

ILLINOIS POLLUTION CONTROL BOARD
March 21, 1984

SHELL OIL COMPANY,)
)
 Petitioner,)
)
 v.) PCB 83-24
)
 ENVIRONMENTAL PROTECTION)
 AGENCY,)
)
 Respondent.)

OPINION AND ORDER OF THE BOARD (by J. D. Dumelle):

On February 28, 1983, Shell Oil Company (Shell) filed a petition for variance from 35 Ill. Adm. Code 901.102(a) and 901.103 (old Rules 202 and 204 of Chapter 8) Noise Pollution, for noise emissions from its petroleum refinery located in Wood River Township in Madison County. The Illinois Environmental Protection Agency (Agency) filed a Recommendation that variance be granted subject to certain conditions on May 11, 1983. Shell responded to that recommendation on May 18, 1983 and the Agency amended its recommendation, altering two of the conditions on February 3, 1984. Shell responded again, indicating agreement with the recommendation and waiving hearing on February 27, 1984. No hearing has been held in this matter.

Shell owns and operates a petroleum refining complex, with a crude oil processing capacity of 295,000 barrels per operating day. Crude oil is supplied from fields in various states, including Louisiana, Mississippi, Oklahoma, Texas and New Mexico, as well as Middle Eastern and other foreign countries. Refined oil products are principally propane, motor gasolines, aviation fuels, diesel and heating oils, lubricating oils, heavy fuel oil and asphalt.

Sections 901.102(a) and 901.103 were adopted by the Board on July 26, 1973. Shell filed a petition for variance with respect to those noise limitations on November 28, 1977, and was granted a five year variance on May 25, 1978 (see PCB 77-306, 30 PCB 289). The Board found that Shell had made a good faith attempt to comply with the Noise Regulations and approved a compliance plan which required reducing the noise emissions from six process heaters, evaluating the costs and benefits of reducing the noise emissions from a seventh process heater, and semi-annual reporting on progress towards these objectives. Shell has fulfilled all the requirements of the compliance plan.

At the time of the granting of the variance in 1978, Shell believed that silencing of three major noise sources would significantly reduce the noise levels in the surrounding community. These sources are the process heaters of the Catalytic Reformer Number Three (CR-3), the Hydrodesulfurizer Unit Number Two (HDU-2) and the Catalytic Reformer Number Two (CR-2).

Pursuant to the Board's Order, Petitioner filed semi-annual reports with the Agency detailing progress under the compliance plan. In the fourth semi-annual report dated May 13, 1980, Shell demonstrated that the multiple-source background noise in the refinery had more of an impact than predicted by the point source computer model used to calculate the effect of silencing the major noise sources. The predicted improvements in the community noise levels from silencing the CR-3/HDU-2 heaters did not materialize as those improvements simply unmasked the multiple-source background noise problem. The actual noise surveys showed only marginal improvement in the noise levels in South Roxana.

In response to the inadequacies in the first model, Shell developed a second model to predict noise emissions into the South Roxana area based on contour areas within the refinery rather than specific sources as was the case with the first model. This second model confirms that noise penetration into South Roxana is a result of multi-source, general background noise.

Shell argues that silencing the multitude of background sources is economically and technically infeasible. To achieve a real reduction in noise levels would require application of the state-of-the-art noise control technology to almost all of the background sources in the refinery estimated to number approximately 140 air cooler fans, 18 cooling water towers, 48 compressors, 71 process heaters and boilers, 2,000 motors, 2,500 pumps, 10,000 control valves and almost 300 miles of piping which can transmit noise.

Shell estimates that approximately 75.0 million 1983 dollars would be required to apply state-of-the-art noise control technology to all of these components, and believes that the best manner in which Shell can reduce its noise emission in South Roxana to achieve compliance is the employment of state-of-the-art noise technology in the course of normal recapitalization (replacing or modifying existing equipment). Even then, compliance with the present noise limitations may be years away.

