

ILLINOIS POLLUTION CONTROL BOARD
August 31, 1989

MINNESOTA MINING AND)
MANUFACTURING COMPANY,)
)
Petitioner,)
)
v.) PCB 89-58
)
ILLINOIS ENVIRONMENTAL)
PROTECTION AGENCY,)
)
Respondent.)

MR. LEE R. CUNNINGHAM AND MR. JEFFREY C. FORT, GARDNER, CARTON & DOUGLAS, APPEARED ON BEHALF OF THE PETITIONER; AND

MS. SUSAN JANE SCHROEDER, ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, APPEARED ON BEHALF OF THE RESPONDENT.

OPINION AND ORDER OF THE BOARD (by J. Anderson):

This matter comes before the Board on a March 31, 1989, petition by Minnesota Mining and Manufacturing Company ("3M") for variance from Subpart QQ of Part 215 of the air rules, more specifically from 35 Ill. Adm. Code 215.946, from April 1, 1989 to March 31, 1991, to either modify its process or install an add-on control system at its Bedford Park facility.

Subpart QQ regulates Miscellaneous Formulation Manufacturing Processes ("Generic RACT"); it was adopted April 7, 1988, became effective April 1, 1989, and applies to sources emitting more than 100 tons VOM annually.

On May 11, 1989, the Board granted the May 1, 1989 motion filed by the Illinois Environmental Protection Agency ("Agency") for an extension of time until May 31, 1989 to file its recommendation. However, by letter received by the Board on May 19, 1989, the Hearing Officer granted the Agency motion for additional time to file its recommendation, until June 16, 1989. The Board notes that the Hearing Officer's extension does not supersede the Board's earlier action. However, in order to cure what appears to be inadvertent error, the Board hereby affirms the Hearing Officer's action.

On June 16, 1989, the Agency filed its recommendation to grant variance, with conditions; on July 17, 1989, the Agency

filed an amendment to its recommendation, essentially consisting of amendments to certain conditions. Hearing was held on July 20, 1989.

3M's variance petition concerns VOM emissions resulting from its production of pressure sensitive adhesives at its plant in Bedford Park, Illinois.

3M believed it could comply with the 100 tpy limit by April 1, 1989, by using process modifications; however, based on a consultant's error, 3M learned on January 31, 1989, that its emissions were over 400 tpy, not the 126.9 tpy earlier computed. (Ex. 2) Given the greater emissions, 3M realized it was not going to be able to timely comply, and proceeded to develop a two year compliance plan. The plan commits to installing add-on technology, most likely thermal oxidizers, for 81 percent reduction of its overall emissions subject to Subpart QQ if 3M cannot reduce its overall emissions below the 100 tons per year through process changes or redesign of its blending operations.

3M manufactures pressure sensitive adhesives through two different, but similar, processes, one of which uses seven ribbon blenders, the other three "moguls."

The manufacture of pressure sensitive adhesives requires the use of rubber, resin, powder, dry ice and a variety of solvents. 3M does not anticipate any change in the raw materials used to produce its adhesives.

A blender cycle lasts fifteen to twenty hours, and starts by adding approximately one-third of the total solvent followed by the initial rubber charge. Several hours later the balance of the rubber is added. Throughout the cycle, solids, such as rubber, are loaded through the blender's hatch, then solvent is added, and, near the end of each cycle, crushed resin is added as well to yield the desired viscosity. After a brief final mixing, the blender's contents are transferred to storage tanks. Each blender is equipped with a condenser, which may have a potential to reduce emissions.

The moguls have a cycle time of six to eight hours. A mogul's cycle begins by adding rubber through its cover in the absence of a solvent. The rubber goes through a mastication stage, which is followed by the addition of resin and powder. Only near the cycle's end is solvent added to bring the mixture to its proper viscosity. Once obtained, the viscous solution is pumped to a storage tank. The three moguls are ducted to a thermal oxidizer to control odors, not VOMs. 3M does not anticipate installing any control equipment on the moguls.

Testing in 1988 indicates that the blenders and moguls emitted 370 and 45 tons of VOM per year, respectively, totalling

415 tons. Production and emission levels are steady throughout the year. Due to the implementation of the proposed interim measures, 3M anticipates a decline in VOM emissions during the life of the variance.

