

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5**

IN THE MATTER OF:)	
)	
Marsulex Inc.)	FINDING OF VIOLATION
Cairo, Ohio)	
)	EPA-5-01-OH-10
)	
Proceedings Pursuant to)	
the Clean Air Act,)	
42 U.S.C. §§ 7401 <u>et seq.</u>)	
_____)	

FINDING OF VIOLATION

The United States Environmental Protection Agency (U.S. EPA) hereby notifies the State of Ohio and Marsulex Inc. (Marsulex), that U.S. EPA finds that Marsulex, located at 7680 Ottawa Road, Cairo, Ohio, has violated the Clean Air Act (Act), 42 U.S.C. §§ 7401 et seq. Marsulex has violated Section 111(e) of the Act, 42 U.S.C. § 7411(e), and the regulations setting forth Standards of Performance (NSPS) for Sulfuric Acid Plants, 40 C.F.R. Part 60, Subpart H (§60.80-.85), as follows:

STATUTORY AND REGULATORY BACKGROUND

1. Section 111(e) of the Act, 42 U.S.C. § 7411(e), provides that after the effective date of a standard it is unlawful for any owner or operator of any new source to operate such source in violation of that standard.
2. Section 111(a)(2) of the Act, 42 U.S.C. § 7411(a)(2), defines the term "new source" as any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance applicable to such source.
3. Construction or modification is "commenced" when an owner or operator undertakes "a continuous program of construction or modification," or enters into a "contractual obligation" for the same. 40 C.F.R. § 60.2.
4. Section 111(a)(4) of the Act, 42 U.S.C. § 7411(a)(4), defines "modification," in pertinent part, as "any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air

pollutant emitted by such source" This definition requires that the physical or operational change result in an increase in emission of any pollutant for which a standard applies. A net emission increase is calculated by comparing the hourly emission rate, at maximum physical capacity, before and after the physical or operational change. 40 C.F.R. § 60.14. Certain exemptions to modification are set forth at 40 C.F.R. § 60.14(e), which include, among others, an exemption for an increase in the production rate of an existing facility where that increase can be accomplished without a capital expenditure. 40 C.F.R. § 60.14(e)(2).

5. For purposes of determining whether certain physical or operational changes to an existing facility constitute a modification, "capital expenditure" is defined at 40 C.F.R. § 60.2 as an expenditure for a physical or operational change which exceeds the product of the applicable "annual asset guideline repair allowance percentage" (AAGRAP) specified in IRS Publication 534 and the existing facility's basis. Publication 534 indicates that the AAGRAP for chemicals or allied products, which includes sulfuric acid plants, is 12 ½%. The existing facility's basis is determined by using the original cost of the facility, adjusted by capital improvements, casualty losses, defunct equipment, but not depreciation.
6. A modified stationary source must comply with all applicable standards within 180 days from the completion of any physical or operational change. 40 C.F.R. § 60.14(g).
7. U.S. EPA proposed the NSPS for sulfuric acid plants on August 17, 1971. 36 Fed. Reg. 15704. U.S. EPA promulgated the NSPS for sulfuric acid plants on December 23, 1971. 36 Fed. Reg. 24877.
8. 40 C.F.R. § 60.81 defines a sulfuric acid production unit to mean any facility producing sulfuric acid by means of the contact process by burning elemental sulfur, alkylation acid (a.k.a. spent sulfuric acid), hydrogen sulfide, organic sulfides and mercaptans, and acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions of sulfur dioxide or other sulfur compounds.
9. The Sulfuric Acid Plant NSPS, at 40 C.F.R. § 60.82(a), provides that the owner or operator of any sulfuric acid production unit shall not cause to be discharged into the

atmosphere any gases which contain sulfur dioxide in excess of 2 kilograms per metric ton of acid produced (kg/ton) (4 pounds per ton of acid produced (lbs/ton)).

