ILLINOIS POLLUTION CONTROL BOARD
February 27, 1975

KOPPERS COMPANY, INC.	)	
	)	
Petitioner,	)	
	)	
vs.	)	PCB 74-325
	)	
ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

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

Koppers Company filed its Amended Petition for Variance seeking a one year extension of variances previously granted by this Board in PCB 73-365 and PCB 74-63. In those cases Koppers was granted relief from Rules 103(a)(5)(A) (construction permits) and 206(c) (carbon monoxide) of the Air Pollution Control Regulations for its current operations and a new addition to the facility.

In October 1974 the Board of Directors of Koppers Inc. directed that a second addition be constructed at its Stickney, Illinois site. Construction of this second addition is scheduled to begin in May 1975 and be completed within about 12 months. Variance is also requested for the second addition.

Petitioner operates a manufacturing facility at Stickney, Illinois for the production of phthalic anhydride and tar products. This facility is located on flat terrain in a highly industrialized area surrounded by other industrial and commercial facilities. The nearest residence is approximately 3000' to the northeast at which point there is a highly populated area.

In the manufacturing operation phthalic anhydride is produced by preheating and vaporizing an ortho-xylene feedstock and then passing the reactant gasses through a catalyst filled tubular reactor. Carbon monoxide and other gasses and solids are produced during this reaction. After scrubbing with water to remove gaseous hydrocarbons and solids the gasses are discharged through a 100' stack. The existing plant exhausts gases containing about 4000 ppm of carbon monoxide (2,382 lbs./hr.).

Carbon monoxide emissions for each of the two new additions have been estimated at 794 lbs./hr. When the new additions have been completed the combined total emissions of carbon monoxide will be 3970 lbs. per hour. Rule 206(c) limits the emission of carbon monoxide to no greater than 200 ppm corrected to 50% excess air.

Emissions from the phthalic anhydride process are characterized by low concentrations of carbon monoxide (0.3-0.4%) and a temperature of about 100° F. Control of such emissions using thermal or catalytic incineration is hazardous and requires high fuel consumption. Three techniques using thermal or catalytic incineration are available to Petitioner but these are inherently dangerous or require high fuel consumption.

First process: Heat exchange and incineration methods have proved dangerous in other phthalic anhydride plants because explosions and fires occur in the heat exchanger when phthalic anhydride dust accumulates in sufficient quantities. Fuel requirements are more than 106 million BTU per hour. This would mean an annual consumption of 924 million cubic feet of natural gas or 6.6 million gallons of fuel oil and is enough energy to supply the annual heating requirements of 6,000 to 9,000 homes.

Second process: The wet scrubbing of emissions prior to incineration alleviates the dust problem. Petitioner now utilizes two wet scrubber systems operating in parallel to control emissions. Scrubbing liquor from the two systems is incinerated in a common incinerator. Fuel requirements are high.

Third process: The addition of a catalyst bed to the incinerator system will reduce fuel consumption. Since the catalyst would have to be protected from catalytic poisoning, natural gas is the only feasible fuel. Natural gas is not currently available in the quantity Petitioner requires and may not be available for some time in the future.

Petitioner has been involved in testing an alternative method of controlling carbon monoxide emissions for some time. According to Petitioner, tests using cold catalytic oxidation have shown that this method has the best potential of any tested for bringing the carbon monoxide emissions into compliance. This method involves the catalytic oxidation of carbon monoxide by metal salts at a temperature of about 100° F. The energy saving features of the cold catalytic oxidation method are particularly attractive.

The importance of Petitioner's investigations in basic air pollution control research were noted by the Board in its Opinion in PCB 73-365. If the cold catalytic oxidation method proves successful, similar industries will undoubtedly benefit directly from the program Koppers is pursuing. In the event this method does not prove successful, Koppers will need to install an incineration system. The company has designed and engineered a suitable incineration system for both the existing plant and the new addition. Condition 3 of the Order in PCB 73-365 requires Koppers to complete construction permit applications for a thermal incinerator within the time frame of the variance. Koppers states that the incinerator system has been engineered to a point short of equipment purchase. The Agency reports, in its Amended Recommendation, that the application for a construction permit for the thermal incinerator system has been received.

Based upon recent pilot plant studies Koppers is now committed to develop some form of catalytic technology to control the carbon monoxide emissions. Petitioner's Exhibit J and paragraphs 11, 12 and 13 of the Agency's Recommendation describing these pilot plant studies have been afforded non-disclosure status pursuant to Board Procedural Rule 107 (See: Board Order, January 23, 1975).

