

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400



BOB MARTINEZ
GOVERNOR
DALE TWACHTMANN
SECRETARY

February 26, 1987

Kathy Campbell
Librarian
Bartow Public Library
315 Parker Street
Bartow, Florida 33830

RE: Preliminary Determination - International Minerals and
Chemical Corporation, New Wales Operations - Polk County

The Bureau of Air Quality Management needs to make the enclosed information available for public inspection pursuant to Federal Prevention of Significant Deterioration Regulations (40 CFR 52.21, Paragraph (q)). A notice directing people to the library will be published in a local newspaper in the near future. The information must be available upon request for a period of at least 30 days from the notice date. At the end of the period, we will forward to you a Final Determination on the permit application.

We appreciate your help in providing this valuable public service, and your assistance does not necessarily constitute an endorsement of the project. Should you have any questions, please call me at (904)488-1344.

Sincerely,

Patty Adams
Staff Assistant
Bureau of Air Quality
Management

pa

Enclosure



KA 124-85-01

December 18, 1986

DER

DEC 22 1986

BAQM

Mr. C. H. Fancy
Deputy Chief,
Bureau of Air Quality Management
Florida Department of
Environmental Regulation
2600 Blair Stone Road
Tallahassee, FL 32301-8241

Subject: IMC-New Wales
Permit AC53-23546
No. 2 DAP Plant

Dear Mr. Fancy:

On November 10, 1986, information was forwarded to your attention through our office regarding nitrogen oxides emissions from the IMC-New Wales No. 2 DAP plant. That information was supplied in response to your letter of June 9, 1986 and confirmed much of the information presented to your staff during a meeting with IMC in your office on July 9, 1986. Subsequent to our November 10, 1986 letter, we have communicated with your staff and have been requested to supply nitrogen oxides emission data from the No. 2 DAP plant during times when the DAP dryer was fired with natural gas. IMC has conducted the required tests and is transmitting the emission data herein.

Nitrogen oxides emission tests were conducted on the No. 2 East DAP train while the dryer was fired with natural gas. The nitrogen oxides emission measurements were made with a continuous emission analyzer while the plants was operated a various production rates. The test results are summarized in the following table.

DAP Prod. Rate	Fuel (tph)	Heat Input (MMBTU/hr)	NO _x		
			(ppm)	(lb/hr)	(lb/MMBTU)
75	Gas	19.46	5.7	3.42	0.18
100	Gas	21.76	6.5	3.84	0.18
125	Gas	22.26	7.5	4.70	0.21

In considering the feasibility of natural gas as a fuel for the No. 2 DAP plant, the Department must consider that IMC-New Wales has no FERC gas allocation. Natural gas is supplied on an interruptible basis; when gas supplies become tight, there will be no natural gas available for IMC-New Wales. The Department should also recognize that prior to last year there was no gas at all available at the IMC-New Wales chemical complex.

Another factor to consider when evaluating the feasibility of natural gas is cost. The 1986-87 production planned from the No. 2 DAP plant is 830,900 tons. The planned oil consumption is 1.5 gallons per ton of DAP. The oil presently used by IMC releases 151,500 BTU per gallon. At a use rate of 1.5 gallons per ton, this relates to 2.27 therms per ton. Based on the current oil cost of \$0.32 per gallon, the annual fuel oil cost for the No. 2 DAP plant is projected to be \$398,832.

The present cost of natural gas is \$0.2531 per therm. Due to the lower net heating value of natural gas, there is an 11.7 percent penalty for using gas; i.e. to get the same net heat input to the dryer, IMC has to burn 11.7 percent more therms of natural gas than oil. This results in a projected annual fuel cost when burning gas of \$533,237; or a \$134,405 per year penalty for burning gas, if the gas is available.

The prices of oil and gas have been very volatile lately, and the real fuel costs to IMC could be quite different at the end of the year.

In addition to the nitrogen oxides emission measurements that have been conducted by New Wales and reported in our letter of November 10, 1986 and herein, New Wales has recently had nitrogen oxides emissions measurements made by the John Zink Company; the suppliers of the burners used on the two trains of the No. 2 DAP plant. Zink tested the burner on the No. 2 East plant while being fired with No. 6 oil. Zink's report has not yet been received, but preliminary data show that as nitrogen oxides emissions were reduced, the opacity of the stack increased markedly to well over 50 percent as a result of unburned fuel. Even if the opacity of emissions could be reduced when the dryer burner was adjusted to yield low nitrogen oxides emissions (or if the Department would grant a variance allowing a 50 percent opacity), the excess fuel required to operate at these conditions would result in a significant increase in annual fuel oil costs.

