

ILLINOIS POLLUTION CONTROL BOARD
May 11, 1989

RICHARD MOORE AND SALLY MOORE,)
)
 Complainants,)
)
 v.) PCB 87-171
)
ARCHER DANIELS MIDLAND COMPANY,)
)
 Respondent.)

RICHARD MOORE AND SALLY MOORE APPEARED PRO-SE;
MR. WAYNE L. BICKES APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (By R.C. Flemal):

This matter comes before the Board upon an enforcement action filed on November 9, 1987 by Complainants Richard Moore and Sally Moore against Respondent Archer Daniels Midland Company ("ADM"). Complainants allege that Respondent emits noise from its Cogeneration Plant in violation of noise pollution prohibitions found in the Illinois Environmental Protection Act ("Act") at Ill. Rev. Stat. 1987 ch. 111 1/2, sec. 1023 and 1024, and found in Board regulations at 35 Ill. Adm. Code 900.102. Complainants request that Respondent be directed to cease and desist from further violations, and that Respondent be ordered to take various specific steps to reduce noise emissions.

Hearings were held August 5 and 29, 1988¹ at the Macon County Municipal Building, Decatur, Illinois. Complainants presented nine witnesses, including themselves, who testified to the nature and affect upon them of noise emissions from the Cogeneration Plant. Respondents presented three witnesses. Two interested citizens additionally made statements. The parties agreed not to submit post-hearing briefs. On February 23, 1989, a Board interim order requested status reports from both sides. Timely responses were filed by Complainants on March 20, 1989 and by Respondent ("ADM Response") on April 3, 1989.

¹ Transcripts of the two hearings are separately paginated. Accordingly, and for use herein, citation to the record of the August 5 hearing is in the form "R. at ___" and to the August 29 hearing in the form "R2. at ___".

FACTS

Respondent operates a cogeneration plant, a facility which produces both steam and electricity (R. at 104). The Cogeneration Plant is located in the extreme northeastern part of the City of Decatur (R. at 103) in an area zoned for heavy industry (R. at 104). The plant is bordered on the east by a park which includes a golf course, campground, and some boat landings, and on the north by fields (R2. at 17-18); the nearest general facilities to the north are the grounds of Richland Community College located approximately 1.25 miles distant (R2. at 19).

The Cogeneration Plant is a new and innovative facility designed to generate power and steam while simultaneously limiting emissions of air pollutants. The principal feature of the facility is the use of fluidized bed boilers (R. at 104), which, with associated emission control devices, allows the burning of high-sulfur coals without corresponding high emissions of sulfur dioxide (R. at 105). Construction was begun in 1985 and the five individual boilers were put on line between February and December 1987 (R. at 119).

Construction of the Cogeneration Plant was supported by the State of Illinois through the Illinois Department of Energy and Natural Resources; the State contributed \$6,000,000 of the approximately \$100,000,000 cost of construction of the plant (R. at 109). For ADM to receive State contributions, it must use new technology which can burn Illinois coal (which has a higher sulfur content than other coals) and still meet the State standards for air emissions (R. at 110). The agreement entered into between the State and ADM states that ADM must burn substantially all Illinois coal (Id.). ADM expects, at full operation, to burn about a million tons of Illinois coal per year (R. at 111). Presently, over 90 percent of the coal used comes from central Illinois (R. at 112).

Also, as part of the agreement for the state funds, ADM must construct and maintain a steam line between the cogeneration plant and the new Richland Community College and provide the college with steam at no cost for 10 years (R. at 113). Illinois Department of Energy and Natural Resources brings delegates from other countries who are concerned about the acid rain problem to the plant to show them the new technology (Id.). The ADM is the largest plant in the world that is using this new technology (R. at 114).

APPLICABLE LAWS AND REGULATIONS

The Act specifies at Ill. Rev. Stat. 1987 Ch. 111 1/2 par. 1024 that:

No person shall emit beyond the boundaries of his property any noise which unreasonably interferes with the enjoyment of life or with any lawful business or activity, so as to violate any regulations or standard adopted by the Board under this Act.

The Board's regulations prohibit noise pollution pursuant to 35 Ill. Adm. Code 900.102²:

No person shall cause or allow the emission of sound beyond the boundaries of his property, as property is defined in Section 25 of the Illinois Environmental Protection Act, so as to cause noise pollution in Illinois, or so as to violate any provision of this Chapter.

Noise Pollution is defined at 35 Ill. Adm. Code 900.101:

Noise Pollution: The emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity.

