



STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION

SOUTHWEST DISTRICT  
7601 HIGHWAY 301 NORTH  
TAMPA, FLORIDA 33610

REUSIN O'D. ASKEW  
GOVERNOR

August 22, 1978

JOSEPH W. LANDERS, JR.  
SECRETARY

IMC  
AFI - Granulation Plant  
Polk County - AP

P. David Puchaty  
District Manager

Mr. Thomas L. Craig  
Vice President & General Manager  
International Minerals & Chemical Corporation  
P.O. Box 1035  
Mulberry, Fla. 33860

Dear Mr. Craig,

Pursuant to Section 403.061(16), Florida Statutes, your application has been approved by the Department and, therefore, we are issuing to you the enclosed permit no. A053-7025 which will expire on August 15, 1983.

This permit is not effective unless you accept it, including any and all of the conditions contained therein. If you do not choose to accept it, you must file an appropriate petition for a hearing pursuant to the provisions of Section 120.57, Florida Statutes.


A petition for a hearing must comply with the requirements of Florida Administrative Code, Section 28-5.15 and be filed (postmarked) with the Secretary of the Department of Environmental Regulation at Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301, with a copy to this office within fourteen (14) days from receipt of this letter. Petitions which are not filed in accordance with the above provisions may be subject to dismissal.

Any time limits imposed in the permit are a condition to this permit and are enforceable under Section 403.061, Florida Statutes. You are hereby placed on notice that the Department will review this permit to check for compliance and will initiate enforcement action for violations of the conditions and requirements of this permit.

Your continued cooperation in this matter is appreciated. Please refer to your assigned permit number in all future communications.

cc: Central Files ✓  
Craig A. Pflaum, P.E.

Sincerely,

  
P. David Puchaty  
District Manager

Enclosures

RULES OF THE ADMINISTRATION COMMISSION  
MODEL RULES OF PROCEDURE  
CHAPTER 28-5  
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
  - (a) The name and address of each agency affected and each agency's file or identification number, if known;
  - (b) The name and address of the petitioner or petitioners;
  - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
  - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
  - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
  - (f) A demand for the relief to which the petitioner deems himself entitled; and,
  - (g) Such other information which the petitioner contends is material.

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NOTE: At a formal hearing all parties shall have an opportunity to present evidence and argument on all issues involved, to conduct cross-examination and submit rebuttal evidence, to submit proposed findings of fact and orders, to file exceptions to any order or hearing officer's recommended order, and to be represented by counsel.

STATE OF FLORIDA  
 DEPARTMENT OF  
 ENVIRONMENTAL REGULATION

NEDS No. 0059  
 Point ID: 27

POLK COUNTY

**OPERATION PERMIT**

FOR International Minerals & Chemical Corp.

P. O. Box 1035,  
 Mulberry, Fla. 33860

PERMIT NO. AC53-7025 DATE OF ISSUE August 22, 1978

PURSUANT TO THE PROVISIONS OF SECTIONS 403.061 (16) AND 403.707 OF CHAPTER 403, FLORIDA STATUTES AND CHAPTERS 17-4 AND 17-7, FLORIDA ADMINISTRATIVE CODE, THIS PERMIT IS ISSUED TO: Mr. Thomas L. Craig, Vice President and General Manager

FOR THE OPERATION OF THE FOLLOWING: 120 TPH granulation plant with 3 Davy Powergas scrubbers manifolded to a common stack subject to the attached condition nos. 1, 2, 3, 5, 6, 7 and 9.

LOCATED AT So. of Nichols, Polk County

UTM: 7396700 E and 3079400 N

IN ACCORDANCE WITH THE APPLICATION DATED July 25, 1978

ANY CONDITIONS OR PROVISOS WHICH ARE ATTACHED HERETO ARE INCORPORATED INTO AND MADE A PART OF THIS PERMIT AS THOUGH FULLY SET FORTH HEREIN. FAILURE TO COMPLY WITH SAID CONDITIONS OR PROVISOS SHALL CONSTITUTE A VIOLATION OF THIS PERMIT AND SHALL SUBJECT THE APPLICANT TO SUCH CIVIL AND CRIMINAL PENALTIES AS PROVIDED BY LAW.

THIS PERMIT SHALL BE EFFECTIVE FROM THE DATE OF ISSUE UNTIL August 15, 1983

OR UNLESS REVOKED OR SURRENDERED AND SHALL BE SUBJECT TO ALL LAWS OF THE STATE AND THE RULES AND REGULATIONS OF THE DEPARTMENT.