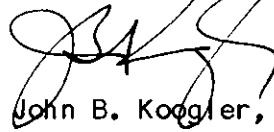
Mr. C. H. Fancy
Florida Department of
Environmental Regulation

Page 3

If there is any additional information that the Department requires or if there are any questions regarding the information provided herein, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES



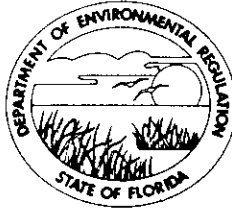
John B. Koogler, Ph.D., P.E.

JBK:app

cc: Mr. J. M. Baretincic
Mr. A. L. Girardin

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

December 9, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

John B. Koogler, Ph.D., P.E.
Koogler and Associates Environmental Services
1213 N.W. 6th Street
Gainesville, Florida 32601

Dear Dr. Koogler:

Re: IMCC - No. 2 DAP Plant

Confirming earlier conversations, the information you submitted in your November 10 letter to me along with the NOx emission data from the No. 2 DAP plant that you are presently preparing to send to the bureau will complete the application requesting relief from the current NOx standard for IMCC's No. 2 DAP plant. Our preliminary determination and technical evaluation, including the proposed BACT determination, will be distributed within 60 days of the receipt of your letter giving the measured NOx emissions from the plants.

Please call Barry Andrews or Willard Hanks at (904)488-1344 if you have any questions on this matter.

Sincerely,

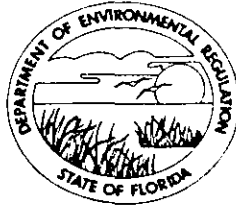
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/WH/s

cc: Mr. J. M. Baretincic

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
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TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

December 2, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. J. M. Baretincic, Manager
Environmental Services and Quality Control
International Minerals & Chemical Corporation
New Wales Operations
Post Office Box 1035
Mulberry, Florida 33860

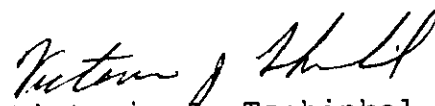
Dear Mr. Baretincic:

Re: Modification of Conditions/Permit No. AC 53-23546

The department is in receipt of your September 22, 1986, letter requesting the permit to construct your No. 2 DAP plant be extended for one year to allow more time to resolve what NOx emission standard this plant will be subject to. The department agrees that additional time is needed for this matter to be resolved. However, we are not convinced that corrective action will take one year. Therefore, the department will extend this construction permit six months. Any request for an additional extension in the future will be considered on its merits. The expiration date of permit No. AC 53-23546 is extended from December 31, 1986 to July 1, 1987.

A copy of this letter must be attached to the referenced construction permit and shall become a part of that permit.

Sincerely,


Victoria J. Tschinkel
Secretary

VJT/ks

cc: Bill Thomas, SW District



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SEP 24 1986

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INTERNATIONAL MINERALS & CHEMICAL CORPORATION

September 22, 1986

Mr. Clair Fancy
State of Florida
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32301-8241

Re: Modification of Conditions - Permit No. AC53-23546

Dear Mr. Fancy:

IMC, New Wales Operations, is hereby requesting an extension of the above referenced Construction Permit from the present expiration date of December 31, 1986 to December 31, 1987. This request is being made in order to provide adequate time to resolve the issue regarding what NO_x emission standard should apply to this plant. The plant is presently operating well within the agreed to emission limits for fluorine and particulate matter with semiannual compliance tests being submitted as required.

Since our meeting on July 9, 1986, we have expended considerable time and money to gather the information necessary to address the questions raised by your staff. While we want to make every reasonable effort to cooperate with the Department, we have become concerned that much of the requested information is not relevant to our request that the NO_x limits be modified to reflect more accurately the limits actually achievable by the control technology installed at this facility. More specifically, it appears that much of the information requested by your staff is being used to re-determine the BACT for this facility. We object to this exercise, since the control technology was selected in May 1980 and approved by both the Department and EPA at this time. We do not believe the Department is authorized to re-determine the BACT simply because the emission limitation associated with the previously-approved control technology was miscalculated by EPA, especially where, as here, the approved control technology already has been installed at considerable expense.