3M and the Agency have agreed on a timetable for instituting the interim measures during the term of the variance. The interim measures are articulated in the modified recommended conditions filed by the Agency on July 17, 1989. 3M testified at hearing that it has already instituted a blender loading program to reduce the time the hatches are open; designed and completed engineering drawings and requested bids for a more effective blender top to reduce leakage; and has installed a small prototype solids loading hopper above one blender and ordered filter media to address the problem of clogging by the resin. If the improved sealing results in emissions greater than 5 tons through each condenser, 3M will then address controls. (R 17-19).

3M states that it will study a closed-loop system to replace the blenders, presently estimated to cost between \$500,000 and \$5 million. 3M presently estimates that a control system will cost \$1 million.

Environmental Impact

The 3M plant is in Cook County, a non-attainment area for ozone. The Agency notes that the two closest monitors are at 1850 S. 51st Avenue, Cicero, Illinois and at 84th & Kedvale Avenue, Chicago, Illinois. In 1986, neither site exceeded the 0.12 ppm ozone standard. In 1987, the Kedvale monitor exceeded the standard once, at 0.157 ppm and the Cicero monitor exceeded it twice, at 0.146 ppm and 0.153 ppm. In 1988, the Cicero monitor exceeded the standard twice, at 0.126 ppm and 0.125 ppm. In April, 1988, the Kedvale site was closed, and the monitoring equipment was relocated to 4500 W. 123rd Street, Alsip, Illinois. The new Alsip monitor exceeded the standard twice, at 0.127 ppm and 0.125 ppm. In 1989, neither monitor has registered excess ozone. The Agency notes that "As a major volatile organic material source in an ozone non-attainment area, 3M contributes, to an unquantified degree, to the 'frequent, pervasive and substantial' violations of the ozone ambient air quality standard in Northern Illinois (See EKCO Glaco Corporation v. IEPA, PCB 87-41 (December 17, 1987))." However, the Agency also notes that 3M expects the VOM emissions to decline during the term of the variance.

3M also points out the numerous control and monitoring systems it has installed over the years, including the installation of thermal oxidizers, activated carbon absorption systems, etc. on its various production lines, its record of unquestioned compliance, and its intent to donate emissions

credits to the state for improvement in air quality (Pet. p. 10, 11).

Compliance with Federal Law

Until the applicable rules have been approved by the USEPA as part of the State Implementation Plan (SIP), the Agency does not believe that the variance needs to be submitted as a SIP revision, and, should Section 215.946 be approved, the variance would be approvable as a SIP. In so saying, the Agency references 52 Fed. Reg. 26404 (July 14, 1987), wherein the USEPA stated that SIP revisions containing post-December 31, 1987 deadlines may be approved if the deadline is "fixed-near-term"; the Agency believes that the March 31, 1991 compliance deadline is sufficiently "near term". The Agency also references 52 Fed. Reg. 36965 (Oct. 2, 1987). The Agency also stated that the USEPA is taking the position that lack of timely fulfillment of the requirements of the 1982 ozone SIP does not in itself prohibit SIP approval of the rule or variance as a SIP revision as long as all other criteria for approval are otherwise met. (Agency Rec. p. 4,5).

Board Conclusions:

The Board accepts the proposed compliance plan as appropriately containing increments of progress and interim measures to reduce VOM emissions. While the conditions reflect compliance choices, depending on the success of various step-by-step compliance methods, the plan contains a definite commitment to achieve compliance by March, 1991. Considering 3M's "near term" compliance commitment, its quick response to the unexpected miscalculation of 3M's emissions, and the reduction of the environmental impact during the term of the variance, the Board finds that 3M has presented adequate proof that compliance with 35 Ill. Adm. Code 215.946 would impose an arbitrary or unreasonable hardship. Because 3M could not have realistically earlier filed for variance, the Board will also start the term of the variance on April 1, 1989, as requested.

This Opinion constitutes the Board's findings of fact and conclusions of law in this matter.

ORDER

Minnesota Mining and Manufacturing Company is hereby granted a variance from Subpart QQ of Part 215, specifically 35 Ill. Adm. Code 215.946, subject to the following conditions:

