ILLINOIS POLLUTION CONTROL BOARD
July 19, 1973

ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Complainant,	)	
	)	
vs.	)	PCB 72-483
	)	
COLUMBIA QUARRY COMPANY,	)	
	)	
Respondent.	)	

John W. Leskera, Assistant Attorney General for the EPA
Floyd E. Crowder, Attorney for Columbia Quarry

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

The Environmental Protection Agency alleges that Respondent Columbia Quarry Company violated Section 9(a) of the Environmental Protection Act (air pollution) and Rule 3-3.111 of the Rules and Regulations Governing the Control of Air Pollution (excessive particulate emission) from April 2, 1971 until the filing of the EPA Complaint on December 11, 1972.

Respondent's #9 quarry is located in a bluff area between State Route 3 and the Imbs Station Road, less than a mile from the Dupo village limits in St. Clair County. Plant flow diagrams show that the facility consists of a primary crusher, 2 secondary crushers, 4 additional crushers following the secondary crushers and other associated quarry equipment. The plant operates two and sometimes three shifts, but the blasting occurs only during daylight hours.

During the four public hearings, 16 local residents related their complaints about the quarry operations. These citizens were disturbed principally by dust, blasting noise and vibration, and equipment and truck noise.

According to this testimony limestone dust accumulated on household furnishings, windowsills, porches, trees, grass, shrubs and automobiles. Quarry operations reduced values of nearby property, saturated air condition filters with limestone dust, increased utility expenses for air conditioner operation, led to more frequent cleaning in residences, curtailed outside leisure and entertaining activities. An increase in respiratory problems

was blamed on dust from Respondent's quarry. Prosecution witnesses said blasting was a major source of their dust problems.

The evidence indicates that Respondent generally detonates small charges which are acceptable in the community. Occasionally, however, an exceedingly large detonation occurs. These super blasts were said to have caused the loss of water in two nearby wells, broken dishes and windows, frightened children, damage to residential foundations, cracked ceilings and walls in nearby houses and even deposited rocks on adjoining property.

Public hearings held on our Proposed Noise Control Regulations, R. 72-2, have provided important testimony relating to the occurrence of such super blasts. We do not, at present, have regulations for the control of such noise although it may be considered a noise nuisance under the Environmental Protection Act. The Complaint here did not allege excessive noise, but air pollution resulting from excessive emission of particulates.

A smaller blast causes less dust. Expert testimony indicates that the extra charge does not substantially increase the yield but costs the quarry extra money for wasted energy. As we have seen here, a primary effect is the creation of animosity between the quarry and its neighbors.

Complainant's witnesses also testified that truck traffic in and out of the quarry was a source of dust emissions and noise.

The quarry operations have been of concern to some Dupo residents for several years. In 1969 a group known as the Citizens for a Better Environment organized under the direction of Ray Fitzpatrick, a Dupo resident who resides about 1/2 mile south of Respondent's quarry. The organization immediately began presenting quarry officials with a list of grievances. Fitzpatrick said company officials had been cordial in meetings with the organization, but the meetings were not productive and problems continued to get worse every year (R. 242). Fitzpatrick observed a water truck at the quarry but felt that the single water truck could not efficiently control the dust from the loading area of the quarry.

Several witnesses testified that they had informed quarry officials of the problems without result. (R. 26, 71, 134, 230, 283).

In rebuttal, Respondent called 34 citizen witnesses who unanimously testified that they had no dust problems attributable to the quarry. These witnesses included the Mayor, Superintendent of Utilities, President of Board of Managers for Sugar Loaf Township,

Superintendent of Dupo Schools, a member of the School Board, a Dupo policeman, quarry employees, former employees and others who lived near prosecution witnesses or the quarry. The few defense witnesses who acknowledged the presence of some dust said it came from the railroad or local rock covered roads. Mayor Metz testified that he had experienced no dust problems on his own property or on community property that he could attribute to emissions from the quarry. He felt that Dupo had no air pollution problem (R. 765) and that those residents of Dupo who had testified against the quarry had done so purely for personal reasons (R. 767). Mayor Metz questioned whether the expense incurred by the quarry for dust suppression equipment was justified to solve doubtful claims of a minority of his constituents (R. 768). His opinion was that the dust problem was not severe enough to warrant consideration by this Board (R. 721-722). The Mayor's statements were echoed by many of Respondent's witnesses.

An employee of the quarry testified that the rock crushers at the quarry emit no dust particulates while in operation (R. 920) and that there was relatively little dust in the quarry vicinity most of the time (R. 921). A rock hauler testified that he had never observed any dust leave the premises of the quarry. He added that dust conditions at the quarry were just about the same as could be found in Dupo (R. 927-928).

