

PRELIMINARY DETERMINATION

AND

TECHNICAL EVALUATION

Agrico Chemical Company
South Pierce Chemical Works
Polk County

Prilled Sulfur Pellet Handling and Melting Facility

State Permit Number
AC 53-55780

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

February 15, 1984

I. PROJECT DESCRIPTION

A. Applicant

Agrico Chemical Company
P. O. Box 1969
State Road 630
Bartow, Florida 33830

B. Source Location

The applicant's proposed project consists of the construction of an underground receiving and unloading pit located in a partially enclosed receiving shed, and the construction of a conveyor from the receiving pit to a 150 ton storage hopper which will distribute, by means of a screw conveyor, Fletcher wet prilled sulfur pellets, such as those manufactured by Coastal and PVC, to three 900 ton melters.

The source is to be located within an existing facility - the South Pierce Chemical Complex south of Lakeland, Florida, in Polk County. The applicant's property consists of approximately 40,000 acres. From the proposed source, the nearest residence is approximately 3 1/2 miles away, the nearest public access is State Route 630 located approximately 1 3/4 miles away, and the nearest neighbor is the Hookers Prairie Mine, owned by W. R. Grace, located approximately 400 feet away. The universal transverse mercator (UTM) coordinates of the source are Zone 17:407.6 km East and 3071.3 km North.

C. Project Descriptions and Controls

NOTE: All capacities are based on long tons and all emissions are based on short tons.

The existing molten sulfur handling facility at the Agrico South Pierce Chemical Complex is to be modified by the adjacent construction of a railcar and truck unloading shed built above an underground receiving pit that will utilize water mist sprays to control sulfur particulate emissions from the unloading operation. A partially enclosed deep-vee conveyor belt, approximately 260 feet in length with an incline not to exceed 15 degrees, will transport the wet prilled sulfur pellets from the underground pit to the 150 ton sulfur pellet storage hopper. The air displaced from the 150 ton hopper will be vented to the open air through a wet scrubber with 90%+ particulate removal efficiency to minimize sulfur particulate emissions at that drop point. From the 150 ton sulfur pellet storage hopper, the pellets will be bottom loaded into a screw auger type of covered conveyor and distributed to three 900 ton sulfur melters. The vapor collection lines from all three 900 ton melters will be vented through an additional wet scrubber to remove hydrogen sulfide and sulfur

particulate generated by the melting process. It is anticipated that a minimum of 98% of the hydrogen sulfide and 90% of the sulfur particulate will be captured. The used caustic scrubber liquid from that scrubber will be pumped to a special wastewater treatment system from which the collected hydrogen sulfide and sulfur vapors will be converted to elemental sulfur and sodium sulfate. The elemental sulfur will be removed and returned to the sulfur pellet melter. The remaining residual substances will be treated and neutralized prior to release into an existing cooling pond. The reason for specifying this specific scrubber wastewater treatment requirement in this air permit is to prevent the release of collected H₂S from the wastewater treatment ponds. Additional wastewater treatment may be needed to meet department wastewater discharge requirements.

In addition to these measures, the applicant has developed work practices which will be implemented as reasonable control measures to confine or control any potential unconfined particulate matter emissions from the proposed facility. All operating personnel will be trained in and observe these work practices.

In evaluating the sulfur particulate emission estimates submitted by the applicant, (as documented in the attachments hereto) the department used the most conservative assumptions suggested by Dale Lundgren--(0.01 lb/ton) multiplied by 4 for each 5 foot drop. That factor was applied to unloading (5 foot drop) controlled by mist water sprays with an assumed 50% control efficiency. From the conveyor to the 150 ton dump hopper, it was assumed that the hopper was about half full resulting in an approximate 15 foot drop. Scrubber efficiency at that point was conservatively assumed to be 90%. Based on these assumptions, the emissions from this scrubber shall not exceed 1 pound per hour (to be verified by test).

The scrubber serving the melters will be primarily for control of hydrogen sulfide but will also serve to condense and remove sulfur particulate matter. Outlet particulate concentration was assumed as .2 pounds per hour (to be verified by test). The resulting sulfur particulate emission estimate was 12 tons per year, or approximately one half the PSD significant emission rate--25 tons per year.