*J. H. Kerns*  
 DISTRICT ENGINEER

*Joseph W. Landers, Jr.*  
 JOSEPH W. LANDERS, JR.  
 SECRETARY  
*Robert L. ...*  
 DISTRICT MANAGER

This permit replaces AC53-5043

State of Florida  
Department of Environmental Regulation

OPERATION PERMIT CONDITIONS  
FOR AIR POLLUTION SOURCES

Permit No.: A053-7025

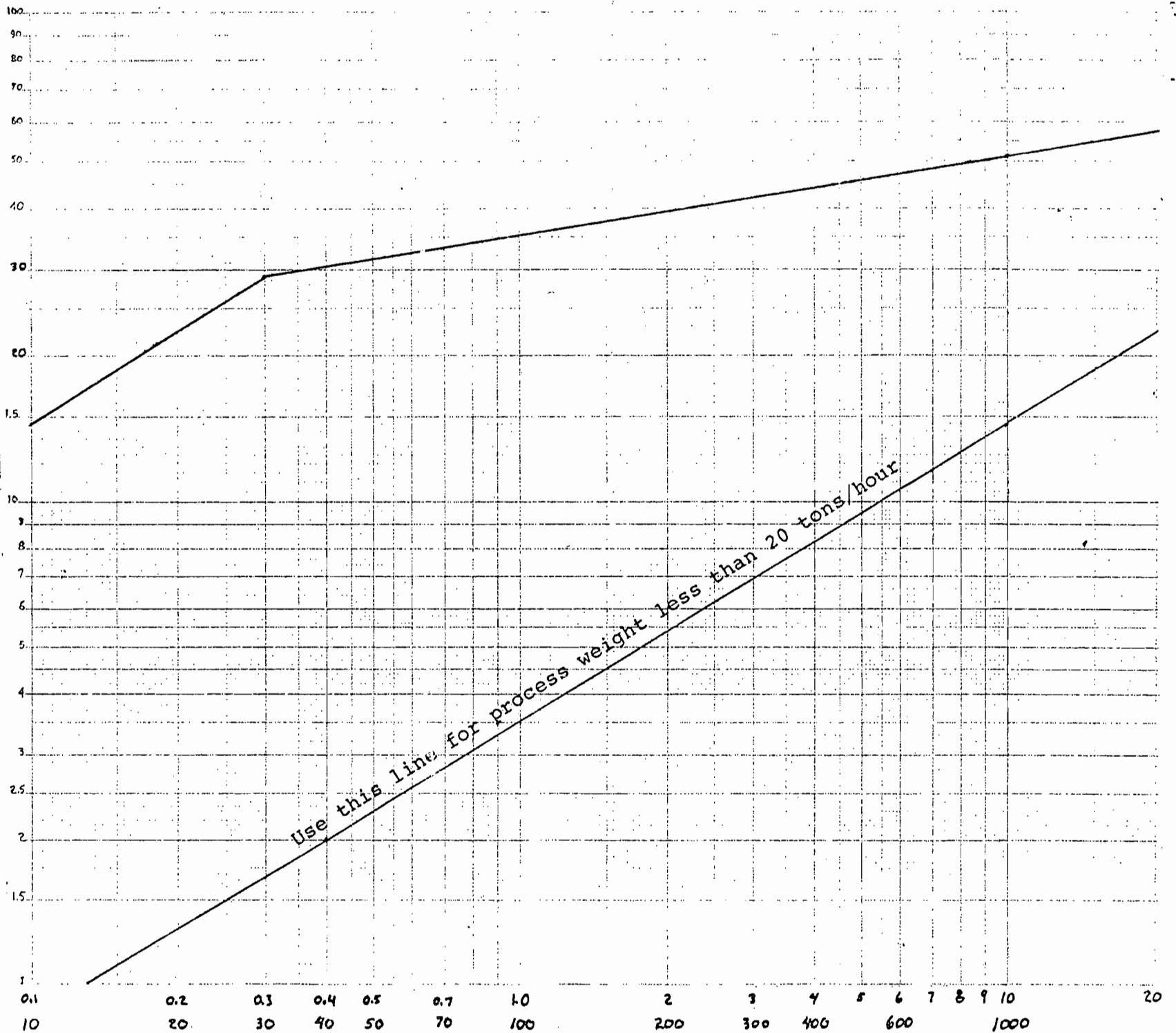
Date: August 22, 1978

An (X) indicates applicable conditions

- (X) 1. The permit holder must comply with Florida Statute, Chapter 403 and the applicable Chapters of the Department of Environmental Regulation in addition to the conditions of this permit (Chapter 403.161(1)(b), Florida Statutes).
- (X) 2. Test the emissions for the following pollutant(s) at intervals of six months from the date of this permit and submit a copy of test data to the District Engineer of this agency within fifteen days of such testing (Chapter 17-2.07(1), Florida Administrative Code (F.A.C.) ).
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Particulates | <input type="checkbox"/> Sulfur Oxides        |
| <input type="checkbox"/> Fluorides               | <input type="checkbox"/> Nitrogen Oxides      |
| <input type="checkbox"/> Plume Density           | <input type="checkbox"/> Hydrocarbons         |
|  | <input type="checkbox"/> Total Reduced Sulfur |
- (X) 3. Testing of emissions must be accomplished at approximately the rates as stated in the application. Failure to submit the input rates or operation at conditions which do not reflect actual operating conditions may invalidate the data (Chapter 403.161(1)(c), Florida Statutes).
- ( ) 4. Submit for this source quarterly reports showing the type and monthly quantities of fuels used in the operation of this source. Also state the sulfur content of each fuel (Chapter 17-4.14, F.A.C.).
- (X) 5. Submit for this facility, each calendar year, on or before March 1, an emission report for the preceding calendar year containing the following information as per Chapter 17-4.14, F.A.C.
- (A) Annual amount of materials and/or fuels utilized.
  - (B) Annual emissions (note calculation basis).
  - (C) Any changes in the information contained in the permit application.

- (X) 6. In the event the permittee is temporarily unable to comply with any of the conditions of the permit, the permittee shall immediately notify the District Office of the D.E.R. as per Chapter 17-4.13, F.A.C. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement actions by the Department.
