R. E. JONES, JR.
Vice President



New Wales Chemicals, Inc.
A SUBSIDIARY OF INTERNATIONAL MINERALS & CHEMICAL CORPORATION

May 27, 1980



Mr. R. R. Garrett
Florida Department of Environmental Regulation
7601 Highway 301 North
Tampa, Florida 33610

Dear Mr. Garrett:

REFERENCE: FDER PERMIT NO. AO-53-5975

New Wales Chemicals, Inc. proposes to modify its existing Monoammonium phosphate (MAP) plant to increase capacity and reduce particulate and fluoride emissions.

Plant capacity will be increased from 900 TPD to 1200 TPD.

Particulate emissions will be decreased from 741 lbs./day maximum to 500 lbs./day maximum.

Fluoride emissions will be decreased from 26 lbs./day maximum to 20 lbs./day maximum.

It is expected that the actual average emission will be substantially lower than these maximums.

It is proposed that the existing Prill Tower and Rotary Cooler Scrubber be replaced with a Venturi-Cyclonic Scrubber for the Prill Tower only. The Cooler would be vented to a new bag-type dust collector similar to that being installed at our new DAP plant.

Construction is expected to commence September 1, 1980, and be completed by December 31, 1981.

A completed construction permit application, with BACT information, and a check for $20 are enclosed.

As per your suggestion, we are sending a copy of this request to the EPA for their information. Your assistance in processing this request is appreciated.

Very truly yours,

REJ:jc
Encls.

P. O. Box 1035 • Mulberry, Florida 33860 • Phone: (813) 428-2531

D.E.R.
MAY 28 1980
SOUTHWEST DISTRICT
TAMPA

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

# APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: MAP Plant [ ] New[1] [X] Existing[1]

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

COMPANY NAME: New Wales Chemicals, Inc. COUNTY: Polk

Identify the specific emission point source(s) addressed in this application (i.e. Lime Kiln No. 4 with Venturi Scrubber; Peeking Unit No. 2, Gas Fired) MAP Cooler Bag Collector, MAP Scrubber

SOURCE LOCATION: Street P. O. Box 1035 City Mulberry, FL 33860

UTM: East 396.7 North 3078.9

Latitude ____ ° ____ ' ____ "N Longitude ____ ° ____ ' ____ "W

APPLICANT NAME AND TITLE: R. E. Jones, Jr., Vice President

APPLICANT ADDRESS: New Wales Chemicals, Inc., P.O. Box 1035, Mulberry, FL 33860

## SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of New Wales Chemicals, Inc.

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

*Attach letter of authorization

Signed: R E Jones Jr

R. E. Jones, Jr., Vice President
Name and Title (Please Type)

Date: 5-27-80 Telephone No. (813) 428-2531

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

This is to certify that the engineering features of this pollution control project have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgment, that the pollution control facilities, when properly maintained and operated, will discharge an effluent that complies with all applicable statutes of the State of Florida and the rules and regulations of the department. It is also agreed that the undersigned will furnish, if authorized by the owner, the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

(Affix Seal)

Signed: Craig A. Pflaum PE

C. A. Pflaum, PE
Name (Please Type)

New Wales Chemicals, Inc.
Company Name (Please Type)

P. O. Box 1035, Mulberry, FL 33860
Mailing Address (Please Type)

Florida Registration No. 18595 Date: 5-27-80 Telephone No. (813) 428-2531

5/28/80
A053-31215

[1]See Section 17-2.02(15) and (22), Florida Administrative Code, (F.A.C.)

## SECTION II: GENERAL PROJECT INFORMATION

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

Replace existing MAP Scrubber. Install new MAP Cooler Bag Collector. Reduce total allowable emissions of particulates from 741#/day to 500#/day. Reduce total allowable fluoride emissions from 26#/day to 20#/day.

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

Start of Construction September 1, 1980 Completion of Construction December 31, 1981

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.)

Estimated cost of new scrubber system - $500,000.

Estimated cost of bag collector system - $500,000.

$1 X 10^6$

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

DER operating permit AO-53-5975, dated January 24, 1978.

Expires January 1, 1983.

