

ILLINOIS POLLUTION CONTROL BOARD
April 3, 1997

SARA SCARPINO & MARGARET SCARPINO,)	
)	
Complainants,)	
)	
v.)	PCB 96-110
)	(Enforcement - Citizens - Noise)
HENRY PRATT COMPANY,)	
)	
Respondent.)	

SARA SCARPINO AND MARGARET SCARPINO APPEARED *PRO SE*; and

JAN FELDMAN AND ANNE VINER OF HOLLEB & COFF APPEARED ON BEHALF OF RESPONDENT.

OPINION AND ORDER OF THE BOARD (by K.M. Hennessey):

This citizens' enforcement action concerns a manufacturing facility in Aurora, Illinois. The facility makes valves and is owned and operated by respondent Henry Pratt Company (Henry Pratt). Complainants Sara Scarpino and Margaret Scarpino (complainants) live in Aurora and allege that noises from the operation of machinery at Henry Pratt's plant have unreasonably interfered with the enjoyment of their lives. Complainants claim that these effects constitute noise pollution and that Henry Pratt therefore has violated the Illinois Environmental Protection Act (Act) (415 ILCS 5/1 *et seq.* (1994)) and Illinois Pollution Control Board (Board) regulations. Complainants request that the Board order Henry Pratt to permanently reduce noise emissions from its plant.

The Board finds that there is insufficient proof that noises from the Henry Pratt plant have unreasonably interfered with complainants' enjoyment of their lives. Accordingly, the Board rules that complainants did not establish that Henry Pratt violated the Act or the Board's regulations.

PROCEDURAL HISTORY

Complainants filed a complaint against Henry Pratt on November 27, 1995 pursuant to Section 31(b) of the Act. (415 ILCS 5/31(b) (1994).) Complainants allege that Henry Pratt has caused and continues to cause noise pollution in violation of the Act (415 ILCS 5/24 (1994)) and Board regulations (35 Ill. Adm. Code 900.102). Hearings were held before Board Hearing Officer June Edvenson on July 19, 1996 and October 11, 1996 in Geneva, Illinois. Five witnesses testified at the hearings. Complainants appeared *pro se* and filed no briefs at or after the hearings. Henry Pratt submitted a "Memorandum of Law Concerning the Appropriate Standard of Review" to the Hearing Officer at the October hearing.

SUMMARY OF EVIDENCE

In the following Summary of Evidence, the Board first describes Henry Pratt's operations and activities. The Board then describes complainants' property and its location in relation to Henry Pratt's facility, along with the area's property uses and zoning. Next, the Board discusses the evidence presented on noise emitted from the Henry Pratt facility and any resulting interference with complainants' enjoyment of life, including sound measurements taken. Finally, the Board describes the measures that Henry Pratt has taken in attempts to mitigate noise.

Description of Henry Pratt

Henry Pratt bought its Aurora property in 1964 and began operation in 1965. (Tr. at 184.)¹ The plant's Standard Industrial Classification or SIC code is and has always been 3494, representing fabricated metal manufacturing, specifically valves and fittings. (Tr. at 202-203.) It manufactures rubber-seated butterfly valves that are used in water handling applications such as underground water lines for housing subdivisions and other uses. (Tr. at 185.) Henry Pratt's customers include local plumbing contractors on large projects, waste water treatment plants and nuclear power plants. (Tr. at 185-186.)

As of the October 11, 1996 hearing, the Aurora facility employed 193 people and its payroll for the preceding 12 months totaled \$9,281,000. (Tr. at 186-187.) It is unclear from the testimony whether Henry Pratt pays \$45,000 or \$90,000 per year in property taxes. (Tr. at 187.) It pays approximately \$57,000 per year on average in use tax. (Tr. at 187.) It also collects \$45,000 to \$47,000 per year from customers in sales tax for Illinois. (Tr. at 187.)

The Aurora plant received awards from Governor Jim Edgar and the United States Environmental Protection Agency for its voluntary pollution prevention efforts in the early 1990's. (Tr. at 187-190; Henry Pratt Exh. 8 and 9.) The plant has a blood drive once or more each year for the Aurora Blood Bank and a food drive around Christmas for a local charitable organization. (Tr. at 217-218.)

Henry Pratt's factory, offices and employee parking lot appear to cover approximately half a block. (Henry Pratt Exh. 10.) The parking lot and factory portion of the facility abut the east side of Cleveland Avenue. (Tr. at 77, 193, 202; Henry Pratt Exh. 10.) The office portion abuts Highland Avenue. (Tr. at 193; Henry Pratt Exh. 10.)

¹ The transcript of the two hearings is cited as "Tr. at _." Complainants' exhibits are cited as "Comp. Exh. _" and Henry Pratt's exhibits are cited as "Henry Pratt Exh. _."

Proximity of Henry Pratt Plant to Complainants

Complainants live together in a house on the west side of Cleveland Avenue in Aurora, Illinois, directly across from the parking lot for Henry Pratt's employees. (Tr. at 13, 26, 54, 77, 193-194, 202; Comp. Exh. 3; Henry Pratt Exh. 10.) The factory portion of Henry Pratt's facility is to the southeast of complainants' home, but the distance between the two is not disclosed in the record. (Henry Pratt Exh. 10.)

Complainants have lived in their house for approximately 70 years and became owners of the property in 1982. (Tr. at 26, 54, 176-177, 179-180.) The house is on a long and narrow lot, with a garage in the backyard and neighbors on the north and south sides of the lot. (Tr. at 84; Comp. Exh. 9.) Complainant Sara Scarpino's bedroom is on the house's second floor, with her bedroom window facing Cleveland Avenue. (Tr. at 58, 103-104.) It has been Sara Scarpino's bedroom since at least 1991. (Tr. at 179.) It has shades, curtains and drapes. (Tr. at 180.) Complainant Margaret Scarpino's bedroom is on the first floor and does not face the Henry Pratt property. (Tr. at 58.)

Description of Vicinity

One of Henry Pratt's witnesses estimated that the vast majority of the land in the vicinity of complainants' house is industrial or commercial property. (Tr. at 199-202; Henry Pratt Exh. 10.) For example, north of complainants' house is an industrial company (Tr. at 194-195; Henry Pratt Exh. 10) and southwest of the house is an ice cream factory (Tr. at 195; Henry Pratt Exh. 10). Generally south of both the Henry Pratt facility and complainants' house is an assembly plant, a restaurant, two auto repair shops, a self-storage facility, a wholesale sheet metal supply facility and a property used by Markly Oil for commercial purposes. (Tr. at 195-197, Henry Pratt Exh. 10.) Directly east of the Henry Pratt plant are two industrial companies and a warehouse facility. (Tr. at 197-198; Henry Pratt Exh. 10.) On Cleveland Avenue's west side where complainants live, there are five other houses along with a gas station and two other commercial or industrial companies. (Tr. at 199; Henry Pratt Exh. 10.)

The Henry Pratt property and much of the surrounding area is zoned for general industrial use. (Tr. at 191-192, 194, 199; Henry Pratt Exh. 10.) Complainants' property appears to be in the same zoning area as the Henry Pratt property. (Tr. at 193-194; Henry Pratt Exh. 10.)

