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

June 30, 1987

DER

JUL 1 1987

BAQM

Mr. Pradeep Ravel
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Re: Application to Construct/Modify Air Pollution Sources, Sulfuric Acid Plants "A", "B", "C", and "D", Permit Nos. AC24-131270 and 131271

Dear Pradeep:

As we've discussed with you by telephone and in our meeting of June 26, the reason for the delay in responding to your May 14 letter is that we have been working on possible alternatives to a permit which does not allow the flexibility to produce the amount of sulfuric acid we can now produce. The proposal we made in the June 26 meeting, which was to permit "A" and "B" at 800 tons per day (TPD), seemed to be a fair compromise, in that it would reduce net emissions for all possible operating scenarios. However, it still does not meet the requirement to offset permitted increases for "C" and "D" with permitted decreases on "A" and "B" based on actual past annual emissions.

After the June 26 meeting, we decided to make a determination regarding an agreement for no increase in permitted emissions of sulfuric acid mist for "C" and "D". According to calculations made by Dr. John Koogler (Attached), if we accept 0.14 lbs. mist per ton sulfuric acid produced by "C" and "D", and a capacity of 800 TPD on "A" and "B", then neither SO_2 or mist are limiting. Therefore, as I notified you by telephone yesterday, we request that you permit the pending application on this basis.

Our past data indicate that there will be no problem meeting 0.14 lbs. mist per ton sulfuric acid produced at "C" and "D". Most of the tests are in the 0.05 to 0.08 range. However, between now and when the permit is issued, we will run additional tests to be absolutely certain this limit can be met.

The above responds to items one and two of your May 14 letter. Item three of the letter requests a startup procedure to be used and if there is a specific sequence for startup of the four plants. In reference to the startup procedure, we are presently discussing this issue with the FDER staff in Tallahassee and Jacksonville. Additionally the air section staff in the Tallahassee office has copies of our startup procedures. A copy of these procedures are attached. Occidental does not object to a special condition in the permit which references these procedures. However, we would object strongly to specific detailed conditions effecting control room operations being included as a condition of the permit. This would limit our flexibility to make improvements in the procedures without a permit modification. Further, it does not appear that FDER has the authority to include such conditions as permit requirements.

There is no specific sequence of startup from the four plants. It should be noted that it is very infrequent that more than one plant is down at the same time, so that only one is normally started at a time. However, when two or more plants are to be started our practice is to start one, bring it into compliance with permitted emission rates, before startup of the next plant. In no instance are plants started simultaneously.

As we have discussed in prior meetings this application requires a fifteen day notice period, rather than a thirty day notice. We would appreciate your consideration of this factor when noticing the permit.

If there are any questions regarding any of the above, please contact Marvin, or me.

Sincerely,

R. E. McNeill, P.E.
Director of Safety, Health
and Environmental Control
for Ag Products, Inc.

psb

Attachments

cc: W. M. Miller, Occidental Chemical Company
W. P. Stewart, P. E., FDER, Gainesville, FL
J. Koogler, Ph.d., P.E., Koogler & Associates
Pradip Raval
Tom Rogers
C. H. Fancy/B Thorat
Delivered 7-1-87

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OCCIDENTAL CHEMICAL COMPANY

FLORIDA OPERATIONS

Post Office Box 300, White Springs, Florida 32096 -- Phone 904 397-8101

Mr. Pradeep Ravel
Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Proposed SO_2 and Mist Limits for A, B, C and D Sulfuric Acid Plants

Occidental Chemical Agricultural Products, Inc
Suwannee River Chemical Complex
White Springs, FL

SO_2

C & D plants, present permitted

SO_2 = 1800 tpd x 4.0 lb/ton x 365 day/yr x 1/2000

= 1314 ton/yr, each plant

A & B plants, present actual
(1984/86 avg from Oxy letter of 3/30/87)

SO_2 = (4316 + 4099) / 2

= 4207.5 ton/yr, each plant

Proposed

C & D plants (each plant)

2000 ton/day production
4.0 lb SO_2 / ton
"m" day/yr operation

A & B plants (each plant)

800 ton/day production
29 lb SO_2 / ton
"m" day/yr operation

Allowable Emissions A+C = A+D = B+C = B+D

= 1314 + 4207.5 + (< 40/2)
= 5521.5 + (< 20) tpy

(Con't)

ALLOWABLE EMISSIONS A/C, A/D, B/C, B/D (Cont)