E. Is this application associated with or part of a Development of Regional Impact (DRI) pursuant to Chapter 380, Florida Statutes, and Chapter 22F-2, Florida Administrative Code? ____ Yes __X__ No

F. Normal equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 52 ; if power plant, hrs/yr ____ ;

if seasonal, describe: ____

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? ____
   c. If yes, list non-attainment pollutants. ____
2. 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. No
4. Do "Standards of Performance for New Stationary Sources" (NSPS) apply to this source? No
5. Do "National Emission Standards for Hazardous Air Pollutants" (NESHAP) apply to this source? No

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

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

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

| Description | Contaminants | | Utilization Rate - lbs/hr | Relate to Flow Diagram |
|---|---|---|---|---|
| | Type | % Wt | | |
| Phosphoric Acid | | | 93,000 | Prill Tower |
| Ammonia | | | 13,000 | Prill Tower |
| | | | | |
| | | | | |
| | | | | |

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

1. Total Process Input Rate (lbs/hr): 106,000

2. Product Weight (lbs/hr): 100,000

C. Airborne Contaminants Emitted:

| Name of Contaminant | Emission[1] | | Allowed Emission[2] Rate per Ch. 17-2, F.A.C. | Allowable[3] Emission lbs/hr | Potential Emission[4] | | Relate to Flow Diagram |
|---|---|---|---|---|---|---|---|
| | Maximum lbs/hr | Actual T/yr | | | lbs/hr | T/yr | |
| Particulates | 12.8 | 56.2 | Agreement with | 16.8 * | Not appli- | | Stack |
| Fluorine | 0.83 | 3.6 | owner. | 0.83* | cable. | | " |
| Ammonia | 20.8 | 91.3 | | 20.8 | Cannot be | | " |
| Particulates | 3.4 | 15.0 | | 4.0 * | operated | | Fan discharge |
| | | | | | without control. | | |

D. Control Devices: (See Section V, Item 4) *Lower than allowed by Process weight table or Chapter 17-2.

| Name and Type (Model & Serial No.) | Contaminant | Efficiency | Range of Particles[5] Size Collected (in microns) | Basis for Efficiency (Sec. V, It[5] |
|---|---|---|---|---|
| Flexible venturi- | Particulates | | 0.03 gr/ACF | |
| cyclonic scrubber | Fluorides | | 0.83#/hr. | |
| | | | | |
| | | | | |
| Mikro-Pul (or equiv- | Particulates | | 0.02 gr/SCF | |
| alent) bag collector | | | | |

[1]See Section V, Item 2.

[2]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)

[3]Calculated from operating rate and applicable standard

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

[5]If Applicable

E. Fuels None

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

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

Fuel Analysis:

Percent Sulfur: _____ Percent Ash: _____

Density: _____ lbs/gal Typical Percent Nitrogen: _____

Heat Capacity: _____ BTU/lb _____ BTU/gal

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

F. If applicable, indicate the percent of fuel used for space heating. Annual Average _____ Maximum _____

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

All wastes recovered to product.

H. Emission Stack Geometry and Flow Characteristics (Provide data for each stack):

Stack Height: 120 ft. Stack Diameter: 4 ft.

Gas Flow Rate: 50,000 ACFM Gas Exit Temperature: 140 °F.

Water Vapor Content: saturated 13 % Velocity: 66.3 FPS

H.1) Bag Collector Fan discharge 80' elev., 3' diam., 24,000 ACFM, 150°F, 4% $H_2O$, 56.6 FPS.

## SECTION IV: INCINERATOR INFORMATION Not Applicable

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

Description of Waste _____

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

Approximate Number of Hours of Operation per day _____ days/week _____

Manufacturer _____

Date Constructed _____ Model No. _____

NOT APPLICABLE

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

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

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

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

Type of pollution control device: [ ] Cyclone [ ] Wet Scrubber [ ] Afterburner [ ] Other (specify) _____