Existence and Source of Noise

Witnesses for both sides testified that noise emitted from the Henry Pratt facility could be heard at complainants' property. (Tr. at 13, 55, 200 (Sara Scarpino); Tr. at 61, 178 (Margaret Scarpino); Tr. at 82, 85, 147 (Greg Zak); Tr. at 216 (Rajendra Dave); Tr. at 256, 258 (Thomas Thunder).) All of this testimony was based on firsthand observations.

Interference

Complainants' Evidence and Correspondence. Complainant Sara Scarpino stated that noises from the Henry Pratt facility became a problem around early 1991 and that they were still a problem at the time of the first hearing in July, 1996. (Tr. at 13, 55; Resp. Exh. 1.) She described the three types of noises in her testimony and in letters to Henry Pratt as a "sharp, droning," "shrill" and "piercing" sound (Tr. at 13, 31; Henry Pratt Exh. 1, 2, 3, 4, 5 and 6), a "deep loud motor-running," "grinding" sound (Tr. at 13; Henry Pratt Exh. 2, 3, 4, 5 and 6) and a "sand blasting" sound (Henry Pratt Exh. 5 and 6). Based on her testimony and letters, it appears that the first type of noise began in early 1991, the second type in late 1991 and the third in the spring of 1995. (Tr. at 55; Henry Pratt Exh. 1, 2 and 5.) While she testified that the noise problem persisted at the time of the first hearing, she specifically mentioned only a shrill, piercing noise and a loud, grinding noise. (Tr. at 13, 261.)

Complainants have had contacts (*i.e.*, phone calls, letters, meetings) regarding noise complaints with Henry Pratt from 1991 to the time of the first hearing. The following chart sets forth the approximate number of these contacts during the various time periods:

<u>Year</u>	<u># of Contacts</u>	<u># of Months Over Which Contacts Were Made</u>
1991	24	9
1992	9	4
1993	5	4
1994	14	4
1995	53	12
1996	8	4

(Comp. Exh. 1 and 6; Henry Pratt Exh. 1 - 6.)²

Sara Scarpino's testimony and letters to Henry Pratt included descriptions of how the noises interfered with her enjoyment of life. She stated that the noises have affected her health and well-being. (Henry Pratt Exh. 1, 5 and 6.) Specifically, she said that her sleep has been disrupted (Henry Pratt Exh. 1, 2, 5 and 6) and that she did not have sleep problems until the Henry Pratt plant "started making noise" (Tr. at 55). She mentioned in February of 1995 that "because of the excessive noise, headaches are a common occurrence" and that she must take

² These contacts include telephone answering machine messages and unsuccessful attempts to reach one another, so a single complaint may have given rise to several contacts. The Board checked the letters against complainants' logs of phone calls and correspondence, but some double-counting is possible. The Board also notes that some contacts may have related to complaints about noise that were not a part of the complaint filed with the Board (*e.g.*, Sara Scarpino complained in a June 11, 1996 letter about noise from a waste disposal truck coming to the Henry Pratt plant).

Tylenol PM. (Henry Pratt Exh. 5.) She also said that she has had to wear earplugs (Tr. at 13; Henry Pratt Exh. 1, 2 and 5), cover her head (Henry Pratt Exh. 2), turn on the radio (Tr. at 13; Henry Pratt Exh. 5), keep her bedroom window closed (Tr. at 13; Henry Pratt Exh. 1 and 3) and use shades, drapes and curtains (Tr. at 180; Henry Pratt Exh. 2, 5), all in an effort to minimize the noises. She also stated that the “deep loud motor-running,” “grinding” sound vibrates through the house. (Henry Pratt Exh. 6.)

Sara Scarpino stated that noise from the Henry Pratt plant disturbs her most of the time (Tr. at 50), but that it is most disruptive during sleeping hours (Henry Pratt Exh. 2, 3, 4 and 5). She also said that the noise persists almost continuously while the plant is operating, specifically from around 4:00 or 5:00 a.m. until 2:00 a.m. on weekdays, from around 5:00 a.m. until 5:00 or 10:00 p.m. on Saturdays and occasionally on Sundays from around 5:00 a.m. until various times. (Tr. at 13-14; Henry Pratt Exh. 1, 4, 5 and 6.) She did not identify how frequently her sleep was disturbed because of the noise.

Margaret Scarpino testified that she switched bedrooms with her sister for approximately four months during the winter preceding the hearings so Sara Scarpino could sleep. (Tr. at 178-179.) Margaret Scarpino did not testify to having any trouble sleeping while she was in her sister’s bedroom. Margaret Scarpino returned to her first floor bedroom because Sara Scarpino preferred to be upstairs. (Tr. at 178.) Margaret Scarpino testified that she often can hear the Henry Pratt plant noise from her first floor bedroom if she leaves the window open. (Tr. at 61,178.)

Sara Scarpino’s Recordings. Complainants presented the testimony of Greg Zak, a noise advisor with the Illinois Environmental Protection Agency (Agency). Mr. Zak has been a noise advisor with the Agency for approximately nine years and has extensive experience with noise measurement and citizen noise complaints. (Tr. at 122, 124; Comp. Exh. 2.) Mr. Zak arrived at complainants’ house on March 14, 1996 with a precision tape recorder for Sara Scarpino to measure sound outside her second floor bedroom window. (Tr. at 66, 69; Comp. Exh. 3.) The tape recorder was modified so that the only user accessible control was the on-off switch. (Tr. at 66-67.) Mr. Zak explained to Sara Scarpino how to place the tripod-mounted, precision microphone in the center of the open window and to turn the tape recorder on when she was most disturbed by noise emissions from the Henry Pratt plant. (Tr. at 67, 70; Comp. Exh. 3.) Mr. Zak calibrated the recorder before leaving. (Tr. at 70; Comp. Exh. 3.)

Sara Scarpino recorded the full two hours of tape over the last half of March, 1996. (Tr. at 67; Comp. Exh. 3 and 4.) There were eleven recording events, each ranging in length from 5 to 17 minutes. (Comp. Exh. 3 and 4.) Although the Board’s regulations at 35 Ill. Adm. Code 900.103(b) require, in almost all instances, a reference time of one hour for measurements sources taken to determine compliance with the numeric sound limits at 35 Ill. Adm. Code 901, Mr. Zak testified that it was not necessary for Sara Scarpino to record for one hour at a time. (Tr. at 97-98.) In support of this conclusion, Mr. Zak noted that complainants did not allege that Henry Pratt had violated the Board’s numeric sound limits and that the noise was not a continuous, reasonably steady sound (*i.e.*, it would be louder and then

quieter, apparently as machinery went on and off at the Henry Pratt plant). (Tr. at 98, 153-158.)

All of Sara Scarpino's recordings were made either between 5:40 and 9:25 a.m. or between 6:45 and 10:17 p.m. (Comp. Exh. 4.) Mr. Zak retrieved the equipment on March 29, 1996 and confirmed that it was in good order and that Sara Scarpino had followed his instructions. (Tr. at 67; Comp. Exh. 3.) The recorder was again calibrated. (Tr. at 70.) No recordings were made from Margaret Scarpino's bedroom window. (Tr. at 58.)