Mr. Clair Fancy
Page 2
September 22, 1986

Although we do not believe that all the requested information is pertinent to our application for permit modification, we nonetheless have taken the following steps in order to provide answers to the questions raised by your staff:

1. Extensive NO_x stack testing was performed to establish emission data and to optimize burning zone conditions.
2. A second consultant (from the Research Triangle Area) was employed to review the stack test data and the EPA literature/files regarding AP42 NO_x criteria.
3. Quotes were requested from three burner manufacturers for low NO_x burner systems along with guarantees of performance.

In the course of evaluating the results of the tests referred to in Item 1, the consultant performing the tests and the consultant referred to in Item 2, discovered that none of the standard evaluation calculation techniques accepted by the EPA is directly applicable to the conditions found in a rotating dryer. We developed an evaluation calculation we believe is correct but differs from the standard. Furthermore, our second consultant concurs with our conclusion that AP42 is applicable to industrial boilers but not for dryers because of the very high excess air flows required by dryers. Item 3 is taking longer than expected. Sales people have given glowing promises about performance but the design engineers have not shown the same confidence. Not one of the three has agreed to a performance guarantee as of this date.

IMC believes that the NO_x issue can be resolved immediately by having the DER grant New Wales an NO_x emission reduction tradeoff which has resulted from our electric cogeneration. Since the construction of the subject DAP plant, New Wales has installed approximately 58 megawatts of cogenerator capability using waste heat as a source of steam. In fiscal 1985/86, New Wales generated 269,370 megawatt hours of electricity with zero additional NO_x emissions. At a 0.21 lbs/NO_x per million BTU emission rate and using the average TECO (Hookers Point and Gannon) average of 13 million BTU per megawatt hour, our efforts have reduced NO_x emissions in the Tampa area by 404 tons per year. This is considerably more than the 170 tons per year NO_x emissions that would be granted under our new construction permit application of April 2, 1986. Based upon our recent testing, New Wales feels that our request for a 1.0 lb/NO_x/million BTU allowance could be reduced to a 0.6 or 102 tons per year based on the calculation method used in evaluating the tests. The 102 tons per year is 25% of the 404 tons reduced by cogeneration.

Mr. Clair Fancy
Page 3
September 22, 1986

New Wales believes that there is ample information to demonstrate that the 0.21 value stipulated in the PSD document was in error and does not apply to a dryer.

In summary, we believe the facts presented above are more than sufficient to justify the DER granting an 0.6 lbs NO_x/million BTU limit. We are available to meet with your staff at your convenience to discuss the issues.

Sincerely,



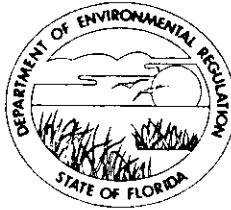
J. M. Baretincic
Manager - Environmental Services
and Quality Control

JMB/bs
058

cc: J. A. Brafford - IMC
J. B. Koogler - Koogler & Assoc.
L. E. Sellers - Holland & Knight
J. D. Speir - IMC
W. C. Thomas - DER

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

June 9, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

*Received 6/10/86
JSK*

Dr. John B. Koogler
Sholtes & Koogler
Environmental Consultants
1213 Northwest 6th Street
Gainesville, Florida 32601

Dear Dr. Koogler:

Re: File No. AC 53-118671

In your May 9 reply to our request for additional information on IMCC's No. 2 DAP plant, you were unable to provide the NOx emission rate from this plant while it is using natural gas as fuel. This, along with most of the other information requested in our May 1 letter, would help in the evaluation of your BACT recommendation. If you are unable to make a reliable estimate of the NOx emissions from using natural gas fuel in this plant please provide the following information:

1. What is the expected life of a new combustion chamber in this plant (burner and refractory)?
2. Please estimate the loss of revenue due to the production halt that would be required to modify the combustion chamber and to replace the existing burners with "low NOx" burners.
3. What would be the applicable interest rate used by IMCC to evaluate the cost of the modification of the chamber and burner over its lifetime?

Dr. John B. Koogler
Page Two
June 9, 1986

If you have any questions regarding the information being requested, please write to me or call Barry Andrews at (904)488-1344.

Sincerely,

A handwritten signature in black ink, appearing to read "C. H. Fancy". The signature is stylized and somewhat cursive.