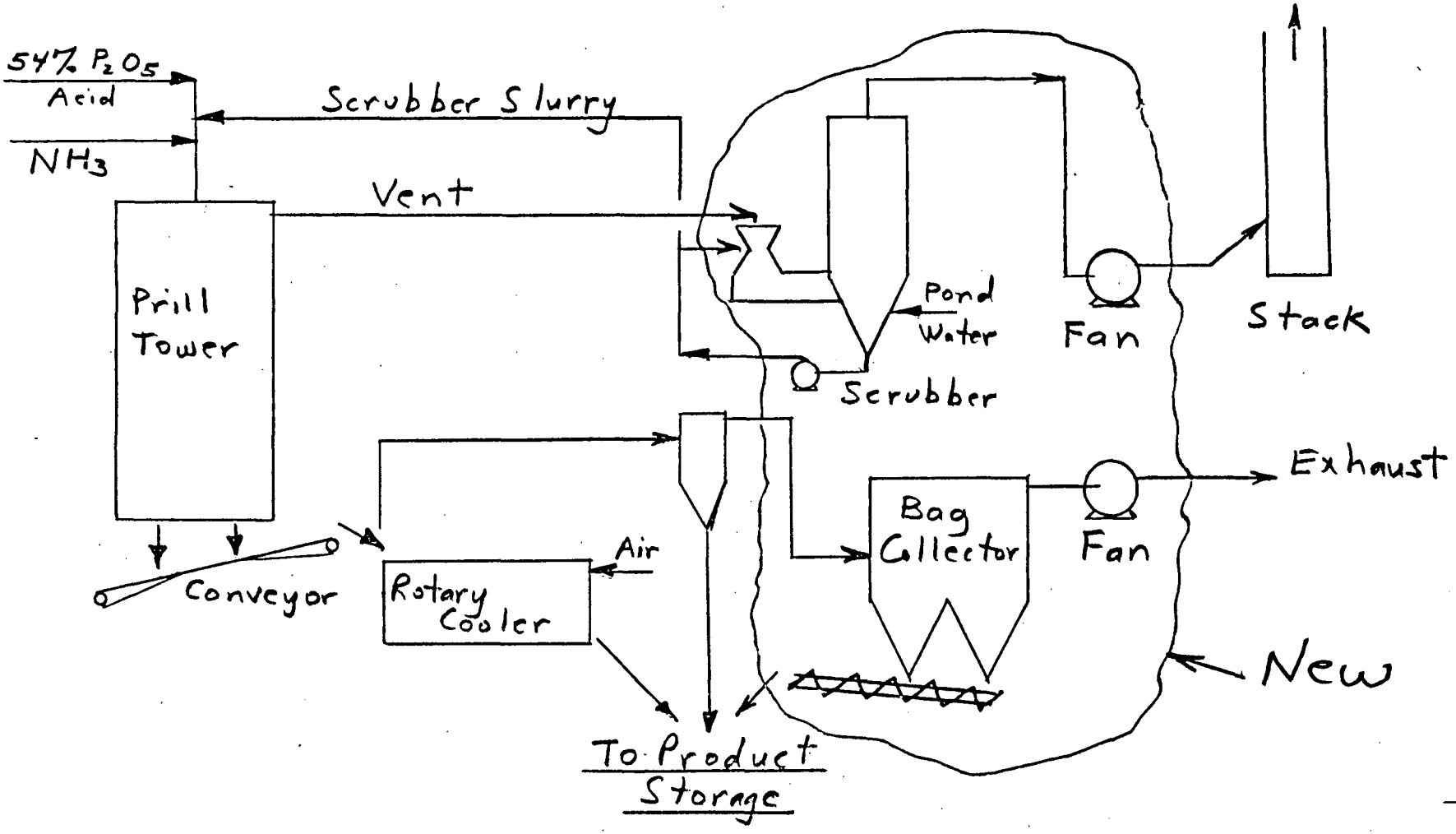
Brief description of operating characteristics of control devices: _____

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

## SECTION V: SUPPLEMENTAL REQUIREMENTS

Please provide the following supplements where required for this application.

1. Total process input rate and product weight – show derivation.
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.
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.).
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).
6. An 8½" 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.
7. An 8½" 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.




# MAP Process Flowsheet

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

FOR _____ AT _____ SKETCH NO. _____

DESCRIPTION _____ DATE _____

BY _____ PROJECT _____

Form 0-136 Rev. 10-58
PRINTED IN U.S.A.

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

A. Are standards of performance for new stationary sources pursuant to 40 C.F.R. Part 60 applicable to the source?
[ ] Yes [X] No

| Contaminant | Rate or Concentration |
|---|---|
| | |
| | |
| | |
| | |

B. Has EPA declared the best available control technology for this class of sources (If yes, attach copy) [ ] Yes [X] No

| Contaminant | Rate or Concentration |
|---|---|
| | |
| | |
| | |
| | |

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

| Contaminant | Rate or Concentration |
|---|---|
| Particulates from scrubber | 308#/day (404#/day max.) |
| Fluorides from scrubber | 20#/day |
| Ammonia from scrubber | 500#/day |
| Particulates from bag collector | 82#/day (96#/day max.) |

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

1. Control Device/System: Venturi scrubber with open knock-out chamber for demisting.
2. Operating Principles: Venturi scrubber
3. Efficiency:*
4. Capital Costs: $300,000
5. Useful Life: Needs replacement
6. Operating Costs:
7. Energy: 200 HP fan
8. Maintenance Cost:
9. Emissions:

| Contaminant | Rate or Concentration |
|---|---|
| Particulates | 741#/day allowable |
| Fluorine | 26#/day allowable |
| Ammonia | 500#/day typical (no maximum) |
| | |

*Explain method of determining D 3 above.