Mr. Zak analyzed the tape in the Agency's noise lab by playing it into a real time analyzer which provides both frequencies and decibel levels. (Tr. at 68-70; Comp. Exh. 3.) He paused the analyzer so as not to include extraneous sounds, such as a train or car in the background. (Tr. at 69-70.) Mr. Zak's report compares the results of four recording events occurring over three days with certain numeric sound limits for nighttime hours set forth in Board regulations. (Tr. at 70-71, 98-100; Comp. Exh. 3 and 4.) "Nighttime hours" are defined at 35 Ill. Adm. Code 900.100 as 10:00 p.m. to 7:00 a.m., local time. The four recordings were made within this time frame.

The Board's daytime and nighttime numeric limits in 35 Ill. Adm. Code 901.102 are defined in terms of different decibel levels at different frequencies or hertz. For his comparison, Mr. Zak selected the nighttime numeric limits in 35 Ill. Adm. Code 901.102(b) for sounds emitted from "Class C land" (includes various manufacturing uses) to "Class A land" (includes various residences), referring to land use classifications under the Standard Land Use Coding Manual. (Tr. at 81, 98; Comp. Exh. 3.) Henry Pratt did not dispute Mr. Zak's land use classifications.

Mr. Zak found sound readings in excess of these nighttime numeric sound limits during each of the four recording events. (Comp. Exh. 3.) Two of the decibel readings exceeded the nighttime decibel limit at 250 hertz by 3 and 4 decibels respectively, two readings exceeded the limit at 500 hertz by 3 and 6 decibels respectively, four exceeded the limit at 1,000 hertz by 5, 3, 7 and 7 decibels respectively, four exceeded the limit at 2,000 hertz by 6, 6, 8 and 9 decibels respectively and four exceeded the limit at 4,000 hertz by 3, 4, 4 and 4 decibels respectively. (Comp. Exh. 3.)

In his testimony, Mr. Zak took the decibel levels at the various frequencies from the most elevated³ of the four recording events and described the extent to which people would typically suffer from sleep disruption at such sound levels. (Tr. at 74-75.) He testified that 58 decibels at 250 hertz is entering an area where a number of people would begin to complain about sleep disturbance, that 53 decibels at 500 hertz would tend to wake up a significant portion of the population, that 48 decibels at 1,000 hertz would be very disturbing, that 45 decibels at 2,000 hertz would be quite disturbing and that 36 decibels at 4,000 hertz would be slightly disturbing. (Tr. at 75.) Mr. Zak admitted that his correlations between sound levels

³ This recording was the "most elevated" on an A-weighted basis. A-weighting is discussed below at page 9 and pages 16 and 17.

and degrees of disturbance were based only on the decibel readings at the given hertz being in excess of the Board's numeric nighttime limits. (Tr. at 170-171.) Mr. Zak testified that he had never been inside the Henry Pratt facility (Tr. at 108-109) and did not know what specific sources there were emitting sounds (Tr. at 72).

Greg Zak's Tests and Additional Testimony. On the morning of July 17, 1996, Mr. Zak returned to complainants' property to conduct additional tests. (Tr. at 79-80.) After walking around complainants' property and up and down Cleveland Avenue and driving down Highland Avenue, he determined that the predominant sound source was the Henry Pratt plant. (Tr. at 81-82; Comp. Exh. 9.) He chose a location in complainants' backyard near the garage to take a measurement for ambient or background noise because it was where the sound levels emanating from the Henry Pratt facility were lowest. (Tr. at 80, 82, 84-85; Comp. Exh. 9.)

Mr. Zak agreed that the purpose of taking an ambient measurement is to determine those background noise levels which are present when there is no sound coming from the subject source. (Tr. at 108.) He testified that ambient measurements are compared with sound level readings of the subject source to ensure that it is actually the source of the complained of sounds. (Tr. at 88, 102.) He stated that because the Henry Pratt plant generated the area's background noise (Tr. at 82, 85), he could not get a "true" ambient reading unless everything in the plant was turned off. (Tr. at 108).

Mr. Zak took the measurements from 9:52 to 9:53 a.m. (Comp. Exh. 9.) He testified that the ambient readings were, in essence, "Pratt data" (Tr. at 88) because they represent sound emissions that were coming from the Henry Pratt facility into the Scarpino backyard (Tr. at 90). He compared his results with the Board's nighttime numeric limits and found the nighttime decibel limits exceeded at 2,000 hertz by 4 decibels and at 4,000 hertz by 5 decibels, adding that the levels were not problematic for daytime but that they could be a little disturbing at nighttime. (Tr. at 90-91; Comp. Exh. 9.)

On the same day, Mr. Zak stood in complainants' front yard and held a microphone boom up to Sara Scarpino's bedroom window to verify that her previous measurements were not affected by reflection. (Tr. at 83, 85; Comp. Exh. 9.) He testified that they were not affected. (Tr. at 91.) He added that taking measurements outside an upper level window is permitted by the American National Standards Institute (ANSI) document entitled "Quantities and Procedures for Description and Measurement of Environmental Sound. Part 3: Short-Term Measurements With an Observer Present," ANSI S12.9-1993/Part 3. (Tr. at 91-93; Comp. Exh. 10.) To further demonstrate the validity of the measurement technique used by Sara Scarpino, Mr. Zak described a study from another site showing that data collected outdoors correlated, in Mr. Zak's opinion, "extremely well" with data collected through in-window measurements. (Tr. at 85-87; Comp. Exh. 9.)

Mr. Zak testified that when he carried on a conversation in complainants' front yard, he did not have to raise his voice and could be heard in normal, soft conversational tones. (Tr. at 145.) He said that sound from the Henry Pratt plant decreases as one moves into Sara Scarpino's bedroom away from her window, that he did not measure inside her bedroom and

that he did not know if sound from the plant could be heard in the house when its windows were closed. (Tr. at 146-148.) He also testified that he would not characterize the Henry Pratt plant noise as a “shrill piercing” or “loud grinding” noise when standing at Sara Scarpino’s bedroom window (Tr. at 148) or as a noise “that rattles windows in the Scarpino home” (Tr. at 146).

Mr. Zak acknowledged that the daytime numeric sound limits in 35 Ill. Adm. Code 901.102(a) are less stringent than the nighttime limits and that the decibel readings from his and Sara Scarpino’s recordings would not exceed the daytime limits for sounds emitted from Class C land to Class A land. (Tr. at 99-101, 163-167.) Mr. Zak also explained that some older companies were grandfathered so that they would not be subject to the Board’s nighttime numeric sound limits and would instead have to meet the daytime limits during nighttime hours. (Tr. at 100-101, 167.)

Mr. Zak did not investigate whether the Henry Pratt plant came within this exemption. (Tr. at 101, 160.) The exemption is set forth in Board regulations at 35 Ill. Adm. Code 901.107(e) and is available to “existing property-line-noise-sources,” defined at 35 Ill. Adm. Code 900.101 as sources for which construction or establishment was commenced prior to August 10, 1973 and whose A, B or C land use classification does not change on or after that date.

