

ILLINOIS POLLUTION CONTROL BOARD
December 19, 1974

WALWORTH COMPANY,)
KEWANEE DIVISION,)
)
Petitioner,)
)
vs.) PCB 74-197
)
ENVIRONMENTAL PROTECTION AGENCY,)
)
Respondent.)

OPINION AND ORDER OF THE BOARD (by Mr. Henss):

Walworth Company operates a conventional gray iron foundry in Kewanee, Illinois known as its Kewanee Division. Two Whiting #8 cupolas at this foundry are operated on alternate weekdays to produce about 400 tons per week of gray and ductile iron castings. Part of the weekly production is utilized in other manufacturing operations within Walworth and the remainder is manufactured on a job basis for other companies. Walworth employs 225 persons at its Kewanee Division.

In its Amended Petition, Walworth seeks variance from Rule 203(b) of the Air Pollution Control Regulations until August 15, 1975 in order to continue operating the two cupolas pending modifications to existing air pollution control equipment and installation of new control equipment.

Petitioner's foundry is located approximately two blocks from Kewanee's main business district. A residential area is located some 200 to 400 feet south and east of the foundry. An industrial/commercial district extending into the main downtown business district bounds the foundry on the north. The Kewanee Division is housed in two large old buildings. Both cupolas, sand handling equipment, and a molding operation are housed in the building nearest the residential area.

The foundry operates approximately six hours per weekday with one cupola operating and one shut down. As shown in the following table, several sets of process weight rate figures have been submitted by the parties:

<u>ITEM</u>	<u>Original Petition, lbs./hr.</u>	<u>Amended Petition, lbs./hr.</u>	<u>Agency Recom- mendation, lbs/hr</u>
Coke	3,225	2,075	3,225
Scrap Iron	12,560	8,080	12,550
Scrap Steel	6,575	4,230	5,575
Malleable Pig Iron	3,590	2,310	3,990
Spiegeleisen	130	85	130
Limestone fluxes and other additions	<u>1,120</u>	<u>720</u>	<u>1,120</u>
TOTAL	27,200	17,500	26,590

In its application for construction permit, Walworth, as required, used two sets of process weight rate figures. The indicated rates were: 33,088 lbs./hr. maximum and 27,200 lbs/hr. average. Slightly compounding the problem is Petitioner's statement that it had submitted a process weight rate figure of 27,300 lbs./hr. on the construction permit application form and that the Agency was aware of this figure since it approved the construction permit (Walworth Reply to Agency Recommendation, page 7).

Petitioner argues that its use of the 17,500 lbs./hr. figure was an error committed during preparation of the Amended Petition. Since both the original Petition and the permit application form show a 27,200 lbs./hr. rate and Petitioner confirms that to be the correct figure, the Board will consider that figure to be the applicable process weight rate for the purpose of this proceeding.

Petitioner states that it initiated studies in 1967 to determine methods of achieving compliance with the Air Pollution Control Act of 1967. The Wisconsin Chemical and Testing Company was retained by Petitioner to conduct stack emission studies. Three tests conducted on Petitioner's stack in April 1968 showed emission rates ranging from 153 lbs. of dust/hr. to 248.4 lbs. of dust/hr. Process weight rates on the three test runs varied from 9.55 tons/hr. to 13.6 tons/hr.

Upon comparing these emission rates to the then allowable rate, Wisconsin Chemical reported to Petitioner that a dust collection system having a minimum overall dust collection efficiency of 91.1% would be required to achieve compliance on the east cupola.

After receiving the Wisconsin Chemical report, Walworth signed a contract with American Air Filter (AAF) in June 1968. Under terms of this contract AAF was to design and fabricate a Venturi scrubber warranted to have the capability of reducing Walworth's particulate emission rate to less than 21.6 lbs./hr. when the cupola was operated at a melt rate of 12 tons/hr.

Installation of the AAF system began in June 1970 and was completed in September 1970 at a cost to Walworth of over \$150,000. In November 1970, pursuant to requirements of the contract, AAF initiated stack tests to determine if the equipment had been properly installed and would allow Walworth to operate its cupolas in compliance with the emission limitations. The stack test showed that the system, as installed, had not brought Walworth's emissions into compliance.

