

ILLINOIS POLLUTION CONTROL BOARD  
March 2, 1978

FARMER'S GRAIN AND COAL COMPANY,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 77-335
	)	
ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

OPINION AND ORDER OF THE BOARD (by Dr. Satchell):

Farmer's Grain and Coal Company in Mason City, Mason County, Illinois filed on December 15, 1977 a petition for variance from the Board's Chapter 8: Noise Regulations (Chapter 8) and Section 24 of the Environmental Protection Act (Act). The Environmental Protection Agency (Agency) filed its recommendation on January 17, 1978. On January 23, 1978 Petitioner filed a waiver of hearing pursuant to Procedural Rule 401(b).

Petitioner is a co-operative grain elevator organized under the Agricultural Co-Operative Act of 1923 serving rural communities of Teheran and Mason City in Mason County for the sale, storage and handling of grain, primarily corn and soybeans. Participating farmers share in the profits of the co-operative elevator by stock and patronage refunds. Further benefit is derived from the existence of an elevator in reasonably close proximity to their farms to allow transportation of their harvest in relatively small vehicles.

Mason City, the location of the operation in question, has a population of approximately 2,600. The co-operative serves landowners and tenants of approximately 45,000 acres. Using 1976 Mason County average farm yields, this represents yields and potential processing and handling of 3,500,000 bushels of corn, 700,000 bushels of soybeans, and 125,000 bushels of wheat per crop year.

The co-operative has an investment at the Mason City facility including equipment of \$1,800,000. Substantial improvements were made in 1976 at an approximate cost of \$750,000. The storage capacity of the elevator is 2,450,000 bushels. The operation is a day business operation and requires no shift work. Occasionally, during the peak of the harvest season, late hours are worked as are demanded by the urgency of surrounding farmers needs. (During the 1977 season this occurred 20 times.)

At the Mason City facility from June 1, 1976 through May 31, 1977, 2,953,000 bushels of grain was processed, handled and stored. The total value processed, handled and stored was \$12,246,000.

The noise emitted by the chutes is caused by grain moving through the gravity chutes from the distributor head to storage bins, grain dryer and buildings. Two power legs exist one 115 feet above grade and one 110 feet above grade. Grain is moved up the power legs and then channeled through the grain chutes to the grain dryer and designated storage bins. During the fall harvest season, a period of approximately 2 1/2 months, these grain chutes were used on a regular basis during the day and on twenty nights between the hours of 10:00 P.M. and 7:00 A.M. for a total of 180 nighttime hours. Multiple chutes of approximately 300 linear feet exist from ten inches in diameter to twelve inches in diameter of seven and ten gauge metal thickness. The chutes have a useful life of five to eight years and are rotated periodically so as to extend their useful life. Grain moving through the chutes has been found to cause noise emissions in excess of standards at certain frequencies.

Petitioner has retained an engineer to advise, direct and design efforts to attenuate noise levels in the present and future operations of the elevator. Concrete block sound barriers and aeration fan enclosures have already been constructed. A time schedule of compliance is difficult as noise attenuating techniques for elevators are still under study. Petitioner would like to monitor the program (wrapping the chutes) at Atwood, Illinois for two years prior to submitting a detailed compliance plan. Petitioner is willing to install double lined chuting at one spout for experimental purposes. The cost of double lining the present grain chuting network is \$17,000. Petitioner's consultant's advise that this modification will not assure adequate alleviation of noise. With double lined chuting further modifications may be necessary for extra support because of the added weight. If the double lined chuting meets the required sound levels further replacements will be initiated. Petitioner states that its intentions are to further attenuate noise levels through required replacement, repair and modification as the same becomes necessary through technically feasible and economically sound methods. Other than double lining or wrapping the chutes (the Atwood experiment) no other sound attenuating technique has been adequately developed or tested to assure successful alleviation of noise emissions.

The Agency agrees with Petitioner's stated facts. The Agency further points out that there are indication that the noise from the grain chute increases with increased grain velocity in the grain chute. The grain chute with the steepest slope, and therefore the greatest grain velocity, appears to be the chute from the southernmost elevator to the load-out holding bin over the dump. This chute is probably the most noisy of all the chutes and would be a logical choice for the first chute to be quieted.

The Agency concurs in the cost estimates supplied by Petitioner with respect to replacing the grain chutes with double walled chutes. However, the Agency feels that the elevator head houses may require enclosures to insure compliance with Rule 202. The Agency states that these could be built with plywood at a total cost of \$88.00.

