

ILLINOIS POLLUTION CONTROL BOARD
June 21, 1973

ENVIRONMENTAL PROTECTION AGENCY)
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 v.) PCB 72-51
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 CPC INTERNATIONAL, INC.)
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OPINION AND ORDER OF THE BOARD (by Mr. Dumelle)

This is an enforcement action alleging violations of Section 9(a) of the Act and Rule 3-3.112 of the old Rules and Regulations Governing the Control of Air Pollution as amended to August, 1969. Hearings were held on December 12 and 13, 1972, January 24 and 29, 1973, February 8, 1973 and April 5, 1973. Also, a Stipulation and Proposal for Settlement was filed by the parties on February 27, 1973.

Section 9(a) provides in part that no person shall cause, threaten or allow the emission of any contaminant into the environment so as to cause or tend to cause air pollution. Section 3(b) of the Act defines air pollution as "the presence in the atmosphere of one or more contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property."

CPC owns and operates a corn wet milling plant in Bedford Park. They employ over 2,152 people and operate around the clock, seven days a week. Total expenditures of the plant are in excess of \$90,000,000 per year. The emissions from the plant are vented to the atmosphere thru four stacks at a total volume of 138,000 cubic feet per minute.

Around twelve private citizens testified to the 9(a) nuisance violation. It is obvious that the plant is emitting a burnt corn meal odor. The question is whether it is a nuisance under the Act. The citizens' reactions to the odor was substantial. They had trouble breathing (R.8), they were nauseated (R.12) it was pungent (R.32), it was overpowering, annoying, and bothersome (R.36), it causes wheezing and headaches, it caused one witness to abandon a bicycle ride and go into her house to escape the odors (R.34, 37), it triggers migraine headaches in one witness (R.48), it causes a choking, suffocating feeling (R.48), it prohibits the use of park facilities and gardening (R.47), it prevents one witness from taking walks as prescribed by her doctor (R.67), it causes awakening at night (R.80), it generally affects outside activities (R.93), it is offensive (R.87, 106, 123), it causes coughing (R. 123) and spitting (R. 160), it is unbearable (R. 163), it affects sinuses (R. 168) and it caused one woman to remove her child from the park program (R. 168).

One man testified that he could smell the odor not only at his home in LaGrange which is three miles from the plant, but also at his job which is nine miles from the plant. In addition to the witnesses there is a petition signed by over 280 people concerning the odors from CPC.

We find that there is a violation of Section 9(a) of the Act. The citizens' testimony more than adequately proves that the emissions from CPC are injurious to human life and that they do unreasonably interfere with the enjoyment of life and property. A penalty of \$7,500 is assessed for this violation.

The complaint also alleges a violation of Rule 3-3.112 of the Rules and Regulation Governing the Control of Air Pollution, as amended to August, 1969. The evidence concerning this allegation is in the record thru affidavits (Exhibits F & G), the contents of which have been stipulated by the parties as being admissible. The issues before the Board in this matter concern both the determination of the particulate emissions allowed under Rule 3-3.112 and the determination of the actual emissions that have occurred.

There are 5 boilers at CPC, 3 coal fired and 2 gas fired. Boilers #1 (coal), #2 (coal), and #4 (gas) exhaust jointly through a 250 foot stack (the west stack), while boilers #3 (coal) and #5 (gas) exhaust jointly through a second 250 foot stack (the east stack). There are thus two emission sources, the stacks, that are the subject of this section of the complaint.

The first issue to be resolved is the allowable emission of particulates. The Agency uses the CILCO opinion (PCB 72-83) to claim that allowable emissions should be based on the capacities of the boilers. This results in a fixed value independent of operating conditions. The Respondent determined its allowable emissions using the capacities of the coal boilers plus the actual fuel usage (operating load) of the gas boilers, which results in a higher allowable emission than that determined by the Agency. The Respondent argues that since it is impossible for them to obtain sufficient gas to operate the boilers continuously at full capacity, the actual gas boiler loadings should be used. However, from Attachment B to the Affidavit of Charles Morton, it can be seen that during June, 1971, the #4 boiler operated at an average hourly load of 269.4×10^6 BTU/hr. which is 86 percent of the boiler capacity of 314×10^6 BTU/hr. During May, 1971, the #5 boiler operated at an average hourly load of 252.7×10^6 BTU/hr. which is 80 percent of the boiler capacity of 314×10^6 BTU/hr. Thus, during some periods, it is possible for CPC to receive sufficient natural gas to operate the gas boilers at full capacity so that an allowable emission based on boiler capacities is appropriate and the CILCO case should be cited. CPC's use of coal boiler capacity rather than average boiler load to calculate the allowable emissions also seems like an intention on their part to follow the CILCO opinion.