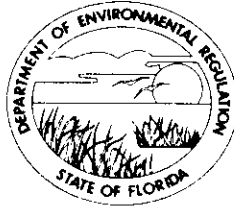
C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/WH/ks

cc: Bill Thomas, SW District
Jerry Girardin, IMCC

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

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2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

May 23, 1986

Mr. Bruce P. Miller
Acting Chief
Air Programs Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Miller:

RE: PSD Applications - Anheuser-Busch Companies - PSD-FL-115
IMC New Wales Operations - PSD-FL-114

Enclosed for your review and comment is are copies of applications from Anheuser-Busch Companies, Duval County, Florida and IMC New Wales Operations, Polk County, Florida. If you have any comments or questions, please contact Willard Hanks, Max Linn (for Anheuser-Busch), or Tom Rogers (for IMC New Wales Operations) at the above address or at (904)488-1344.

Sincerely,

Patty Adams
Staff Assistant
Bureau of Air Quality
Management

/pa



SHOLTES & KOOGLER, ENVIRONMENTAL CONSULTANTS
1213 N.W. 8th Street Gainesville, Florida 32601 (904) 377-5822

DER

MAY 12 1986

BAQM

SKEC 124-85-01

May 9, 1986

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

Subject: IMC, Inc. - New Wales Operation
Polk County, Florida
PSD Construction Permit Application to Increase NOx
Emissions From the No. 2 DAP Plant
File No. AC53-118671

Dear Mr. Fancy:

In response to the Department's letter of May 1, 1986, we are providing the following additional information to complete the subject air pollution source construction permit application. The numbering of the items of information follow the numbering used in your request for information.

No. 1 - Good Engineering Practice Stack Height

Good Engineering Practice (GEP) stack height is defined as the height of the "nearby structure" plus 1.5 times the lesser dimension (height or projected width) of the nearby structure or 65 meters (213 feet); whichever is greater. The stack heights of the two DAP plant stacks addressed in the subject air pollution source construction permit are 171 feet. Thus, both stacks satisfy the requirement for GEP stack height without consideration of nearby structure dimensions since the heights of the two stacks are less than 213 feet.

A second consideration regarding stack height is that of pollutant downwash. The stack height of each of the two plants is 171 feet while the height of the DAP building is 144 feet. Since the stack heights are less than 2.5 times the structure height, there is a potential for pollutant downwash. This matter was addressed in supplemental information

submitted on December 14, 1979 in support of the original PSD construction permit for the No. 2 DAP plant. A copy of the downwash analysis submitted at that time is attached hereto.

The analysis showed that under downwash conditions, the maximum impact of pollutants emitted from the No. 2 DAP plant at the nearest IMC property line (1.9 kilometers) is less than would be expected under normal dispersion conditions. This phenomenon is a result of the distance to the nearest property line (1.9 kilometers) and the initial dispersion experienced by the downwashed plume.

The fact that only the annual average impacts of NO_x must be considered will further minimize the significance of pollutant downwash. The reason being that downwash occurs only a small fraction of the time and the impact of emissions occurring during this time will be minor when compared with the impact of emissions occurring during the remaining hours of annual operation; emissions that are dispersed without downwash.

No. 2 - Estimated NO_x Emissions From the No. 2 DAP Plant While Firing With Natural Gas

The NO_x emissions were measured from the No. 2 DAP plant on three occasions while the plant was fired with No. 6 fuel oil. The results of these measurements have been summarized in Appendix A of the Attachment Package for an Air Pollution Source Construction Permit Application dated April 2, 1986 and submitted to the Department. No NO_x emission measurements have been made on the No. 2 DAP plant while firing the plant with natural gas.

On January 10, 1986, NO_x emission measurements were made on three plants at IMC-New Wales while the plants were fired with natural gas. The plants were the GTSP plant, the Multifos plant and the AFI plant. Of these plants, the AFI plant is most similar to the No. 2 DAP plant in that temperatures in the combustion chamber are expected to be in the 2300-2400°F range. While fired with natural gas, the NO_x concentration in the AFI plant stack gas averaged 24.2 parts per million and the emission rate averaged 0.18 pounds of NO_x per ton of product. This compares with NO_x emissions from the No. 2 DAP plant, when fired with No. 6 fuel oil, of 24.5 parts per million in the stack gas and an emission rate of 0.16 pounds per ton of product. Based upon a comparison of these

measurements, the estimated NOx emissions from the No. 2 DAP plant, while fired with natural gas, should be similar to those measured from the plant when the plant was fired with No. 6 fuel oil.