NATURE AND EFFECT OF THE SOUND EMISSIONS

Various of Complainants' witnesses testified to the nature of the sound emissions from the Cogeneration Plant and the effect these sounds have on them. The first of these witnesses was Ms. Linda Carter, who resides along with her husband and two children at 3830 East Harrison Avenue, Decatur, approximately one-half mile from the plant (R. at 9-10); the Carters have lived there for twelve years (R. at 10). Ms. Carter characterized sounds from the plant as being "very loud" and "unbearable" at times (R. at 11, 12, 22). She testified that the sound "wakes us up at night" (R. at 11) and that she has lost whole nights of sleep at various times from May 1987 to June 1988 (R. at 12, 18). She also testified that her children were awakened by the noises and that she had difficulty getting them back to sleep (R. at 12). Among other difficulties she noted has been inability to carry on

² The Board's regulations also provide for quantitative limitations on the emissions of noise between properties, as at 35 Ill. Adm. Code 901.106. However, these additional provisions have not been raised at issue either through claim or attempt at proof in the instant proceedings.

conversations outdoors (R. at 11, 17), the need to turn up the family TV to allow it to be heard over the noise (R. at 11), and an incident where one of her children's teachers "had to close her windows for her to teach" (R. at 18-19). Ms. Carter additionally noted that she has on various occasions beginning in May 1987 contacted ADM to voice her complaints about the noise emissions (R. at 11-20).

Complainant's second witness was Ms. Elnora Harlin, who lives at 2635 East Geddes, Decatur, approximately $2\frac{1}{2}$ miles from the Cogeneration Plant (R. at 23-24). She characterized the plant noise as "very, very loud" and noted that it caused her and her husband to shut their windows to allow the TV to be heard and to sleep at night (R. at 24). Ms. Harlin also noted that she has complained of the noise to both the Decatur Police Department and to ADM directly (R. at 25), as well as to the Illinois Environmental Protection Agency ("Agency") (R. at 26). In an independent statement Ms. Harlin likened the noise to a jet engine or a steam locomotive, and noted that it affects her and her husband's ability to concentrate (R. at 29).

Mr. Charles Davis appeared as Complainants' third witness. Mr. Davis lives at 3735 East Harrison Avenue and operates an early-morning delivery route in the northeast quadrant of Decatur. Mr. Davis characterized noises coming from the Cogeneration Plant as sometimes being a "big, loud roar" and sometimes "like a bomb going off" (R. at 32). He also noted that he can hear the sounds along his whole business route which he begins between 4:00 A.M. and 4:30 A.M. and that, even though he normally rises at 3:30 A.M., he is wakened earlier on some mornings by the noise (Id.).

Complainant Richard Moore appeared as Complainants' fourth witness. Mr. Moore has resided at 3820 East Harrison Avenue, Decatur, for thirty-three years (R. at 35). In response to being asked to describe the noise from the Cogeneration Plant, Mr. Moore responded:

At first it was like gunshots or explosions and then it trailed off into noises similar to jet engines gearing up to take off or circling and it seemed to reach a peak and then trail off and then turn around and come right back to a peak. (R. at 35)

In response to being asked the effect of the noise, Mr. Moore responded:

It interrupted my sleep and activities around and about the house to the point that sleep was interrupted where it was hard to get up and go to work the next day and be at my full potential. (R. at 35).

Mr. Moore further recited the incident of a family reunion that he and his wife hosted at which several children were caused to cry and conversation had to be moved indoors due to the noises from the Cogeneration Plant (R. at 37).

Ms. Jean Crowell, resident at 3821 East Harrison Avenue, Decatur, since 1934 (R. at 42) appeared as Complainants' fifth witness. She stated her concurrence with the characterization of the noise by earlier witnesses (Id.) and emphasized the difficulty of carrying on outdoor conversations and hosting company outdoors while the noises are being emitted (R. at 43). She also testified that the sounds were comparable to a jet plane taking off (Id.).

Mr. Loren Lill appeared as Complainants' sixth witness. Mr. Lill has resided at 3281 East Harrison Avenue, approximately one mile from the site of the new Cogeneration Plant, for forty-one years (R. at 45-46). Mr. Lill characterized the noise from the plant as being like a jet and like a train going by all night long (R. at 46). He noted that the noise keeps him awake (R. at 46, 47, 49) and that he and his wife have difficulty carrying on conversations outdoors when the noise is emitted (R. at 49). Mr. Lill testified that he has phoned ADM about the noise, and has also contacted the Agency (R. at 46).

Mr. George Baine, 2401 Julie Avenue, Decatur, appeared as Complainants' seventh witness. Mr. Baine testified that the Cogeneration Plant noises have affected both he and his family (R. at 58) and personally has been stressed by the noises (R. at 53).