Testimony of Rajendra Dave of Henry Pratt. Henry Pratt introduced the testimony of Rajendra Dave, an employee at the Aurora plant as a manufacturing engineer since 1976 and manufacturing manager since 1987. (Tr. at 183-184.) Mr. Dave testified that his experience at the Henry Pratt plant made him very familiar with its operations. (Tr. at 184.) He stated that the Henry Pratt plant has conducted the same type of manufacturing process and made the same products since it began operating in 1965. (Tr. at 186.) He also testified that there were no major changes in equipment or operations at the plant at the time of or within six months prior to complainants’ first noise complaint in March, 1991. (Tr. at 13, 206-207.) He added that sounds emitted from the plant would have been of a fairly constant nature before and after March of 1991. (Tr. at 207.)

Mr. Dave testified that in the several times he had been in complainants’ house, on their front porch and on the sidewalk in front of their house, he did not hear a “shrill piercing” or “loud grinding” noise emanating from the Henry Pratt plant. (Tr. at 215-216.) He described the sounds from the plant that could be heard at complainants’ property as “a steady, low-frequency mechanical type of noise.” (Tr. at 216.) He also testified that it was not necessary to raise your voice to have a conversation in complainants’ house or on their sidewalk. (Tr. at 216-217.)

Testimony of Thomas Thunder. Henry Pratt also presented the testimony of Thomas Thunder, principal audiologist and noise consultant with Acoustic Associates, Ltd. of Palatine, Illinois, a noise consulting firm. (Tr. at 225, 231.) Mr. Thunder has extensive experience in environmental noise assessment. (Henry Pratt Exh. 13.) In early September, 1996, Mr.

Thunder took sound level measurements on the sidewalk in front of complainants' house. (Tr. at 233, 258.)

To measure ambient or background noise, Mr. Thunder had Henry Pratt shut off all the equipment during the plant's normal ten-minute break from 10:00 to 10:10 p.m. (Tr. at 236.) Then, when Mr. Thunder was advised that the "entire plant was up and running" and all the equipment was operating, he took additional measurements for approximately five minutes to obtain total noise. (Tr. at 236, 241.) He then subtracted the background noise from the total noise to find out what component of the noise is coming from the Henry Pratt plant. (Tr. at 236-237.)

Based on these measurements, Mr. Thunder found that the sound due to the plant alone exceeded the Board's nighttime numeric decibel limits for sound from Class C to Class A land at 250 hertz by 1 decibel, 500 hertz by 3 decibels, 1,000 hertz by 5 decibels, 2,000 hertz by 7 decibels and 4,000 hertz by 6 decibels. (Henry Pratt Exh. 11.) None of the readings exceeded the Board's daytime numeric limits for sound from Class C to Class A. (Henry Pratt Exh. 11.) In addition, the ambient noise levels exceeded the nighttime numeric limits at 1,000 hertz by 2 decibels and 4,000 hertz by 4 decibels, but did not exceed the daytime limits. (Henry Pratt Exh. 11.)

Mr. Thunder testified regarding "A-weighted" sound levels, which he described as providing a measure of the overall noise level, as opposed to individual frequencies or hertz. (Tr. at 239.) According to Mr. Thunder, the A-weighted levels are as follows: 49 decibels (ambient noise measured by Mr. Thunder); 51 decibels (sound emitted at the Board's nighttime numeric limits); 53 decibels (noise due to the Henry Pratt plant alone as measured by Mr. Thunder); 54 decibels (the most elevated (when A-weighted) of Sara Scarpino's four reported recordings as corrected for the attempted ambient readings taken by Mr. Zak on July 17, 1996); and 61 decibels (sound emitted at the Board's daytime numeric limits). (Tr. at 239-242; Comp. Exh. 3 and 9; Henry Pratt Exh. 11.) The Board discusses A-weighting further at pages 16 and 17 of this opinion.

Mr. Thunder also determined that the most elevated (when A-weighted) of Sara Scarpino's four reported recordings as corrected for the attempted ambient readings taken by Mr. Zak showed exceedences of the nighttime limits at 250 hertz by 4 decibels, at 500 hertz by 6 decibels, at 1,000 hertz by 6 decibels and at 2,000 hertz by 7 decibels. (Tr. at 241-242; Comp. Exh. 3 and 9; Henry Pratt Exh. 11.)

Mr. Thunder concluded that noise from the Henry Pratt facility does not represent an annoyance to the general population and the community as a whole. (Tr. at 227.) His conclusion is based in part on studies described in an article entitled "Effects of Noise on People," by Henning E. von Gierke and Kenneth M. Eldred, which appeared in "Noise/News International," June, 1993. (Tr. at 244-246, 257; Henry Pratt Exh. 12.) Mr. Thunder took the sound level data he collected for the instant case and adjusted it by applying a formula based on the article that includes "non-acoustic factors" (e.g., noise-maker's relationship with the community). (Tr. at 246-250; Henry Pratt Exh. 11 and 12 at 68, 79.) After applying the

formula, Mr. Thunder used a graph from the article (Henry Pratt Exh. 12 at 81) to estimate the following percentages of people in this vicinity who would be highly annoyed by the following sound levels at night: (1) approximately 7% by this area's ambient sound levels, (2) approximately 8% by sounds emitted at the Board's nighttime numeric limits and (3) approximately 7% by this area's total noise levels (*i.e.*, Henry Pratt plant noise and background noise combined). (Tr. at 251-255; Henry Pratt Exh. 11.)

Mr. Thunder also testified that he would not characterize the Henry Pratt plant sounds he heard when he was at complainants' property as "shrill piercing" or "loud grinding" noises, adding that the measurements made also do not suggest that they were those kinds of noises. (Tr. at 256-257.)

Measures Designed to Mitigate Noise

Henry Pratt implemented a number of measures at its plant in an attempt to mitigate the noises complained of by complainants. (Tr. at 207-208; Henry Pratt Exh. 6.) It redirected its plasma exhaust to the south "to reduce the potential for sound waves to travel toward" complainants' house. (Henry Pratt Exh. 6.) It appears that this work was done in late July, 1991 in response to complaints beginning in March, 1991 about the "sharp droning," "shrill" and "piercing" noise. (Tr. at 208; Henry Pratt Exh. 1) As of August 1, 1991, complainants appeared satisfied with this measure, but on August 21, 1991, Sara Scarpino complained that the noise returned. (Tr. at 209; Henry Pratt Exh. 1.)

In June of 1991, Sara Scarpino complained of "sounds like a steam engine giving off steam . . . like a loud blast." (Henry Pratt Exh. 1.) On July 9, 1991, Sara Scarpino counted 79 "blasts" from 9:15 a.m. to 10:00 p.m. (Henry Pratt Exh. 1.) In response, Henry Pratt redirected the exhaust from its abrasive blast room in July, 1991, which apparently eliminated the problem. (Tr. at 208-209; Henry Pratt Exh. 1 and 6.) These blast noises were not mentioned in the complaint filed with the Board.