- (X) 7. According to the Process Weight Table within Chapter 17-2.04(2), F.A.C., the maximum allowable emission rate of particulate matter for a process rate of 120 tons/hour is 36.8 pounds/hour. At lesser process rates, the allowable emission rates can be determined from the graph.
- ( ) 8. This permit is associated with a Development of Regional Impact (D.R.I.). It does not waive any other permits that may be required from this or any other state, federal, or local agency.
- (X) 9. Issuance of this permit does not indicate an endorsement or approval of any other required permits by this Department.

POUNDS OF PARTICULATES



PROCESS WEIGHT TABLE

PROCESS WEIGHT TONS/HOUR

7-28-78  
A053-7025 RC



DER

JUL 28 1978

SOUTHWEST DISTRICT  
TAMPA

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL REGULATION  
APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

Source Type:  Air Pollution  Incinerator  
Application Type:  Construction  Operation  Modification  Renewal of DER Permit No. \_\_\_\_\_  
Company Name: INTERNATIONAL MINERALS & CHEMICAL CORP. County: POLK  
Identify the specific emission point source(s) addressed in this application (i.e.: Lime Kiln No. 4 with Venturi Scrubber; Peaking Unit No. 2, Gas Fired): AFI PLANT WITH 3 DPG VENTURI/CROSSFLOW SCRUBBERS VENTING INTO COMMON STACK.  
Source Location: Street: P. O. BOX 1035 City: MULBERRY, FL. 33860  
UTM: East 396.7 North 3079.4  
Latitude: \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_"N. Longitude: \_\_\_\_\_° \_\_\_\_\_' \_\_\_\_\_"W.  
Appl. Name and Title: THOMAS L. CRAIG, VICE PRESIDENT & GENERAL MANAGER  
Appl. Address: 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 INTERNATIONAL MINERALS & CHEMICAL CORP.  
I certify that the statements made in this application for a OPERATION 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 provisions 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 nontransferable and I will promptly notify the Department upon sale or legal transfer of the permitted establishment.

THOMAS L. CRAIG  
Name of Person Signing (please Type or Print)

Thomas L. Craig VICE PRES. & GEN. MGR.  
Signature of the Owner or Authorized Representative and Title  
Date: 7-25-78 Telephone No.: 813-428-2531

\*Attach a letter of authorization.

B. PROFESSIONAL ENGINEER REGISTERED IN FLORIDA

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 judgement, 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 the applicant a set of instructions for the proper maintenance and operation of the pollution control facilities and, if applicable, pollution sources.