AAF then initiated further studies to determine the reason why the system had failed to achieve compliance. Modifications made to the system during the period January to November 1971 were followed by more testing but the results continued to show non-compliance. In June 1972 changes in design and equipment, including the addition of a 75 h.p. fan, were completed. AAF performed additional stack testing on the modified system in September 1972 and submitted the results to Walworth.

Walworth reviewed these test results and rejected them because of wide variations. Walworth's opinion was that the results still showed non-compliance with the Regulations and that AAF had not complied with the provisions of its contract. Because of dissatisfaction with the AAF test, Walworth secured the services of National Loss Control for further stack testing. National was to determine the actual emission rate from the foundry and whether or not this rate was in compliance.

Two series of tests were performed by National. Tests conducted on November 7 and 17, 1972 showed that Walworth emitted an average of 28.2 lbs./hr. on a time weighted basis at a melt rate of about 10.4 tons/hr. The allowable rate was 19.69 lbs./hr. The emissions contained 1,720 ppm of carbon monoxide (allowable rate 200 ppm), but the afterburners at the foundry were not in operation during testing for carbon monoxide.

Two tests conducted on March 20, 1973 revealed emission rates of 38.06 lbs./hr. and 18.37 lbs./hr. at a charge rate of about 13.68 tons/hr. The allowable rate was reported to be 23.66 lbs./hr. at that melt rate. The report notes that consideration should be given to the fact that the ratio of charge to blast was greater during the initial hours of operation than during later hours. With the after burners in operation, carbon monoxide emissions were reported to be less than 25 ppm.

Walworth states that the Agency and its predecessor were fully informed of all developments at its Kewanee foundry from the period June 1968 to September 1970. Walworth claims it submitted partially completed permit applications because it was unable to complete the forms pending receipt of accurate test results showing compliance with the regulation.

Walworth claims that, upon receiving the test results from National, AAF refused to undertake further examination of the Venturi scrubber system to resolve the problem. In June 1973 Walworth filed suit in the U. S. District Court, Northern District of Illinois, charging AAF with breach of contract and breach of warranties. Walworth sought damages from AAF for replacement of parts and lost time and production in excess of \$60,000.

After protracted pre-trial discovery and at the discretion of the Court, AAF agreed to review the design and fabrication of the system and making necessary changes to bring the system into compliance.

AAF completed changes in the design of the system in April 1974. Six tests conducted on May 7, 8, and 9, 1974 showed that the required reduction in particular emissions had still not been achieved. Tests indicated excessive entrainment of dirty water which should be separated in the sludge settler or separator before entry into the fan system. As a result of these tests AAF informed Petitioner that adequate evaluation of the system would require field tests with a pilot scrubbing system. The field tests were required to establish the relation between scrubbing system pressure drop and emission from the system.

Pilot tests conducted from June 24 to 26, 1974 revealed that the present system had an inadequate capability for pressure drop. In place of the present 35 inch pressure drop the system requires a pressure drop of 60-65 inches. AAF determined the necessity of installing a supplementary fan in order to create the desired pressure drop in the system. The pilot test indicated that a 60 inch pressure drop should produce an outlet grain loading of 0.08 gr./DGCF or a particulate emission rate of about 10 lbs./hr.

Petitioner estimates that its uncontrolled emissions would probably be about 300 lbs./hr. of iron oxide, coke breeze, and lime dust. The Agency estimates uncontrolled particulate emissions of 231.2 lbs./hr. at a process weight rate of 27,300 lbs./hr.

Petitioner states that the 10 lbs./hr. emission rate was based on pilot tests conducted at a lower tonnage rate and under more controlled conditions than would be considered standard operation. Therefore, Petitioner believes that actual operating conditions will cause a controlled emission rate of 16 to 18 lbs./hr. of particulates at a higher pressure drop.

Based upon data and Petitioner's permit application the Agency estimates controlled particulate emissions from the foundry are now 34.68 lbs./hr. At this rate the present scrubber is approximately 85% effective in removing particulate matter.

The Agency stated that an emission rate of 10 lbs./hr. would meet requirements of both Rule 203(a) and 203(b), but Petitioner took exception to the mention of Rule 203(a), stating that Rule 203(a) did not apply to the foundry or this proceeding. Under the provisions of Rule 203(c)(2), Walworth would be required to meet the more restrictive emission limitation of Rule 203(a) unless it had commenced construction or modification on equipment before April 14, 1972 "sufficient to achieve compliance with Paragraph (b) of this Rule 203". On the record there is no question that Petitioner proceeded with installation with control equipment that was thought to be sufficient to achieve compliance. In spite of this effort the record also shows that this system has not solved Petitioner's problem.