Similarly, hydrogen sulfide emissions were estimated using an assumed, worst case, 250 ppm based on the work of Hyne and Raymont, together with a 98% removal efficiency for the scrubber. Again, the worst case figures were approximately one half of the significant emission rate of 10 tons per year.

Where possible as a double check on the validity of the assumptions made, (i.e. drops conducted in still air and control device efficiencies) permit restrictions requiring specific testing are included.

II. RULE APPLICABILITY

The Agrico South Pierce Chemical Complex is a major facility for particulate matter and sulfur dioxide emissions as defined in Florida Administrative Code Rule 17-2.100(95).

The proposed project is located in an area classified as attainment for all criteria pollutants according to Florida Administrative Code Rule 17-2.210.

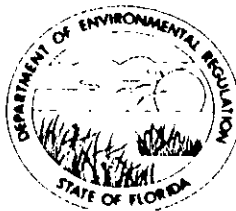
The proposed project is exempt from the requirements of Florida Administrative Code Rule 17-2.500, Prevention of Significant Deterioration, according to Florida Administrative Code Rule 17-2.500(2)(d)4.a.(ii), since this project will not result in a significant net increase of emissions of any regulated pollutant in excess of the PSD de minimus levels and the emissions from the wet prilled sulfur pellet handling and melting operation would not have a significant impact on any Class I area.

The proposed project is subject to the provisions of Florida Administrative Code Rule 17-2.520, Sources Not Subject to Prevention of Significant Deterioration or Nonattainment Requirements, and Rule 17-4.07, Standards for Issuing or Denying Permits.

The proposed project is a source of unconfined emissions as defined in Florida Administrative Code Rule 17-2.100(167); and Administrative Code Rule 17-2.610(3), Unconfined Emissions of Particulate Matter. Therefore, reasonable precautions to control unconfined particulate matter emissions must be applied to this project.

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

PERMITTEE:

Agrico Chemical Company
P. O. Box 1969
State Road 630
Bartow, Florida 33830

Permit Number: AC 53-55780

Date of Issue:

Expiration Date: *

County: Polk

Latitude/Longitude: 27° 45' 45" N
81° 56' 28" W

Project: Wet Prilled Sulfur Pellet
Handling and Melting
Facility

This permit is issued under the provisions of Chapter(s) 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the department and made a part hereof and specifically described as follows:

For the construction of an underground receiving and unloading pit located in a partially enclosed receiving shed, construction of a conveyor from the receiving pit to a 150 ton storage hopper which will distribute by means of a screw conveyor, wet prilled sulfur pellets to three 900 ton melters.

The source is located within the existing facility of the South Pierce Chemical Complex south of Lakeland, Florida, in Polk County. The universal transverse mercator (UTM) coordinates of the source are Zone 17:407.6 km East and 3071.3 km North.

List of Attachments:

1. Application AC 53-55780 - Received Southwest District, 5-10-82.
2. Incompleteness letter to L. C. Lahaman from DER, 6-9-82.
3. Additional information received, 9-22-82.
4. Extension of time request to C. H. Fancy from Agrico 11-22-82.
5. Letter to Steve Smallwood from H. Long, Agrico, submitting test data, 2/8/83.
6. Emission Factor Determination for Prilled Sulfur by Dale Lundgren, 2-28-83.
7. Letter from Steve Smallwood to Dale Lundgren to request clarification of emission data, 3-17-83.
8. August 5, 1983 letter from Ed de la Parte to Steve Smallwood responding to request for information submitted March 17, 1983 to Dale Lundgren.
9. Letter from Agrico's H. Long to Ed Huck 9/22/83 submitting answers on technical clarification of issues.
- * 18 months after the validity of the permit is established

**PERMITTEE: Agrico Chemical
Company**

**I. D. Number:
Permit Number: AC 53-55780
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Expiration Date: ***

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the department.

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in the permit.

4. This permit conveys no title to land or water, does not constitute state recognition or acknowledgement of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the state. Only the Trustees of the Internal Improvement Trust Fund may express state opinion as to title.

5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, plant or aquatic life or property and penalties therefor caused by the construction or operation of this permitted source, nor does it allow the permittee to cause pollution in contravention of Florida Statutes and department rules, unless specifically authorized by an order from the department.

