

ILLINOIS POLLUTION CONTROL BOARD
December 20, 1984

IN THE MATTER OF:)
)
CORNELL FORGE, HAMPSHIRE DIVISION) R83-26
)
PETITION FOR A SITE-SPECIFIC)
OPERATIONAL LEVEL PURSUANT TO)
CHAPTER 8, RULE 206(d) OF THE)
RULE AND REGULATIONS OF THE)
ILLINOIS POLLUTION CONTROL BOARD)

ADOPTED RULE. FINAL OPINION AND ORDER.

OPINION AND ORDER OF THE BOARD (by B. Forcade):

On August 2, 1984, the Board proposed to adopt a new rule, 35 Ill. Adm. code 901.115, which provides site-specific relief from the Board's noise regulations. First notice of this proposal was published at 8 Ill. Reg. 15274, on August 24, 1984. The first notice comment period expired on October 8, 1984. The Administrative Code Unit submitted a comment on September 10, 1984, regarding Illinois Register first notice format. No other comments were received. The Board made a non-substantive change in the wording of the proposed rule.

By order of the Board dated October 10, 1984, the proposed rule was submitted to the Joint Committee on Administrative Rules ("JCAR"). JCAR second notice review commenced on October 22, 1984. JCAR issued a Certification of No Objection to this rulemaking on November 8, 1984, ending the second notice period.

This matter comes before the Board on a petition filed on November 15, 1983, by Cornell Forge, Hampshire Division ("Cornell"), for a site-specific operational level for its forging shop as an alternative to compliance with the noise limits contained in 35 Ill. Adm. code 901.105 (old Rule 206 of Chapter 8). A public hearing was held on March 29, 1984, in Hampshire, Illinois. Two members of the public, Robert Kudlicki, the village president and Frederick G. Modde, the township supervisor, testified in support of the petition. No other public testimony or comments were received.

The Board appreciates the contribution of David G. Mueller who assisted in drafting this Opinion.

The Department of Energy and Natural Resources ("DENR") issued a statement of negative declaration of economic impact on April 19, 1984, obviating the need for an economic impact statement. On July 18, 1984, the Economic and Technical Advisory Committee concurred with the DENR's finding.

The regulatory scheme for existing forging operations requires that the Petitioner either (i) comply with the noise prohibitions contained in Table F of Rule 206(c) no later than fifteen months following the effective date of the Rule, or (ii) seek a permanent site-specific operational level as provided in Rule 206(d). These rules have been recodified as 35 Ill. Adm. Code 901.905(c) and (d). The noise prohibitions in §901.905(c) vary for different classes of receivers and for daytime and nighttime periods. A petition under §901.905(d) must demonstrate that it is technically and economically infeasible for its shop to meet the numerical limits of §901.905(c). A petition must also propose measures to reduce impulsive noise where possible and assess the consequential health and welfare impacts on the surrounding community.

Cornell is located on Walker Road in Hampshire, Illinois. Cornell's operation occupies six acres and is surrounded on all four sides by land zoned for farming. The sole noise receiver is a farmhouse located approximately 1,000 feet northeast of the Cornell facility (R. 25). The farmhouse is a Class A receiver. The Cornell facility was built in 1953 and has been in operation since that time (R. 25). The facility consists of three one-story buildings. The forging hammers and furnaces are located in a single one-story building that runs north and south of the property. The building's lower levels are composed principally of a structural frame with sheet steel sides. The roof is made entirely of sheet steel. The sheet steel sides open like garage doors and the roof also can be opened (R. 36). The building houses seven impact forge hammers and seven furnaces. There are two 1,500 lb. hammers and five 2,000 lbs. hammers (R. 28). Cornell currently employs 28 people at its Hampshire facility (R. 41).

The forging process consists of heating carbon or alloy steel in furnaces to approximately 2350 degrees Fahrenheit and then forcing the heated pieces between two dies. The upper die is attached to a guided ram and the lower die is attached to the forge. The metal is shaped through pressure exerted by the ram or forge hammer, forcing the workpiece into the impression on the dies. The sound produced through this process is impulsive and originates primarily from the impact between the upper and lower die and the workpiece. There is a constant flow of materials between the furnace, forge, and cooling area (R. 49). Cornell forges golf club irons and various commercial and industrial parts (R. 33).

The nature of the forge operation creates an extremely hot work environment. The furnaces require a tremendous amount of oxygen and emit a great deal of heat. The cooling workpieces

also radiate heat into the forge shop. Consequently, the shop requires extensive ventilation which is provided by the garage-type side doors and the ability of the roof to open. This system creates a "stack effect" whereby air flows through the open sides of the building and is drawn up and out through the roof (R. 67-68). This natural ventilation system is effective and widely utilized by the forging industry. The open sides of the building also facilitate the free movement of material in and out of the forge shop. Noise escapes through these roof and side openings (R. 68).