1. This variance shall be in effect from April 1, 1989 to March 31, 1991.

2. By September 1, 1989, 3M shall institute a blender loading program designed to reduce the amount of time the charging hatches are open during the loading of solids thereby reducing peak emissions. This program shall include, at a minimum, opening the charging hatches only while solids are being added to the blender and closing the hatches while carts of solids are being retrieved from storage.
3. By July 1, 1990, 3M shall install tops on each of its blenders. These tops will be designed to reduce VOM losses from the blenders, compared to current tops, by reducing vapor leakage along the rim and hatch edges and through any hinges. After March 31, 1990, 3M shall use temporary sealing measures (e.g. measures similar to those used during testing) on all blenders that do not have new blender tops.
4. 3M shall attempt to minimize emissions through the blender hatches by replacing hatch loading with a solids handling system to deliver the solids and resins to the blenders without the need to open the hatches. The following steps will be taken:
 - a) By January 1, 1990, 3M shall position a solids loading hopper well above one blender top. By February 1, 1990, 3M shall report, in writing, to IEPA on the results. This report will include a plan, including dates, by which 3M will implement solids handling system on each of its blenders, if the hopper can be operated effectively from this position without plugging caused by solvent vapors.
 - b) If the system in (1) above cannot be utilized effectively due to plugging, by April 1, 1990, 3M shall install a system whereby carbon dioxide is used as a purge into the dump chute from the hopper to keep the blender's solvent vapors from reaching the resin hopper. By May 1, 1990, 3M shall report in writing to IEPA on the results. If this system can be effectively operated without plugging, this report shall include a plan, including dates, by which 3M shall install and operate such a system on each blender.
5. 3M shall investigate the potential for reducing emissions through the condensers. By February 1, 1990, 3M shall report in writing to IEPA on the results considering the experience with new blender tops and the solids loading hopper(s) to that point. This report shall include the emission reduction estimates per blender and a plan, including dates, by which 3M shall provide interim improvements for more effective condensation of the solvent vapors in the condenser, to the extent possible based upon available data. By May 1, 1990, 3M shall submit a final

report considering further experience with new blender tops and solids loading hoppers. This report shall provide the final plan for the interim improvements to the condensers on each blenders.

These condenser improvements will be implemented if the interim control measures listed below will reduce emissions by 5 tons per year per blender using methods 1 and /or 2 below. If emissions cannot be reduced by 5 tons per year per blender using methods 1 and/or 2 below, 3M will implement improvements if the interim control measure will reduce emissions by 10 tons per year per blender using method 3 below. Methods 1, 2 and 3 are as follows:

1. using chilled water in the condensers
2. refrigerating the condensers or
3. replacing the condensers with more effective condensers.

3M shall implement improvements to the condensers of each blender as soon as possible after the blender tops are in place and cost estimates are received.

6. If 3M chooses to achieve compliance through the use of kettles, the February 1, 1990, written notification to IEPA shall include a statement as to which interim control measures will be pursued and why.
7. 3M shall submit to IEPA every quarter a report describing in detail the progress made in the previous three months in:
1) the studying and testing of various modifications of the manufacturing process of pressure sensitive adhesives, 2) the design, construction and installation of add-on control equipment or new compounding equipment, and 3) the progress made in the previous three months in employing the interim control measures.
8. Quarterly reports shall be submitted to IEPA's regional office in Maywood and the Permit Section in Springfield within 20 days of the end of the quarter.

Illinois Environmental Protection
Agency
Division of Air Pollution
Control
The Intercontinental Center
1701 First Avenue
Maywood, IL 60153

Illinois Environmental
Protection Agency
Division of Air Pollution
Control
Permit Section
2200 Churchill Road
Springfield, IL 62702

9. The quarterly report shall include a summary of actions taken, any determinations made as to VOM emissions and feasibility of control measures, any decision made as to the

particular control measures to be pursued, the reports of any further emissions tests performed on equipment subject to Subpart QQ, and an estimate of the current level of VOM emissions using mass balance computations.

- 10) Within 45 days of the date of this Order, Petitioner shall execute and forward to Bobella Glatz, Enforcement Programs, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62794-9276, a Certification of Acceptance and Agreement to be bound to all terms and conditions of this variance. Failure to execute and forward the Certificate within 45 days renders this variance void and of no force and effect as a shield against enforcement of rules from which variance was granted. The 45-day period shall be held in abeyance during any period that this matter is being appealed. The form of said Certification shall be as follows:

CERTIFICATION

I, (We), Minnesota Mining and the Manufacturing Company, having read the Order of the Illinois Pollution Control Board, in PCB 89-58, dated August 31, 1989, understand and accept the said Order, realizing that such acceptance renders all terms and conditions thereto binding and enforceable.

Petitioner

By: Authorized Agent

Title

Date

Section 41 of the Environmental Protection Act, Ill. Rev. Stat. 1987 ch. 111 1/2 par. 1041, provides for appeal of Final Orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 31st day of August, 1989, by a vote of 6-0.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board