$= (2000 \text{ ton/day} \times 4.0 \text{ lb/ton} \times m \text{ day/yr} \times 1/2000)$
$+ (800 \text{ ton/day} \times 29 \text{ lb/ton} \times m \text{ day/yr} \times 1/2000)$

$5521.5 + (<20) = 4.0m + 11.6m$

m - 355 days/yr operation for all plants

(<20 = 16.5 tpy)

CHECK

C & D PLANTS (each plant)

$SO_2 = 2000 \text{ tpd} \times 4.0 \text{ lb/ton} \times 355 \text{ d/y} \times 1/2000$

= 1420 tpy, each plant

A & B PLANTS (each plant)

$SO_2 = 800 \text{ tpd} \times 29 \text{ lb/ton} \times 355 \text{ d/y} \times 1/2000$

= 4118.0 tpy, each plant

TOTAL - 5530.0 tpy proposed, each set (A/C, A/D, B/C, B/D)

= 5521.5 tpy present, each set

INCREASE = 16.5 tpy each set

$\times 2$

= 33.0 tpy all 4 plants

< 40 tpy, O.K.

MIST

A & B - Reduce rate to 800 tpd ; no change in emission limit of 0.5 lb / ton

C & D PLANTS , PRESENT PERMITTED

MIST = 1800 tpd x 0.15 lb / ton x 365 day/yr x 1/2000

= 49.3 ton/yr , each plant

PROPOSED

C & D PLANTS (each plant)

2000 ton / day production
"m" lb mist / ton
355 day / yr operation

ALLOWABLE EMISSIONS (each plant)

= 49.3 + (< 7/2)

= 2000 lb/ton x "m" lb/ton x 355 d/yr x 1/2000

m = 0.14 lb/ton

(< 7/2 = 0.4 tpy)

CHECK

C & D PLANTS (each plant)

MIST = 2000 tpd x 0.14 lb/ton x 355 d/y x 1/2000

= 49.7 tpy , each plant

x 2

= 99.4 tpy , proposed both plants

= 98.6 tpy , present both plants

INCREASE = 0.8 tpy

< 7.0 tpy , O.K.

STARTUP GUIDELINES

GENERAL

1. If a plant has been down for more than four hours, the wind speed is less than four mph average as indicated on the control room monitor, and the restart is between 0200 and 1000, the area manager or complex manager must approve the startup. The manager who approves the startup will take into consideration the existing plant parameters such as sulfur furnace temperature, catalyst temperature, wind direction, velocity and plant performance startup history in reaching his decision. The manager has the discretion and may institute additional operating constraints to provide additional safeguards to prevent environmental damage.

2. When an SO_2 meter is out of service, plant production rate will not be raised nor will any changes be made in the converter temperature profile that would cause an increase in SO_2 emissions.

3. When a plant shutdown involving more than one sulfuric acid plant occurs, the startup of the sequent plants will not occur until the prior plant has been restarted and is in compliance.

4. When an acid plant is started up, stack O_2 and SO_2 will be monitored and action taken to ensure the plant stays in compliance.

5. Three hours prior to any scheduled startup, E/I technicians will test the SO_2 meter with span gas. Should the meter not test satisfactorily, startup will be delayed until repairs have been completed.

START-UP PROCEDURE

DORR-OLIVER SULFURIC ACID PLANTS

1. Have the "B" Operator blow down the waste heat boiler to 35%.

2. Start the 96% and 98% circulating pump turbines. Use maximum acid bypass around the 98% cooler until normal operating acid temperature is reached.

3. Position dampers as follows:

a. Furnace Inlet Damper	100% Open
b. Heat Exchanger Inlet Damper	50% Open
c. Return Air Damper	100% Open
d. Boiler Exit Damper	5% Open
e. Jug Damper	100% Open
f. C-Mass Dilution Air Damper	Shut
g. D-Mass Dilution Air Damper	Shut
h. Converter Exit Damper	100% Open

4. Have the "B"Operator start the sulfur feed pump.

5. Slowly open the main turbine throttle valve until the blower discharge pressure reaches 50".

6. Have the "B" Operator open one of the sulfur guns.

7. Open the sulfur feed valve 25%.

8. When the gun fires, adjust the sulfur feed valve to obtain a furnace temperature of 1100-1600 F. Keep the furnace temperature as high as possible within this range without allowing SO2 emissions to exceed the compliance level.

