46.7/16.6         BACT         1.2/10.7/3.8           21.0/49.2/54.6         92.0/215.5/239.2         NA         21.0/49.2/54.6           2.0/4.1/4.2         8.9/18.0/18.4         NA         2.0/4.1/4.2	Emissions         Allowable Emissions         Potential (1b/hr)           0.1/128.7/130.6         0.3/563.9/572.1         BACT         0.1/128.7/130.6         0.1/128.7/130.6           1.2/10.7/3.8         5.3/46.7/16.6         BACT         1.2/10.7/3.8         1.2/10.7/37.9           21.0/49.2/54.6         92.0/215.5/239.2         NA         21.0/49.2/54.6         21.0/49.2/54.6           2.0/4.1/4.2         8.9/18.0/18.4         NA         2.0/4.1/4.2         2.0/4.1/4.2

## E. Fuels

\*Units Natural Gas, MMCF/hr; Fuel Oils, barrels/hr; Coal, lbs/hr

Type (Be Specific)	Consu	mption*	Maximum Heat Input
	avg/hr	max./hr	(MMBTU/hr)
0i1	5	19.5	120
Gas	0.03	0.12	120
Coal-Oil Mix (COM)	5.1	19.1	120

Percent Sulfur:	Gas/0i1/C0 -/1.0/0.9			Percent Ash:	-/0.09/4	.5	
Density:	-/8/9.3 			Typical Percer	nt Nitrogen:	-/Ni1/0.7	737
Heat Capacity:		00/16,040	BTU/Ib	/146,4	100/149,172		BTU/gal
Other Fuel Contai	minants (which	may cause air pol	lution):N	one		····	
G. Indicate liquid	id or solid wast	es generated and r	method of dispo	sal. 1) to landf	verage <u>N/A</u>	ler water b	olow-down to
Stack Height Gas Flow Ra Water Vapor	: 104 ate: 100,000	d Flow Character (50,000 ea.	boi ler	Stack Diamete Gas Exit Temp	r: 6.5 perature: 380	<del></del>	and D boilerft
*BTU/ft <sup>3</sup>			IV: INCINER T APPLICAB		MATION		
Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type V1 (Solid By-prod.)
Lbs/hr Incinerated							
escription of Waste							<u></u>
otal Weight Inciner	rated (lbs/hr)			Design Capacity	(lbs/hr)		
pproximate Numbo	er of Hours of C	peration per day			days/w	eek	
ate Constructed	<del></del>			Model No			

		Volume			Fuel	Temnerature
L		(ft)3	(BTU/hr)	Туре	BTU/hr	(OF)
P	rimary Chamber					
S	econdary Chamber					
it	sck Height:	1	t. Stack Diameter	· .	Stack Ter	np
* [1	50 or more tons per o	day design capac	ity, submit the emission	s rate in grains (	per standard cubic foo	ot dry gas corrected to 50% ex
		Type BTU/hr    Common				
3ri	remperature (PF)    Type					
Primary Chamber  Secondary Chamber  Stock Height:						
	<del></del>		<u> </u>	<del> </del>		
	<del></del>					
14.						···
Jit	imate disposal of any ef	ifluent other than	that emitted from the	stack (scrubber	water, ash, etc.):	
_		<u> </u>		<del></del>	<del></del>	
	_					
					·	
			<del></del>			
		SE	CTION V: SUPPLEME	NTAL REQUIR	EMENTS	
ea	se provide the following	g supplements wh	nero required for this ap	plication,		
1.	Total process input ra	ite and product v	veight — show derivation	ر. ATTACHI	MENT 1	
2.	applicable standards.  provided when apply	,) and attach pro To an operation	posed methods (e.g., F. application, attach test	R Part 60 Methoresults or metho	ods 1, 2, 3, 4, 5) to shood used to	ow proof of compliance with for compliance. Information
						•
<b>3</b> .	Attach basis of potent	tial discharge (e.g	., emission factor, that i	s, AP42 test).	ATTACHMENT	1
١.	With construction per to air ratio; for scrubb	rmit application, er include cross-	include design details for section sketch, etc.). St	or all air pollution ubmitted wi	on control systems (e.gith Application	g., for baghouse include cloth n=for=Ac-24-40968
<b>.</b>	With construction per and 5 should be consist	mit application, stent: actual emi	attach derivation of co issions = potential (1-eff	iciency)		st or design data. Items 2, 3,
i_	An 8%" x 11" flow di	isaram which wil	I without revealing trad			etions and/or processes 1-2:
•	cate where raw mater	ials enter, where	solid and liquid waster	exit, where gase	ous emissions and/or a	ations and/or processes. (ng)- airborne particles are evolved
•	An 8%" x 11" plot plaing area, residences as map).	an showing the lo nd other perman	ocation of the establishment structures and road	nent, and points ways (Example	of airborne emissions : Copy of relevant p	i, in relation to the surround- ortion of USGS topographic
	An 8%" x 11" plot pl	an of facility sho	owing the location of m	nanufacturing o	rocesses and outlets fo	or airborne emissions. Relate
	all flows to the flow di	agram,	ATTACU			2, 4. 20114 VIIII 370113, 1161 <b>6</b> 16

ATTACHMENT 4

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

(Also See PSD-FL-083)

Contaminant	_	Rate or Concentration
Has EPA declared the best available control technology  Contaminant	for th	is class of sources (If yes, attach copy) [ ] Yes [X] No Rate or Concentration
What emission levels do you propose as best available co Contaminant S02	ntroi	Rate or Concentration 1.1 1b/10 <sup>6</sup> BTU; use of oil with 1.0% Sulfur or COM with 0.9% Sulfur
Describe the existing control and treatment technology (  1. Control Device/System:  2. Operating Principles:	if any	Presently No. 6 fuel oil with 0.8% sulf or COM with 0.7% sulfur is used to cont sulfur dioxide emissions.
3. Efficiency: *	4.	Capital Costs:
5. Useful Life:		Operating Costs:
7. Energy:	8.	Maintenance Cost:
9. Emissions:  Contaminant  S02	_	Rate or Concentration  0.9 1b/10 <sup>6</sup> BTU; use of oil with

<sup>\*</sup>Explain method of determining D 3 above.

	10.	Stack Parameters			
	4	a. Height:	ft.	b.	Diameter:
	(	c. Flow Rate:	ACFM	d.	Temperature:
	•	. Velocity:	FPS		
E.	Desci	ribe the control and treatm	nent technology available (As r	man	y types as applicable, use additional pages if necessary).
	1.		•		•
	а	. Control Device:			
	b	o. Operating Principles:			
	С	. Efficiency*:		d.	Capital Cost:
	e.	. Useful Life:		f.	Operating Cost:
	g.	. Energy*:		h.	Maintenance Cost:
	i.	Availability of construc	ction materials and process che	mic	als:
	j.	Applicability to manufa	acturing processes:		
	k.	Ability to construct wit	th control device, install in ava	ilab	le space, and operate within proposed levels:
	2.				
	a.	Control Device:			
	b.	Operating Principles:			
	c.	Efficiency*:		d.	Capital Cost:
	e.	Useful Life:		f.	Operating Cost:
	g.	Energy **:		h.	Maintenance Costs:
	i.	Availability of construct	tion materials and process che	mica	ols:
	j.	Applicability to manufac	cturing processes:		
	k.		<del>-</del> ·	labl	e space, and operate within proposed level::
'Ехр	lain me	ethod of determining effici	iency.		
Enei	gy to t	pe reported in units of elec	etrical power – KWH design ra	ite.	
	3.				•
	a.	Control Device:			
	b.	Operating Principles:			
	C.	Efficiency*:	c	<b>i</b> . •	Capital Cost:
	e.	Life:	f	. 1	Operating Cost:
	g.	Energy:	ħ	n. 1	Maintenance Cost:

ft. °F

<sup>\*</sup>Explain method of determining efficiency above.