Affidavits of 281 persons residing in or near Dupo stated that they had not experienced any dust problems caused by Respondent's quarry and that the operation had not discharged dust into the atmosphere so as to cause air pollution. The affidavits were prepared by Respondent's attorney and circulated by several village officials and others. Robert Burpo, President of Board of Managers for Sugar Loaf Township, testified that he asked Respondent's attorney to prepare the affidavits because he felt the quarry was a big asset to Dupo and that "they are being harrassed" (R. 796).

Several of Respondent's witnesses testified that Columbia Quarry had been an asset to the community in its performance of civic obligations. The Superintendent of Schools testified that Columbia Quarry had made a donation toward the purchase of lights for a gymnasium and had donated rock for parking lots at the Dupo schools (R. 809). Another witness testified that he knew of no organization that had been refused in their request for donations of rock. He added that the quarry President had offered the use of any quarry vehicle during any emergency situation (R. 818).

Photographs taken by EPA surveillance personnel, while showing some visible dust emissions, do not reveal the vast clouds of

limestone dust that have been evident in photographs of other quarry sites. Some of the photographs even show roadways in the quarry area that appear to have been wetted down.

We would be hard pressed to draw a conclusion from such conflicting testimony, but fortunately technical data is available and is of some assistance in deciding these issues.

Columbia Quarry processes a maximum of 500 tons of limestone per hour through its primary crusher (R. 547) and about 350 tons per hour through its secondary crushers (R. 574). Using emission factors for uncontrolled process equipment, the Agency calculated *Respondent's emissions to be in excess of 700 lbs. per hour* (R. 576). Respondent's allowable emissions based on process weight rate are 133.9 lbs. per hour.

Respondent disputed the EPA calculation of the allowable emission rate as being inconsistent with two Agency inter-office memoranda. The first of these documents, Respondent's Exhibit #1, was a memorandum which calculated allowable and actual emissions from process weight data supplied by Columbia Quarry Company. The data contained in the memorandum showed:

Primary Crusher	379 ton/hr. average	626 ton/hr. high
Secondary Crusher	306 ton/hr. average	398 ton/hr. high
Tertiary Crusher	175 ton/hr. average	175 ton/hr. high

Using these figures, the quarry's allowable emissions based on the average and high rates were listed as:

Crushing	65.8 lb/hr.
Screening	65.8 lb/hr.
Conveying	65.8 lb/hr.

Total Emissions Allowed 197.4 lb/hr. (Average quarry rate)

and,

Crushing	71.8 lb/hr.
Screening	71.8 lb/hr.
Conveying	71.8 lb/hr.

Total Allowed Emissions 215.4 lb/hr. (maximum quarry rate)

According to this Exhibit, suspended particulate emissions from the quarry would be 851.4 lbs/hr. (based on the average process rate) or 931.6 lbs/hr. (based on the high process rate).

This memorandum was apparently written to correct inaccurate figures contained in an earlier EPA memorandum. (Respondent

Exhibit #2). The previously written memorandum showed Respondent's emissions based on the average process rate to be about 1340 lbs/hr. as compared to an allowable rate of 185.9 lbs/hr.

It appears therefore, that the EPA using process weight figures has calculated Respondent's allowable and actual emission on three occasions and has come up with three different answers. We are not happy with this but note that each calculation has shown a gross violation, with actual emissions far exceeding those allowed under the Regulation.

Additional technical data came from two high volume particulate samplers which were placed near Respondent's quarry in 1971. They were placed on opposite sides of the quarry and in location to utilize the prevailing winds in the area to provide useful emission data. Testimony indicates that the samplers were operated intermittently from about March 7, 1971 to August 24, 1971. Data from the samplers was used with weather data from a mobile weather trailer located at Cahokia Mounds State Park. The Agency's calculations indicated probable process weight rate violations on July 13, and July 16, 1971. The July 13 data showed a concentration of 412 micrograms per cubic meter downwind of the quarry and 146 ug/m^3 upwind while the July 16 data showed a concentration of 220 ug/m^3 downwind and 91 ug/m^3 upwind.

Agency calculations using these figures revealed emissions of from 152 to 376 lbs/hr. on July 13, 1971 and 177 lbs/hr. on July 16, 1971 (Complainant's Exhibit #66). Therefore, this method of calculation also revealed a violation but of a less serious nature.

The area upwind of the quarry met the U. S. Primary Standard of 75 ug/m^3 on only 2 of 10 days with the average reading being about 104 ug/m^3 (Complainant's Exhibits #12-16). The downwind concentrations for the same period averaged about 170 ug/m^3 and on every date for which data was available, the downwind concentration exceeded the upwind concentration.