If Petitioner's efforts to upgrade the control system are successful then Rule 203(b) is the applicable Rule. Failure of the system to the point of abandonment in favor of some other system or method would, under the provisions of Rule 203(c), cause Petitioner's operation to come under the provisions of Rule 203(a). This is not to be construed as a directive to stay with the present system regardless of continued failure of the system. It merely points out that the more restrictive provisions of Rule 203(a) will have to be complied with if the present system is ultimately abandoned and another system or method is used.

Additional control requirements at the foundry will require additional electrical equipment for proper operation. Bids have already been secured for the electrical equipment. The cost to Petitioner for this equipment is estimated to be about \$33,000. Petitioner's proposed timetable for achieving compliance is as follows:

- | | <u>Complete by:</u> |
|--|---------------------|
| 1. Select and order additional fan and auxiliary equipment | August 1, 1974 |
| 2. Receive and install equipment. (Current delivery time is quoted as 40 weeks). | June 1, 1975 |
| 3. Perform shake-down runs and conduct emission test | July 15, 1975 |
| 4. Submit data in support of operating permit | August 15, 1975 |

In its Recommendation the Agency expressed the opinion that the schedule was reasonable.

Walworth states that grant of this variance is required since valid construction and operating permits are required to continue operation. Shutting down the foundry would involve a hardship for both Petitioner and its 250 employees. Continued operations under variance cause emissions "only slightly out of compliance" according to Petitioner.

The Agency recommends denial of this variance. In June 1974 the Agency contacted fourteen of Petitioner's neighbors, most of whom complained of heavy emissions from the foundry. The emissions were alleged to have interfered with their ability to enjoy outdoor activity, hang wash outside, and keep their houses clean. Some of the citizens indicated that the emissions caused a choking sensation.

The Agency believes that Petitioner has continued to operate its cupolas despite 19 separate scrubber malfunctions which occurred from April 1973 through September 1974. Some of the incidents involved operating for only one day without the scrubber, while others were long periods of operation without the scrubber. In 1973 Petitioner operated from the 4th to the 24th of September when the scrubber was down with damper problems.

The Agency claims that such operation contravenes the provisions of Rule 105 of the Air Pollution Control Regulations. When a malfunction occurs, the Agency recommends the Petitioner be allowed to complete the charge in the cupola but then be prohibited from operating the cupolas until the scrubber has been repaired. Uncontrolled operations may be the cause of citizen complaints according to the Agency.

The record does not show the length of time this foundry has been in operation. Petitioner's neighbors have obviously received some relief since the installation of the scrubber but, as of June 1974, are still experiencing interference with their lives and property because of the foundry emissions. There is simply not enough in the record to support the Agency's contention that most of the problems experienced by these neighbors is a result of Petitioner's operation without the scrubber.

If the variance is granted, the Agency recommends that such variance be granted only until July 15, 1975 on the condition that:

1. Petitioner submit a program whereby only clean scrap will be used during the period of variance;
2. Petitioner submit a maintenance program for its modified scrubber and make such program part of its operating permit application.
3. Petitioner complete the charge in the cupola when a scrubber malfunction occurs and then cease operations until the malfunction is corrected and submit in writing a complete report of the incident;

4. Petitioner submit bi-monthly progress reports;
5. Petitioner limits its process weight rate to 17,500 lbs./hr.;
6. Petitioner perform stack tests within 35 days of completion of the proposed modifications, and
7. Petitioner post a bond to insure completion of the scrubber modifications.

Walworth's response to the Agency Recommendation raises several points of interest. On the question of continued operation during a scrubber malfunction, Petitioner states that cessation of operation pending corrections would cause serious hardship to Petitioner, its employees, customers, and the economy of Kewanee. This hardship would result because, as a jobbing foundry, parts must be timely produced in order to benefit the customer. The Board is asked to recognize the nature of the industry, the individuals and the businesses dependent thereon and how cessation of production would effect those individuals and businesses.

The Agency also requests a maintenance program for the modified scrubber. Petitioner states its willingness to submit such a program to the Agency. In addition, Petitioner claims to maintain a spare parts inventory in anticipation of any problems except for problems requiring fabrication of parts. Daily maintenance and inspection of the scrubber system is under the direction of a maintenance foreman, and records of such work are kept.