The only plant at IMC-New Wales where nitrogen oxides emissions measurements have been made during both No. 6 fuel oil and natural gas firing is the GTSP plant. While firing with No. 6 fuel oil, the nitrogen oxides concentration in the stack gas averaged 26.6 parts per million and the emission rate averaged 0.27 pounds per ton of product. When fired with natural gas, the nitrogen oxides concentration in the stack gas averaged 7.8 parts per million and the emission rate averaged 0.10 pounds per ton of product; approximately a 67 percent reduction in NOx emissions.

Based upon a comparison of natural gas and residual fuel oil emission factors published in AP-42, one would expect a 63 percent reduction in NOx emissions in utility boilers if the fuel was changed from No. 6 fuel oil to natural gas. This NOx emission reduction is comparable to the observed NOx emission reduction in the IMC-New Wales GTSP plant.

The observed NOx emission reduction in the GTSP plant and the calculated NOx emission reduction based on AP-42 emission factors resulting from a fuel change from No. 6 fuel oil to natural gas are mutually consistent but are inconsistent with natural gas fired NOx emissions from the AFI plant (a plant similar to the No. 2 DAP plant). A comparison of NOx emissions from the AFI plant (when fired with natural gas) and the No. 2 DAP plant (when fired with No. 6 fuel oil) indicates the NOx emissions from the No. 2 DAP plant will be approximately the same regardless of the fuel used.

In summary, our best estimate is that NOx emissions from the No. 2 DAP plant, when fired with natural gas, will be similar to the NOx emissions measured when the plant was fired with No. 6 fuel oil. In reviewing this estimate, it must be recognized that there are many factors related to NOx emissions from the various combustion sources operated by IMC-New Wales that are not fully understood. This fact is evident from the variations in NOx emission rates for the various types of plants (all of which have been previously submitted to the Department).

No. 3 - Cost For Replacing Existing No. 2 DAP Plant Burners With Low-NOx Burners

The following costs have been estimated for replacing the existing burners in the two No. 2 DAP plant dryers with low-NOx burners:

Item	Cost Per Burner	Cost for No. 2 DAP Plant
Replacement of Combustion Chamber	\$219,000	\$438,000
Modification to Inlet Duct and Structural Steel	20,000	40,000
Low-NOx Burner	46,000	92,000
Combustion Chamber and Outlet Plenum Installation	25,000	50,000
Electrical Controls	12,000	24,000
Total	\$322,000	\$644,000

In addition to these direct costs, the approximate three week down-time for each dryer required for the burner replacements will result in a DAP production loss of approximately 70,000 tons.

These costs, both the direct costs of \$644,000 and the production loss of 70,000 tons of DAP, must be weighed against the increase in ambient NOx levels that will result from the requested increase in NOx emission rates. As presently permitted, the IMC-New Wales chemical complex has a maximum annual NOx impact of 2.7 micrograms per cubic meter. The requested increase in NOx emissions will increase this impact by only 0.6 micrograms per cubic meter; to 3.3 micrograms per

cubic meter. The ambient air quality standard for NO_x is 100 micrograms per cubic meter, annual average, and the de minimis impact is 14 micrograms per cubic meter, annual average.

The cost of preventing the 0.6 microgram per cubic meter increase in ambient NO_x levels is \$1.07 million dollars per microgram per cubic meter; a cost not justified, particularly in view of the fact that ambient NO_x levels in the vicinity of IMC-New Wales are presently only three percent of the ambient air quality standard.

No. 4 - Current Cost of No. 6 Fuel Oil

The current cost of No. 6 fuel oil to IMC-New Wales is \$0.18 per therm, or \$11.35 per barrel. This price is based on a short-term (2 months) contract.

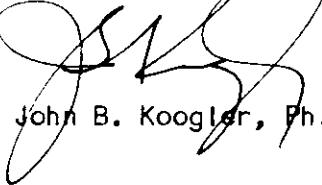
No. 5 - Cost of Natural Gas

The current cost of natural gas to IMC-New Wales is \$0.27 per therm; or 50 percent more than the cost of No. 6 fuel oil. It should be noted that the natural gas supply to IMC-New Wales is an interruptible supply. That is, the supply can be interrupted or limited at the discretion of the gas company.