Complainant Ms. Sally Moore appeared as Complainants' eighth witness. In response to the question of why noise from the Cogeneration Plant bothers her, Ms. Moore responded:

Because it is so devastating to me. It's a different kind of noise. It's a noise I can't get used to and it just, it's nerve racking and it's just the volume of the noise and the way the noise is. There's no way that you can let it go to your subconscious and leave there and go on your business. ... I have tried, there's no way. It's just too devastating.
(R. at 59).

She added that in comparison to other neighborhood noises, such as trains, backup beepers from vehicles and fans from blowers at a nearby plant, the noise from Cogeneration Plant is much more distracting (R. at 59-60).

Upon advice from the Agency, she telephoned ADM starting in June, 1987 (R. at 60, 63). She called again in August to tell them that the noise had kept her family up all night (R. at

63). On September 25, 1987, a representative of ADM called Ms. Moore in response to a letter that Ms. Moore had sent to ADM (R. at 65). She was told to "be patient with us" and that the noise would not happen at night, weekends or holidays (Id.).

Based upon Ms. Moore's notes, the noise went nonstop from June 1 to 10, 1987 and again nonstop from June 25 to July 4, 1987 (R at 66). In one particular incident, she and three neighbors were sitting beside a pool, but the noise was so bad that they virtually could not talk to each other (Id.). Similar disturbances in conversations also occurred (Id.). In sum, Ms. Moore felt that during the last 15 months, her life had not been the same due to the disturbing noise from ADM (R. at 68).

Complainant's presented Mr. Gregory T. Zak as their final witness. Mr. Zak is an employee of the Agency with the title of Environmental Protection Specialist (R. at 71). His main responsibility is noise control engineering for steam release and induced draft fans (R. at 82). Mr. Zak testified he has been involved in taking several thousand noise measurements (R. at 74). Mr. Zak had listened to audio tapes³ and now testified that the noise he heard "sounded like steam release, and in a much lower intensity, an induced draft fan or possibly more than one induced fan" (R at 80, 83). He also testified that the normal solution is to install a silencer on the exhaust, between the exhaust outlet and the top of the stack, where the fan is located (R. at 84). Mr. Zak also testified that based upon a frequency of 1,000 Hertz, he would expect to see approximately a 35 to 40 decibel reduction in that particular frequency band with the installation of good quality silencers (R. at 85-86). This would reduce the noise to approximately one-16th of the sound level existing without the silencers (R. at 89). Mr. Zak referred to stack noise (or induced draft fan noise) as a hum, whereas steam-release noise is normally a roar (Id.).

Under cross examination Mr. Zak noted that he has not personally heard sound emissions from the Cogeneration Plant in a field setting (R. at 93).

³ Complainants attempted to introduce into the record two tape recordings (Complainants' Exh. 1 and 2) purporting to represent sounds emitted from the Cogeneration plant (R. at 21, 48, 57). The Hearing Officer initially denied admission of the recordings (Id.), but subsequently reversed that ruling over ADM's objection (R2. at 35-36). It is these tapes to which Mr. Zak listened.

NOISE SOURCES AND ADM RESPONSES

Mr. Terry A. Stoa, the manager of construction engineering at the Cogeneration Plant (R. at 100-101), testified on behalf of Respondent. Mr. Stoa noted that there are three sources of loud or significant noises which are, or have been, emitted from the Cogeneration Plant (R. at 118, 121, 127, 139). He further noted, however, that only one of these was anticipated prior to actual appearance of the noise, and that all three have been or are in the processes of being rectified.

Mr. Stoa testified that due to the uniqueness of the plant, the only noise problem that ADM knew would occur before building the plant was noise from blowing out of steam lines during start-up (R. at 118). This is necessary to clean the steam lines and to protect the steam turbines from damage caused by particulates that might be in the pipes (R. at 118). Mr. Stoa admitted that blowing out the steam lines makes "a very loud noise", but noted that the noise lasts for about one-two minutes per line, and that the blowing out need only be done once per pipe (R. at 118-119). He further testified that the "police department and media" had been notified prior to scheduling of the line blow outs (R. at 140), that attempts were made to conduct all blow outs during daylight hours (Id.), and that all of the blowing out is now completed (R. at 118).

Subsequent to start-up ADM discovered two additional sources of loud noise produced respectively from tripping of safety valves and from the draft fans. The Cogeneration Plant utilizes a system of safety valves on the steam lines, the function of which is to release excess pressure in the lines (R. at 120). Mr. Stoa estimated that there are thirty-five to forty such valves within the Cogeneration Plant (R. at 22-23). The safety valves do not release during normal operations (R. at 120). However, some of them do release when the turbines have to be shut down, and ADM has experienced a greater number of turbine shut-downs than they had anticipated (R. at 120-121).