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GENERAL CONDITIONS:

6. The permittee shall at all times properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by department rules.

7. The permittee, by accepting this permit, specifically agrees to allow authorized department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

- a. Having access to and copying any records that must be kept under the conditions of the permit;
- b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the department with the following information:

- a. a description of and cause of non-compliance; and
- b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

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The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the department for penalties or revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the department, may be used by the department as evidence in any enforcement case arising under the Florida Statutes or department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

10. The permittee agrees to comply with changes in department rules and Florida Statutes after a reasonable time for compliance, provided however, the permittee does not waive any other rights granted by Florida Statutes or department rules.

11. This permit is transferable only upon department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

- () Determination of Best Available Control Technology (BACT)
- () Determination of Prevention of Significant Deterioration (PSD)
- () Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

- a. Upon request, the permittee shall furnish all records and plans required under department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the department, during the course of any unresolved enforcement action.

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GENERAL CONDITIONS:

- b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by department rule.
- c. Records of monitoring information shall include:
 - the date, exact place, and time of sampling or measurements;
 - the person responsible for performing the sampling or measurements;
 - the date(s) analyses were performed;
 - the person responsible for performing the analyses;
 - the analytical techniques or methods used; and
 - the results of such analyses.

15. When requested by the department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the department, such facts or information shall be submitted or corrected promptly.

SPECIFIC CONDITIONS:

Note: All capacities are based on long tons and all emissions are based on short tons.

1. The only type of solid formed sulfur handled or melted at the South Pierce Chemical Works facility shall be in prill (pellet) form and shall be Fletcher process wet-formed prill pellets, such as those manufactured by Coastal and PVC, or a tested, verified, and department approved equivalent.

2. The maximum hours of operation of this facility shall be 8,760 per year. The maximum production shall not exceed 75 tons per hour, 1,800 tons per day, or 600,000 tons per year.

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3. The maximum total emissions of sulfur particulate shall not exceed 2.8 pounds in any hour from the handling and melting facility.

4. The maximum total emissions of sulfur particulate shall not exceed 12 tons per year from the handling and melting facility.

5. The maximum total emissions of hydrogen sulfide (H_2S) shall not exceed 1 pound in any one hour or 5 tons per year from the handling and melting facility.

6. Sulfur prill received at South Pierce shall not be unloaded if the moisture content is less than three (3) percent. The moisture content will be monitored and if necessary adjusted by the addition of moisture as specified in Attachment 9.

7. A wet scrubber device servicing the drop point from the conveyor from the unloading pits to the 150 ton dump hopper will be properly installed and maintained as specified in facility diagrams and sketches in Attachment 9. The particulate emission from the scrubber exhaust shall not exceed 1 pound per hour as determined by DER Method 5. The angle of incline on the conveyor belt shall not exceed 15° .

8. A wet scrubber device servicing the 150 ton dump hopper and the manifold feed to the three 900 ton melters will be properly installed and maintained as specified in facility diagram and sketches in Attachment 9.

A. The particulate emission from the scrubber exhaust shall not exceed .2 pounds per hour as determined by DER Method 5.

B. The hydrogen sulfide emission from the scrubber exhaust shall not exceed .75 pounds per hour as determined by EPA Method 16.

9. The final disposition of the spent caustic soda solution from the hydrogen sulfide scrubber to which the melters are vented shall be handled and processed in accordance with the conditions specified in Attachment 9. This condition is necessary to prevent emission of hydrogen sulfide gas from the receiving waters. Additional treatment may be required to meet wastewater discharge requirements of the department.

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10. On site storage of sulfur pellets in open storage piles is not allowed.

11. In order to minimize any wind entrainment of sulfur particulate during the unloading operation, Agrico will install a wind anemometer that will sound an alarm when the five minute average wind speed exceeds 18 miles per hour. Sulfur pellet unloading operations will be terminated until the wind has subsided to below 18 miles per hour, five minute average.

12. This facility will be constructed in the physical location described on the plot plan submitted to the Department of Environmental Regulation. This shall be in accordance with the property ownership map of the South Pierce Chemical Works area and an aerial map made in 1983 submitted depicting the area surrounding the construction of this source.

13. Clean up and housekeeping procedures: During operation the area superintendent or the superintendent's designate will survey the entire area for fugitive sulfur on a daily basis. If a significant spill occurs, such as a break in a conveyor belt, the sulfur shall be reclaimed from the spill area as soon as possible, that day. The area beneath the conveyor will be paved to facilitate easy recovery of the sulfur without introducing contamination.