Signature: Craig A. Pflaum  
Name: CRAIG A. PFLAUM  
(Please Type)

Mailing Address: P. O. BOX 1035  
MULBERRY, FL. 33860

Company Name: INT'L. MIN. & CHEM. CORP.  
Florida Registration Number: 18595

Telephone No.: 1-813-428-2531  
Date: 7-25-78

(Affix Seal)

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.

GRANULATION PLANT (GRANULATION, DRYING, SCREENS, COOLING AND CONVEYING)

FOR THE PRODUCTION OF 420,000 TPY ANIMAL FEED INGREDIENTS. POLLUTION

CONTROL EQUIPMENT TO CONSIST OF 3 DAVY POWERGAS VENTURI/CROSSFLOW SCRUBBERS

VENTING INTO A COMMON STACK.

B. Schedule of Project Covered in this Application (Construction Permit Application Only).

Start of Construction: \_\_\_\_\_ Completion of Construction: \_\_\_\_\_

C. Costs of Construction. (Notes: show breakdown of estimated costs only for individual components/units of the project serving pollution control purpose. Information on actual costs shall be furnished with the application for operation permit.)

TOTAL INSTALLED COST FOR (3) THREE DAVY POWERGAS SCRUBBERS - \$2,500,000.

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

PERMIT #AC53-5043 ISSUED 6/7/76 EXPIRES 12/30/78.

E. Is the emission point considered to be a New\* or Existing\* source, as defined in Chapter 17-2.02(5) & (6), Florida Administrative Code?  New  Existing

F. 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  No

G. Normal Equipment Operating Time: hrs/day: 24 ; days/wk: 6 ; wks/yr: 50 ; if seasonal, describe: \_\_\_\_\_

\*Note

New Source: any source which came into existence, began operation or construction, or received a permit for the letter on or after January 18, 1972.

Existing Source: any source in existence, operating or under construction (or with a permit to construct) prior to January 18, 1972.



**SECTION III: AIR POLLUTION SOURCES & CONTROL DEVICES**

(other than incinerators)

**A. Raw Materials and Chemicals Used in Your Process:**

Description	Utilization Rate lbs./hr.	Relate to Flow Diagram
PHOSPHORIC ACID AND LIMESTONE	120 TPH	GRANULATOR
PHOSPHORIC ACID AND AMMONIA	65 TPH	GRANULATOR

**B. Process Rate:**

- 1) Total Process Input Rate (lbs./hr.): 120 TPH
- 2) Product Weight (lbs/hr): 120 TPH

**C. Airborne Contaminants Discharged:**

Name of Contaminant	Actual Discharge*		Allowed Discharge Rate Per Ch. 17-2, F.A.C.**	Allowable Discharge*** (lbs./hr.)	Relate to Flow Diagram
	lbs./hr.	T/yr.			
PARTICULATES	23.0		PROCESS WT.	36.8	STACK
SO2	300	---	-----	--	STACK

**D. Control Devices:**

Name and Type (Model and Serial No.)	Contaminant	Efficiency†	Range of Particles Size Collected (in microns)	Basis for Efficiency††
DPG VENTURI/CROSS- FLOW SCRUBBERS	PARTICULATES	99	3-5	DESIGN

\*Estimate only if this is an application to construct.

\*\*Specify units in accordance with emission standards prescribed within Section 17-2.04, F.A.C. (e.g. Section 17-2.04(6)(e)1.a. specifies that new fossil fuel steam generators are allowed to emit particulate matter at a rate of 0.1 lbs. per million BTU heat input computed as a maximum 2-hour average.)

\*\*\*Using above example for a source with 260 million BTU per hour heat input:  $\frac{0.1 \text{ lbs}}{\text{MMBTU}} \times \frac{260 \text{ MMBTU}}{\text{hr.}} = 26 \text{ lbs./hr.}$

†See Supplemental Requirements, page 5, number 2.

††Indicate whether the efficiency value is based upon performance testing of the device or design data.

E. Fuels:

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg./hr.	Max./hr.	
#6 FUEL OIL	5600 PPH	7200 PPH	135 MMBTU/HR

\*Units: Natural Gas - MMCF/hr.; Fuel Oils, Coal - lbs./hr.

Fuel Analysis:

Percent Sulfur: 2.5% Percent Ash: \_\_\_\_\_

Density: 8 lb./gal.

Heat Capacity: \_\_\_\_\_ BTU/lb. 149,000 BTU/gal.

Other Fuel Contaminants: \_\_\_\_\_

F. If applicable, indicate the percent of fuel used for space heating: NA Annual Average: \_\_\_\_\_ Maximum: \_\_\_\_\_

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

ALL LIQUID WASTE TO GYPSUM POND.