In September of 1987 ADM conducted a study of all potential noise sources at the Cogeneration Plant, which showed that the largest source appeared to be steam release from the safety valves (R. at 121). ADM thereafter investigated methods of silencing the safety valves (Id.). As of the August 5, 1988 hearing date silencers had been installed on the safety valves for Boiler 5 and orders had been placed for more custom silencers for installation on the remaining four boilers (R. at 121-123). Mr. Stoa stated his belief that these silencers would be installed by November 1988 (R. at 136).

The second unexpected source of noise discovered by ADM is related to operation of exhaust system fans (R. at 127, 152). Unlike the sounds related to steam release from the safety valves

or line blowing, the sounds emitted by the fans are continuous (R. at 128). At the time of hearing, ADM had contracted for the purchase and installation of silencers to be installed in the exhaust stack (R. at 129-130). The stack silencers are intended to provide a 10 decibel reduction in noise (R2. at 25).

In overview, Mr. Stoa stated his belief that the installation of the various silencers "will alleviate the noise problem" (R. at 145) and the reduction will be such that ADM will thereafter be in compliance with noise emission regulations (R. at 144).

Mr. J.T. Weissenburger, president of Engineering Dynamics International and ADM noise consultant, also testified regarding ADM's investigation of its noise emissions and alleviation efforts. He confirmed that the primary source of continuous noise is the induced draft fans of the exhaust system (R. at 152), and added that this identification was made in December of 1987 (R. at 153). He further noted that, although the fan noise emissions are continuous, variations in atmospheric conditions, including gradients in air density, wind velocity, and humidity, can cause the perception of the emissions to vary considerably at differing distances and times (R. at 156-157).

In response to the Board's February 23, 1989 Order for a status report on its noise abatement efforts, ADM notes that each of the three identified noise sources has been addressed. ADM states that all cleaning of steam lines has been completed (ADM Response, p. 1, 4). It further adds that, should the Cogeneration Plant ever be expanded, and thereby require installation of new steam lines, silencer equipment will be installed on such lines prior to performing any line blows (Id. at 5).

On the matter of silencing safety release valves, ADM states that it has now installed silencers on the turbine and boiler warm-up steam vents, and on the header and electromatic relief valves for each of the five boilers (ADM Response, p. 5).

On the matter of silencing the exhaust fan noise, ADM states that it has installed stack silencers on both flues of the stack (ADM Response, p. 5). It adds that one of the silencers was placed in service in October 1988 and the second by December 7, 1988 (Id.).

SECTION 33(c) FACTORS

Section 33(c) of the Act requires the Board to consider certain enumerated, non-exclusive factors in rendering its decisions:

1. the character and degree of injury to, or interference with the protection of the health, general welfare and physical property of the people;
2. the social and economic value of the pollution source;
3. the suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved;
4. the technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source;
5. any economic benefits accrued by a noncomplying pollution source because of its delay in compliance with pollution control requirements; and
6. any subsequent compliance.

Regarding the first 33(c) factor, the testimony as noted above indicates that the sounds emitted by ADM's Cogeneration Plant substantially and frequently interfered with the Complainant's use and enjoyment of their property as well as that of their neighbors. This interference was well beyond minor annoyance or discomfort, as the sounds disrupted sleep, leisure and other activities. However, the record also contains several abatement measures which were subsequently taken by ADM. Considering these abatement measures, it is questionable (notwithstanding the Board's effort to obtain this information via status reports) whether interference of the magnitude indicated by the testimony continues to occur. The Board therefore finds that although there was a substantial interference with the general welfare and use of the physical property of the Complainants and other nearby residents, it is questionable whether that substantial interference continues to occur.

Concerning the second Section 33(c) factor, the record indicates that the ADM Cogeneration Plant has social and economic value. As noted above, the Cogeneration Plant is an innovative facility designed to generate power and steam while simultaneously limiting emissions of air pollutants, as well as being designed to use high-sulfur Illinois coal. It follows therefore that the Cogeneration Plant has the social and economic value of a power plant as well as the additional value of encouraging the utilization and development of new technology which aids in the decrease of air pollutant emissions. The

record further indicates that the Cogeneration Plant has economic value because it is a source of employment in an area where unemployment is higher than the national and State average, and because it encourages the use of Illinois coal (See, testimony of Richard Lutovsky, R2. at 5-13; Respondent's Exh. 5).