		ì.	Availability of construction materials and p	rocess chemi	cals:
		j.	Applicability to manufacturing processes:		
		k.	Ability to construct with control device, ins	tall in availal	ole space and operate within proposed levels:
	4				
		a.	Control Device		
		b.	Operating Principles:		
		c.	Efficiency*:	d.	Capital Cost:
		e.	Life:	f.	Operating Cost:
		g.	Energy:	h.	Maintenance Cost:
		i.	Availability of construction materials and pr	ocess chemic	als:
		j.	Applicability to manufacturing processes:		
		k	Ability to construct with control device, inst	tall in availab	le space, and operate within proposed levels:
F.	Des	cribe	the control technology selected:		·
	1.	Cont	rol Device:		
	2.	Effic	iency*:	3.	Capital Cost:
	4.	Life:		5.	Operating Cost:
	6.	Energ	gy:	7.	Maintenance Cost:
	8.	Manu	ıfacturer:		
	9.	Other	r locations where employed on similar proce	sses:	·
		a.	·		
		(	1) Company:		
			2) Mailing Address:		
			3) City:	(4)	State:
			5) Environmental Manager:	• • •	
		(6	6) Telephone No.:		
*Ex	płain	methe	od of determining efficiency above.		
			7) Emissions*:		
•			Contaminant		Rate or Concentration
			· · · · · · · · · · · · · · · · · · ·		
		(8	3) Process Rate*:		
	1	b.	,		,
		J. (1	) Company:		
	-	(2			·
		(3		(4)	State:
*Aaal	ican•				otate.  formation not be available, applicant must state the reason(s)
why.	-curit		provide this anomiation when available. S	alouid this if	normation not be available, applicant must state the reason(s)

DER FORM 17-1.122(16) Page 8 of 10 .

(5)	Environmental Manager:	•
(6)	Telephone No.:	
(7)	Emissions*:	
	Contaminant	Rate or Concentration
		<u> </u>
<del></del>		
(8)	Process Rate*:	
10. Reason fo	or selection and description of systems:	

See PSD-FL-083

<sup>\*</sup>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

(See PSD-FL-083)

A.	Company Monitored Data  1 no sites TSP	( SO <sup>2</sup> * Wind spd/dir
	Period of monitoring / / / month day year	to/ /
	Other data recorded	
	Attach all data or statistical summaries to this application	ition.
	2. Instrumentation, Field and Laboratory	
	a) Was instrumentation EPA referenced or its equ	ivalent? Yes No
	b) Was instrumentation calibrated in accordance v	rith Department procedures? Yes No Unknown
₿.	Meteorological Data Used for Air Quality Modeling	
	1 Year(s) of data from/ / month day year	to/ / month day year
	2. Surface data obtained from (location)	
	3. Upper air (mixing height) data obtained from (location	n)
	4. Stability wind rose (STAR) data obtained from (local	ion)
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.
Ο.	Applicants Maximum Allowable Emission Data	
	Pollutant	Emission Rate
	. TSP	grams/sec
	so <sup>2</sup>	grams/sec
Ξ.	Emission Data Used in Modeling	
	Attach list of emission sources. Emission data required UTM coordinates, stack data, allowable emissions, and no	s source name, description on point source (on NEDS point number), rmal operating time.
Ξ,	Attach all other information supportive to the PSD review	<i>i</i> .
Spe	cify bubbler (B) or continuous (C).	
ì.	Discuss the social and economic impact of the selected duction, taxes, energy, etc.). Include assessment of the en	technology versus other applicable technologies (i.e., jobs, payroll, provironmental 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.

```
FUEL:
```

Gas

Oil at 1.0% sulfur

Coal-Oil Mix at 0.9% sulfur

**HEAT INPUT:** 

120 x 10<sup>6</sup> BTU/hr

FUEL INPUT:

Gas =  $120 \times 10^6$  BTU/hr x 1/1000 ft<sup>3</sup>/BTU =  $0.12 \times 10^6$  ft<sup>3</sup>/hr

0il = 120 x  $10^6$  BTU/hr x 1/146,400 gal/BTU = 820 gal/hr

Coal-Oil = 120 x 10<sup>6</sup> BTU/hr x 1/149,172 gal/BTU = 804 gal/hr x 9.3 lbs/gal

= 7481 lbs/hr @ 50% oil and 50% coal

x 0.5 = 3741 lbs/hr coal = 3741 lbs/hr oil x 1/8 = 467 qal/hr oil

#### OPERATING

FACTOR:

8760 hours/year

#### **EMISSIONS:**

# Sulfur Dioxide (Potential and Actual)

0il: S0<sub>2</sub> = (0.157 x 1.0) 1b S0<sub>2</sub>/gal x 820 ga/hr = 128.7 1bs/hr x 8760/2000 = 563.9 TPY

Coal-Oil:  $SO_2 = 7481 \text{ lb/hr} \times 0.009 \text{ lbs/lb} \times 2 \text{ lb} SO_2/ls S \times 0.97 = 130.6 \text{ lbs/hr}$ 

x 8760/2000 = 572.1 TPY

Gas:  $SO_2 = 0.6 \times 10^6 \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ = 0.1 lb/hr = 0.3 TPY

# Nitrogen Oxides (Potential and Actual

0il:  $NO_X = 0.060$  lb  $NO_X/gal \times 820$  gal/hr = 49.2 lbs/hr  $\times 8760/2000 \times 1.0$  = 215.5 TPY

Coal-Oil:  $NO_X$  @ 0.4552 lb  $NO_X$  (as  $NO_2$ )/106BTU from test data provided by KVB

 $NO_{X}^{\circ} = 0.4552 \text{ lb/lo}^{\circ} \text{ BTU x (120 x lo}^{\circ}) \text{ BTU/hr}$ 

= 54.6 lbs/hr x 8760/2000 = 239.2 TPY

```
ATTACHMENT 1 (Cont.)
      Gas: NO_X = 175 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}
                  = 21.0 lb/hr
                  = 92.0 \text{ TPY}
Particulate Matter (Potential)
      0il: PM = [10(1.0) + 3]/1000 lb/gal x 820 gal/hr
                  = 10.7 \text{ lbs/hr}
                  = 8760/2000
                  = 46.6 \text{ TPY}
Coal-Oil: PM = 17 lb/ton coal x 3741/2000 tons.hr + [10(1.0) + 3]/1000 lb/gal
                  x 467 gal/hr
                  = 31.8 + 6.1
                  = 37.9 lbs/hr
                  x 8760/2000
                  = 165.9 TPY
     Gas: PM = 10 \times 10^{-6} lb/ft<sup>3</sup> x 0.12 x 10^{6} ft<sup>3</sup>/hr
                  = 1.2 lb/hr
                  = 5.3 \text{ TPY}
Particulate Matter (Actual)
            PM = 10.7 \, lbs/hr/
      0il:
                                       baghouse will be by-passed when fuel oil
                  = 46.7 TPy
                                                 and gas are used.
Coal-Oil: PM = 37.9 \text{ lb/hr} \times (1-0.9)
                = 3.8 \text{ 1b/hr}
                 x 8760/2000
                 = 16.6 \text{ TPY}
     Gas: PM = 1.2 lb/hr
                  = 5.3 TPY
```

# Carbon Monoxide (Potential and Actual)

```
Oil: CO = 820 \text{ gal/hr} \times 5/1000 \text{ lb } CO/\text{gal}
                       = 4.1 lb/hr
                       x 8760/2000
                       = 18.0 \text{ TPY}
Coal-Oil: CO = (467 \text{ gal/hr} \times 5/1000 \text{ lb} CO/\text{gal}) + (3741/2000 \text{ ton/hr} \times 1 \text{ lb/ton})
                       = 2.3 + 1.9
                       = 4.2 \text{ lb/hr}
                       x 8760/2000
                       = 18.4 \text{ TPY}
       Gas: CO = 17 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}
                       = 2.0 \text{ 1b/hr}
                       = 8.9 \text{ TPY}
```