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

Stack Height: 172 (BLOWER DISCHARGE) ft. Stack Diameter: 8 ft.

Gas Flow Rate: 130,000 ACFM Gas Exit Temperature: 120 °F

Water Vapor Content: 5-10 %

SECTION IV: INCINERATOR INFORMATION

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: \_\_\_\_\_

Total Weight Incinerated (lbs./hr.): \_\_\_\_\_ Design Capacity (lbs./hr.): \_\_\_\_\_

Approximate Number of Hours of Operation per Day: \_\_\_\_\_, days/week: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Date Constructed: \_\_\_\_\_ Model No.: \_\_\_\_\_

	Volume (ft.) <sup>3</sup>	Heat Release (BTU/hr.)	Fuel		Temp. (°F)
			Type	BTU/hr.	
Primary Chamber					
Secondary Chamber					

Stack Height: \_\_\_\_\_ ft. Stack Diameter: \_\_\_\_\_ Stack Temp.: \_\_\_\_\_ °F

Gas Flow Rate: \_\_\_\_\_ ACFM \_\_\_\_\_ DSCFM\*

\*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 Device: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Ultimate Disposal of Any Effluent Other Than That Emitted From the Stack (scrubber water, ash, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

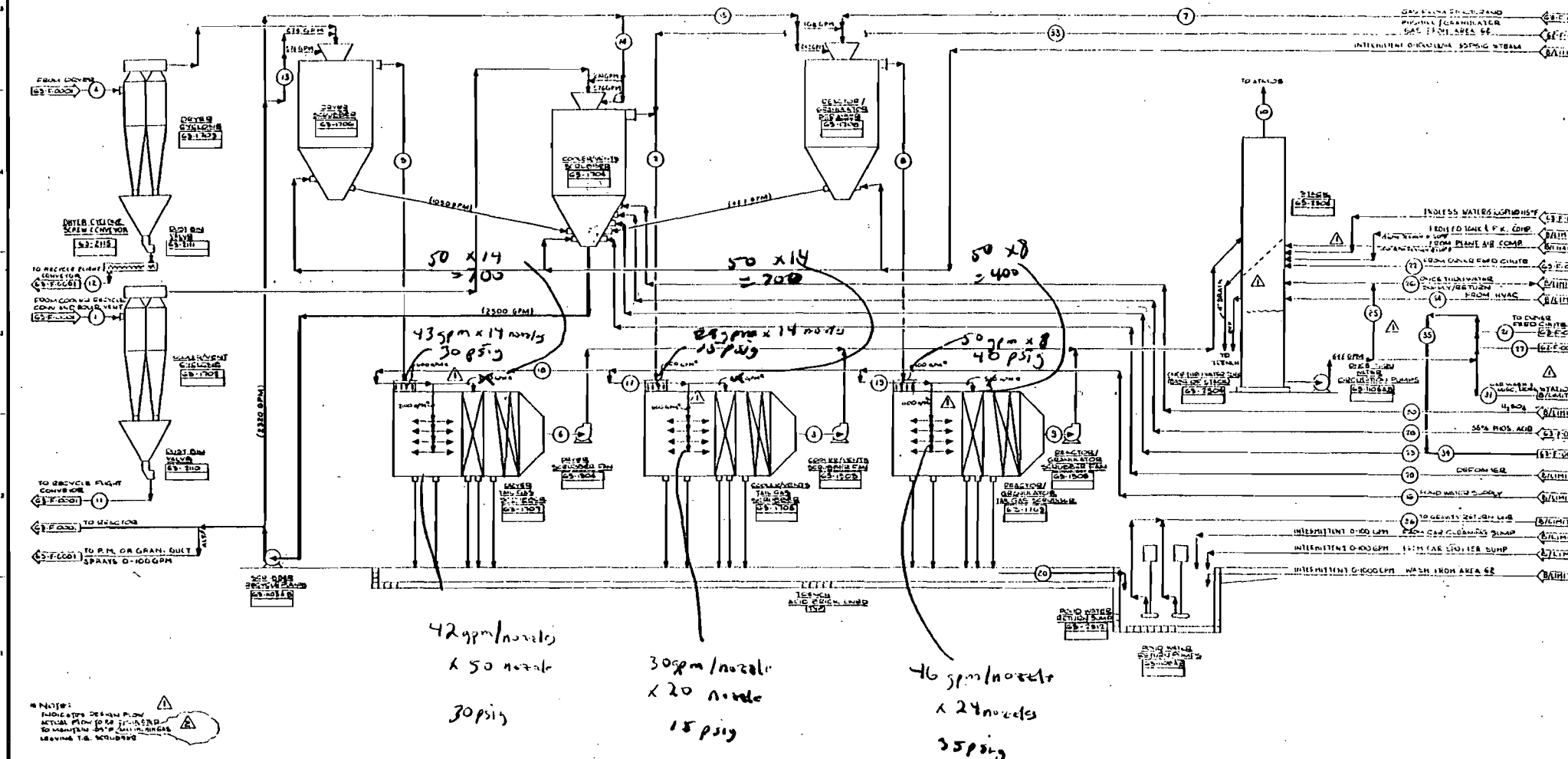
**SECTION V: SUPPLEMENTAL REQUIREMENTS**

Please Provide the Following Supplements Required For All Pollution Sources:

1. Total process input rate and product weight - show derivation.
2. Efficiency estimation of control device(s) - show derivation. Include pertinent test and/or design data.
3. An 8 1/2" x 11" flow diagram, which will, without revealing trade secrets, identify the individual operations and/or processes. Indicate where raw materials enter, where solid and liquid waste exit, where gaseous emissions and/or airborne particles are evolved and where finished products are obtained.
4. An 8 1/2" x 11" plot plan of facility showing the exact location of manufacturing processes and outlets for airborne emissions. Relate all flows to the flow diagram.
5. An 8 1/2" x 11" plot plan showing the exact 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 USGS topographic map.)
6. Description and sketch of storm water control measures taken both during and after construction.