9. When the HGF inlet reaches 900-1000 F, open the boiler exit damper as necessary to maintain that temperature range until the HGF outlet reaches 750 F. Then open the boiler exit damper as necessary to achieve normal HGF operating temperatures.

10. Set up cross-circulation and dilution water flows when necessary to maintain proper acid concentrations.

11. When the inlet temperatures of all four masses are above 750 F, open the main turbine throttle valve until the blower discharge pressure reaches 100".

11. Operate dampers as follows:
    a. When A-mass inlet reaches 800-850 F, open the #1 heat exchanger inlet damper and close its bypass as necessary to maintain that temperature range.
    b. When B-mass inlet reaches 800-850 F, open the #2 heat exchanger inlet damper and close its bypass as necessary to maintain that temperature range.
    c. When C-mass inlet reaches 800-850 F, close the primary superheater bypass as necessary to maintain that temperature range.
    d. When D-mass inlet reaches 800-850 F, open the boiler exit damper and close the jug damper as necessary to maintain that temperature range.

12. When SO2 emissions return to the compliance level, adjust dampers as necessary to achieve normal operating temperatures in the converter and heat exchangers.

13. Bring the plant up to the desired rate by slowly increasing the air and sulfur rates in small increments, followed by intervals during which all operating parameters are checked and adjusted.

14. When the HGF reaches its normal operating temperature, slowly close the HGF bypass damper.

NOTES:

1. This procedure is meant to serve as a guideline only. If circumstances necessitate different actions than those given above, the supervisor will direct such action.

2. SO2 and O2 stack concentrations should be monitored continuously during start-up to determine SO2 emissions.

3. Under no condition should O2 in the stack drop below 3%. Serious plant damage can result due to the sublimation of sulfur. Immediately increase air flow if O2 drops to 3% or less.

4. The blower's critical range is 2300-2750 rpm. Operating the blower in this range must be avoided. Speed change through this range should be done quickly to avoid possible turbine damage.

5. Sulfur guns operate best with high sulfur pressure. Fire an additional gun only when furnace temperature cannot be maintained with the sulfur control valve at least 3/4 open.

START-UP PROCEDURE
CTC SULFURIC ACID PLANTS

1. Have the "C" Operator blow down the waste heat boiler to 35%.

2. Start the acid circulating pumps. Use maximum acid bypass around the absorption tower coolers until normal operating acid temperature is reached.

3. Position dampers and valves as follows:

a. Furnace Inlet Damper	100% Open
b. Boiler Exit Damper	5% Open
c. Jug Damper	100% Open
d. HGP Bypass Damper	100% Open
e. Heat Exchanger Inlet Dampers	Shut
f. Heat Exchanger Bypass Dampers	100% Open
g. E-Mass Dilution Air Valve	Shut
h. Economizer Exit Damper	100% Open
i. Primary Superheater Bypass	100% Open

4. Have the "C" Operator open the top left sulfur gun.

5. Ensure the main turbine governor valve is set at minimum, then have the "C" Operator slowly open the turbine throttle valve until the blower discharge pressure reaches 50".

6. Start the sulfur feed pump with the panel mounted switch and open the sulfur feed valve by adjusting its controller to 5 psig air pressure.

7. When the gun fires, adjust the sulfur feed valve to obtain a furnace temperature of 1100-1600 F. Keep the furnace temperature as high as possible within this range without allowing SO2 emissions to exceed the compliance level.

8. When #1 heat exchanger shell inlet reaches 1000-1050 F, open the boiler exit damper as necessary to maintain that temperature range. Do not exceed 1050 F.

9. When the inlet temperatures of the top three masses are all above 750 F, have the "C" Operator open the main turbine throttle valve completely, leaving furthur control to the "A" Operator with the governor valve. The turbine should come to about 3000 rpm.

10. Adjust the sulfur feed valve to obtain a furnace temperature of 1375-1425 F.

12. Operate dampers as necessary to obtain normal operating temperatures in the converter:
    a. Open the boiler exit damper and adjust the jug damper to control A-mass inlet.
    b. Open the heat exchanger inlet damper and adjust the furnace inlet damper to control B-mass inlet.
    c. Open the C-mass dilution air damper to control C-mass inlet.
    d. Open the D-mass dilution air damper to control D-mass inlet.

13. Bring the plant up to the desired rate by slowly increasing the air and sulfur rates in small increments, followed by intervals during which all operating parameters are checked and adjusted.