Thermal oxidation has now been rejected as a control method. This decision to use catalytic oxidation had been made several months before the agreed decision date according to Koppers. However, Koppers requires additional time for more pilot plant evaluation in order to determine which of several catalytic processes will be used. Depending on test results Koppers expects to make its decision on the catalytic process between March 30 and May 30, 1975. This means that Koppers will fall behind several months in its compliance schedule. Meanwhile, a larger pilot plant will be built and operated, and the design work on a commercial installation will proceed.

Koppers asserts that denial of this variance will cause arbitrary and unreasonable hardship due to a production cost increase of about 20% to cover the capital and operating costs for thermal incineration. Competitive plants representing 85% of the total U. S. phthalic anhydride capacity would not incur such increases since they operate in states having different pollution regulations. A 20% increase in production costs would place Koppers at a disadvantage with these competitive plants particularly since more suitable technology can be developed in a reasonable period of time. Such hardship would be aggravated if Koppers were required to use thermal oxidation to control emissions from the second addition in light of its expenditures and progress on catalytic technology. Koppers claims that the combined carbon monoxide emissions from the facility and other sources will have no significant effect on ambient air quality and will not be harmful. Koppers claims that it has met all

provisions of the prior variances.

Air quality monitoring data has been supplied in order that the Board may evaluate the effect of Kopper's emissions upon the ambient air. This data shows that the air quality in the area is within the National Ambient Air Quality Standard for carbon monoxide. The data are from 1973.

Petitioner's Exhibit F shows that the catalytic oxidation program will be completed by about September 1976. Petitioner states that construction of the second addition will not substantially alter the compliance schedule submitted for the existing plant and the addition now under construction.

The Agency recommends the grant of variance from Rule 206(c) until December 6, 1975 for both the existing facility and the first addition and from Rules 103(a)(5)(A) and 206(c) until December 6, 1975 for the second addition, subject to certain conditions. Since a construction permit for the first addition has been granted, the Agency recommends that the request for variance from Rule 103(a)(5)(A) for the first addition be dismissed as moot.

For the record the Board notes receipt of two formal objections to the granting of this variance. The first objection states that damage was done to the finish of automobiles parked on a nearby lot. The signers of this letter allege that the damage was caused by emissions from the Koppers facility. As proof, they show that Koppers reimbursed them for damage done on one of the three dates. The objectors worry not only about their automobiles but also about possible health effects.

The second objection comes from a citizen who indicates that Koppers increases its emissions on weekends when it knows that air pollution inspectors are not on duty. Emissions allegedly force his family to remain indoors with windows closed on hot, humid summer days. After walks with his grandson he returns home with "red swollen eyes because of the toxic poison fumes" from the Koppers facility.

We are in sympathy with those who suffer from environmental pollution and we wish to maintain an open forum to hear such citizen complaints. However, the current variance request does not apply to any component of the Kopper's exhaust stream other than carbon monoxide. The record is inadequate to establish the cause of the paint damage and the burning of the eyes. We cannot conclude from the record that such damage was caused by carbon monoxide. The Agency should investigate these citizen complaints and take appropriate action if it can establish the type of contaminant involved, indentify the source and if the Agency believes the law has been violated.

From our review of the entire record, the Board finds that Koppers is moving diligently to solve its emission problem. These efforts have involved considerable research into new technology which appears at last to be on the road to providing a solution to a complex problem. The Agency notes that Petitioner has shown good faith in its actions during the term of the prior variance.

We grant the variance as detailed in the Order below.

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

Mr. Henss dissents.

ORDER

It is the Order of the Pollution Control Board that Koppers Company, Inc. be granted variance from Rule 206(c) of the Air Pollution Control Regulations from December 6, 1974 to and including December 6, 1975 for its existing facility and first addition and from Rules 103(a)(5)(A) and 206(c) of the Air Pollution Control Regulations to and including December 6, 1975 for the second addition at its Stickney, Illinois plant. This variance is subject to the following conditions:

1. Koppers Company shall apply to the Environmental Protection Agency for all necessary construction and operating permits no later than May 30, 1975.

2. Koppers Company shall submit bi-monthly progress reports to the Agency. Said progress reports shall commence on March 30, 1975 and shall provide details of progress towards completion of the catalytic oxidation program.

3. Koppers Company shall diligently pursue completion of its research involving catalytic oxidation and shall report to the Agency in its May 30, 1975 progress report its decision on type of catalytic process finally selected.

4. Koppers Company shall cause the bond required in cases PCB 73-365 and continued in PCB 74-63 to apply to the variance in this matter. Said bond shall guarantee performance with this Order.

The request that variance be granted from Rule 103(a)(5)(A) for the first addition at the Stickney Plant is hereby denied as moot.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 27th day of February, 1975 by a vote of 3-1

Christan L. Moffett
Christan L. Moffett, Clerk