

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301



BOB GRAHAM
GOVERNOR
JACOB D. VARN
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

MEMORANDUM

CERTIFIED MAIL

TO: Mr. Thomas L. Craig, New Wales Chemicals, Inc.
Mr. Craig A. Pflaum, New Wales Chemicals, Inc.
Mr. P. David Puchaty, DER - Southwest District

FROM: Mr. Steve Smallwood, BAQM

DATE: March 28, 1980

SUBJ: New Wales Chemical Company Application for Permit to
Construct Diammonium Phosphate Plant

Attached is one copy of the application, technical evaluation, statement of the Department's intent regarding the application and proposed permit to construct a diammonium phosphate plant with venturi-tailgas scrubbers and bag collectors at the phosphate fertilizer manufacturing complex located near the intersection of highway 640 and the Polk/Hillsborough County line.

Please send any applicable comments concerning this action, in writing, to Willard Hanks of the Bureau of Air Quality Management, Tallahassee.

SS:caa

Attachment

cc: Jim Estler (w/o attachments)

CONSTRUCTION NOTICE

The Florida Department of Environmental Regulation (DER) has received an application from and intends to issue a Construction Permit to New Wales Chemicals, Inc. for the construction of a Diammonium Phosphate (DAP) Plant to be located on Highway 640 at the Hillsborough County line in Polk County, Florida. A determination of Best Available Control Technology was required. Copies of the application, BACT Determination, Technical Evaluation, and Departmental Intent are available for inspection at the following offices:

Department of Environmental Regulation	DER Bureau of Air Quality
Southwest District	Management
7601 Highway 301, North	2600 Blair Stone Road
Tampa, Florida 33610	Tallahassee, Florida 32301

Comments on this action shall be submitted in writing to Willard Hanks of the Tallahassee Office, within 30 days of this notice.

To appear in: Tampa Tribune
on: 4/1/1980

Technical Evaluation
and
Preliminary Determination

New Wales Chemicals, Inc.
Polk County, Florida

Construction Permit
Application Number:
AC 53-23546

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting
March 25, 1980

I. PROPOSED DEPARTMENT ACTION

The Department intends to issue a permit to New Wales Chemicals, Inc. for the construction of a diammonium phosphate manufacturing facility at their chemical complex in Polk County near the intersection of highway 640 and the Polk/Hillsborough County line is subject to public comments received as a result of this public notice. ?

Any person wishing to file comments on this proposed action, may do so by submitting such comments in writing to:

Mr. Willard Hanks
 Florida Department of Environmental
 Regulation
 Twin Towers Office Building
 2600 Blair Stone Road
 Tallahassee, Florida 32301

Any comments received within thirty days after publication of this notice will be considered and noted in the Department's final determination.

Any person whose substantial interest would be affected by DER's intended action on this application may request an administrative hearing by filing a petition as set forth in 14 days of the date of this notice with:

Ms. Mary Clark
 Office of General Counsel
 Department of Environmental Regulation
 2600 Blair Stone Road
 Tallahassee, Florida 32301

II. SUMMARY OF EMISSIONS AND AIR QUALITY ANALYSIS:

a. The regulated air pollutants from this source will be particulate, sulfur dioxide and fluoride. Emissions of these pollutants will be through three stacks, each train (dual manufacturing facilities) will be served by a scrubber system having a stack. There will be a common cooler for both trains with a bag collector control system discharging through another stack. The permitted emission including those determined by BACT, are in compliance with Chapter 17-2, FAC and are listed in the following table:

Permitted Emissions

Unit	Max Capacity TPH DAP	Particulate			SO ₂			Fluorides	
		lbs/hr	lbs/* TP ₂ O ₅ Feed	T/yr	lbs/hr	lbs/* TP ₂ O ₅ Feed	T/yr	lbs/TP ₂ O ₅	T/yr
East Train	70	14.1	0.433	55.84	22	0.7	87.12	0.06	7.73
West Train	70	14.1	0.433	55.84	22	0.7	87.12	0.06	7.73
Common	140	4.5	-	17.82	-	-	174.24	-	1546

* Total particulate emissions from 2 DAP manufacturing facilities and common cooler is equal to 0.5 lbs/ton P₂O₅ feed which was determined to be BACT.