NOTES:

1. This procedure is meant to serve as a guideline only. If circumstances necessitate different actions than those given above, the supervisor will direct such action.

2. SO2 and O2 stack concentrations should be monitored continuously during start-up to determine SO2 emissions.

3. Under no condition should O2 in the stack drop below 3%. Serious plant damage can result due to the sublimation of sulfur. Immediately increase air flow if O2 drops to 3% or less.

4. Sulfur guns operate best with high sulfur pressure. Fire an additional gun only when furnace temperature cannot be maintained with the sulfur control valve at least 3/4 open.

I-A "E" AND "F" SULFURIC ACID PLANT START UP PROCEDURE

Safety Equipment Required - None

Other Equipment Required - None

A. Twenty to thirty (20-30) minutes prior to the startup:

1. Bring boiler level to -2".

2. Stroke the BPCV and leave in manual at 50%.

3. Close C&D mass temperature control dampers and open B mass temperature control damper. Verify damper position in the field.

4. Open the hot gas filter bypass damper.

B. At startup:

1. Open the slide gate when the "C" Operator begins opening the manual dampers.

2. Put H1004 (turbine speed control) in manual at 0% and T1039 (furnace temperature control valve) in manual at 100%. Open the jug damper 50% on "F" plant and 100% on "E" plant.

3. The boiler exit damper must be closed at least 75% on "E" plant.

4. The boiler exit damper on "F" plant must be closed 50% if the furnace temperature prior to start up is less than 700 deg. C. If the furnace temperature is greater than 700 deg. C., leave the boiler exit damper open.

5. Ensure the sulfur supply to ALL sulfur guns is shut off with the exception of the one gun that will be used for startup. Start up on a 700 TPD gun if available. If not, start up on a 900 TPD gun.

6. Have the "C" Operator bring the blower speed to at least 1000 RPM.

7. Start the sulfur pump. The amps on the pump will start at about 65-70%. Then the amps will slowly build up to about 80%. They will then drop off about 10%. When the amps drop off, there should be sulfur at the front of the furnace.

8. When the fire lights in the furnace (indicated by an increase in furnace temperature), adjust the blower speed to maintain the furnace temperature at the same temperature prior to startup.

CAUTION: DO NOT LET O_2 DROP BELOW 3.5% AT ANY TIME WHILE THE PLANT IS OPERATING.

B. (continued)

9. Check the #/ton chart and determine if the plant is in compliance. If it is not, reduce furnace temperature until the emission rate is in compliance, but do not allow the furnace to be less than 650°C. Steam production must start as soon as possible in order to control "B" mass inlet temperature.

10. Raise A mass inlet temperature to 440°C AS SOON AS POSSIBLE. (See 14A).

11. Raise plant rate and furnace temperature from this point as the converter catalyst beds start converting. The plant will be maintained at less than 4#/ton of emissions during the startup or corrective action must be taken. The stack SO_2 must be, if possible, maintained at less than 1000 ppm at all times.

12. The converter beds will start converting properly when the bed inlet temperature exceeds 400°C. Conversion across a catalyst bed will decrease when the inlet temperature exceeds 460-470°C.

13. It is not practical to set parameters at which point rate may be increased due to the many variables involved. All rate changes and temperature increases will be monitored closely to ensure emission standards are met. Immediate corrective action will be taken as necessary to reduce the emissions to less than 4#/ton.

14. As the plant heats up, control as follows:

    a. Control A mass inlet temperature with the boiler exit damper and the jug damper. Opening the boiler exit damper and closing the jug damper will lower A mass inlet temperature. When starting up, the boiler exit damper should be used to control until the boiler exit damper is fully opened. Then the jug damper should be used for control.

    b. Control B mass temperature inlet with the superheater bypass damper. Closing the damper will lower B mass inlet temperature.

    c. Control C&D mass inlet temperature as per the control range established for normal operating.

15. Have the "C" Operator unblock the dilution water isolation valves and the magmeter isolation valves once the temperature in the furnace is stabilized after the initial firing. Have the "C" Operator verify proper flow through the final and interpass concentration cells.

I-A "E" AND "F" SULFURIC ACID PLANT START UP PROCEDURE

B. (continued)

16. Do not increase furnace temperature to more than 1000°C until all converter bed temperatures are greater than 400°C.

17. Place the hot gas filter in service.

18. Place the 96% acid system in service if it is winter.