FACTUAL BACKGROUND

Facility Construction and Ownership

10. In 1959, Agrico Chemical Corporation (Agrico Chem) built a sulfuric acid plant (Plant A) and a liquid sulfur dioxide plant (Plant B) at 7570 Ottawa Road, Cairo, Allen County, Ohio. Marsulex informed the U.S. EPA that it does not have any records regarding the construction cost of Plant A and Plant B.
11. In 1975, Agrico Chem sold the sulfuric acid plant and liquid sulfur dioxide plant to Cairo Chemical Corporation (Cairo Chem). In 1980, Cairo Chem built a second sulfuric acid plant to produce ultra-pure sulfuric acid for use in the semiconductor industry (Plant D). Pursuant to a Permit to Install (PTI) issued by the Ohio Environmental Protection Agency (Ohio EPA) on October 9, 1991, Cairo Chem constructed a second liquid sulfur dioxide plant (Plant C).
12. In 1993, Coulton Chemical Company, LP, (Coulton) purchased from Cairo Chem the two sulfuric acid production plants (Plants A and D) and the two liquid sulfur dioxide plants (Plants B and C) located at 7570 Ottawa Road, Cairo, Allen County, Ohio (Cairo Facility).
13. On October 1, 1996, Marsulex purchased the Cairo Facility from Coulton. At the time of the sale, Coulton transferred all records regarding Plants A, B, C, and D in Coulton's custody to Marsulex. Further, Ohio EPA transferred all permits regarding Plants A, B, C, and D from Coulton to Marsulex.
14. The Ohio EPA designates Plants A, B, and D as source number 0302000001 P001 (P001), and Plant C as source number 0302000001 P007 (P007). Plants A, B, C, and D have a single stack emission point to the atmosphere.

Applicability of NSPS, Subpart H, to Plant A: Modification

15. In September 1994, Coulton applied to Ohio EPA for a Permit to Install to increase its production capacity from 150 tons acid/day to 250 tons acid/day at Plant A. On June 28, 1995, Ohio EPA issued a Permit to Install to Coulton for the

construction of various projects that increased the production capacity at Plant A to 250 tons of sulfuric acid equivalent per day.

16. On March 15, 1999, Marsulex provided U.S. EPA with a list of the physical or operational changes that Coulton or Marsulex made to P001 and P007 pursuant to the June 1995 PTI. The physical or operational changes included the following: installation of an oleum booster fan and replacement of the demister pads and related equipment in the absorbing tower and dry tower; replacement of a portion of the catalyst in Plant A converter; and repacking the Plant A absorbing tower. Therefore, the U.S. EPA concludes that Coulton and Marsulex made physical and/or operational changes to Plant A.
17. U.S. EPA does not know the efficiency of converting sulfur dioxide to sulfur trioxide that Coulton achieved prior to implementing the physical or operational changes pursuant to the June 1995 permit to install. However, Plant A is a single absorption unit sulfuric acid plant. The Kirk-Othmer Encyclopedia of Chemical Technology reports that the maximum efficiency of a single absorption unit sulfuric acid plant is approximately 98%.¹ U.S. EPA assumed that the conversion efficiency was constant at 98.0%. At 98.0%, the emission factor for sulfur dioxide is 26.0 pounds of sulfur dioxide per ton of 100% sulfuric acid. U.S. EPA made the following emission calculations pursuant to the sulfuric acid plant emission factors in AP-42, which U.S. EPA had revised in July 1993:

Production Rate (tons H ₂ SO ₄ /day)	Emission Factor (lbs SO ₂ /ton H ₂ SO ₄)	Convert from Days to Hours	Emission Rate (lbs/hr)
150 tons/day	26.0 lbs/ton	1 day/24hours	162.5 lbs/hr
250 tons/day	26.0 lbs/ton	1 day/24hours	270.8 lbs/hr

¹ Donovan, J.R.; Salamone, J.M. In *Kirk-Othmer Encyclopedia of Chemical Technology, 3rd Edition*; Grayson, M., Eckroth, D., Eds.; Volume 22; John Wiley & Sons: New York, 1983; pp. 190 to 191, 210 to 215.