# Hydrocarbons (Potential and Actual)

0il: HC = 820 gal/hr x 1/1000 lb HC/gal

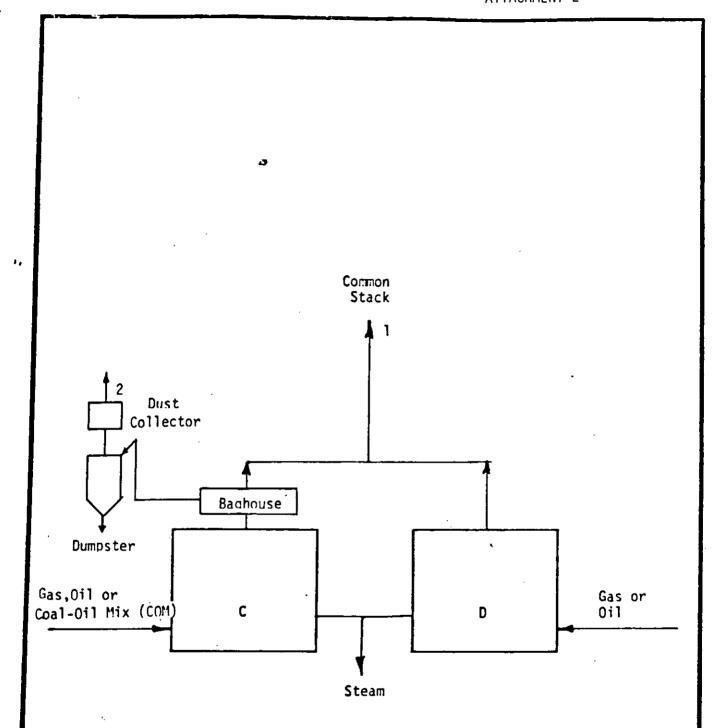
= 0.8 lb/hrx 8760/2000 = 3.6 TPY

Coal-Oil: HC =  $(467 \text{ gal/hr} \times 1/1000 \text{ lb HC/gal}) + 3741/2000 \text{ ton/hr} \times 0.3 \text{ lb/ton})$ 

 $= 1.0 \, 1b/hr$ x 8760/2000 = 4.5 TPY

Gas: HC =  $3 \times 10^{-6} \text{ lb/ft}^3 \times 0.12 \times 10^6 \text{ ft}^3/\text{hr}$ = 0.4 lb/hr

= 1.6 TPY

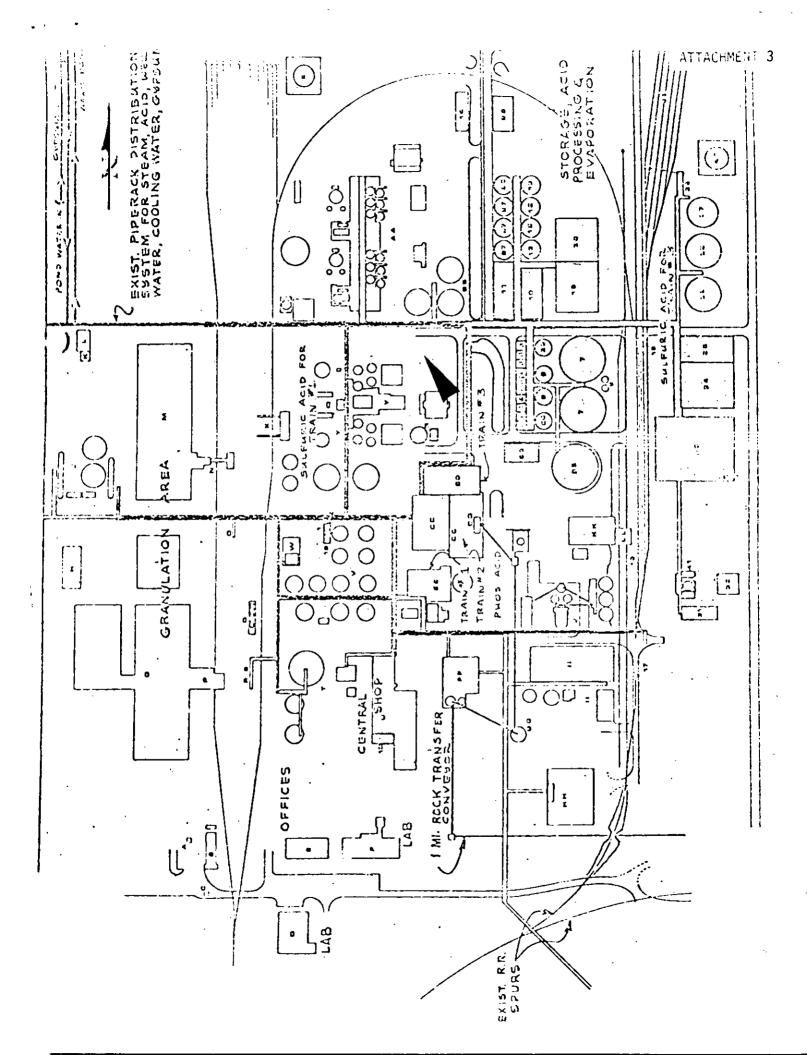


FLOW SHEET

AUXILIARY BOILERS C & D
SUWANNEE RIVER CHEMICAL COMPLEX

OCCIDENTAL CHEMICAL COMPANY WHITE SPRINGS, FLORIDA

\*NOTE - Baghouse is by-passed when Gas and Oil are used as fuels.





May 14, 1982

# STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

# DER

# APPLICATION TOXXXXXXXXXXXCONSTRUCT AIR POLLUTION SOURCES

MAY 27 1982

AIN POLLU	TION SOURCES
SOURCE TYPE: Granular Fertilizer Plant	_ ( ) New <sup>1</sup> (X) Existing 1 BAQM
APPLICATION TYPE: [ ] Construction [ ] Operation [X	K Modification
COMPANY NAME: Occidental Chemical Compa	ny COUNTY: Hamilton
Identify the specific emission point source(s) addressed in this No. 2, Gas Fired) Diammonium Phosphate Plan	application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit
SOURCE LOCATION: Street S.R. 137	CityWhite Springs
UTM: East <u>328,20 km E</u>	North 3368,82 km N
Latitude o ,	"N - Longitude ° ' 'W cal Company
APPLICANT ADDRESS: Post Office Box 300, Wh	
SECTION I: STATEMENTS I	BY APPLICANT AND ENGINEER
A. APPLICANT	
I am the undersigned owner or authorized representative* of	
pollution control source and pollution control facilities in Florida Statutes, and all the rules and regulations of the control facilities.	knowledge and belief. Further, I agree to maintain and operate the n such a manner as to comply with the provision of Chapter 403, department and revisions thereof. I also understand that a permit, if will promptly notify the department upon sale or legal transfer of the
*Attach letter of authorization	Signed: 1278 127 5 Cf 1 (True)
	M.P. McArthur, V.P. & General Manager
•	Name and Title (Please Type)  Date: 5/24/82 Telephone No. (904) 397-8101
BB055000000 50000550 5500075000 00 5000	• •
B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA	
be in conformity with modern engineering principles application. There is reasonable assurance, in my principles and operated, will discharge an effluent that rules and regulations of the department. It is also agreed th	on control project have been deligibles/examined by me and found to cable to the treatment and disposal of pollutants characterized in the rofessional judgment, that the pollution control facilities, when propit complies with all applicable statutes of the State of Florida and the at the undersigned will furnish, if authorized by the owner, the applieration of the pollution control facilities and, if applicable, pollution
	Signed:
	J.B. Koogler, Ph.D., P.E.
(Affix Seal)	Name (Please Type) SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS
	Company Name (Please Type)
	1213 NW 6TH Street, Gainesville, FL 32601
Florida Registration No. 12925	Mailing Address (Please Type)  Date: 5/14/87 Telephone No. (904) 377-5822