It is our opinion that Petitioner's uncontrolled emissions during long periods of scrubber malfunction present an unwarranted burden upon its neighbors that outweighs the claim of economic hardship. Continued operation in an uncontrolled mode for ten to twenty days is totally unacceptable to the Board. The knowledge that Petitioner must repair the scrubber before resuming operation should provide the incentive to expedite the repair work. If Petitioner submits required information and its operating permit application to the Agency in conformance with Rule 105, then it may obtain the right to operate during a malfunction or breakdown. As the record now stands the Board is not convinced that such operation is warranted.

We shall not, however, limit Petitioner to a process weight rate of 17,500 lbs./hr. When a cupola is operating in conjunction with the scrubber, excessive particulate emission amounts to about 11 lbs./hr. While this is above the allowable rate, it does not represent an intolerable excess, as does the uncontrolled emission. Petitioner shall be limited to 27,200 lbs./hr. for the duration of this variance.

The issue of clean versus dirty scrap comes about as a result of the Agency's statement that the excess emissions "may be caused by the use of dirty scrap". No evidence is presented by the Agency that dirty scrap is used in the foundry. Petitioner asserts that every effort is made to assure that #1 scrap is utilized and that it is unclear what the Agency defines as dirty scrap. Petitioner believes that the Agency erroneously equated the aluminum and magnesium content in scrap engine blocks with dirty scrap. A requirement that Petitioner continue to utilize the same grade of scrap as it has in the past should clear up any misunderstanding by the parties.

It is the opinion of the Board that Walworth has met the requirements necessary to receive a variance. Walworth's efforts to comply show good faith. This record of continuing effort indicates that Walworth will meet its obligations without the added inducement of a compliance bond.

Finally, we note that Walworth's schedule calls for meeting the standard shortly after the date to which the State of Illinois has committed in the Implementation Plan, approved by the U. S. Environmental Protection Agency. From the entire record we believe that Walworth can and should advance its schedule so that compliance is achieved by July 1975. Variance will be granted subject to certain conditions to and including June 30, 1975.

This Opinion constitutes the findings of fact and conclusions of law of the Pollution Control Board.

ORDER

It is the Order of the Pollution Control Board that Walworth Company be granted variance from Rule 203(b) of the Air Pollution Control Regulations for its Kewanee Foundry to and including June 30, 1975 for the purpose of modifying an existing scrubber system to the extent required to achieve compliance with Rule 203(b). This variance is subject to the following conditions:

- a. Petitioner shall apply for all necessary permits from the Agency for modification and operation of the scrubber system.
- b. Petitioner shall submit bi-monthly reports to the Environmental Protection Agency. Said progress report shall commence on January 15, 1975 and shall provide details of Petitioner's progress toward completion of the scrubber modification program.
- c. Within 35 days of the completion of the scrubber modification program, Petitioner shall have a stack test performed on its cupola by an independent stack

testing service. Petitioner shall give five days prior notice to the Environmental Protection Agency, Regional Office, 4302 North Main Street, Rockford, Illinois, phone # 815/987-7576 and shall allow Agency personnel to observe such test if they so desire. Results of the stack test shall be submitted to the Environmental Protection Agency's Springfield office as soon as they are available to Petitioner.

- d. Upon experiencing a scrubber malfunction, Petitioner shall complete the charge in that cupola and then cease operation of both cupolas until necessary repairs to the scrubber system have been completed. After each such malfunction Walworth shall cause a written report to be submitted to the Agency detailing the date, time, and nature of the malfunction and the time required to complete repairs. This report shall be included as part of the bi-monthly report required under Part (b) of this Order.
- e. Petitioner shall limit its charge rate to 27,200 lbs./hr. during the period of this variance.
- f. Petitioner shall make all reasonable efforts to utilize the same grade of scrap metal as has been used during the two years preceding the date of this Order.
- g. Petitioner shall submit to the Agency a maintenance program for the modified scrubber designed to keep said scrubber at peak operating efficiency. Said program shall be made a part of Petitioner's operating permit application to the Agency for the modified scrubber system.

I, Christan L. Moffett, Clerk of the Pollution Control Board, hereby certify the above Opinion and Order was adopted this 19th day of December, 1974 by a vote of 4 to 0.

Christan L. Moffett (g)