7. An application fee of \$20.00, unless exempted by Chapter 17-4.05(3), FAC, made payable to the Department of Environmental Regulation.
8. With construction permit application, include design details for control device(s). Example: for baghouse, include cloth to air ratio; for scrubber, include cross-sectional sketch; etc.
9. Certification by the P.E. with the operation permit application that the source was constructed as shown in the construction permit application.



STREAM NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34	35	
DESCRIPTION	GAS TO CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS TO CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	GAS FROM CONVEYER	
AVG MATERIAL FLOW	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	ACFM	
DIAGNOSIS (21.5 IN CA)	71,500	71,000	15,000	82,000	74,000	53,100	27,300	25,900	17,600	14,600	10,100	10,100	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
DYNAMOS (21.5 IN CA)	71,500	71,000	15,000	82,000	74,000	53,100	27,300	25,900	17,600	14,600	10,100	10,100	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850
DESIGN FLOW	71,600	71,000	15,000	82,000	74,000	53,100	27,300	25,900	17,600	14,600	10,100	10,100	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850	850



<p>42 gpm/nozzle x 50 nozzles 30 psig</p> <p>30 gpm/nozzle x 20 nozzles 15 psig</p> <p>46 gpm/nozzle x 24 nozzles 35 psig</p>	<p>NOTE: INDICATES DESIGN FLOW ACTUAL FLOW FOR DESIGN TO MAINTAIN 50% DUST EFFICIENCY LEAVING T.B. SCRUBBER</p>	<p>DESIGNER: J.S.M.</p> <p>CHECKED: J.S.M.</p> <p>DATE: 11/17/66</p>	<p>DATE: 11/17/66</p> <p>SCALE: 1/4" = 1'-0"</p>	<p><b>Davy Powergas, Inc.</b></p> <p>INTERNATIONAL MINERALS &amp; CHEMICAL CORPORATION ANIMAL FEED INGREDIENTS FACILITY - NEW WALKERS, IL BIOMOS &amp; DYNAFOS SCRUBBING PROCESS FLOW DIAGRAM</p>	<p>DATE: 11/17/66</p> <p>SCALE: 1/4" = 1'-0"</p> <p>4241-63-F-0002</p>
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STACK CALCULATIONS - DATA SHEET

STACK AFI DATE MAY 22, 1978 TIME \_\_\_\_\_

ORSAT \_\_\_\_\_ % CO<sub>2</sub>  
 \_\_\_\_\_ % CO  
 \_\_\_\_\_ % O<sub>2</sub>  
 \_\_\_\_\_ % N<sub>2</sub>