The third Section 33(c) factor concerns the suitability of the pollution source to the area in which it is located and priority of location. As noted above, the record indicates that the Cogeneration Plant is located in an area that is zoned for heavy industry, that it borders recreational areas and Richland Community College, and that there are some nearby residences. On the priority of location issue, it is clear that the nearby residences have priority, since the Cogeneration Plant is a newly constructed facility. However, the area in which the Plant is located is zoned for heavy industry, and it can be assumed that heavy industrial facilities such as the Cogeneration Plant would be located in such an area. Therefore, the Board finds that the Cogeneration Plant is suitable to the area in which it is located.

Concerning the fourth 33(c) factor, the testimony of Messrs. Zak, Stoa, and Weissenburger as noted above indicates there are technically practicable and economically reasonable means of reducing the emissions, and that abatement devices have already been installed.

Concerning the fifth 33(c) factor, it is questionable whether the Respondent operates a noncompliant pollution source at this time. The record indicates that ADM moved expeditiously to correct any noise emissions from the Cogeneration Plant. If any benefit were to be assessed, it would be the benefit of start-up and continued operation of the facility to date.

Concerning the sixth 33(c) factor, as noted above, the record indicates Respondent has made a substantial effort to reduce noise emissions. Noise sources have been assessed and abatement devices have been installed.

REQUESTED RELIEF

Complainants request a five-element relief program. The first of these is a cease and desist order and the remaining four consist of specific noise abatement actions to be undertaken by ADM. These four are:

1. Installation of blow-off silencers when steam pipes are blown out;
2. Installation of stack silencers;

3. Installation of silencers, capable of providing a 50 decibel reduction, at all steam venting points; and
4. Completion of the above installations by November 1988.

(R2. at 38-39)

CONCLUSION

Based upon the record and after consideration of the Section 33(c) factors, the Board finds that the emissions from the Cogeneration Plant substantially and frequently interfered with Complainant's use and enjoyment of their property, and this interference was unreasonable. The emissions from the Cogeneration Plant therefore constituted noise pollution pursuant to 35 Ill. Adm. Code 900.101 and violated 35 Ill. Adm. Code 900.102 and Section 24 of the Act. Although, as the Board's discussion indicates, the Cogeneration Plant has social and economic value and is suitable to the area in which it is located, these factors are outweighed by the substantial interference with the health and general welfare of the Complainants, and by the fact that there are economically reasonable and technically practicable means of reducing the emissions.

However, it is apparent that ADM found itself, in its construction of its prototype Cogeneration Plant, with serious noise problems which it had not anticipated, and which at least in part stemmed from the fact that it was employing a new and socially-beneficial technology. We cannot find that ADM lacked diligence in pursuing remedies once the noise problems were discovered. We note, for example, ADM's history of discovery, study, and action as attested to by Mr. Stoa. We note ADM's testimony of its using the lessons it learned at the Decatur Cogeneration Plant in planning for the construction of a second such plant (e.g., R. at 133-134). We also note, for example, Mr. Weissenburger's testimony of his surprise, based on his experience, at how quickly ADM arranged to purchase an appropriate silencer once the remedy had been identified (R. at 161). Finally, and critically, we note the advanced status of noise abatement efforts undertaken by ADM as chronicled in ADM's April 3, 1989 response.

Therefore, in finding that a violation has occurred, the Board cannot identify any noise abatement efforts which it would now order ADM to undertake, based upon this record, other than those which ADM has already undertaken under its own initiative. Moreover, the Board finds that ADM's noise abatement actions as now undertaken are in substantial conformity with

those requested by Complainants. Accordingly, the Board in finding violation will only order ADM to cease and desist from violations of the Act and Board's regulations by operating any of its presently identified sources of noise pollution absent existing noise abatement equipment.

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

ORDER

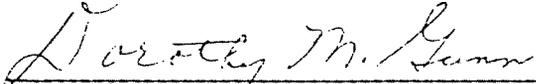
The Board finds that Respondents Archer Daniels Midland Company has violated Section 24 of the Environmental Protection Act and 35 Ill. Adm. Code 900.102.

Respondent shall cease and desist from violations of the Act and the Board's regulations by operating any of its presently identified sources of noise pollution absent existing noise abatement equipment.

Section 41 of the Environmental Protection Act, Ill. Rev. Stat. 1987 ch. 111 $\frac{1}{2}$ par. 1041, provides for appeal of final Orders of the Board within 35 days. The Rules of the Supreme Court of Illinois establish filing requirements.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 15th day of May, 1989, by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board