Using the boiler capacities to determine the allowable particulate emissions, the Agency calculates an allowable of $0.468 \text{ lb}/10^6 \text{ BTU}$ for the plant (CPC calculates an allowable of $0.594 \text{ lb}/10^6 \text{ BTU}$ based on average gas usage). Both parties performed the calculation of allowable emissions incorrectly in that they used a multiple stack factor for the two stacks which is suitable only for stacks with equal heat inputs. The stack factor was taken from ASME Standard APS-1 "Recommended Guide for the Control of Dust Emission Combustion for Indirect Heat Exchangers", referenced in Rule 3-3.112, and an examination of this document will show that the multiple stack factor is not appropriate. This point was also brought out in the CILCO opinion and the conclusion found in that case and which should be found in this case is that the method to use for unequally heated multiple stacks is that of superposition of sources. For the particular situation at CPC, the superposition method results in a calculated allowable emission of $0.469 \text{ lb}/10^6 \text{ BTU}$, which is almost identical to the value calculated by the Agency. Therefore, the allowable plant emission to be applied to CPC is $0.47 \text{ lb}/10^6 \text{ BTU}$.

The actual emissions of particulates at CPC were calculated by both parties using collection device efficiencies and particulate emission factors. A sampling test of the #1 boiler conducted by Commercial Testing and Engineering Co. (CTE) on February 25, 1972, Attachment 3 of the Statement of Joseph L. Hoffmann, showed particulate emissions from two tests of $0.717 \text{ lb}/10^6 \text{ BTU}$ and $0.729 \text{ lb}/10^6 \text{ BTU}$. The samples were taken downstream of the multiclone collectors and thus represent emissions up the stack.

In determining the actual emissions, the Agency used the CTE test result together with a particulate emission factor for the coal boilers of 17A, where A represents the percent ash content of the coal. The factor was taken from Table 1-2 of AP-42 "Compilation of Air Pollutant Emission Factors", Attachment 4 of the Hoffmann Statement, and taken with the sampling test result implies a collection efficiency for the multiclone of 84.5 percent. The Agency then applies this efficiency along with the emission factor to each coal boiler and in addition applies a particulate emission factor for gas combustion, Table 1-6 of AP-42, to show that on four out of ten dates for which the boiler loadings were known, CPC emitted particulate in excess of the allowable limits, as shown on Attachment 5 of the Hoffmann statement. The Agency thus finds a violation of Rule 3-3.112 on these four dates.

CPC, in their determination of the actual emissions, does not use the information from the CTE tests but instead uses a multiclone collection efficiency of 90.2 percent based on design charts published by Western Precipitator, the manufacturers of the multiclones. This efficiency is dependent on the size distribution of the particulates entering the collector and on the gas pressure drop through the collector. No analysis of size distribution was available for CPC, so the distribution given in Table A-1 of AP-42

was assumed. Thus, by using the assumed particulate size distribution, the known pressure drop, and the design chart supplied, Attachment C to the Affidavit of Donald F. Franzen, an expected collection efficiency of 90.2 percent was determined. In addition, the emission factor of 17A used by the Agency was also used by CPC and with these two pieces of information plus the monthly average boiler loadings listed in Attachment B of the Affidavit of Charles R. Morton, CPC calculated monthly average actual emissions that for the period of November, 1970 to June, 1972 are less than their calculated allowable emissions as shown in Attachment N of the Franzen affidavit.

Because of the lack of complete test data for the plant, both parties made engineering assumptions and approximations in trying to prove their respective cases. The Agency applied the CTE test results from one coal boiler (#1) to the other two coal boilers and also combined the test results with an emission factor to determine the collection efficiency of the multiclones. They used this efficiency, plus the emission factor, to calculate the actual emissions. CPC ignored the CTE test results and based their determination of multiclone efficiency on manufacturer design curves using an assumed particle size distribution. They then used this efficiency along with the same emission factor used by the Agency to determine the actual emissions, assuming in addition that there was no contribution to the emissions from the gas fired boilers.

Based on the allowable emissions for CPC of $0.47 \text{ lb}/10^6 \text{ BTU}$ the Agency shows a violation for 4 specific dates out of 10 for which they had data. Also, CPC's own calculations show a violation, on the average, for the entire month of November, 1971, where, based on Attachment N of the Franzen affidavit, the emissions from the plant averaged $0.50 \text{ lb}/10^6 \text{ BTU}$. The Board, in the CILCO opinion, has held that compliance on the average is not enough and that "one day of clean air does not compensate for a day of dirty air." In addition, non-compliance on the average for an entire month indicates non-compliance for many hours of many days and thus a significant problem. The penalty for this violation will be \$2500.

The Proposal for Settlement need not be expressly repeated in this opinion. We will incorporate it herein by reference and simply require that CPC adhere to all its terms and compliance dates, including its provisions for filing permit application, performance testing, adjustments, progress reports, odor panel tests and a performance bond.

Even though the parties have agreed upon a remedial program we still find it necessary to assess a penalty for the past violations. The health and welfare of many people was interfered with and we must deal with that issue. The total penalty shall be \$10,000.

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

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ORDER

CPC International shall pay to the State of Illinois by July 31, 1973, the sum of \$10,000. Penalty payment by certified check or money order payable to the State of Illinois shall be made to: Fiscal Services Division, Illinois Environmental Protection Agency, 2200 Churchill Drive, Springfield, Illinois 62706.

CPC International shall adhere to all the terms and compliance dates contained in the Proposal for Settlement filed February 27, 1973 including the provisions for filing permit application, performance testing, adjustments, progress reports, odor panel tests and a performance bond.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 21st day of June, 1973 by a vote of 4-0.


Christian L. Moffett, Clerk
Illinois Pollution Control Board