10. Stack Parameters

a. Height: 120 ft. b. Diameter: 4 ft.

c. Flow Rate: 45,000 ACFM d. Temperature: 140 °F

e. Velocity: 60 FPS

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

1.

a. Control Device: Bag collector for cooler exhaust.

b. Operating Principles: Fabric filtration of gases, no fluorine evolution.

c. Efficiency*: 0.02 gr/SCF d. Capital Cost: $500,000

e. Useful Life: 12 years f. Operating Cost:

g. Energy*: 200 HP h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

2.

a. Control Device: Venturi-Cyclonic Scrubber for Prill Tower.

b. Operating Principles: Venturi for wetting dust, cyclonic to remove entrainment.

c. Efficiency*: 0.03 gr/ACF d. Capital Cost: $500,000

e. Useful Life: 12 years f. Operating Cost:

g. Energy**: 250 HP h. Maintenance Costs:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

*Explain method of determining efficiency.

**Energy to be reported in units of electrical power – KWH design rate.

3.

a. Control Device:

b. Operating Principles:

c. Efficiency*: d. Capital Cost:

e. Life: f. Operating Cost:

g. Energy: h. Maintenance Cost:

*Explain method of determining efficiency above.

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

4.

a. Control Device

b. Operating Principles:

c. Efficiency*:

d. Capital Cost:

e. Life:

f. Operating Cost:

g. Energy:

h. Maintenance Cost:

i. Availability of construction materials and process chemicals:

j. Applicability to manufacturing processes:

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

F. Describe the control technology selected: SEE SECTION E

1. Control Device:

2. Efficiency*:

3. Capital Cost:

4. Life:

5. Operating Cost:

6. Energy:

7. Maintenance Cost:

8. Manufacturer:

9. Other locations where employed on similar processes:

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 |
|---|---|
| | |
| | |
| | |

(8) Process Rate*:

b.

(1) Company:

(2) Mailing Address:

(3) City:

(4) State:

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

(5) Environmental Manager:

(6) Telephone No.:

(7) Emissions*:

| Contaminant | Rate or Concentration |
|---|---|
| | |
| | |
| | |

(8) Process Rate*:

10. Reason for selection and description of systems:

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

NOT APPLICABLE- EMISSIONS WILL BE REDUCED FROM EXISTING LEVELS

## SECTION VII – PREVENTION OF SIGNIFICANT DETERIORATION

A. Company Monitored Data

1. _____ no sites _____ TSP _____ ( ) $SO^2$* _____ Wind spd/dir

Period of monitoring ____/____/____ to ____/____/____
month day year month day year

Other data recorded _____

Attach all data or statistical summaries to this application.

2. Instrumentation, Field and Laboratory

a) Was instrumentation EPA referenced or its equivalent? ____ Yes ____ No

b) Was instrumentation calibrated in accordance with Department procedures? ____ Yes ____ No ____ Unknown

B. Meteorological Data Used for Air Quality Modeling

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

2. Surface data obtained from (location) _____

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

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

C. Computer Models Used

1. _____ Modified? If yes, attach description.

2. _____ Modified? If yes, attach description.

3. _____ Modified? If yes, attach description.

4. _____ Modified? If yes, attach description.

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

D. Applicants Maximum Allowable Emission Data

| Pollutant | Emission Rate |
|---|---|
| TSP | _____ grams/sec |
| $SO^2$ | _____ grams/sec |

E. Emission Data Used in Modeling

Attach list of emission sources. Emission data required is source name, description 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.

*Specify 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.

# SUPPLEMENTAL INFORMATION FOR BACT DETERMINATION

New Wales Chemicals, Inc. proposes, as BACT, a venturi-cyclonic scrubber for particulate removal. These scrubbers, using gypsum pond water, are reliable and will demonstrate 0.03 gr/ACF. A similar unit is in operation at New Wales.

The scrubber slurry will contain recovered MAP dust and ammonia from the Prill Tower, and will be used as make-up water for the process. The presence of ammonia will increase the slurry pH to about 7.0, resulting in low fluoride emissions. These emissions will average 10 #/day, with occasional maximums of 20 #/day.

Ammonia from the Prill Tower, above that which is necessary to raise the slurry pH to 7.0, will emit to the atmosphere. Typical emissions are 500 #/day.

The Mikro-Pul (or equivalent) bag-type dust collector, with a maximum air/cloth ratio of 5.0 $SCFM/FT^2$, has already been declared BACT for a rotary DAP cooler vent (Construction permit to IMC-May, 1980). The MAP rotary cooler is a similar installation, the only significant difference being the smaller product screen size. BACT is recommended at 0.02 gr/SCF.