

ILLINOIS POLLUTION CONTROL BOARD

August 1, 1974

WOODRUFF AND EDWARDS COMPANY, INC.)
)
 Petitioner,)
)
 vs.) PCB 74-112
)
ENVIRONMENTAL PROTECTION AGENCY,)
)
 Respondent.)

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

Woodruff and Edwards Company, Inc. requests variance from Rule 206(e) of the Air Pollution Control Regulations for a period of one year pending experiments, modifications of control equipment, and testing on its foundry cupola. Rule 206(e) prohibits the emission of gasses containing carbon monoxide from any cupola having a melt rate in excess of 5 tons per hour unless:

- 1) such gasses are burned in an afterburner so that the resulting concentration of carbon monoxide is less than or equal to 200 ppm corrected to 50% excess air, or
- 2) such gas streams are controlled by other equivalent pollution control equipment approved by the Agency.

Petitioner operates a gray and ductile iron foundry (cupola rating 12 tons/hour) which is located along the west bank of the Fox River in Elgin, Illinois. West of the foundry is a residential area. There are commercial operations to the north and south and the Elgin City Hall and Civic Center are across the River to the east. The cupola is equipped with a baghouse for particulate control.

Applications for an operating permit were apparently denied by the Agency because of excessive carbon monoxide emissions. Shortly thereafter Petitioner conducted stack tests which showed the cupola to be emitting 219,823 ppm carbon monoxide. Carbon monoxide concentrations at the stack were shown to be 65,615 ppm.

Another series of tests were conducted by Petitioner to determine the effect of the carbon monoxide emissions on nearby areas. Results of these tests were reported as follows:

- 1) In the path of the air stream directly from the point source (cupola and baghouse). 2.5 ppm
- 2) At property line of closest residence 2.5 ppm
- 3) Up-wind from point source for background. 2.5 ppm

To verify these test results, Petitioner performed a series of calculations using the guidelines found in Workbook of Atmospheric Dispersion Estimates, U. S. EPA Document AP-26. These calculations allegedly show that Petitioner's carbon monoxide emissions increase the ground level concentrations of carbon monoxide by 1.2 ppm.

Petitioner is willing to install an afterburner to control carbon monoxide emissions but has been informed by Northern Illinois Gas Company that additional quantities of natural gas for this purpose are not available. Northern Illinois suggested that Petitioner investigate the possibility of eliminating gas usage in other parts of the foundry operation and transfer this gas to the afterburner operation. However, Petitioner states that it would fall short of the afterburner gas requirements by 20% using this method.

The alternative, according to Petitioner, is to use the upper section of the cupola as a combustion chamber to convert the carbon monoxide to carbon dioxide. This "recuperative" method requires the introduction of additional air to the cupola through the charging door. The additional air supply in the presence of heat from the melting operation would allegedly cause spontaneous ignition of the carbon monoxide. Tests using this procedure have shown that carbon monoxide concentrations can be reduced to about 20 ppm in the exhaust stack of the baghouse. Petitioner states that careful supervision was required during these tests and "present conditions were not readily converted to production procedures".

Further modifications of the cooling system will allow combustion of the carbon monoxide to take place in the cross-over duct between the cupola and the cooling tower. This phase of the operation will be difficult since the gas stream must be sufficiently cool prior to entering the baghouse to prevent the destruction of the collection bags.

Based on information from its consulting engineering firm, Petitioner estimates that equipment necessary for the experimental procedure would require eight months for delivery and three months for installation. The experimental method would, if successful, provide the dual reward of achieving compliance with the Regulations and saving energy since it would not require auxiliary fuel. Petitioner has applied for construction permits for an afterburner in the event the variance is not approved although doubts are expressed about the operational efficiency of the afterburner because of inadequate natural gas supplies.

The Agency acknowledges Petitioner's problem in obtaining natural gas and recommends that Petitioner be given the opportunity to explore this new method of carbon monoxide control. According to the Agency, fugitive particulate emissions which Agency investigators observed coming from the furnace cap on the cupola and the charging door should also be eliminated by this proposed method of control.

Nearby residents have no objection to the granting of this variance. The Agency believes that the foundry does not cause a nuisance to the surrounding community.

Reasons for the delay in meeting the standard are not stated definitely, however, the Agency recommends that Petitioner be granted a three month variance. This recommendation apparently stems from conversations in which Petitioner indicated that the required alterations would be made during a July shutdown and that testing would be performed shortly thereafter. In the absence of any response from the Company, the Board concludes that equipment required for the experimental modifications has already been received and will be installed this month.

We shall grant this variance for four months since this is the time Petitioner has indicated would be required for installation of the modification equipment plus an additional month for testing. Petitioner is to be commended for its efforts toward achieving compliance without the need for auxiliary fuel.

ORDER

It is the Order of the Pollution Control Board that Woodruff and Edwards Company, Inc. of Elgin, Illinois be granted a variance from Rule 206(e) of the Air Pollution Control Regulations until December 1, 1974 for the purpose of installing and testing cupola modification equipment designed to achieve compliance with Rule 206(e). This variance is subject to the following conditions:

1. Petitioner shall apply for all necessary Agency permits for the modification equipment.
2. Petitioner shall submit monthly progress reports to the Environmental Protection Agency. Said progress reports shall commence on August 15, 1974 and shall provide details of Petitioner's progress toward completion of the experimental modification program.
3. Within thirty days after completion of the experimental modification Petitioner shall perform a stack test. Results of the stack test shall be

submitted to the Environmental Protection Agency within 5 days after they are available to Petitioner. Petitioner shall notify the Agency five days prior to the stack test indicating the time and place of said test and shall allow Agency personnel to observe said test if they so desire.

4. If the stack test does not show compliance with Rule 206(e), Woodruff and Edwards Company shall proceed to install an afterburner for control of carbon monoxide emissions. Appropriate permit procedures shall be followed.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order was adopted this 1st day of August, 1974 by a vote of 5 to 0.

Christan L. Moffett