If there are any questions regarding the information provided herein or if additional data are required, please do not hesitate to contact me.

Very truly yours,

SHOLTES & KOOGLER,
ENVIRONMENTAL CONSULTANTS



John B. Koogler, Ph.D., P.E.

JBK:ssc
Attachment

cc: Mr. A. L. Girardin

DER
MAY 12 1986
BAQM

SUPPLEMENTAL DATA FOR PSD REVIEW

NEW WALES CHEMICALS, INC.
POLK COUNTY, FLORIDA

DECEMBER 14, 1979

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

9.0 DOWNWASH ANALYSIS

When pollutants are emitted from a stack or vent at a velocity less than two times the prevailing wind speed or at a height less than approximately 2.5 times the height of the nearby structures, there is a possibility that the pollutant will be entrapped in the turbulent wake generated by the structure or stack and be mixed immediately to ground level. Such an event is referred to as a downwash.

This section includes an analysis of downwash on air quality for the various sources proposed by New Wales.

The sulfuric acid plants proposed by New Wales will have 200 foot high stacks. The highest structure associated with the sulfuric acid plants or near these plants will be approximately 86 feet high. The 200 foot stack is 2.33 times higher than this structure. In addition, the tail gas velocity exiting the stack will be approximately 10.8 meters per second; approximately three times the average wind speed at the New Wales site. Considering the height of the sulfuric acid plant stack relative to surrounding structures and the tail gas velocity leaving the stack, it is very unlikely that downwash from these sources will occur.

The three stacks exhausting the DAP plant and the two stacks exhausting the third product load-out system are all less than two times the height of nearby structures. Because of this, a downwash analysis has been made for particulate matter and sulfur dioxide emitted from these sources. The analysis was conducted after a method suggested by Turner(1). Turner suggests that the initial σ_z be equal to the structure

height divided by 2.1 and that the initial σ_y be equal to the structure width divided by 4.3.

For the analysis described herein "structure height" has been defined as the stack height. This is assumed to be reasonable since the pollutant will be initially mixed between the top of the stack and ground level. In the case of the horizontal dispersion the "structure width" is assumed to be twice the stack height. This dimension was selected since the structures adjacent to the stacks being considered are much broader than the stack is high. This is apparent from viewing a plot plan of the New Wales Chemical Complex. From a practical point of view; however, it was not considered reasonable that the pollutant would initially be dispersed over the total breadth of adjacent structures. For purposes of this analysis; therefore, the structure width was assumed to be equal to twice the stack height.

One additional assumption is that the stability of the atmosphere would become one stability class less stable during downwash conditions to represent the mechanically induced turbulence that would exist at the ground surface. This mechanical turbulence would result from the wind passing over and around structures on the New Wales plant site and trees immediately off the plant site. It would act to disperse the downwashed pollutant at a greater rate near the ground surface than the rate at which the pollutant would be dispersed under normal dispersion conditions. The increased instability is reasonable since the average wind speed for the conditions evaluated averaged 10 miles per hour for the 24-hour period. This wind speed will certainly generate mechanical turbulence in the air mass at the ground surface.

Another assumption made was that downwash would occur for the entire 24-hour period or 3-hour period. Observation of sources similar to those proposed by New Wales has shown that downwash occurs very infrequently and certainly not for periods of 24 hours as assumed in this analysis. This assumption; therefore, will result in a conservatively high downwash impact for the 24-hour periods.

The downwash analysis was conducted with the air quality model PAL. In each case analyzed the air quality impact of the source was determined assuming normal dispersion patterns and again assuming that downwash would occur. The meteorological data input to the model were the data resulting in the maximum impact from the DAP plant as determined with the CRSTER air quality model. Receptor distances were established to equal distances to the points of maximum impact as determined by the previous modeling and to represent distances to the nearest New Wales property line.

The specific conditions evaluated for downwash impact include particulate matter emissions from the DAP plant, particulate matter emissions from the third product load-out and sulfur dioxide emissions from the DAP plant. The results of these analyses are summarized in Table 9-1. It can be seen that at the point where the maximum 24-hour impact of emissions from the DAP plant are expected to occur under normal dispersion conditions (1.1 km from the source) the impact under downwash conditions will be 30-50 percent higher. The 24-hour particulate matter impact under downwash conditions is 13 ug/m^3 compared to 10 ug/m^3 under normal dispersion conditions and the downwash SO_2 impact is 15 ug/m^3

compared with 10 ug/m^3 under normal conditions. At the nearest property line distance (1.9 km from the source), the 24-hour impacts of both particulate matter and SO_2 are less under downwash conditions than under normal dispersion conditions.