14. The permittee shall establish and all equipment operators shall attend a training program, designed by Agrico and approved by the department, on equipment operating practices to assure the minimization of unconfined particulate matter.

15. There shall be no visible emissions resulting from the remelting of the wet prilled sulfur pellets in excess of 10% opacity (6 minute average) at any point in the plume that is more than 2 meters downwind of the point at which the wet prilled sulfur pellets are melted.

16. Within 30 days after issuance of the construction permit, a sulfur particulate and hydrogen sulfide source emissions monitoring plan, and a sulfur particulate perimeter deposition monitoring plan that describes the sampling locations, the sample

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SPECIFIC CONDITIONS:

collecting and analysis procedures, and quality assurance measures to be employed shall be submitted to the Bureau of Air Quality Management by the permittee.

A. After approval by the department, the deposition monitoring network shall be established expeditiously and operated continuously. A data report shall be submitted to the Southwest District and the Bureau of Air Quality Management within 30 days of the end of each calendar quarter. After 12 months of data have been collected and validated, the department will reevaluate the deposition monitoring network results in detail, and make any changes to the approved monitoring plan that are warranted.

B. The source emissions monitoring plan shall include:

- (1) Records of the tonnage processed, type and supplier of the pellets, and moisture as received and added.
- (2) A method to sample the particulate emissions from the railcar/truck unloading operation.
- (3) Physical sampling and Lundgren test of sampled pellets.
 - (a) About 10 lb of pellets for each 300 tons of pellets processed.
 - (b) Each 400 lb of sample collected to be riffled down to 20 lb of composite sample.
 - (c) Three 5 lb samples of composite sample to be tested in Lundgren test chamber at approximately 1, 2 and 3% moisture.
 - (d) One 5 lb sample to be retained for 2 years for QA check by DER.
 - (e) Results to be reported to DER quarterly (with report on results of deposition monitoring).
 - (f) This plan will be reconsidered after fully evaluating one full year of valid data.

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SPECIFIC CONDITIONS:

17. Compliance with the process limitations of this permit shall be demonstrated by recordkeeping of: Daily hours of operation for sulfur handling and melting; any spillage recovery, the amounts of sulfur associated with each activity; the times of such spillage and recovery; and other related information necessary to properly interpret the recorded data. Data shall be maintained on file by permittee for a minimum of two years subject to inspection and review as required by DER. Annual reports shall be filed with the DER Southwest District office prior to March 1 of each following year.

18. The initial compliance testing for these sources shall consist of the following:

A. An onsite inspection by department personnel verifying that construction of the facility is in accordance with permit conditions.

B. Certification by the permittee that the employee training program as required has been instituted.

C. The witnessing by department personnel of a satisfactory demonstration of sulfur pellet handling and remelting.

D. The Department of Environmental Regulation shall conduct visible emissions testing by DER Method 9 during facility operations at 90 to 100% of the maximum designed processing rate to determine whether the conditions in specific condition No. 14 should be modified.

E. Scrubbers exhaust tests as required by Specific Conditions 7 and 8. After the initial testing, Agrico will perform annual compliance tests using the same procedure.

19. After satisfactory completion of the initial compliance test and prior to 90 days before the expiration of this permit, a complete application for an operating permit shall be submitted to the DER Southwest District office. The permittee may continue to operate in compliance with all terms of this construction permit until its expiration date or the issuance of an operating permit as authorized by Florida Administrative Code Rule 17-2.210(1).

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20. All conditions of this permit that do not relate solely to the construction of the source shall be made a part of any subsequently issued operating permit.

21. Agrico is aware of a pending inquiry by the department into development of a rule concerning sulfur transportation, handling and storage and acknowledges that the rule ultimately adopted could, if made applicable to this category of sources, require substantial modification of the facility which is the subject of this permit. Agrico agrees to comply with any such rule within the time period established within the rule, or, if not so specified, on a reasonable time schedule developed between the permittee and the department. Agrico, by accepting this condition, does not waive its rights to participate in rulemaking proceedings nor to appeal or otherwise challenge the validity (as opposed to the applicability) of the adopted rule.

Issued this ____ day of January, 1984.

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

Victoria J. Tschinkel

Expiration Date: _____

Pages Attached.