The sound levels emitted by the refinery are continuous and nearly steady through the entire day, changing slightly with local meteorology and plant operating conditions. One analysis tool for determining the effects of this noise on people is the energy equivalent sound level, Leq, which gives an average value for a changing sound level. The United States Environmental

Protection Agency has identified an Leq of 70 dB at residential property as adequate to protect against hearing loss. Currently, there appears to be a limited land area exterior to the Shell plant affected by an Leq of 61 dB, and, therefore, no hearing damage is expected due to refinery noise.

This data, coupled with the fact that only one complaint has been received during the last two years regarding noise emissions resulting from the operation of the facility, leads the Board to find that the adverse environmental impact of granting variance is not great and clearly does not outweigh the huge cost of compliance. The Board, therefore, concludes that denial of variance would impose an arbitrary or unreasonable hardship.

Shell's difficulty in attaining compliance with the applicable noise limitations has been recognized ever since those rules were first adopted on July 26, 1973 in R72-2. In its Opinion in support of the adoption of those rules, the Board stated that "Shell's situation is unique in that not only is it a very large refinery, but [it] abuts the residential community of South Roxana, allowing only the width of a street for noise attenuation. Rather than basing a regulation on this unique situation, this could be handled in a variance proceeding" (8 PCB 726).

However, the propriety of granting the present variance is not nearly as clear as it was when the rules were adopted or when the previous variance was granted in PCB 77-306. In the past Shell, the Agency and the Board concluded that compliance with the present rules was attainable within a five year term of variance. That no longer appears to be the case since the control program which was expected to result in compliance has proven ineffective, and compliance is now "years away." In fact, the record fails to demonstrate that compliance will ever be attained.

While the Board will grant this variance based upon the arbitrary or unreasonable hardship and the good faith attempts toward compliance, the Board notes that site-specific regulatory relief may be more appropriate than additional variance extensions. Conditions, upon which both Shell and the Agency have agreed, will be imposed on the variance to assure that all reasonable steps toward compliance will be taken.

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

ORDER

Shell Oil Company is hereby granted variance from 35 Ill. Adm. Code 901.102(a) and 901.103 as they apply to its petroleum refinery located in Wood River Township in Madison County, subject to the following conditions:

1. This variance shall terminate March 21, 1989;
2. Shell shall continue to employ state-of-the-art noise technology in the course of normal recapitalization through replacing or modifying existing equipment;
3. Shell shall report yearly to the Illinois Environmental Protection Agency (Agency) describing the progress of normal recapitalization. Such report shall include a listing of such activity by Shell, including an equipment description and projects costs. Shell shall also submit to the Agency its engineering guidelines and specifications relative to specific procedures and requirements for considering and limiting noise emissions in all new installations of noise generation equipment, including but not limited to, motors, pumps, fans and furnaces.
4. Shell shall employ state-of-the-art noise technology on all new equipment processes and facilities installed at its Wood River refinery. In no event may the sound emitted from any new equipment process, or facility, if taken alone, exceed the limitations of 35 Ill. Adm. Code 901.102(a) and (b) of any Class A Land Use or Section 901.103 of any Class B Land Use.
5. Within 45 days of the date of this Order, Shell Oil Company shall execute a Certificate of Acceptance and Agreement to be bound to all terms and conditions of the variance. Said Certification shall be submitted to the Agency at 2200 Churchill Road, Springfield, Illinois 62706. The forty-five day period shall be held in abeyance during any period that this matter is being appealed. The form of the certificate shall be as follows:

CERTIFICATE

I, (We), _____, having read the Order of the Illinois Pollution Control Board in PCB 83-24, dated March 21, 1984, understand and accept said Order, realizing that such acceptance renders all terms and conditions thereto binding and enforceable.

Petitioner

Authorized Agent

Title

Date

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 21st day of March, 1984 by a vote of 6-0.



Christan L. Moffett, Clerk
Illinois Pollution Control Board