# SECTION II: GENERAL PROJECT INFORMATION

Describe the nature and extent of the project. Refer to pollution control equipment, and e formance as a result of installation. State whether the project will result in full compliance. Granular fertilizer plant reacting ammonia with phosphori	xpected improvements in source per- Attach additional sheet if necessary C acid is vented to wet
venturi-cyclonic scrubbers and entrainment separator. Dr	y product screening and
crushing facilities are vented to dry cyclones for produc	t recovery in series with
wet scrubbers for emission control. A gas fired dryer ha	s oil firing capability. It
proposed to increase the sulfur content of the fuel oil f Schedule of project covered in this application (Construction Permit Application Only)	rom 0.8% to 1.5%.
Start of Construction July 1982 Completion of Construction	July 1982
Costs of pollution control system(s): (Note: Show breakdown of estimated costs only for project serving pollution control purposes. Information on actual costs shall be furnished permit.)  Not applicable - no air pollution control equipment is us	r individual components/units of the distribution for operation
SO <sub>2</sub> emissions.	
Indicate any previous DER permits, orders and notices associated with the emission point, in tion dates.	ncluding permit issuance and expira-
FDER No. A0-24-10781 issued 7/7/78 and expiring 8/31/80;	A0-24-33051 issued
9/16/80 and expiring 9/16/85.	
if seasonal, describe: 8760 hours/year	
If this is a new source or major modification, answer the following questions. (Yes or No)	<del></del>
1. Is this source in a non-attainment area for a particular pollutant?	No
a. If yes, has "offset" been applied?	<u></u>
b. If yes, has "Lowest Achievable Emission Rate" been applied?	<del></del>
c. If yes, list non-attainment pollutants.	
Does best available control technology (BACT) apply to this source? If yes, see Section VI.	Yes
3. Does the State "Prevention of Significant Deterioriation" (PSD) requirements apply to this source? If yes, see Sections VI and VII.	Yes
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source?	No*
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source?	No
Attach all supportive information related to any answer of "Yes". Attach any justification for considered questionable.	any answer of "No" that might be

\*Not for sulfur dioxide

### SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES (Other than Incinerators) (See Attachment 1)

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

D''	Contaminants		Utilization	51 51	
Description	Туре	% Wt	Rate - lbs/hr	Relate to Flow Diagram	
Phosphoric Acid	F	1-3	145,263	1	
Anhydrous Ammonia	None	· ·	28,165	2	
Sulfuric Acid	None		2,400 (max)	8	

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

175,828 1. Total Process Input Rate (lbs/hr): \_

120,000 2. Product Weight (lbs/hr): \_\_

#### Airborne Contaminants Emitted:

	Emission <sup>1</sup>		Allowed Emission <sup>2</sup>	Allowable <sup>3</sup>	Potential Emission <sup>4</sup>		Relate	
Name of Contaminant	Maximum lbs/hr	Actual T/yr	Rate per Ch. 17-2, F.A.C.	Emission Ibs/hr	lbs/hr	T/yr	to Flow Diagram	
Fluoride (as F	1.74	6.1	17-2.600(3)	1.74	NOT APPL	ICABLE	7	
DAP Dust(6)	46	193	17-2.610( <u>1</u> )	46	NOT APPL	CABLE	7	
Sulfur Dioxide	(7) 11.8	51.5	BACT	11.8	59.0	258	7	
			5,10					
-	· .							

#### Control Devices: (See Section V, Item 4)

Name and Type (Model & Serial No.)	Contaminant	Efficiency	Range of Particles <sup>5</sup> Size Collected (in microns)	Basis for Efficiency (Sec. V, It <sup>5</sup>
Venturi, Cyclone and	F	96.0%		Design and
Entrainment Separator				Test Data
Badger/Polycon				
	Dust	95.5%		
			·	

<sup>&</sup>lt;sup>1</sup>See Section V, Item 2.

 $<sup>^2</sup>$ Reference applicable emission standards and units (e.g., Section 17-2.05(6) Table II, E. (1), F.A.C. - 0.1 pounds per million BTU heat input)

<sup>&</sup>lt;sup>3</sup>Calculated from operating rate and applicable standard

<sup>&</sup>lt;sup>4</sup>Emission, if source operated without control (See Section V, Item 3)

<sup>5&</sup>lt;sub>If Applicable</sub>

<sup>(6)</sup>Dry process weight is 466 TPH (E= 17.3 p U.16 where P=466). Weight is design recycle product ration of 9.3:I on average design rate of 50 TPH.

<sup>(7)</sup>Assuming stand-by oil used 100% of time with 80% removal of SO2 in scrubbers.

Type (Be Specific)	Consu	mption*	Maximum Heat Input	
	avg/hr	max./hr	(MMBTU/hr)	
Gas	4.9	5.9	36 (30 Avg.)	
Oil Stand-By	0.030	0.036	36 (30 Avg.)	

Percent Sulfur:	Gas/0i1		r; Coal, Ibs/hr		<b>-/</b> 0 09		
<del>-</del>				Percent Ash: .	70.03	• 1	<del></del>
Heat Capacian 10	)00 PTU/6+3	/19200	lbs/gal	Typical Percer	nt Nitrogen:/N	11	
Other Fuel Conta	minants (which	may cause air pol	BTU/lb   lution):		400		BTU/g
		· · · · · · · · · · · · · · · · · · ·		<u> </u>			<u> </u>
G. Indicate liqu	uid or solid wasti	es generated and r	method of dispo	sal.	verage <u>N/A</u> d with recir		
		eturned to	process.				
H. Emission St.	<del></del>		<del>-</del>				·
3,113,1011 3(5	ick Geometry an	nd Flow Character	ristics (Provide d	ata for each stac	ck): r:8		
Gas Flow R	130.0	00		Stack Diameter	r: erature:125		fi
Water Vapor	Content:	10	ACFM	Gas Exit Temp	43		
	·		IIV: INCINER, OT APPLICAE		IATION .		·
	<del></del>		T APPLICAT	SLC	<del></del>		
Type of Wasta	Type O	Type I	Type II	Type III	Type IV	Type V	Type VI
Type of Waste	Type O (Plastics)	Type I (Rubbish)	Type II (Refuse)	Type III (Garbage)	Type IV (Pathological)	Type V (Liq & Gas By-prod.)	Type VI (Solid By-prod.)
Type of Waste  Lbs/hr Incinerated						(Liq & Gas	(Solid
Lbs/hr	(Plastics)					(Liq & Gas	(Śolid
Lbs/hr Incinerated escription of Wast	(Plastics)	(Rubbish)	(Refuse)	(Garbage)	(Pathological)	(Liq & Gas By-prod.)	(Solid By-prod.)
Lbs/hr Incinerated	(Plastics) e	(Rubbish)	(Refuse)	(Garbage)	(Pathological)	(Liq & Gas By-prod.)	(Solid By-prod.)

	Volume	Heat Release	F	uel	Temperature
	(ft)3	(BTU/hr)	Туре	BTU/hr	(OF)
Primary Chamber	-				
Secondary Chamber			<u> </u>		
tack Height:		ft. Stack Diameter _	<u>.</u>	Stack Terr	np
					FP:
					t dry gas corrected to 50% ex
ype of pollution control	device: [ ] Cy	clone [ ] Wet-Scrubi	ber [] Afterbu	rner [] Other (spe	cify)
<u> </u>		<del></del>			
	-				
Iltimate disposal of any of	Aluana nahan ahar				<del></del>
Ultimate disposal of any ef	fluent other thai	n that emitted from the	stack (scrubber v	vater, ash, etc.):	
	<del> </del>	<del></del>	<del></del>		·
<del></del>	<u> </u>	<del></del>	<del></del>	·	<u> </u>
<del></del>		<del></del>		·	<del></del>
	\$E	CTION V: SUPPLEM	ENTAL REQUIRI	EMENTS	
ease provide the following	supplements wi	here required for this a	oplication.		•
I. Total process input ra	te and product v	veight — show derivatio	on. ATTACHMI	ENT 1	
turer's test data, etc., applicable standards.	) and attach pro To an operation	posed methods (e.g., l application, attach tes	FR Part 60 Metho t results or methoi	ds 1, 2, 3, 4, 5) to shi	frawings, pertinent manufac- ow proof of compliance with f of compliance. Information
made.			struction permit sl	hall be indicative of t	he time at which the test was
. Attach basis of potent	ATTACHI al discharge (e c		is APAT test)		
				ATTACHMENT	1.
<ul> <li>With construction per to air ratio; for scrubb</li> </ul>	mit application, er include cross-	include design details ( section sketch, etc.).			, for baghouse include cloth
			N/A for		
and 5 should be consis	mit application, stent: actual emi	attach derivation of clissions = potential (1-ef	ficiency).	_	t or design data. Items 2, 3,
An 8½" x 11" flow di cate where raw materi and where finished pro	ials enter, where	solid and liquid waste	de secrets, identif	TACHMENT 1 y the individual opera ous emissions and/or a	ations and/or processes. Indi- irborne particles are evolved
·		ATTACHMENT			
ing area, residences ar	an showing the lo nd other perman	ocation of the establish	ment, and points	of airborne emissions Copy of relevant po	, in relation to the surround- ortion of USGS topographic
map).		ATTACHMENT			
An 8%" x 11" plot pl.	an of facility sh	owing the location of	manufacturing pro	ocesses and outlets fo	or airborne emissions. Relate

ATTACHMENT 4

- 9. An application fee of \$20, unless exempted by Section 17-4.05(3), F.A.C. 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

(Also See PSD-FL-083)

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

[XX] Yes [] No

	are not effected by this fuel modification.
Has EPA declared the best available control techn	ology for this class of sources (If yes, attach copy) [ ] Yes [X] No
Contaminant	Rate or Concentration
What emission levels do you propose as best availa  Contaminant	Rate or Concentration
\$0 <sub>2</sub>	0.41 lb/ton P205 input (fuel with 1.5% sulfur)
Describe the existing control and treatment techno	incochory ract off which ofton sairal of
Control Device/System:     Operating Principles:	is used in the DAP dryer. This result the emission rate shown below.
3. Efficiency: *	4. Capital Costs:
5. Useful Life:	6. Operating Costs:
7. Energy:	8. Maintenance Cost:
9. Emissions:	
Contaminant	Rate or Concentration0.22_1b/ton_P205_input

<sup>\*</sup>Explain method of determining D 3 above.