Henry Pratt took several measures regarding the circulation fan in the men's restroom area in response to complaints about the "deep loud motor-running," "grinding" noise. It turned off the circulation fan when closing the plant, apparently beginning this practice in late 1991. (Tr. at 209; Henry Pratt Exh. 2.) It then changed the circulation fan. (Tr. at 209; Henry Pratt Exh. 2 and 6.) It appears that this work was done in early 1992. (Henry Pratt Exh. 2.) In May of 1996, Henry Pratt replaced the circulation fan with one which is apparently supposed to be quieter. (Tr. at 209; Henry Pratt Exh. 6.)

Henry Pratt also installed silencer devices on the following: the exhaust duct related to its plasma operation; the discharge duct related to its compressor cooling fan exhaust (this duct was also redirected to discharge to the south); the exhaust fan discharge duct for its abrasive blast room; and the vacuum pump of its soil vapor extraction system. (Tr. at 210, 220-221; Henry Pratt Exh. 6.) It is unclear from the record which noises these measures were intended to abate. They were taken some time before June 25, 1996 and it appears that one of the

silencers was installed in the fall of 1995 before the complaint was filed with the Board. (Henry Pratt Exh. 6.)

Additionally, Henry Pratt constructed an eight foot high wall designed to act as a noise barrier around the motor portion of the blast room dust collector located in the parking lot. (Tr. at 210, 221; Henry Pratt Exh. 6.) It also began a preventive maintenance program for the blast room dust collector involving inspecting and replacing parts. (Tr. at 210; Henry Pratt Exh. 6.) The record does not disclose which noises these steps were designed to control, but they were implemented some time before June 25, 1996. (Henry Pratt Exh. 6.)

Mr. Dave testified that Henry Pratt selected these measures based on in-house engineering knowledge and advice of outside consultants, adding that Henry Pratt first retained a consultant within a couple months after the first noise complaint and has been working with consultants since then. (Tr. at 211-212; Henry Pratt Exh. 1.) Mr. Dave testified that Henry Pratt had spent a total of \$25,000 to \$30,000 on measures designed to mitigate noise, apparently including consulting fees, and that approximately \$22,000 of this amount had been spent since June, 1995. (Tr. at 214-215.)

Complainants acknowledged Henry Pratt's efforts at noise abatement over the years, but concluded they were ineffective. (Tr. at 32, 35-36; Henry Pratt Exh. 2, 4, 5 and 6.) Mr. Dave testified that after Henry Pratt's attempts at noise abatement, Sara Scarpino complained that the equipment got louder. (Tr. at 212.) After one of the silencers was installed, Sara Scarpino stated that the noises were worse since its installation. (Tr. 212-213; Henry Pratt Exh. 6.) Mr. Dave testified that she once told Henry Pratt that noise from the plant subsided 15 minutes after she called to complain, but Mr. Dave added that on that occasion Henry Pratt had not done anything to reduce noise. (Tr. at 213.)

APPLICABLE LAWS

Complainants allege that Henry Pratt has violated Section 24 of the Act and 35 Ill. Adm. Code 900.102. Section 24 provides that no person shall:

emit beyond the boundaries of his property any noise that unreasonably interferes with the enjoyment of life or with any lawful business or activity, so as to violate any regulation or standard adopted by the Board under this Act.

(415 ILCS 5/24 (1994).) Section 900.102 of the Board's regulations states in relevant part that no person shall "cause or allow the emission of sound beyond the boundaries of his property . . . so as to cause noise pollution in Illinois" (35 Ill. Adm. Code 900.102.) "Noise pollution" is defined as "the emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity." (35 Ill. Adm. Code 900.101.)

These provisions constitute a prohibition against "nuisance noise." (Zivoli v. Prospect Dive and Sport Shop, Ltd. (March 14, 1991), PCB 89-205, 120 PCB 11, 18.) "In determining whether noise rises to the level of a nuisance, the unreasonable interference with

complainant's enjoyment of life, the Board takes into consideration Section 33(c) of the Act” (Hoffman v. City of Columbia (October 17, 1996), PCB 94-146, slip op. 2.) Section 33(c) reads as follows:

In making its orders and determinations, the Board shall take into consideration all the facts and circumstances bearing upon the reasonableness of the emissions, discharges, or deposits involved including, but not limited to:

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; and
5. any subsequent compliance.

(415 ILCS 5/33(c) (1994).)

DISCUSSION

The uncontested evidence demonstrates that noise emitted from the Henry Pratt plant could be heard at complainants' property. Thus, the remaining questions are whether the noise has interfered with complainants' enjoyment of life and, if so, whether such interference was unreasonable in light of the Section 33(c) factors. The Board shall address these questions in turn.

Interference with Enjoyment of Life

“If there is no interference, no ‘nuisance noise’ violation is possible.” (Zivoli, PCB 89-205, 120 PCB at 19.) Accordingly, a “threshold issue in any nuisance noise enforcement proceeding is whether the sounds have caused an interference with the complainants’ enjoyment of life” (Furlan v. University of Illinois School of Medicine (October 3, 1996), PCB 93-15, slip op. 4.) The Board in Zivoli stated the following:

Interference is more than an ability to distinguish sounds attributable to a particular source. Rather, the sounds must objectively affect the complainant’s life

(Zivoli, PCB 89-205, 120 PCB at 19.)

As described in the Summary of Evidence, Sara Scarpino said that Henry Pratt plant noise persists almost continuously while the plant is in operation. Margaret Scarpino testified that she often could hear noise from the Henry Pratt facility if she left her bedroom window open. The mere ability to hear sounds emitted from the Henry Pratt plant, however, does not constitute an interference. (See Hoffman, PCB 94-146, slip op. 16 (“Testimony to the effect that the sound constitutes an interference solely because it could be heard is insufficient”).) There is insufficient evidence in the record to show that Henry Pratt plant noise interfered with Margaret Scarpino’s enjoyment of life.

Nevertheless, the evidence presented demonstrates an interference with Sara Scarpino’s enjoyment of life. Sara Scarpino often mentioned that her health and well-being were being affected by the noise and on one occasion in 1995 she mentioned having headaches. The only interference, however, established by a preponderance of the evidence has been disruption of her sleep. The Board has held that sleep loss from noise can constitute an interference with the enjoyment of life. (See Manarchy v. JJJ Associates, Inc. (July 18, 1996), PCB 95-73, slip op. 11 (sleeplessness from nightclub noise is interference); D’Souza v. Marraccini (May 2, 1996), PCB 96-22, slip op. 5, 7-8.)

Sara Scarpino’s testimony and letters regarding sleep disruption are corroborated by the sound measurements taken by the parties that showed exceedences of the Board’s nighttime numeric sound limits at 35 Ill. Adm. Code 901.102(b) for Class C land emitting to Class A land. Although complainants do not allege that Henry Pratt has violated any numeric limits, the Board has previously found exceedences of numeric limits relevant to establishing interference in cases alleging nuisance noise. (See, e.g., D’Souza, PCB 96-22, slip op. 6 (Board relying in part on numeric exceedences to find interference in case alleging nuisance noise).) In this case, the nighttime limits are more relevant than the daytime limits because the nighttime limits were designed “to offer greater protection during sleeping hours” (In the Matter of Noise Pollution Control Regulations (July 31, 1973), R 72-2, 8 PCB 703, 723.)