Respondent produced two expert witnesses to respond to the EPA evidence. Benjamin Abell, an Assistant Professor at Parks College of Aeronautical Technology, testified that he would be unable to reliably project the weather data from the Cahokia Mounds Weather Station to the quarry site, a distance of about 13 miles (R. 672, 698). He testified that the terrain surrounding the weather trailer was relatively smooth while the quarry was situated in a bluff area of very rough terrain (R. 672). Abell testified that there were thunder storms in the general vicinity of Metropolitan St. Louis on July 13, 1971, the presence of which

could have affected the wind pattern in an area 13 miles distant. He attacked the reliability of the Cahokia Mounds Trailer Weather data by comparing it to data from the U. S. Weather Bureau Station at Lambert Field in St. Louis, Missouri. Abell found a variation of 2 miles per hour on July 13, 1971 and 1.9 miles per hour on July 16, 1971. He did not specify which of the two stations had the higher readings. Our comparison of data for July 13, 1971 using the time period from 9:00 a.m. to 3:00 p.m. for the Cahokia Mounds Station and 8:54 a.m. to 4:55 p.m. for the weather station at Lambert Field, indicates the Lambert Field average reading exceeded the Cahokia average reading by 0.850 mph. The July 16, 1971 comparison for comparable time periods indicates the Lambert Field readings were 1.857 mph higher on the average. These time periods were chosen since they most nearly reflect the operating time periods shown for the two high volume samplers.

Respondent's other expert witness testified that under the Agency equation, reducing the wind speed will result in a calculation of reduced emissions. Ironically then, it would appear that the Agency's data used to calculate Respondent's emissions resulted in a finding of lower actual emissions than would have been the case if Respondent's data had been used.

Professor Abell did acknowledge that the weather data recorded at the Cahokia Mounds Station could have been representative of existing weather conditions near Dupo (R. 699), and we believe it is sufficiently reliable for our use in the absence of sound rebutting testimony.

Respondent also implied that the Agency calculations were not strictly proper in that one equation used to estimate the emissions was "back calculated". However, Respondent's second expert witness stated that such practice would not represent a fallacy unless some of the basic assumptions of the equation were violated in the process. Respondent's expert testified that one of the factors contained in the questioned equation could have caused a variability in the answer on the order of 3 to 1 (R. 718). He did not show that such an error did occur. Finally, the claim that the high volume sampler data was affected by "dirt throwing" is not supported by evidence.

Although this is not an easy case to decide, we believe the weight of the evidence is with the Complainant. The combination of Hi Vol data, process weight calculations and a substantial number of citizen complaints convinces us that the dust emissions were in violation of the Regulation and constituted a nuisance at times near the quarry.

In spite of this, we believe that Columbia Quarry is basically a good neighbor. The Company has now purchased and installed a

liquid spray dust suppression system for its Dupo operation. This system consists of a piping network which strategically locates spray valves at dust emission points in the crushing process. Water, treated with a chemical wetting agent, is pumped through the piping network and sprayed over the emission points. An engineer with the Johnson-March Company testified that he had first been contacted by Columbia officials about July 19, 1971. The system was ordered in November of 1971 and installation was completed in late Fall of 1972, shortly before the filing of this action.

The record indicates that the quarry has been a civic asset to some of its neighbors and we believe these improvements will cause the quarry to be considered an asset by more of them. The equipment is installed, ready to operate, and should resolve part of the problem which led to this prosecution. We believe that a diligent program of wetting quarry roads and other traffic areas will also be required. Since the record indicated that a watering truck is already at the quarry site, it only remains to have the truck in operation as conditions warrant. The wetting of the rock surface before blasting is another possible abatement procedure, perhaps of a more experimental nature. The elimination of the super blast would benefit both Columbia and its neighbors.

In addition to abatement procedures listed above, the evidence justifies a monetary penalty of $1,000 and it will be so ordered.

ORDER

It is the order of the Board that:

1. Columbia Quarry shall pay to the State of Illinois within 35 days the sum of $1,000 as a penalty for its violations of Section 9(a) of the Environmental Protection Act and Rule 3-3.111 of the Rules and Regulations Governing the Control of Air Pollution. Penalty payment by certified check or money order payable to the State of Illinois shall be made to: Fiscal Services Division, Illinois EPA, 2200 Churchill Road, Springfield, Illinois 62706.

2. Respondent shall on each day of operation at its Dupo quarry site, cause its dust suppression equipment as described in the record to be in full operation and shall continuously and diligently water its roadways and adjacent areas for suppression of traffic-created dust as conditions warrant.

3. Respondent shall endeavor to use the smallest practicable charge required for blasting and

shall make every reasonable effort to conduct its blasting operations under such wind and atmospheric conditions as will minimize the nuisance in the surrounding areas.

4. Respondent shall immediately initiate an experimental program as part of the blasting procedure, to consist of the wetting of the rock face prior to blasting. Agency personnel shall be allowed to observe this experimental procedure.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted this 19th day of July, 1973 by a vote of 4 to 0.