	10. 3	Stack i arameters				
	a	ı. Height:	ft.	b.	Diameter:	ft.
	c	:. Flow Rate:	ACFM	d.	Temperature:	oŁ
	е	. Velocity:	FPS			
Ξ.	Descr	ibe the control and treatment tech	inology available (As r	nany	types as applicable, use additional pages if necessary	).
	1.					
	a.	. Control Device:			• •	
	ь	. Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	e.	Useful Life:		f.	Operating Cost:	
	9.	Energy *:		h	Maintenance Cost:	
	i.	Availability of construction ma	terials and process che	emic	als:	
	j.	Applicability to manufacturing	processes:			
	k.	Ability to construct with contro	ol device, install in ava	ilab	e space, and operate within proposed levels:	
	2.					
•	2. a,	Control Device:	•			
	<b>b</b> .	Operating Principles:				
	C.	Efficiency*:		d.	Capital Cost:	
	е.	Useful Life:		f.	Operating Cost:	
	g.	Energy **:		h.	Maintenance Costs:	
	i.	Availability of construction mat	erials and process che	mica	ls:	
	j.	Applicability to manufacturing	orocesses:			
	k.	Ability to construct with contro	I device, install in avai	ilable	space, and operate within proposed levels:	
Expl	lain me	ethod of determining efficiency.				
Ener	gy to t	be reported in units of electrical p	ower – KWH design ra	ate.		
	3.	,			·	
	a.	Control Device:			-	
	b.	Operating Principles:				
	c.	Efficiency*:		d.	Capital Cost:	
	е.	Life:			Operating Cost:	
	g.	Energy:	_		Maintenance Cost:	
		<del>-</del> -				

ft.

<sup>\*</sup>Explain method of determining efficiency above.

'' ~	transport of construction materials an	d process chemicals.
j. A	applicability to manufacturing processe	s:
k. A	bility to construct with control device,	, install in available space and operate within proposed levels:
4.	·	
a. C	ontrol Device	
b. O	perating Principles:	
c. E	fficiency*:	d. Capital Cost:
e. L	ife:	f. Operating Cost:
g. E	nergy:	h. Maintenance Cost:
i. A	vailability of construction materials and	d process chemicals:
j. A	pplicability to manufacturing processes	E .
k. Ai	bility to construct with control device,	install in available space, and operate within proposed levels:
F. Describe th	e control technology selected:	
1. Contro	of Device:	
2. Efficie	ncy*:	3. Capital Cost:
4. Life:		5. Operating Cost:
6. Energy	:	7. Maintenance Cost:
· 8. Manufa	acturer:	
9. Other I	ocations where employed on similar pr	rocesses:
a.		
(1)	Company:	
(2)	Mailing Address:	
(3)	City:	(4) State:
(5)	Environmental Manager:	
(6)	Telephone No.:	
*Explain method	of determining efficiency above.	
(7)	Emissions*:	
	Contaminant	Rate or Concentration
	<u> </u>	
(8)	Process Rate*:	
b.		
(1)	Company:	
(2)	Mailing Address:	
(3)	City:	(4) State:
*Applicant must p	rovide this information when availabl	e. Should this information not be available, applicant must state the reaso

E DER FORM 17-1.122(16) Page 8 of 10 ...

	(5)	Environmental Manager:		
	(6)	Telephone No.:		
-	(7)	Emissions*:		
		Contaminant	Rate or Concentration	
		<del></del>		
		·		<del></del>
	(8)	Process Rate*:		

10. Reason for selection and description of systems:

See PSD-FL-083

<sup>\*</sup>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

See PSD-FL-083

A	Company Monitored Data
	1 no sites TSP ( ) SO <sup>2</sup> * 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.
	2. Instrumentation, Field and Laboratory
	a) Was instrumentation EPA referenced or its equivalent? Yes No
	b) Was instrumentation calibrated in accordance with Department procedures?YesNoUnknown
8.	Meteorological Data Used for Air Quality Modeling
	1 Year(s) of data from/ / to/ /
	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 <sup>2</sup> grams/sec
E.	Emission Data Used in Modeling
	Attach list of emission sources. Emission data required is source name, description on 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.
*Spe	cify bubbler (B) or continuous (C).
G.	Discuss the social and economic impact of the selented technology versus other applicable technologies (i.e., jobs, payroll, production, taxes, energy, etc.). Include assessment of the environmental impact of the sources.

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.

## CALCULATION FOR SECTION III, A, B & C

PRODUCT:

Diammonium Phosphate as 46% P<sub>2</sub>0<sub>5</sub>, 18% N granules

PRODUCT RATE:

1,440 Short tons per day (STPD)

-or-

120,000 pounds per hour  $(1,440 \times 2,000 \div 24)$ 

PROCESS LOSSES:

-5% of P<sub>2</sub>O<sub>5</sub> in phosphoric acid input or 95% recovery

-6.5% of ammonia input or 93.5% recovery

### PROCESS INPUT:

Phosphoric Acid:

697 STPD of 100% P<sub>2</sub>05 from both 30 & 50% P<sub>2</sub>05 acid(1)

 $(1,440 \times 0.46 \div 0.95)$ 

-or-

1,743 STPD of 40% P<sub>2</sub>0<sub>5</sub> acid from 30 & 50% mixed "half & half" (697 ÷ 0.40)

-or-

145,263 lbs/hr 40% P<sub>2</sub>05 acid

-or-

72,632 lbs/hr of 30% P<sub>2</sub>0<sub>5</sub> acid and 72,632 lbs/hr of 50% P<sub>2</sub>0<sub>5</sub> acid

Ammonia: 277 STPD of 100% nitrogen (1,440 x 0.18 ± 0.935)

-or-

338 STPD of NH<sub>3</sub>  $(277 \times 17 \div 14 \div 0.996)^{(2)}$ 

-ar-

28,165 lbs/hr.

Sulfuric Acid: Used for "grade control" may average about 2,400 lbs/hr

of 93% acid.