The Petitioner submits that the granting of the variance to permit the operation of the elevator grain chuting under the present conditions would impose no perceptible harm to the public. The Agency's recommendation does document interference in the day-to-day living habits of Petitioner's neighbors. Petitioner's closest neighbors could enjoy less noise interference in conversation during outdoor activities if Petitioner's grain chute noise was within standards. Indoors noise can interfere with conversation, radio and television communication and sleeping. During its investigation the Agency did send out 47 inquiries in Mason City concerning the variance. There was no response to most of the inquiries. Of the responses received three are against granting the variance, none are for, and three are undecided. The homes of the three against are in close proximity to the elevator. Several of the responses dwelled on dust and chaff emissions rather than noise.

The Agency points out that since the noise is seasonal, the "average interference" to residents is not great in terms of either hearing loss or health and welfare problems. However, when the grain chutes are in operation for two and one-half months per year some people should expect to experience outdoor speech interference and for about twenty nights per year interference with their sleep. Responses to the inquiries did not mention indoor speech or sleep interference indicating these problems are minor if existent.

A denial of this variance would not require Petitioner to cease business; it would require an immediate expenditure of \$17,000 with somewhat uncertain results or it would expose Petitioner to potential enforcement action. There is no other elevator which serves the primary area in which the patrons of Mason City live. Adequate storage in peak harvest season and the rapid processing of the harvest from the field is of increasing importance to the farmer. The Agency further states the Petitioner has shown good faith in undertaking noise abatement procedures with its grain dryers and aeration fans. Petitioner has spent a considerable amount of money in replacing its original grain dryer with a new grain dryer which was acoustically designed to reduce noise. The Agency recommends the grant of the variance with certain conditions.

The Board finds that Petitioner has shows sufficient hardship to warrant a variance subject to the conditions the Agency recommends. Petitioner has shown good faith in efforts of abatement. Satisfactory techniques of abatement are still being developed. Petitioner's willingness to experiment with double-lined chutes may aid this development. The conditions imposed should help abatement and assuage Petitioner's neighbors.

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

ORDER

It is the order of the Pollution Control Board that Farmer's Grain and Coal Company is granted a variance for five years from the date of this order from Rules 102 and 202 of the Chapter 8: Noise Regulations and Section 24 of the Environmental Protection Act as they pertain to Petitioner's Mason City grain elevator subject to the following conditions:

1. That sounds emitted by said facility shall at no time exceed the limits of Rule 202 except for sounds emitted by the grain chutes.
2. That no new equipment process or facility installed at Petitioner's grain elevator shall at any time emit sounds in excess of Rule 202.
3. That on or before August 15, 1978, Petitioner shall replace the grain chute to the outload holding bin over the dump at the southern most elevator with a double-lined chute as described in Petitioner's Exhibit V (sleeved, with rubber grommet separation).
4. That from and after the date of the filing of the Petition herein, Petitioner shall replace any grain chute requiring replacement with such double-lined chutes\* as described in Petitioner's Exhibit 5.
5. That on or before the expiration of the five (5) year Variance period Petitioner, regardless of whether said grain chutes require replacement from wear, or otherwise, shall replace all grain chutes with double-lined chutes\* as described in Petitioner's Exhibit V.
6. That on or before the expiration of the five (5) year Variance period, Petitioner shall install around the two grain chute headhouses, sound abatement enclosures of material with at least a 20dB transmission loss (3/8" plywood or better) with all joints acoustically sealed.
7. That during the term of the Variance all noise control equipment now in place on the aeration fans and the dryer, shall be properly maintained.
8. That Petitioner shall report to the Agency:
  - (a) On or before August 15, 1978, as to the replacement of the grain chute to the outload holding bin.
  - (b) At intervals of not more than six (6) months

from and after the Board Order herein, as to the progress of and future plans for accomplishing the conditions set out above.

9. Within 45 days after the date of this Board Order herein the Petitioner shall execute and forward to the Environmental Protection Agency, Division of Noise Pollution Control, Enforcement Section, 2200 Churchill Road, Springfield 62706 a Certification of Acceptance and Agreement to be bound to all terms and conditions of the variance. This 45 day period shall be held in abeyance for any period during which this matter is appealed. The form of said Certification shall be as follows:

CERTIFICATION


I (We), \_\_\_\_\_ having read and fully understanding the Order of the Illinois Pollution Control Board in PCB 77-335 hereby accepts said Order and agree to be bound by all terms and conditions thereof.

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
\*or other Agency approved chuting

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 2<sup>nd</sup> day of March, 1978 by a vote of 5-0.

  
Christan L. Moffett Clerk  
Illinois Pollution Control Board