Sara Scarpino recorded exceedences of the nighttime limits from her bedroom window on March 14, 15 and 18, 1996. Mr. Thunder recorded nighttime exceedences from the sidewalk in front of the Scarpino house in early September, 1996.⁴ All of these measurements were taken during the nighttime hours (*i.e.*, from 10:00 p.m. to 7:00 a.m.) as defined in Board regulations.

In concluding that the measurements corroborate Sara Scarpino’s claims of sleep disruption, the Board closely examined the evidence regarding the procedures used in measuring. When sound level measurements are submitted into evidence not to prove or disprove a numeric violation, but to substantiate or refute a nuisance noise claim, measurement procedures need not meet all Board requirements that apply in a case alleging a numeric violation. (See Discovery South Group, Ltd. v. Pollution Control Board, 275 Ill. App. 3d.

⁴ While the recordings of Ms. Scarpino and Mr. Thunder occurred after the complaint was filed, Mr. Dave testified at the October, 1996 hearing that the sounds emitted by the Henry Pratt plant would have been similar before and after the first complaint in 1991.

547, 559, 656 N.E. 2d 51, 59 (1st Dist. 1995) (strict adherence to measurement procedure requirements is only necessary when proving a violation of the Board's numeric limits); Schrantz v. Village of Villa Park (December 14, 1994), PCB 93-161, slip. op. 13.) However, the measurement procedures used still must be technically justified. (Cf. Dettlaff v. Boado (July 1, 1993), PCB 92-26, slip op. 7-9 (measurements not taken in compliance with Board regulations accepted as evidence with respect to alleged nuisance noise); Hoffman, PCB 94-146, slip op. 6-7.) As described below, the Board finds that these procedures were adequate for this case.

First, although Sara Scarpino's recordings were not corrected for background noise, as is required in a case alleging a numeric violation (see 35 Ill. Adm. Code 900.103(b)), Mr. Zak testified that the Henry Pratt plant emitted the background noise in the area and was its only significant noise source. In addition, Ms. Scarpino's recordings seem to correlate roughly with Mr. Thunder's recording, which was corrected for ambient noise by shutting off all the equipment at the plant. For example, Ms. Scarpino's recordings did not show an exceedence at any frequency not also shown by Mr. Thunder's recording of the Henry Pratt plant.

Second, neither Sara Scarpino nor Mr. Thunder recorded for one hour at a time, as is required under 35 Ill. Adm. Code 900.103(b) in a case alleging a numeric violation. Instead, they recorded for periods of 5 to 17 minutes. Nevertheless, the Board finds the measurements obtained from the shorter recordings to be relevant here. Mr. Zak testified that the shorter reference periods were technically justified because the recorded Henry Pratt plant noise was not a continuous, reasonably steady sound, presumably due to machinery there going on and off. The Board agrees. (See Village of Matteson v. World Music Theatre (February 25, 1993), PCB 90-146, slip op. 45-46, 56, *aff'd*, 275 Ill. App. 3d 547, 656 N.E.2d 51 (1st Dist. 1995) (Board allowed an outdoor concert venue to use a five minute reference period for monitoring future compliance because sounds were not continuous and reasonably steady).)

Third, to the extent that there was any question about the validity of the in-window measurement technique used by Sara Scarpino, Mr. Zak addressed it when he conducted a test for reflection outside her bedroom window and also described in-window and outdoor measurement results from another site as correlating extremely well. The Board finds the in-window measurements taken by Sara Scarpino to be relevant. The Board has accepted similar in-window measurements as evidence in a case alleging nuisance noise. (See Hoffman, PCB 94-146, slip op. 6-7, 16.)

Based on the testimony and correspondence regarding sleep disruption and the sound measurement results showing exceedences of the nighttime numeric limits, the Board finds that Henry Pratt plant noise has interfered with Sara Scarpino's enjoyment of life.

Unreasonable Interference with Enjoyment of Life

The remaining issue is whether noise from the Henry Pratt plant has unreasonably interfered with Sara Scarpino's enjoyment of life. Whether an interference is unreasonable is determined by reference to the criteria set forth in Section 33(c) of the Act; however,

complainants are not obligated to introduce evidence on each of the Section 33(c) factors. (See Incinerator, Inc. v. Pollution Control Board, 59 Ill. 2d 290, 296, 319 N.E.2d 794, 797 (1974); Processing and Books, Inc. v. Pollution Control Board, 64 Ill. 2d 68, 75-77, 351 N.E.2d 865, 869.) Henry Pratt has the burden of proof as to the Section 33(c) factors “to the extent that a factor is not a necessary part of Complainants’ burden as to unreasonableness.” (IEPA v. W.F. Hall Printing Company (September 15, 1977), PCB 73-30, 27 PCB 371, 372, n.3 (citing Processing and Books, Inc., 64 Ill. 2d 68, 351 N.E.2d 865 (1976)).)

The Board now considers each of the Section 33(c) factors in determining whether Henry Pratt’s interference was unreasonable.

The Character and Degree of Injury to, or Interference with the Protection of the Health, General Welfare and Physical Property of the People. In assessing the character and degree of interference caused by Henry Pratt plant noise, the standard applied by the Board is whether the noise “substantially and frequently interferes” with the enjoyment of life, “beyond minor or trifling annoyance or discomfort.” (Kvatsak v. St. Michael’s Lutheran Church (August 30, 1990), PCB 89-182, 114 PCB 765, 773.)

(1) Character and degree of interference.

There are significant shortcomings and discrepancies in the evidence regarding the character and degree of the interference. As described in the Summary of Evidence, complainants had a number of contacts regarding noise complaints with Henry Pratt over the years since the initial complaint in 1991. The record is insufficient, however, to establish how many times or how often over this time period Sara Scarpino’s sleep was disrupted. Moreover, Margaret Scarpino slept in Sara Scarpino’s bedroom for approximately four months in the winter prior to the hearings, yet there is no evidence of Margaret Scarpino’s sleep having been disrupted during that time. Furthermore, Sara Scarpino voluntarily moved back to the room after that time. The Board also notes that Sara Scarpino made no sound recordings after 10:17 p.m. or before 5:40 a.m.

A considerable amount of testimony from witnesses for both sides in this case also bears upon the character and degree of the interference suffered by Sara Scarpino. First, Mr. Dave stated that there were no major changes in plant equipment or operations around the time the noise complaints started. He added that plant noise would have been similar before and after that time.

Second, Sara Scarpino described a shrill, piercing noise and a loud, grinding noise coming from the Henry Pratt plant, yet neither Mr. Dave, Mr. Thunder nor Mr. Zak heard those noises when they were at complainants’ property. In fact, Mr. Thunder testified that the sound measurements taken do not suggest those types of noises.

Third, Sara Scarpino said that one of the noises vibrates through her house, but Mr. Zak said he would not characterize noise from the Henry Pratt plant as one which rattles the

Scarpino's windows. In addition, Mr. Zak and Mr. Dave testified that it was unnecessary to raise one's voice to have a conversation at complainants' property.