Total Process Input Rate: 175,828 lbs/hr (145,263 + 28,165 + 2,400)

### ALLOWABLE EMISSIONS:

Fluoride:

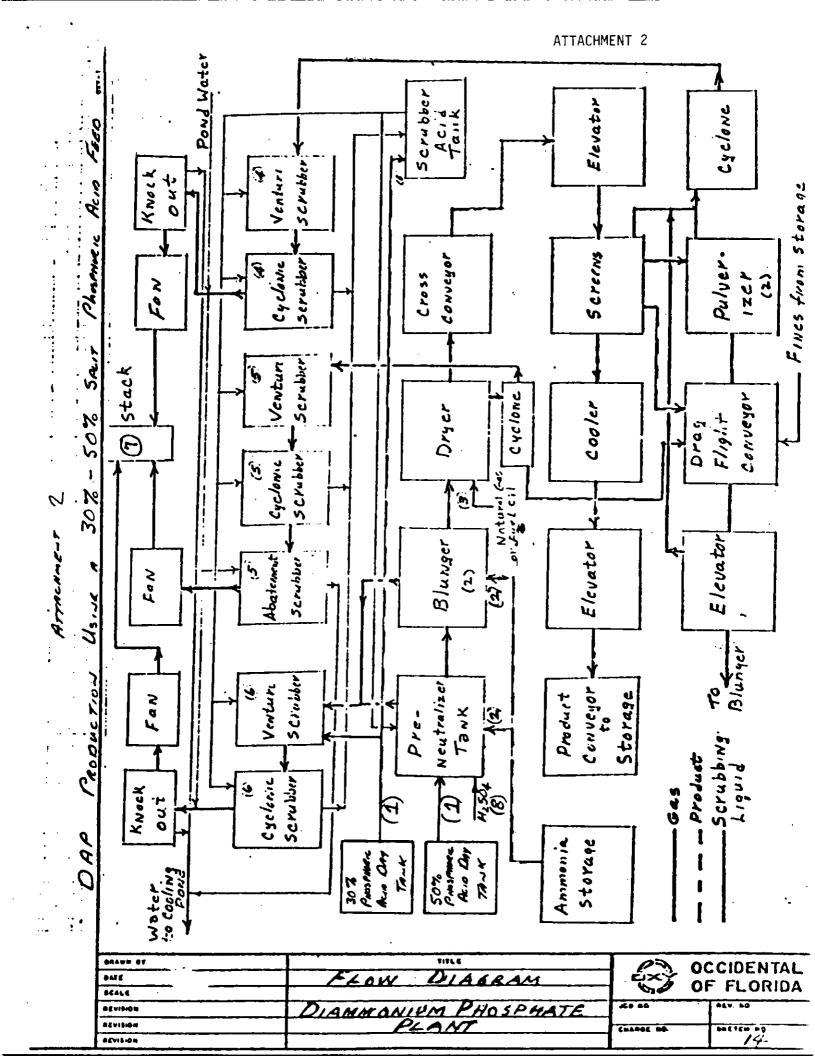
Based on rule at 0.06#F per ton  $P_2O_5$  input it is 1.74#/hr (.06 x 697 ± 24). Based on previous average permitted rate it is 1.45#/hr (50 TPH ± 60 TPH x 697 TPD x .06 ± 24). Annual emission of 6.1 tons Per Year is based on 1.45#/hr and does not change (1.45 x 24 x 7 x 50 ± 2,000).

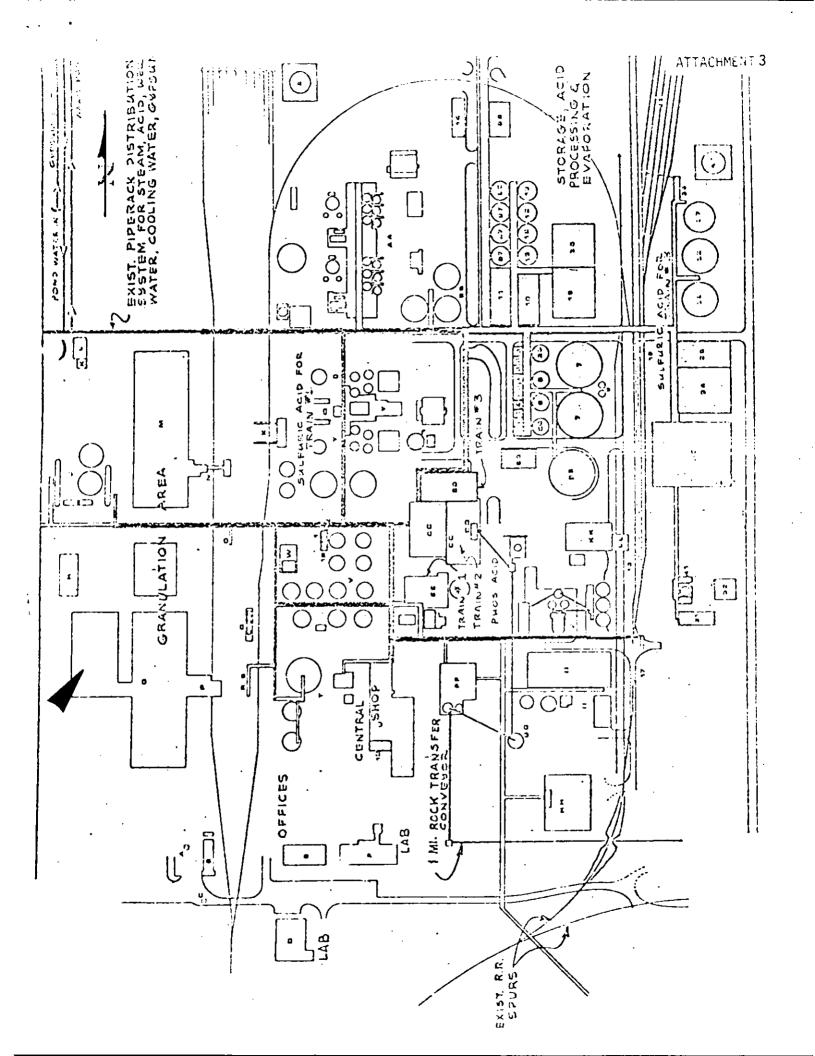
NOTE: (1) Water-Heat balance in slurry process requires an average 40% P205 strength feed acid at previous, average permitted rate.

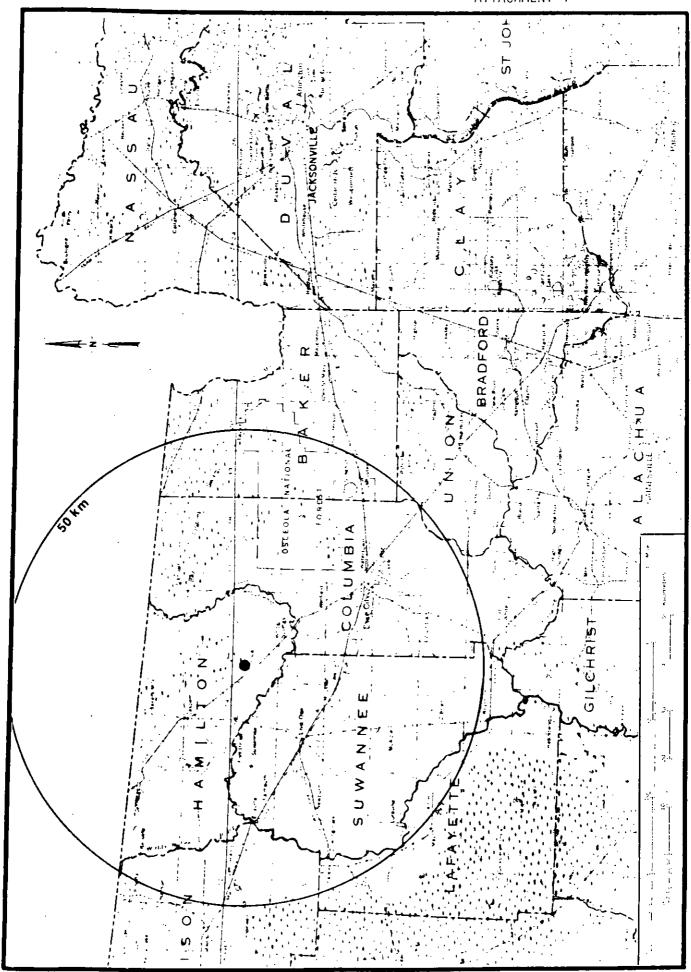
(2) Purity of anhydrous ammonia is 99.6% NH<sub>2</sub>.