270.8 pounds of sulfur dioxide per hour
~~-162.5 pounds of sulfur dioxide per hour~~
 108.3 pounds of sulfur dioxide per hour^{2 3}

Based upon the calculations using the emission factors in AP-42, U.S. EPA concludes that the hourly emission rate to the atmosphere from Plant A did increase.

18. Based upon the information in paragraphs 15 through 17, U.S. EPA concludes that Coulton modified Plant A. Further, as discussed below, the exemption to modification set forth in 40 C.F.R. § 60.14(e)(2) does not apply. Therefore, Plant A is an affected facility under 40 C.F.R. Part 60, Subpart H.
19. Marsulex reported that Coulton completed the modifications to the Cairo Facility in May 1996. Therefore, Coulton completed the modification by no later than May 31, 1996. Thus, pursuant to 40 C.F.R. § 60.14(g), Plant A has been an affected facility since no later than November 26, 1996.

Capital Expenditure Exemption Does Not Apply

20. By letter dated April 9, 1995, Coulton asserted to Ohio EPA that the capital expenditure exemption set forth at 40 C.F.R. § 60.14(e)(2) exempted Plant A from NSPS

² This increase corresponds to an annual increase of 474.4 tons of sulfur dioxide per year. Under the Prevention of Significant Deterioration rule, 40 C.F.R. § 52.21, a net emissions increase of greater than 40 tons SO₂/yr is significant and defines a major modification for sulfur dioxide. 40 C.F.R. § 60.14 does not define a significant emission increase that represents a modification.

³ Ohio Administrative Code (OAC) 3745-18-08(H) sets an emission limit of 35.0 lbs of sulfur dioxide per ton of 100% sulfuric acid produced for P001. In February 1980, the Ohio EPA included this rule in its proposed SIP revision. In May 1980, the Ohio EPA withdrew this rule from the proposed SIP revision, and therefore, in January 1981, the U.S. EPA did not approve OAC 3745-18-08(H) as part of the applicable Ohio SIP. 40 C.F.R. § 52.1881(a)(4) and (8). However, this emission limit is legally and practicably enforceable by the Ohio EPA. In January 1995, an Ohio EPA permit reviewer used the limit in OAC 3745-18-08(H) to determine that the net emissions increase for this facility would be at least 639 tons/year.

applicability. That exemption provides that modifications that arise from an increase in production rate where that increase can be accomplished without a capital expenditure are exempt from NSPS applicability. The exemption applies if the cost of the modification is less than the product of 12 1/2% (AAGRAP) and the sum of the original cost of the facility, adjusted by capital improvements, casualty losses, defunct equipment, but not depreciation.

21. Marsulex has not provided U.S. EPA with information pertaining to the cost of constructing Plant A in 1959. However, using the purchase price for the facility (Plants A and B) in 1975 (\$400,000), indicates that the exemption would apply only if the cost of the physical and operational changes to Plant A are less than \$50,000 (12 1/2% of \$400,000). By letter dated April 27, 1999, Marsulex reported that Coulton spent \$298,933 to implement the physical and operational changes made by Coulton to increase the production capacity of Plant A. Therefore, the exemption does not apply because the cost to implement the changes exceeded the product of the AAGRAP and the basis by over \$248,000.

Daily Monitoring Requirements

22. The June 28, 1995, PTI requires Marsulex to collect and analyze one grab sample of the effluent gases from the Cairo Facility during each 8-hour shift; to measure the concentration of sulfur dioxide in that sample; to calculate the emission rate in pounds per ton; to record the emission rate; and to report, on a quarterly basis, the average emission rate for each day.

Summary of Emissions in Excess of NSPS Limit

23. On July 29, 1992, Cairo Chem's stack testing contractor conducted three runs of Reference Method 8 in 40 C.F.R. 60, Appendix A (Method 8) for sulfur oxides. The average emission rate from P001 and P007 was 206 pounds of sulfur dioxide per hour (lbs/hr), which was equivalent to 25.5 lbs/ton.
24. On April 16, 1997, Marsulex's stack testing contractor conducted three runs of Method 8 for sulfur oxides. The average emission rate of sulfur dioxide from P001 and P007 was 219 lbs/hr, which was equivalent to 31.9 lbs/ton.
25. Between November 26, 1996, and December 31, 2000, the daily

average emission rate was 31.1 lbs/ton. Table 1 reports the average emission rate for each month between November 1996 and December 2000.