Finally, Sara Scarpino complained that equipment at the Henry Pratt facility actually got louder after measures designed to abate noise were implemented. Sara Scarpino also said once that noise from the plant lessened shortly after she called to complain, yet Henry Pratt had done nothing on that occasion to reduce noise.

(2) Measurements.

Turning to the sound level measurements taken, the Board notes that while exceedences of the nighttime numeric limits were recorded by both sides, the results must be examined closely to give them proper weight under this Section 33(c) factor.

The Board notes that neither party's recordings of Henry Pratt plant noise showed exceedences at any frequency of the daytime numeric limits at 35 Ill. Adm. Code 901.102(a) for Class C land emitting to Class A land. The recordings of both parties showed exceedences of the nighttime limits (see page 13 herein). However, these exceedences do not, standing alone, require a finding that the character and degree of the interference was substantial. (See Sneed v. Farrar, First Bank & Trust Company (February 25, 1993), PCB 91-183, 139 PCB 481, 493 ("Evidence of a possible numerical violation does not, in itself, automatically result in a finding of a nuisance violation.")) This is especially true because it was not established that the Henry Pratt plant is subject to the nighttime limits (see page 8 above). (See Hoffman, PCB 94-146, slip op.13 (whether exemption from numeric limits would apply pertains to the weight given to numeric exceedences in case alleging nuisance noise).)

In order to further assess the plant noise, the Board finds it appropriate to consider the A-weighted levels calculated by Mr. Thunder. A-weighting is an attempt to compensate for the fact that generally a sound with a given decibel level at a higher frequency seems louder to the human ear than a sound with the same decibel level at a lower frequency. (See Noise Pollution Control Regulations, R 72-2, 8 PCB at 712-713.) For a given sound measurement, decibels are either subtracted or added at various frequencies using a scale, then the weighted values for each frequency "are combined to give a single A weighted decibel level for the sound." (*Id.* at 713.)

The Board did not develop A-weighted levels for the daytime and nighttime numeric sound limits in part because "the characteristics of all possible noise sources [are] so varied that the correlation between A weighted sound levels and subjective reaction does not always hold true." (*Id.* at 728.) Nevertheless, the Board acknowledged that A-weighted measurements "may be helpful in assessing, on a preliminary basis, a potential noise problem."⁵ (*Id.*) Accordingly, the Board finds the A-weighted sound levels to have relevance

⁵ The Board's noise regulations have A-weighted numeric limits for impulsive sounds (sound usually less than one second in duration, such as from a drop forge hammer). (See 35 Ill. Adm. Code 900.101 (definition) and 901.104 (limits).) The Board noted in its original

in this case. (See, e.g., Dettlaff, PCB 92-26, slip op. 9 (Board looked to an A-weighted measurement in assessing character and degree of interference in a case of alleged nuisance noise from a picnic area, amusement park and day camp).)

Mr. Thunder determined that sound due to the Henry Pratt plant alone equaled 53 A-weighted decibels, which is 8 A-weighted decibels below the Board's daytime limits (A-weighted at 61 decibels). It was also 2 A-weighted decibels above the Board's nighttime limits (A-weighted at 51 decibels) and 4 A-weighted decibels above the area's background noise (A-weighted at 49 decibels).⁶ Additionally, the most elevated (when A-weighted) of Sara Scarpino's four reported recordings as corrected for the attempted ambient readings taken by Mr. Zak is 54 A-weighted decibels. Moreover, Mr. Thunder's readings of Henry Pratt plant noise appear more representative because of his ability to more accurately correct for background noise, as described above. The Board concludes that while these A-weighted measurements are not determinative, they are some indication that the interference with Sara Scarpino from sound emitted by the plant is not significantly different from that which might result from background noise or sound emitted at the nighttime limits. (See Furlan, PCB 93-15, slip op. 6 (Board found no unreasonable interference; noise with air conditioner on was 3 A-weighted decibels greater than noise without air conditioner).)

(3) Mr. Thunder's findings regarding community annoyance.

Lastly, the Board gives some weight to certain of Mr. Thunder's findings regarding community annoyance. As described in the Summary of Evidence, Mr. Thunder applied a formula with non-acoustic factors to various noise emission levels, then used a graph to arrive at estimates of percentages of people in the vicinity of the Henry Pratt plant who would be highly annoyed by different noise emission levels at night.

The Board has noted that human reactions of annoyance to a particular sound can depend on non-acoustic factors, such as the time of day noises are heard. (See Noise Pollution Control Regulations, R 72-2, 8 PCB at 718.) Here, Mr. Thunder assessed (1) the area's ambient sound levels (A-weighted at 49 decibels), (2) sounds emitted at the Board's nighttime numeric limits (A-weighted at 51 decibels) and (3) the area's total noise levels, *i.e.*, Henry Pratt plant noise and ambient noise combined (A-weighted at 54 decibels). Mr. Thunder added 10 A-weighted decibels to each of these noise emission levels as a "nighttime penalty" because noise "at night is more annoying than noise during the day." (Tr. at 250; Henry Pratt

rulemaking that impulsive sounds were not easily measured in the field at the various frequencies but their levels, measured in A-weighted decibels, did appear to correlate sufficiently well for all types of impulsive sound emitters so that the frequencies were not required. (See Noise Pollution Control Regulations, R 72-2, 8 PCB at 720.) Mr. Thunder testified that he found no impulsive character or pure tone in the sound he analyzed for the instant case. (Tr. at 255.)

⁶ Mr. Thunder testified that he uses a calibrator in the field that has an accuracy of plus or minus less than one-half decibel. (Tr. at 234.)

Exh. 12 at 68.) The U.S. Environmental Protection Agency also has used a nighttime penalty of 10 A-weighted decibels in assessing environmental noise. (See Henry Pratt Exh. 12 at 86.)

This resulted in “normalized” A-weighted decibel levels of 59, 61 and 64, respectively. His corresponding estimated percentages of people in the area who would be highly annoyed by these sounds at night are as follows: (1) approximately 7% by the area’s background noise;⁷ (2) approximately 8% by noise at the nighttime limits; and (3) approximately 12% by the area’s total noise levels. (Henry Pratt Exh. 11.)

Mr. Thunder then reduced the normalized A-weighted level (from 64 to 59 decibels) and the corresponding estimated percentage of people who would be highly annoyed (from 12% to 7%) for the area’s total noise levels because Henry Pratt’s “relationship with the community [is] good.” (Tr. at 254; Henry Pratt Exh. 11.) Based on these findings, Mr. Thunder concluded that Henry Pratt plant noise does not constitute an “unreasonable annoyance” as a “group-wide statistical measure.” (Tr. at 257.)

The Board gives no weight to Mr. Thunder’s estimate that is based on reducing the normalized level of the area’s total noise because of Henry Pratt’s alleged good relationship with the community. While the Board has noted that the annoying value of a particular sound can depend on such factors as the relationship of a noise source to community welfare (see Noise Pollution Control Regulations, R72-2, slip op. 8 PCB at 718), the basis for Mr. Thunder’s assertion about Henry Pratt’s relationship with the community is not substantiated. Furthermore, the Board already is required to weigh evidence of Henry Pratt’s social and economic value under the second Section 33(c) factor; that value is not properly a part of the Board’s analysis of the character and degree of interference.