Cornell currently operates from 7:00 a.m. to 4:30 p.m., five days per week with daily and Saturday overtime. Historically, Cornell has operated two shifts from 7:00 a.m. to 12:00 p.m. The Petitioner, in a post-hearing submittal, requests a site-specific level that would allow them to operate no more than seven hammers at any one time for a maximum period of 17 hours per day, Monday through Saturday. Petitioner proposes to operate in two shifts; one from 7 a.m. to 3:30 p.m. and the other on an alternating basis, either from 3:30 to 12:00 midnight or from 10:30 p.m. to 7:00 a.m. Cornell's president testified that the company could significantly reduce its electricity bill if it were allowed to operate a nighttime shift. Cost savings would amount to 80% of Cornell's \$60,000 to \$65,000 annual demand charge for electricity (R. 53).

Production has fluctuated over the last few years. Production levels have declined slightly since 1981 as is shown by the table below. The volume of production in 1983 is expected to be the same as in 1982.

	<u>Total No. of Forgings on hammers</u>	<u>No. of blows/yr.</u>	<u>Tonnage of all forgings</u>
1980	3,133,000	13,158,000	1,005
1981	3,426,000	14,388,000	1,123
1982	3,352,000	14,079,000	1,011

The regulations of the Board define two methods of measuring sound. The definition of dB(A), or A - weighted sound in decibels, is found in 35 Ill. Adm. Code 900.101, as is the definition of Leq, or equivalent continuous sound pressure level in decibels. Essentially, dB(A) measures the noise level at the peaks while Leq measures the average noise level over time, including peaks and background noise.

Permissible impulsive sound levels for existing forge shops are found in 35 Ill. Adm. Code 901.105. The impulsive sound level emitted to residences (Class A-land) cannot exceed 58.5 Leq, during the day or 53.5 Leq at night. Actual measurements of sound were taken around the Cornell facility by George F. Kamperman, an expert in the area of noise-control engineering. Based on these measurements, Kamperman predicted that the highest level at the nearest receiver would be approximately 62 Leq (R. 72). This

receiver, the farmhouse, is the only relevant noise receiver in terms of the regulations. But for the existence of this farmhouse, no petition for site-specific relief would be required. No citizen complaints have been received about the noise from Cornell's facility (R. 46).

Cornell has investigated several methods of compliance with the Board's noise regulations. Cornell's consultant and expert witness testified that the most economical and efficient method of compliance would require closing all roof vents, rebuilding the north entrance of the building to make a sound lock-type vestibule, replacing the present fiberglass wall panels with more substantial glass or cement asbestos board, and sealing the roof vent system with thick cement asbestos board. A mechanical ventilation system would then have to be installed to exhaust the heated air from the building (R. 47-48). These modifications would result in an approximate 10dB reduction (R. 97) and would achieve compliance with the regulations. The capital cost for these modifications are \$225,000. The building itself would require structural strengthening to support the new vent system and roof silencers at a cost of \$88,000. Electric power for the new vent system would cost \$14,000 for one year (R. 99-100). Cornell's expert testified that other types of control methods such as external grade-level sound barriers would be acoustically ineffective and would impede the flow of materials into the forge shop (R. 69-70). The proposed changes also affect the flow of materials and would create an undesirable "closed-in" feeling for the employees (R. 97-98).

Cornell has not implemented any control measures at this time. Cornell's president testified that denial of site-specific relief would not result in the immediate closing of the Hampshire facility. Eventually, however, the facility would be phased out of operation (R. 54).

The Illinois Environmental Protection Agency ("Agency"), in their written comments on the proposal filed January 18, 1984, did not challenge Cornell's qualification for site-specific relief on the basis that it is an "existing impact forging operation," nor did they question the fact that the Petitioner was violating Rule 206(c). The Agency stated that while technologically feasible noise reduction measures existed for forge shops, these measures were not technically feasible or economically reasonable for Cornell. The Agency also stated that granting the proposal site-specific operational level would not endanger the hearing of area residents.

The Board will grant the site-specific operational level requested by Cornell. Cornell is an existing impact forging operation which is presently in violation of 901.105(c). While compliance is technically possible, its extremely high cost makes it economically unreasonable for Cornell at this time. On a practical level, compliance measures would decrease production by impeding the flow of materials within the forge shop, create an

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 20th day of December, 1984 by a vote of 5-0.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board