26. Based upon the July 1992 and April 1997 stack tests, the daily monitoring data, U.S. EPA concludes that on 1445 days of operation between November 26, 1996, and December 31, 2000, Marsulex violated the sulfur dioxide standard in the Sulfuric Acid Plant NSPS. Further, based upon the presumption of continuing violation in Section 113(e)(2) of the Act, 42 U.S.C. 7413(e)(2), U.S. EPA concludes that Marsulex will continue to violate that standard until Marsulex installs and operates appropriate air pollution control technology.

FINDING OF VIOLATION

The Administrator of the U.S. EPA, by authority duly delegated to the undersigned, hereby notifies you and the State of Ohio that Coulton violated the Standard of Performance for sulfuric acid plants as set forth in this Finding of Violation.

1-26-01

Date



Bharat Mathur, Director
Air and Radiation Division

Table 1. NSPS Violations at Marsulex, Cairo, OH, November 1996 through December 2000.

Month, Year	Average Emission Rate (lbs/ton)	Number of Days of Operation
November 1996	30.0	5
December 1996	30.7	31
January 1997	29.5	27
February 1997	30.0	28
March 1997	30.4	28
April 1997	31.1	29
May 1997	32.3	31
June 1997	33.7	30
July 1997	32.1	31
August 1997	31.8	31
September 1997	32.5	21
October 1997	30.9	31
November 1997	31.2	30
December 1997	31.1	31
January 1998	30.8	31
February 1998	30.7	28
March 1998	31.2	31
April 1998	31.8	30
May 1998	32.2	31
June 1998	31.8	30
July 1998	31.0	31
August 1998	30.8	31
September 1998	30.7	27
October 1998	28.9	29
November 1998	29.8	22

December 1998	29.6	30
January 1999	29.6	28
February 1999	30.5	27
March 1999	25.1	30
April 1999	31.7	29
May 1999	32.1	30
June 1999	31.9	30
July 1999	31.3	31
August 1999	31.1	30
September 1999	31.1	30
October 1999	30.5	31
November 1999	30.1	30
December 1999	30.4	31
January 2000	31.6	31
February 2000	31.8	29
March 2000	32.2	31
April 2000	32.9	28
May 2000	30.4	22
June 2000	31.7	28
July 2000	31.8	30
August 2000	31.2	31
September 2000	33.0	30
October 2000	31.8	31
November 2000	31.2	30
December 2000	30.5	31
TOTAL	31.1 ⁴	1445

⁴ Weighted Average

CERTIFICATE OF MAILING

I, Loretta Shaffer, certify that I sent one Finding of Violation, issued pursuant to the Clean Air Act, by Certified Mail, Return Receipt Requested, to:

Duane S. Abbott, P.E.
Manager of Process Engineering
Marsulex, Inc.
6800 West Central Avenue, Suite L-1
Toledo, Ohio 43617

Charles Perry, Esq.
Hunton & Williams
NationsBank Plaza
600 Peachtree Street, Suite 4100
Atlanta, Georgia 30308-2216

I also certify that I sent copies of the Notices of Violation by first class mail to:

Robert Hodanbosi, Chief
Division of Air Pollution Control
Ohio Environmental Protection Agency
Lazarus Government Center
P.O. Box 1049
Columbus, Ohio 43216-1049

Donald Waltermeyer, Air Pollution Control Supervisor
Northwest District Office
Ohio Environmental Protection Agency
347 North Dunbridge Road
Bowling Green, Ohio 43402

on the 29th day of January, 2001.



Loretta Shaffer, Secretary
AECAS, (MN/OH)

CERTIFIED MAIL RECEIPT NUMBER: 7099 3400 0000 9601 3892