The Board also notes that because the studies Mr. Thunder used did not involve Henry Pratt plant noise or people in the vicinity of the plant, there is a potential for variability between the studies’ results and this community’s actual response to Henry Pratt plant noise. In addition, the studies appear to include parameters that are different from the relevant evidence in the instant case. For example, the graph that Mr. Thunder refers to in determining the percentages of people who would be highly annoyed is based on analysis of responses to transportation noise measured in day-night average sound levels. (Henry Pratt Exh. 12 at 81.) The Board also notes that Mr. Thunder did not state whether his findings regarding annoyance are specific to sleep disruption, which is the interference at issue here.

Nevertheless, the Board will give some weight to Mr. Thunder’s estimate that approximately 12% of the area’s people would be highly annoyed by the area’s total noise levels at night. This is some indication that Henry Pratt plant noise alone at night would not be highly annoying to a significant portion of the community.

⁷ Mr. Thunder’s background measurements (*i.e.*, area noise without contribution from the Henry Pratt plant) showed exceedences of the nighttime numeric limits at 1,000 and 4,000 hertz.

Based on the evidence's shortcomings and inconsistencies, the levels of the sound measurements taken and certain of Mr. Thunder's findings regarding community annoyance, all as described above, the Board finds that the record does not support a finding that the character and degree of interference from Henry Pratt plant noise has been substantial and frequent. Accordingly, the Board weighs this Section 33(c) factor in favor of Henry Pratt.

The Social and Economic Value of the Pollution Source. In examining the value of a pollution source, the Illinois Supreme Court has looked to the number of persons employed by the defendant and whether the defendant is an important supplier to a particular market. (See Wells Manufacturing Company v. Pollution Control Board, 73 Ill. 2d 226, 235-236, 383 N.E.2d 148, 152 (1978).) Similarly, the Board has looked to such factors as the number of employees at a facility, total wages and taxes paid by a respondent and its charitable contributions. (See Peter Arendovich v. Koppers Company (February 8, 1990), PCB 88-127, 108 PCB 7, 12.)

As stated in the Summary of Evidence, Henry Pratt employs a significant number of people at its Aurora plant, paying them a large amount in wages. It also pays and collects a considerable amount of taxes, does local community work and has been recognized for its voluntary pollution prevention efforts. Its customers include waste water treatment plants and nuclear power plants. The Board finds that the Henry Pratt plant has significant social and economic value and weighs this Section 33(c) factor in favor of Henry Pratt.

The Suitability or Unsuitability of the Pollution Source to the Area, including Priority of Location. The Board recognizes that complainants have priority of location, having lived in their house for approximately 70 years. Nevertheless, priority of location is only one aspect of suitability and it is not necessarily determinative of the Board's finding under this Section 33(c) factor. (See Oltman v. Cowan (November 21, 1996), PCB 96-185, slip op. 3, 5 (no finding of unsuitability of neighboring air conditioning unit, noise from which began well after complainants moved into their house).)

As set forth in the Summary of Evidence, Henry Pratt's location and much of the surrounding area is zoned for general industrial use. Moreover, much of the land around the plant and complainants' house is being used for industrial or commercial purposes. While a pollution source must be compatible with other nearby property uses (see State of Illinois v. Forty-Eight Insulations, Inc. (September 30, 1976), PCB 74-480, 23 PCB 563, 571), the Board cannot find that the Henry Pratt plant is unsuitable to the area based on this record. Accordingly, the Board weighs this Section 33(c) factor in favor of Henry Pratt.

The Technical Practicability and Economic Reasonableness of Reducing or Eliminating the Emissions Resulting from the Pollution Source. In considering this factor, the Board must determine whether technically practicable and economically reasonable means of reducing or eliminating noise emissions were readily available to Henry Pratt. (See Incinerator, Inc., 59 Ill. 2d at 298, 319 N.E.2d at 798; Forty-Eight Insulations, PCB 74-480, 23 PCB at 572.)

It is uncontested that Henry Pratt has taken a number of steps at its plant in an attempt to mitigate the noises complained of by complainants. As described in the Summary of Evidence, these measures included redirecting its plasma and compressor cooling fan exhausts away from complainants' house, installing several silencers, instituting preventive maintenance practices, building a wall around a dust collector motor and limiting the use of, changing and eventually replacing a circulation fan.

As Henry Pratt has already voluntarily adopted each of these measures, the Board finds that they are technically practicable and economically reasonable. To try to identify and abate potential noise sources, Henry Pratt began working with outside consultants soon after the noise complaints began and continued working with them at various times over the ensuing years. Henry Pratt spent \$25,000 to \$30,000 on measures designed to abate noise, apparently including consulting fees.

Complainants presented no evidence about any other measures Henry Pratt could have used to try to abate noise. The record is insufficient to find that the measures taken reasonably could or should have been implemented earlier. Accordingly, the Board weighs this Section 33(c) factor in Henry Pratt's favor.

Any Subsequent Compliance. The issue for the Board in examining this factor is whether Henry Pratt has subsequently come into compliance with the requirements allegedly violated. (See Manarchy, PCB 95-73, slip op. 13.) The Board has found that Henry Pratt implemented numerous measures designed to reduce its plant's noise emissions. Complainants acknowledged these efforts but concluded they were ineffective. The Board will not weigh this factor in either side's favor.

Conclusion

Noise from the Henry Pratt plant has caused some interference with Sara Scarpino's enjoyment of life, but there is insufficient evidence in the record to make a finding that the character and degree of interference has been substantial and frequent. In addition, the Henry Pratt plant has significant social and economic value and, despite complainants' priority of location, is not unsuitable to the area. Furthermore, Henry Pratt implemented a number of technically practicable and economically reasonable measures to try to reduce its facility's noise emissions. Complainants presented no alternative measures and the record does not support a finding that the measures taken reasonably could or should have been implemented earlier.

The Board has had cases alleging nuisance noise in which it has found an interference, but determined that the interference was not unreasonable after considering the Section 33(c) factors. (See, e.g., Furlan, PCB 93-15, slip op. 8 ; Oltman, PCB 96-185, slip op. 6.) Likewise here, the Board finds that the interference from Henry Pratt plant noise has not been unreasonable in light of the Section 33(c) factors. Accordingly, the Board does not find that Henry Pratt has violated either Section 24 of the Act or 35 Ill. Adm. Code 900.102.

This opinion constitutes the Board's findings of fact and conclusions of law in this matter. This case is dismissed and the docket is closed.

IT IS SO ORDERED.

Section 41 of the Environmental Protection Act (415 ILCS 5/41 (1994)) provides for the appeal of final Board orders to the Illinois Appellate Court within 35 days of the date of service of this order. The Rules of the Supreme Court of Illinois establish filing requirements. (See also 35 Ill. Adm. Code 101.246, "Motions for Reconsideration.")

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the _____ day of _____, 1997, by a vote of _____.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board