The maximum 3-hour SO_2 impact from the DAP plant under normal dispersion conditions occurs at 1.1 km from the source. At this distance the SO_2 impact under downwash conditions is 31 ug/m^3 compared with 43 ug/m^3 under normal dispersion conditions. At the nearest property line distance (1.9 km) and at the distance where the maximum 3-hour SO_2 impact from all sources occurs (2.5+ km), the 3-hour SO_2 impact under downwash conditions is also less than the impact under normal dispersion conditions.

The impact of particulate matter emissions from the third product load-out at all distances beyond 0.5 km is greater under normal dispersion conditions than under downwash conditions.

If the increased impact in particulate matter and/or sulfur dioxide emissions resulting from downwash conditions are added to the impacts summarized in Figures 5-3 and 5-7 of the information document submitted on October 19, 1979, the resulting pollutant levels at the points of maximum impact will still not threaten ambient air quality standards nor PSD increments. At property line distances the impacts of emissions under downwash conditions will be less than under normal dispersion conditions.

TABLE 9-1

DOWNWASH ANALYSES OF POLLUTANTS EMITTED FROM
PROPOSED DAP PLANT AND THIRD PRODUCT LOAD-OUT

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

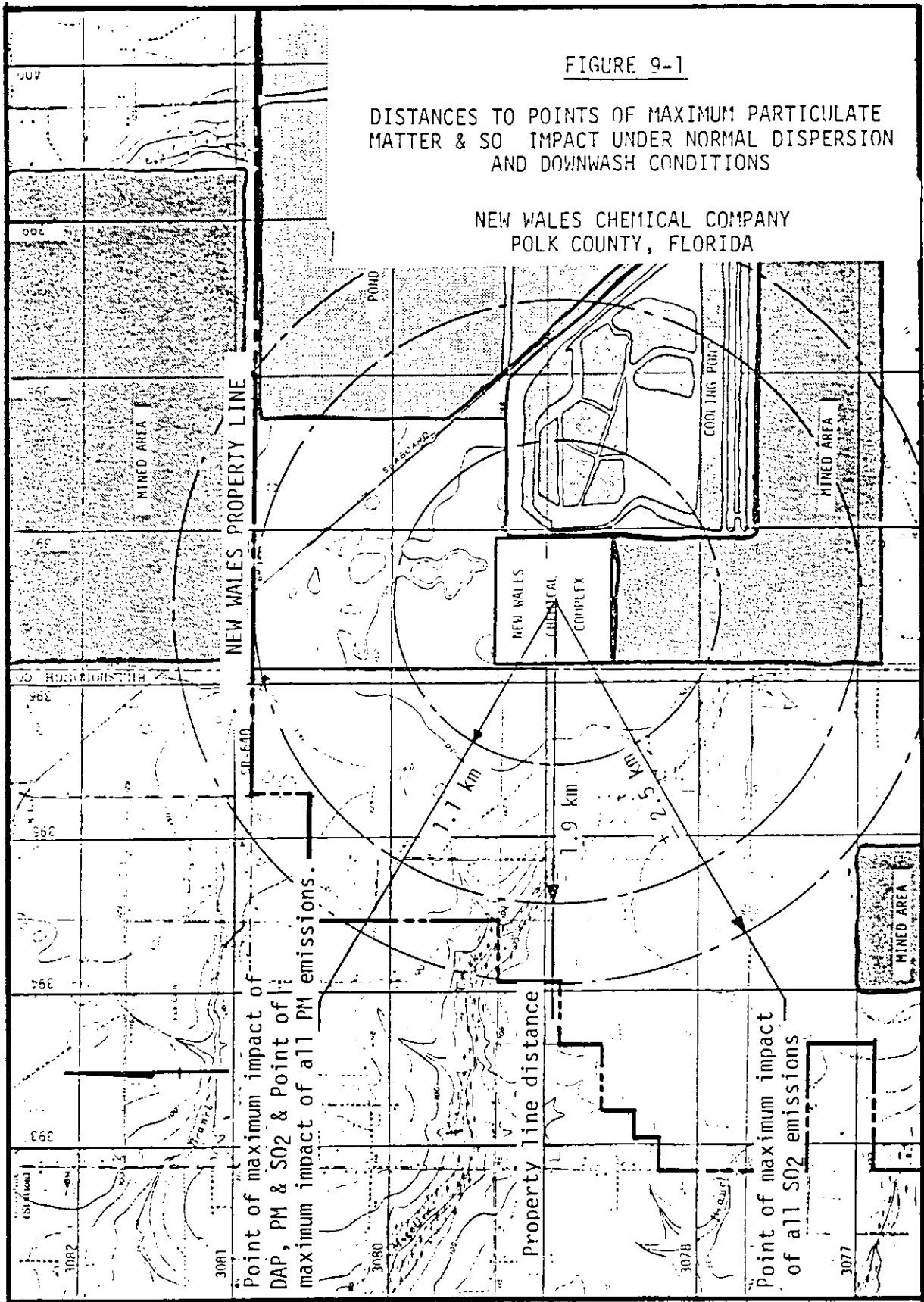
Source/Pollutant	Receptor Distance from Source (km)	Groundlevel Pollutant Concentration	
		Normal Dispersion (ug/m ³)	Downwash (ug/m ³)
DAP Particulate Matter	1.1(1)	10	13
	1.9(2)	8	6
24-Hour SO ₂	1.1(3)	10	15
	1.9(2)	8	6
3-Hour SO ₂	1.1(4)	43	31
	1.9(2)	15	14
	2.5(5)	10	9
Third Product Load-Out Particulate Matter	1.1(1)	1.1	0.7
	1.9(2)	0.6	0.3