NOK ?

B. The proposed location of the facility is unclassified for the criteria pollutant particulate and attainment for the remaining pollutants. It is in the "area of influence" of the Hillsborough County particulate nonattainment area. Therefore, modeling of the requested emissions from the proposed facility along with a reduction of the allowable emissions from the existing sources was required to determine the impact of the plant. The modeling showed the maximum particulate impact will be 36.6 ug/m^3 for a 24 hour period and 11 ug/m^3 for the annual average. These impacts are below the allowable increase, 37 ug/m^3 for particulate over a 24 hour period and 19 ug/m^3 for the annual average, under Chapter 17-2.04(1)(b). No ambient air violations are predicted to occur.

III. SYNOPSIS OF APPLICATION:

a. Applicant.

New Wales Chemicals, Inc.
P. O. Box 1035
Mulberry, Florida 33860

b. Description of Project and Controls

The proposed facility consists of two TVA type diammonium phosphate plants served by one common product cooler. The facility will manufacture DAP fertilizer (18-46-0) from anhydrous ammonia, phosphoric, and sulfuric acids; dry (using #6 fuel oil) and granulate the DAP to a specific size; cool the product and then convey it to storage for shipping.

Each plant will be equipped with ^{two} this coaxial venturi scrubber (scrubber liquor is phosphoric acid) which will be followed by a vertical packed bed (scrubber liquor is process water). One scrubber controls emissions from the reactor and granulator. The other scrubber controls emissions from the dryer. A separate stack will serve these controls for each plant. The common product cooler will be controlled by a bag collector system which has its own stack. The pollution control equipment will reduce the total emissions from the proposed facility to a level that is in compliance with state regulations.

c. Description of Process, Proposed Process Rate and Emission Rate

The TVA type DAP facility planned by New Wales Chemicals takes phosphoric acid (70 TPH P_2O_5), sulfuric acid (4.5GPM) and anhydrous ammonia (30 TPH) and combines them in a reactor to form a slurry. This slurry is then pumped to the granulator where it is mixed with more ammonia and a recycle stream of dry DAP. The wet DAP is then dried in a rotary dryer using #6 fuel oil (max 2.5% sulfur). The dry material is conveyed to a set of screens that separates it into fines, product and coarse sizes. The coarse material is ground in a mill and, along with the fines, returned to the granulator as the recycle stream. The product (140 TPY) is then conveyed to

the common rotary cooler before being transferred to storage. The maximum operating time of each facility is 7,920 hours per year.

Emissions from the granulator and from the closed conveying and process equipment vents first pass through a dry cyclone. They are then sent to a coaxial venturi scrubber. Fumes from the reactor which contain ammonia and fluoride, are sent directly to a coaxial venturi scrubber using phosphoric acid to remove the ammonia. The acid is then sent to the reactor. All the fumes leaving the venturi scrubber then pass through a vertical packed bed scrubber where they contact process water which removes fluorides. The process water is returned to the process water system.

The vented fumes from the dryer, which contain particulate matter and fluoride, pass through a dry cyclone which removes part of the particulate matter. The emissions then go to the dryer coaxial scrubber where phosphoric acid is used to remove more particulates. This acid is part of the raw material feed to the reactor. The discharge from the venturi scrubber is then passed through the dryer packed bed scrubber where process water removes additional particulates and fluorides. Water from the scrubber is recycled to the process water system. The emissions from the two packed bed scrubbers (dryer control and reactor granulator controls) are discharged through a 6 foot diameter 120 foot high stack. Each train, east and west as they are referred to in the blueprint, is identical in process and controls.