Sulfur Dioxide:

36 x 10<sup>6</sup> BTU/hr x 1/18,300 1b/BTU x (0.015 x 2) 1b S02/1b x (1-0.8) eff. = 11.8 1b/hr x 1/29.04 hr/ton P205 = 0.41 1b S02/ton P205 11.8 x 8760/2000 = 51.7 TPY







ATTACHMENT 1
FUEL PRICES

#### EASTERN SEABOARD PETROLEUM COMPANY, INC.

P. O. BOX 3232, STATION F-6531 EVERGREEN AVE.

JACKSONVILLE, FLORIDA 32206

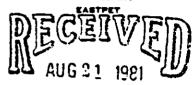
OFFICES

JACKSONVILLE
TAMPA

August 20, 1981

TELEPHONE 804/355-9678

CABLE ADDRESS



**PURCHASING** 

Mr. Gilbert McGhin Occidental Chemical Company PO Box 300 White Springs, FL 32096

Dear Mr. McGhin:

In response to your request for projections on No. 6 fuel prices, I submit the following:

Grade	Current Price per bbl	4th Qtr 81	1st Qtr <u>82</u>	2nd Qtr 82	3rd Qtr <u>82</u>	Actual Dec. 1981 Cost(1)
.8%	\$29.900	\$31.39	\$34.53	\$34.53	\$36.26	34.07/bb1
1%	29.265	30.73	33.80	33.80	35.49	32,77/bb1
1.5%	28.75	30.19	33.21	33.21	34.87	30.38/bb1
2.0%	27.75	29.14	32.05	32.05	33.65	29.38/БЫ

Each of the above prices are fob Jacksonville, delivery to White Springs is an additional \$1.13 per barrel.

Barring any flare-up in the Middle East, we should see fuel oil prices somewhat more stable than in the last two years. The current meeting in Geneva of the OPEC countries will have a great impact on price and supply. We believe the Saudi's will be successful in stabilizing crude prices from that region of the world.

I hope you will find this information helpful and if I can be of any further assistance, please give me a call.

Arnold E. Seaton Assistant Vice President

AES/tab

cc: Craig Taylor

(1)Price quoted by Arnold E. Seaton to J. B. Koogler during telephone conversation of 11/24/81.



August 20, 1981

Mr. J. Craig Taylor Occidental Chemical Company Florida Operations P. O. Box 300 White Springs, FL 32096

Dear Mr. Taylor:

The following are prices, effective August 20, 1981, for the products listed below:

```
Diesel Fuel/#2 - - - - - - $1.0036 Per Gallon
#6 Fuel Oil (.8% Sulphur) - - - .7731 Per Gallon - - 0.8733 Per Gallon
#6 Fuel Oil (1.0% Sulphur) - - - .7255 Per Gallon - - 0.7898 Per Gallon 33.71
#6 Fuel Oil (1.5% Sulphur) - - - .7017 Per Gallon - - 0.7612 Per Gallon 33.71
#6 Fuel Oil (2.0% Sulphur) - - - .6779 Per Gallon - - 0.7269 Per Gallon 30.53
#6 Fuel Oil (2.5% Sulphur) - - - .6707 Per Gallon
```

These prices, exclusive of taxes, are delivered prices to your White Springs, Florida location.

Thank you for your business.

Sincerely

BELCHER OIL COMPANY

J. R. Sauls

Manager-Mid-Gulf Area

JRS/ke

cc: Bob Travis

<sup>(1)</sup> Prices quoted by Mr. Huhn of Belcher to J.B. Koogler during telephone conversation of 11/24/81.



#### B. & M. Oil Company

P.O. Box 1288—909 S. Ohio Ave. Live Oak, FL 32060 (904)362-6340 Night-(904)362-1182

August 18, 1981

Occidental Chemical Company
P. O. Box 300
White Springs, FL 32096
Attn: Mr. Gilbert McGinn, Supervisor
Materials Management

#### Dear Gilbert:

Based upon our phone conversation of August 18, 1981, our current bid price on #6 fuel oil is as follows:

Maximum Suffer Content of .8% Maximum Suffer Content of 1.0% Maximum Suffer Content of 1.5% Maximum Suffer Content of 2.0%	\$.81 gal. Not Available \$.78 gal. Not Available
	Not Available 30.66 \$.73 gal.

Above listed prices include freight to White Springs, Florida.

Prices are not firm, but may fluctuate from time-to-time as the world Oil Market fluctuates.

Based upon my observation of the leading oil price indicators, I believe the projected price for the next several months will remain stable to approximately a 2 to 3% maximum increase in coft.

Therefore, the projected cost of \*6 fuel oil for the next 2 to 3 quarters should remain at or not over the below cost:

Maximum Suffer Content of .8%	\$.84 gal.
Maximum Suffer Content of 1.0%	Not Available
Maximum Suffer Content of 1.5%	\$.81 gal.
Maximum Suffer Content of 2.0%	Not Available
Maixmum Suffer Content of 2.5%	\$.75 gal.

Thanking you for all your courteousness in this matter and I will be looking forward to hearing from you.

Don Boyette President

DB: vbh

Fuel costs not updated in December, 1981 because of unfavorable cost differential between this quotation and quotations from Belcher and Fastern Seaboard.

# SULFUR DIOXIDE EMISSION RATE CALCULATIONS

OCCIDENTAL CHEMICAL COMPANY HAHILTON COUNTY, FLORIDA

## SWIPT CREEK CHEMICAL COMPLEX

### SULPURIC A CIO PLANT 'E' (NEW Source)

Present Parmitted Rate - 2000 toyday

Proposed Rate - 2500 ton/day

SOz = 2500 to/day x 1/24 dey/h- x 40 16 50 / for

= 416.7 16 SOz/hr

= 52.5 g/sec

### SULPURIC ACID PLANT 'F' (NEW SOURCE)

Identical to "E"

## Boiler E' (NEW Source)

Present Permitted Fuel - No. 6 Oil w/ 0.8% S

Proposed Fuel - No G OIL W/ 10% S

502 = 125,000 lb/hr steam x 1000 BTU/ll x 1/08 efficiency

170.8 lb soz/hr

= 21.5 3/sec

#### SUWANNER RIVER CHEMICAL COMPLEX

## BOILER 'B' (NEW Source)

Present Permitted Fuel - No. 6 Oil w/ 0865

Proposed Fuel - No 6 Oil w/ 1.0% S

502 = 160×106 BTU/hr mput x 1/18300 16 01/BTU x (0.01 x2) 16 50/16.

= 174.9 16 Soc/hr

## BOILER ( NEW SOURCE)

Present Permitted Fuel - No 6 Oil w/ 08% S

Proposed Fuel - NOGOII w/ 10% S

SOz = 120x10° BTU/hr mput x 1/18300 16/BTU x (001x2)

= 131.1 16 502/hn

= 16.5 g/sec

## Boiler D (NEW Source)

Identical to Boiler "C"

### DAP No 2 - Z'TRAIN (EXISTING SOURCE)

Present Permitted 50 = Emission Rate - 6.3 lb/hr

Present and Proposed Pros input - 697+pd; 290+ph

Proposed Fuel - No 6 OII w/ 1.5% S

SO2 = 36 x 10 ° BTu/hr x 1/18300 13/BTU x (0015 x2)

x (1-0.8) absorption fector

= 11.8 15/hr (0.41 16502/fon P205 in put

502 increase = 11.8-6.3 lb/him

· 5.5 16/ha

= 0.69 g/sec

() BOILERS "C" AND "D" ARE VENTED THRU A COMMON STACK

# ATTACHMENT 2 OCCIDENTAL FUEL USES & ANNUAL FUEL COSTS

#### FUEL USE BY SOURCE

The sources affected by the proposed fuel changes are:

PSD-FL-082 (SCCC) I.

Auxiliary Boiler E - Annual Operating Factor - 97.5% - Heat Input - 156 x 10<sup>6</sup> Btu/hr

II. PSD-FL-083 (SRCC)

Auxiliary Boiler B - Annual Operating Factor - 25%

- Heat Input - 160 x 106 Btu/hr

- Annual Operating Factor - 25% - Heat Input - 120 x 10<sup>6</sup> Btu/hr Boiler C

- Annual Operating Factor - 25% - Heat Input - 120 x 10<sup>6</sup> Btu/hr Boiler D

Z Train (DAP No.2) - Annual Operating Factor - 95% - Heat Input - 30 x 10<sup>6</sup> Btu/hr

#### DECEMBER, 1981 FUEL COSTS

Ea	st	ern	Seal	poard

Sulfur Content (%)	Heat Content (Btu/gal)	Price per Gallon(\$)	Price per 10 <sup>6</sup> Btu (\$)
0.8	144,650	0.8112	° 5,6080
1.3(1)	148,140	0.7461	5.0364
Belcher			
0.8	144,650	0.8733	6.0373
1.3(1)	148,140	0.7726	5.2153

<sup>(1)</sup> Price for 1.3% sulfur fuel was obtained by interpolation between prices of 1.0 and 1.5 percent sulfur fuels.