RUN #3

$M_D = 0.44 (\% CO_2) + 0.32 (\% O_2) + 0.28 (\% N_2 + CO)$  28.84

D 8 FT. DIAMETER, A =  $3.14159 D^2/4$  50.27 FT<sup>2</sup> AREA

DRY BULB TEMP T<sub>S</sub> 116 °F

WET BULB TEMP 115 °F

M .072 # H<sub>2</sub>O/# DRY AIR FROM PSYCHROMETRIC CHART

$B_{WD} = M/(M+(18/M_D))$  .103

$M_S = 18 (B_{WD}) + M_D (1-B_{WD})$  27.73

P<sub>B</sub> 30.00 " Hg

P<sub>V</sub> .20 " H<sub>2</sub>O

$P_S = P_B - (P_V/13.6)$  29.99 " Hg

ΔH 1.79 " H<sub>2</sub>O

$P_M = P_B + (\Delta H/13.6)$  30.13 " Hg

T<sub>S</sub> 576 °R

T<sub>M</sub> 576 °R

√ΔP A 7593

V<sub>M</sub> 27.07 CF.

C<sub>P</sub> .75

W<sub>1</sub> .0462 G PARTICULATES

W<sub>2</sub> - G SO<sub>2</sub>

W<sub>3</sub> - G H<sub>2</sub>SO<sub>4</sub>

W<sub>4</sub> - G F

W<sub>5</sub> - G NH<sub>3</sub>

$V_S = 85.48 (C_P) (\sqrt{\Delta P} A) (\sqrt{T_S/P_S M_S})$  40.5 FPS

$Q_A = 60 (A) (V_S)$  122,193 ACFM

$Q_S = 17.71 (Q_A) (P_S/T_S) (1-B_{WD})$  101,063 DSCFM

$V_{MS} = 17.71 (V_M) (P_M/T_M)$  25.08 SCF

$E = 3.172 (Q_S/V_{MS})$  12,784

E<sub>1</sub> = E(W<sub>1</sub>) 591 #/DAY PARTICULATES

E<sub>2</sub> = E(W<sub>2</sub>) - #/DAY SO<sub>2</sub>

E<sub>3</sub> = E(W<sub>3</sub>) - #/DAY H<sub>2</sub>SO<sub>4</sub>

E<sub>4</sub> = E(W<sub>4</sub>) - #/DAY F

E<sub>5</sub> = E(W<sub>5</sub>) - #/DAY NH<sub>3</sub>

PLANT RATE \_\_\_\_\_

COMMENTS RUN ON DYNAFOS

\_\_\_\_\_  
 \_\_\_\_\_





STACK CALCULATIONS - DATA SHEET

✓ 1st 9:30 a.m.

STACK AFI

DATE 6-6-78

TIME 2nd 10:45 a.m.

ORSAT — % CO2

— % CO

— % O2

— % N2

$M_D = 0.44 (\% \text{ CO}_2) + 0.32 (\% \text{ O}_2) + 0.28 (\% \text{ N}_2 + \text{CO})$  28.84

D 8.0 FT. DIAMETER, A =  $3.14159 D^2 / 4$  50.27 FT<sup>2</sup> AREA

DRY BULB TEMP  $T_S$  126 °F

WET BULB TEMP 123 °F

M .09 # H2O / # DRY AIR FROM PSYCHROMETRIC CHART

$B_{WO} = M / (M + (18 / M_D))$  .126

$M_S = 18 (B_{WO}) + M_D (1 - B_{WO})$  27.47

$P_B$  30.00 " Hg

$P_V$  -.25 " H2O

$P_S = P_B - (P_V / 13.6)$  29.98 " Hg

$\Delta H$  2.3 " H2O

$P_M = P_B + (\Delta H / 13.6)$  30.17 " Hg

$T_S$  586 °R

$T_M$  572 °R

$\sqrt{\Delta P} A$  .8087

$V_M$  26.96 CF.

$C_p$  .75

$W_1$  .0354 G PARTICULATES

$W_2$  — G SO2

$W_3$  — G H2SO4

$W_4$  — G F

$W_5$  — G NH3

$V_S = 85.48 (C_p) (\sqrt{\Delta P} A) (\sqrt{T_S / P_S M_S})$  43.73 FPS

$Q_A = 60 (A) (V_S)$  131,910 ACFM

$Q_S = 17.71 (Q_A) (P_S / T_S) (1 - B_{WO})$  104,458 DSCFM

$V_{MS} = 17.71 (V_M) (P_M / T_M)$  25.18 SCF

$E = 3.172 (Q_S / V_{MS})$  13,159

$E_1 = E (W_1)$  466 #/DAY PARTICULATES

$E_2 = E (W_2)$  — #/DAY SO2

$E_3 = E (W_3)$  — #/DAY H2SO4

$E_4 = E (W_4)$  — #/DAY F

$E_5 = E (W_5)$  — #/DAY NH3

PLANT RATE 120 TPH

COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



STACK CALCULATIONS - DATA SHEET

STACK AFI

DATE 6-6-78

TIME 10:45 a.m.