After the DAP has been dried, it is conveyed to the common product cooler system which served both trains. This part of the process has its own abatement equipment consisting of two bag collectors. They are connected in parallel with vents so that one collector can be shutdown for cleaning while the other remains in operation. Particulate matter removed by the bag collectors is added to the system. Emissions from the bag collectors are then discharged into the atmosphere through a 6' in diameter and 120' high stack.

The following table outlines the proposed emission rates for the new source.

Pollutant	Estimated Potential Emission Rate		Proposed Permitted Emissions	
	lbs/hr.	T/yr	lb/hr.	T/yr
Particulate	11,480	45,461	32.7	129.5
Fluorides	7,000	27,720	3.91	16.46
Ammonia	60,000	237,600	NO LIMIT	
SO ₂	112**	444	44	174.2
→ NO _x	112*	44	(NO LIMIT)	

* From process equipment per AP 42, Compilation of Air Pollutant Emission Factors

** Potential emission from 2.5% sulfur in #6 fuel oil at 2 gal/TDAP

IV. RULE APPLICABILITY

The proposed project is located in the area of influence of the Hillsborough County Particulate Nonattainment Area. Air quality modeling has been performed to predict the impact on the nonattainment area of the proposed allowable particulate emissions from each new source. No impact above significance levels is predicted. Therefore, none of the proposed sources is subject to the nonattainment provisions of 17-2.17, FAC.

The proposed project is a major emitting facility for the pollutants particulate and sulfur dioxide. Therefore, with respect to particulate and sulfur dioxide, the facility is subject to the requirements of 17-2.04, Prevention of Significant Deterioration (PSD), and 17-2.03, Best Available Control Technology (BACT). Mathematical modeling of maximum impact of permitted particulate and sulfur dioxide emissions for time periods of 3 hour (SO₂ only), 24 hour and annual averages was performed. The model submitted to the Department was based on specific existing sources at the plant reducing their allowable emissions to the present actual emissions. The permits for these specified sources will be modified to indicate this reduction in allowable emissions and maintaining compliance at the new emission levels will become part of the special provisions of the construction permit for the new DAP facility. By reducing the allowable emissions of previous sources within the New Wales Chemical complex, the provisions of 17-2.04 (PSD rule) will be met.

V. FINDINGS AND PERMIT CONDITIONS

a. Best Available Control Technology has been determined as required according to 17-2.03, FAC. Emission limitations are:

0.5 pounds per ton P₂O₅ Feed and 32.7 pounds per hour particulate

0.6 pounds of fluoride per ton P₂O₅ Feed to the plant.

0.7 pounds per ton P₂O₅ Feed and 44 pounds per hour of sulfur dioxide.

These emissions are based on each 70 TPH DAP plant having 2 venturi scrubbers followed by 2 tailgas scrubbers, The common cooler facility will be controlled by 2 bag collectors.

b. The total permitted emissions through both DAP trains (east and west) and the product cooler facility will be:

Pollutant	lbs/ton P ₂ O ₅ Feed	lbs/hr	tons/yr
Particulate	0.50	32	128.9
Fluoride	.06	3.9	16.6
Sulfur dioxide	0.70	44	174.2

c. Maximum operation time will be 7,920 hours per year, total for the facility.

d. Maximum production per DAP train will be 70 tons per hour DAP (18-46-0) product. The maximum DAP handled by the cooler will be 140 TPH (18-46-0).

e. The fuel oil (#6) will not have a greater sulfur content than 2.5%.

f. On the basis of air quality modeling performed in accordance with applicable Department guidance, particulate and sulfur dioxide emissions from the proposed facilities will not contribute to ground level concentration in excess of any ambient air quality standard or PSD Class II increment. Such emission will not have a significant impact on any particulate matter or sulfur dioxide nonattainment area or PSD Class I area. This is based on the model being run with the modified allowable (reduced from the existing permits) emissions from existing sources. Compliance with the modified emission rates will be included in the construction permits pursuant to the issuance of operating permits for the DAP trains and product cooler. Table I lists the process equipment effected and modified emission rate. (on following page).

g. Fugitive emissions from the plants will be controlled by sealing and venting all fumes from the process, conveying and storage equipment to pollution control devices. This includes potential sources of fluoride emission, such as scrubber seal tanks. They are to be sealed and/or vented to control devices to remove fluorides.

h. Construction should commence and be completed within a reasonable time based on the projections included in the application.

i. Construction should reasonably conform to the plans submitted.