#### FUEL COST BY SOURCE

<u>S</u> ource	Annual Heat Input (10 <sup>12</sup> Btu/yr)	Fuel Cost (\$/year) 0.8% Sulfur 1.3% Sulfur		Fuel Cost Differential (\$/year) 0.8 - 1.3% Sulfur	
Eastern Seaboard Prices			1.38 341141	0.0 = 1.3% Sultur	
Boiler E Boiler B Boiler C Boiler D Z Train (DAP)	1.332 0.350 0.263 0.263 0.250	7,472,077 1,965,043 1,473,782 1,473,782 1,400,093	6,710,479 1,764,754 1,323,566 1,323,566 1,257,388	761,597 200,289 150,216 150,216 142,706	
Total		13,784,777	12,379,753	1,405,024	
Belcher Prices			· · · · · · · · · · · · · · · · · · ·		
Boiler E Boiler B Boiler C Boiler D Z Train(DAP)	1.332 0.350 0.263 0.263 0.250	8,044,074 2,115,470 1,586,602 1,586,602 1,507,272	6,948,845 1,827,441 1,370,581 1,370,581 1,302,052	1,095,230 288,029 216,022 216,022 205,221	
Total .	e	14,840,020	12,819,500	2,020,520	

# ATTACHMENT 3 POLLYPHOS PLANT SULFUR DIOXIDE EMISSION MEASUREMENTS

## SUMMARY OF SULFUR DIOXIDE EMISSION MEASUREMENTS

A & B POLLYPHOS REACTORS

OCCIDENTAL CHEMICAL COMPANY SUWANNEE RIVER CHEMICAL COMPLEX WHITE SPRINGS, FLORIDA

MARCH, 1981

SHOLTES & KOOGLER ENVIRONMENTAL CONSULTANTS 1213 NW 6TH STREET GAINESVILLE, FLORIDA 32601 (904) 377-5822

#### TABLE OF CONTENTS

		PAGE
1.0	INTRODUCTION	1
2.0	PROCESS DESCRIPTION	2
3.0	SAMPLING PORT LOCATION	3
4.0	SAMPLING AND ANALYTICAL PROCEDURES	5
5.0	SUMMARY OF RESULTS	6
APPENDIX		

To the best of my knowledge, all applicable field and analytical procedures except as noted in Section 4.0 comply with FDER requirements and all test data and plant operating data are true and correct.

Signature

Date

#### Attachment 3

Derivation of SO<sub>2</sub>
Emission Rates for Selected Sources

Occidental Chemical Company Hamilton County, Florida

## SULFUR DIOXIDE EMISSION RATE CALCULATIONS

OCCIDENTAL CHEMICAL COMPANY HAMILTON COUNTY, FLORICA

#### SWIFT CREEK CHEMICAL COMPLEX

## SULPURIC A CIO PLANT 'E' (NEW SOURCE)

Present Parmitted Rate - 2000 toylday

Proposed Rate - 2500 ton/day

SOz = 2500 to/day x 1/24 dol/hr x 40 1650 / ton = 416.7 16 502/hr

= 52.5 g/sec

## SULPURIC ACID PLANT 'F" (NEW SOURCE)

Identical to "E"

#### BOILER E ( NEW SOURCE)

Present Permitted Fuel - No. 6 Oil w/ 0.8% S

Proposed Fuel - No G OII w/ 1.0% S

502 = 125,000 lb/hr steam x 1000 BTU/lb x 1/08 efficiency x 1/18700 lb oil/BTU x (001x2) lb 501/lb oil

= 170.8 lb soz/ha

= 21.59/sec

#### SUWANNEE RIVER CHEMICAL COMPLEX

### BOILER 'B' (NEW Source)

Present Permitted Fuel - No. 6 Oil w/ 0.8%S

Proposed Fuel - No 6 Oil W/ 10% 3

502 = 160×106 BTU/h- input x 1/18300 1601/BTU x (001x2)16304

= 174.9 16 Soc/hr

# BOILER C' (NEW Source)

Present Permitted Fuel - No 6 Oil w/ 08% S

Proposed Fuel - NOGOII W/ 10% S

SOz = 120×10° BTU/hr input x 1/18300 16/BTU x (0.01×2) = 131.1 16 502/hr

= 16.5 g/sec

# Boiler D (New Source)

Identical to Boiler "C"

## DAP No 2 - Z'TRAIN (EXISTING SOURCE)

Present Permitted 50 = Emission Rate - 6.3 lb/hr

Present and Proposed P205 input - 697 tpd; 29.0 tph

Proposed Fuel - No 6 OII w/ 1.5% S

SO2 = 36 x 10 ° BTu/hr x 1/18300 13/BTu x (0.015 x2) x (1-0.8) absorption fector = 11.8 15/hr (0.41 16502/fon P205 imput)

502 increase = 11.8-6.3 lb/hr = 5.5 lb/hr

= 0.6991540

(1) BOILERS "C" AND "D" ARE VENTED THRU A COMMON STACK

#### TABLE 1

#### SUMMARY OF PERMITTED OR ACTUAL SULFUR DIOXIDE EMISSIONS

#### OCCIDENTAL CHEMICAL COMPANY SRCC & SCCC

SOURCE NAME	EMM. LB/HR	RATE (G/SEC)	STACK HT. (M)	STACK TEMP. (DEG-K)	EXIT VEL. (M/SEC)	STACK DIA.
Sulfuric Acid A Sulfuric Acid B Sulfuric Acid C Sulfuric Acid D DAP 1 DAP 2 GTSP/Dical Auxiliary Boiler A Pollyphos Feed Prep. Pollyphos Reactor A Pollyphos Reactor B SPA #1 Rock Dryer #3 (SCCC) Rock Dryer East Rock Dryer West Auxiliary Boiler B Auxiliary Boilers C & D Sulfuric Acid E Sulfuric Acid F Auxiliary Boiler E	1208.3 1208.3 300.0 300.0 11.1 11.8 11.1 102.4 4.9 5.0 0.8 38.1 28.7 28.7 174.9 262.2 416.7 416.7 170.8	152.25 (1) 152.25 (1) 37.80 (2) 37.80 (2) 1.40 (4) 1.49 (4) 1.40 (10) 12.90 (5) 0.62 (4) 0.63 (6) 0.10 (6) 4.80 (10) 3.61 (10) 3.61 (10) 22.00 (7) 33.00 (8) 52.50 (3) 52.50 (3) 21.50 (4)	61.0 61.0 45.7 45.7 36.6 42.7 32.3 12.2 28.7 30.5 30.5 15.2 18.3 18.3 10.7 31.7 61.0 61.0 15.3	350.0 350.0 356.0 356.0 322.0 325.0 314.0 466.0 342.0 322.0 318.0 317.0 343.0 468.0 468.0 468.0 456.0 356.0 428.0	15.50 15.50 28.70 28.70 12.20 13.10 13.10 12.50 14.90 10.10 17.80 17.20 5.70 9.50 15.20 9.30 9.30 15.90	1.80 1.59 1.59 2.13 2.44 2.13 1.07 1.22 1.22 0.43 2.16 2.95 2.95 1.46 1.98 2.90 2.90

(10) Actual emissions with 1.5% sulfur fuel

At 1000 tpd 100% H<sub>2</sub>SO<sub>4</sub> and 29 lb SO<sub>2</sub>/ton of acid
At 1800 tpd 100% H<sub>2</sub>SO<sub>4</sub> and 4 lb SO<sub>2</sub>/ton of acid
At 2500 tpd 100% H<sub>2</sub>SO<sub>4</sub> and 4 lb/SO<sub>2</sub>/ton of acid
At 1.5% sulfur fuel and 80% SO<sub>2</sub> sorption
At 62.5 x 10<sup>5</sup> BTU/hr and 1.5% of sulfur fuel. A 25% operating factor is imposed when
Sulfuric Acid Plants A and B are operating at rated capacity

Based on emission measurements
At 160 x 10<sup>6</sup> BTU/hr and 1.0% sulfur fuel
Two boilers at 120 x 10<sup>6</sup> BTU/hr each and 1.0% sulfur fuel
At 156 x 10<sup>6</sup> BTU/hr and 1.0% sulfur fuel