ORSAT — % CO<sub>2</sub>

— % CO

— % O<sub>2</sub>

— % N<sub>2</sub>

$M_D = 0.44 (\% \text{ CO}_2) + 0.32 (\% \text{ O}_2) + 0.28 (\% \text{ N}_2 + \text{CO})$  28.84

D 8.0 FT. DIAMETER, A =  $3.14159D^2/4$  50.27 FT<sup>2</sup> AREA

DRY BULB TEMP T<sub>S</sub> 126 °F

WET BULB TEMP 123 °F

M .09 # H<sub>2</sub>O/# DRY AIR FROM PSYCHROMETRIC CHART

$B_{WD} = M/(M+(18/M_D))$  .126

$M_S = 18 (B_{WD}) + M_D (1-B_{WD})$  27.47

P<sub>B</sub> 30.00 " HG

P<sub>V</sub> -.25 " H<sub>2</sub>O

$P_S = P_B - (P_V/13.6)$  29.98 " HG

ΔH 2.5 " H<sub>2</sub>O

$P_M = P_B + (\Delta H/13.6)$  30.18 " HG

T<sub>S</sub> 586 °R

T<sub>M</sub> 576 °R

$\sqrt{\Delta P} A$  .8546

V<sub>M</sub> 28.83 CF.

C<sub>P</sub> .75

W<sub>1</sub> .0405 G PARTICULATES

W<sub>2</sub> — G SO<sub>2</sub>

W<sub>3</sub> — G H<sub>2</sub>SO<sub>4</sub>

W<sub>4</sub> — G F

W<sub>5</sub> — G NH<sub>3</sub>

$V_S = 85.48 (C_P) (\sqrt{\Delta P} A) (\sqrt{T_S/P_S M_S})$  46.22 FPS

Q<sub>A</sub> = 60 (A) (V<sub>S</sub>) 139,397 ACFM

Q<sub>S</sub> = 17.71(Q<sub>A</sub>) (P<sub>S</sub>/T<sub>S</sub>) (1-B<sub>WD</sub>) 110,387 DSCFM

V<sub>MS</sub> = 17.71(V<sub>M</sub>) (P<sub>M</sub>/T<sub>M</sub>) 26.75 SCF

E = 3.172 (Q<sub>S</sub>/V<sub>MS</sub>) 13,090

E<sub>1</sub> = E(W<sub>1</sub>) 530 #/DAY PARTICULATES

E<sub>2</sub> = E(W<sub>2</sub>) — #/DAY SO<sub>2</sub>

E<sub>3</sub> = E(W<sub>3</sub>) — #/DAY H<sub>2</sub>SO<sub>4</sub>

E<sub>4</sub> = E(W<sub>4</sub>) — #/DAY F

E<sub>5</sub> = E(W<sub>5</sub>) — #/DAY NH<sub>3</sub>

PLANT RATE 120 TPH

COMMENTS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



JUDSON H. DREWRY

Vice President

Florida Operations



INTERNATIONAL MINERALS & CHEMICAL CORPORATION

April 2, 1976

Mr. T. L. Craig  
Vice President & General Manager  
IMC Chemicals Corp.  
Post Office Box 1035  
Mulberry, Florida 33860

Dear Tom:

This letter is your authorization to sign on behalf of IMC Chemicals Corp. the various applications for permits, specifically the applications for operating permits from the Florida Department of Environmental Regulation.

Very truly yours,

J. H. Drewry

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STATE OF FLORIDA

DEPARTMENT OF STATE



STATE OF FLORIDA )
) SS
Department of State )

I, RICHARD (DICK) STONE, Secretary of State of the State of Florida, do hereby certify from the records of this office that

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

a corporation organized and existing under the laws of the State of NEW YORK is duly authorized to transact business within the State of Florida.

I further certify that said corporation has paid all fees and taxes due this office to date; has otherwise fully complied with the corporation laws administered by this office; and that its permit is in full force and effect.

GIVEN under my hand and the Great Seal of the State of Florida, at Tallahassee, the Capital, this the 10TH day of AUGUST, A.D., 19 73.



Richard (Dick) Stone

SECRETARY OF STATE