- (1) Point of maximum impact for all particulate matter sources and for DAP plant emissions.
- (2) Distance to nearest New Wales property line.
- (3) Point of maximum 24-hour impact for emissions from DAP plant. Point of maximum 24-hour impact for all SO₂ sources is between 1.9 and 3.2 km.
- (4) Point of maximum 3-hour impact for emissions from DAP plant. Point of maximum 3-hour impact for all sources is 2.5+ km.
- (5) Point of maximum 3-hour impact for SO₂ emissions from all sources.

FIGURE 9-1

DISTANCES TO POINTS OF MAXIMUM PARTICULATE MATTER & SO₂ IMPACT UNDER NORMAL DISPERSION AND DOWNWASH CONDITIONS

NEW WALES CHEMICAL COMPANY
POLK COUNTY, FLORIDA

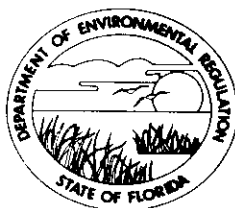


REFERENCES
SECTION 9

1. Turner, D.B., Workbook of Atmospheric Dispersion Estimates, AP-26, US Department of HEW, Cincinnati, Ohio 1969.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241



BOB GRAHAM
GOVERNOR
VICTORIA J. TSCHINKEL
SECRETARY

May 1, 1986

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Dr. John B. Koogler
Sholtes & Koogler Environmental Consultants
1213 Northwest 6th Street
Gainesville, Florida 32601

Dear Dr. Koogler:

Re: File No. AC 53-118671

The Department has made a preliminary review of your April 2, 1986, application for permit to increase the NO_x emissions from IMCC's No. 2 DAP plant. We need more information to process this application. Please furnish the information requested below.

1. Provide a copy of the GEP stack height calculations for this plant.
2. What is the estimated NO_x emission rate associated with firing natural gas in the No.2 DAP plant dryer?
3. What is the total cost of replacing the existing burners in the No. 2 DAP plant dryer with "low NO_x" burners?
4. What is the current cost of No. 6 fuel oil for the No. 2 DAP plant?
5. What is the estimated cost of natural gas for this plant?

As soon as the information requested above is received, we will resume processing your application. If you have any questions regarding the data being requested, please write me or call

Dr. John B. Koogler
Page Two
May 1, 1986

Tom Rogers (GEP stack height), Barry Andrews (BACT), or Willard Hanks (status of review) at (904)488-1344.

Sincerely,



C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality
Management

CHF/WH/s

cc: Bill Thomas, SW District
Jerry Girardin, IMCC

P 408 533 190

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