Table I

Particulate Emissions

Modifications to Existing Operating Permits

<u>Permit #</u>	<u>Source</u>	<u>Existing Permitted Emission Rate - lbs/hr.</u>	<u>Modified Permitted Emission Rate - lbs/hr.</u>
AO 53-5964	Rail Car Gnd. Rock Unload	31.3	4.8
AO 53-5963	Dry Rock Silo	44.3	10.0
AO 53-5967	Rock Grinding East	41.3	10.0
AO 53-5981	Dryer Prod. Best Trans.	44.0	10.0
AO 53-5981	Wet Rock Dryer	46.1	25.6
AO 53-5970	Phos. Acid Rock Bin West	41.3	5.0
AO 53-5974	GTSP Rock Bin	28.3	4.8
AO 53-5968	Phos. Acid Rock Bin East	41.3	5.0
AO 53-7030	Multiphos. Ship Bind	9.7	3.6
AO 53-7027	Limestone Stg. Silo	33.3	3.6
AO 53-7023	Silica Handling	15.0	1.6
AO 53-7029	AFI Stg. Silos (2)	72.0	9.5
AO 53-5965	Fert. Products Ship.	41.7	20.0
AO 53-5133	AFI Limestone Feed Silo	34.5	3.6
AO 53-16911	AFI Truck Ship	40.4	3.6
AO 53-16908	AFI Rail Ship	40.3	3.6
AO 53-16905	Soda Ash Unloading	5.7	3.6
AO 53-16907	Multiphos Cooler A	15.0	4.8
AO 53-16903	Multiphos Cooler B	15.0	4.8
AO 53-22670	Multiphos Sizing	23.0	1.6
AO 53-07026	Multiphos Sizing	23.0	1.6
AO 53-19051	Multiphos Glass	18.4	3.6
AO 53-226661	Second Product L/O	77.2	3.6
AO 53-5969	West Phosphate Rock Grinding Plant		0.0* (to be shut down)
AO 53-5970	West Rock Feed Bin		0.0* (to be shut down)
AO 53-5980	Dry Rock Storage Bottom Load		0.0* (to be shut down)

* to be shut down

j. The applicant should submit quarterly reports on construction progress until the permit to construct expires or is replaced by a permit to operate.

k. The owner shall install, calibrate, maintain, operate, and record data from flow monitoring devices which measure total phosphorus input to each plant. The owner shall keep records on daily P_2O_5 feed and continuously measure and record the total pressure drop across each scrubbing system. The pressure drop across the venturi scrubbers must be 12 in. H_2O or greater during plant operations.

l. Before the construction permit expires, both DAP manufacturing facilities will be sampled for particulate, fluoride and sulfur dioxide. The bag collectors serving the product cooler will be sampled for particulate and opacity. Test methods will be EPA reference methods 1, 2, 3, 5, 6, 13A or 13 B as published in 40 CFR 60, Appendix A, dated July 1, 1978 or other state approved methods. The Department and EPA will be notified 30 days in advance of the scheduled tests. During the compliance test, the plant will operate at permitted capacity (+10%) with the dryers burning #6 fuel oil with 2.5% ($\pm 10\%$) sulfur content. P_2O_5 feed pH of the scrubber solution and the pressure drop across the scrubbers will be normally operated. This information along with test data and results will be reported to the Department.

m. The company's ambient air station measuring TSP will be operated on a 6 day schedule as established by DER and the data reported to the DER office in Tampa on a quarterly basis.

n. Three separate and complete applications for permit to operate will be submitted by the owner. One permit application for each of the DAP trains and one separate permit application for the product cooler system.