

## NOTICE OF FILING

Before the Illinois Pollution Control Board

**Vitautas Matulyauskas**, Complainant

v.

**Lisle Park District**, Respondent

PCB 26-\_\_\_\_ (for Board use only)

---

Please take notice that today, **January 3, 2026**, I, **Vitautas Matulyauskas**, filed with the Clerk of the Illinois Pollution Control Board ("Board") a **Formal Complaint** commencing a citizen's enforcement action pursuant to the Illinois Environmental Protection Act. A copy of the Formal Complaint is served upon you together with this Notice of Filing.

You may be required to attend a hearing on a date to be set by the Board.

Failure to file an **Answer** to the Formal Complaint within **60 days** after service may have severe consequences. Failure to timely answer will result in all allegations in the Formal Complaint being taken as admitted for purposes of this proceeding. See **35 Ill. Adm. Code 103.204(f)**.

If you have any questions regarding this procedure, you should contact the hearing officer assigned to this proceeding, the Clerk's Office of the Illinois Pollution Control Board, or an attorney.

---

**Complainant:**

Vitautas Matulyauskas  
6282 Timberview Dr  
Lisle, IL 60532  
Phone: (630) 747-4018

---

Vitautas Matulyauskas  
Date: January 3, 2026

---

## INFORMATION FOR RESPONDENT RECEIVING FORMAL COMPLAINT

The following information has been prepared by the Illinois Pollution Control Board for general informational purposes only and does not constitute legal advice or substitute for

the provisions of any statute, rule, or regulation. Information about the Formal Complaint process before the Board is found in the Illinois Environmental Protection Act (415 ILCS 5) and the Board's procedural rules (35 Ill. Adm. Code 101 and 103).

## Board Review of Formal Complaint

The Board will not accept a Formal Complaint for hearing if it finds the complaint to be either **duplicative** or **frivolous** within the meaning of Section 31(d)(1) of the Act (415 ILCS 5/31(d)(1)) and Section 101.202 of the Board's procedural rules.

- A complaint is **duplicative** if it is identical or substantially similar to a case brought before the Board or another forum.
- A complaint is **frivolous** if it seeks relief the Board does not have authority to grant or fails to state a cause of action upon which the Board can grant relief.

If the Board determines that a complaint is duplicative or frivolous, it will dismiss the complaint and notify the parties.

## Motions and Answer

A respondent may file a motion alleging that the complaint is duplicative or frivolous within **30 days** after receipt of the complaint. If no such motion is filed, the respondent must file an **Answer** within **60 days** after service. Failure to timely answer may result in all allegations being deemed admitted.

## Representation

Under Illinois law, an association, citizens group, unit of local government, or corporation must be represented before the Board by an attorney. An individual may represent himself or herself.

## Costs

The Board charges no filing fee. Each party is responsible for its own costs, including attorney fees and witness expenses.

If you have questions, contact the Clerk's Office at (312) 814-3461.

## Before the Illinois Pollution Control Board

**Vitautas Matulyauskas**, Complainant

v.

**Lisle Park District**, Respondent

PCB 26-\_\_\_\_ (for Board use only)

---

### 1. Your Contact Information

**Name:** Vitautas Matulyauskas

**Street Address:** 6282 Timberview Dr.

**County:** DuPage

**City, State:** Lisle, Illinois, 60532

**Phone:** (630) 747-4018

### 2. Place Where You Can Be Contacted During Normal Business Hours

Same as above.

### 3. Name and Address of Respondent (Alleged Polluter)

**Name:** Dan Garvy, Lisle Park District

**Street Address:** 1925 Ohio St.

**County:** DuPage

**City, State:** Lisle, Illinois, 60532

**Phone:** (630) 964-3410

### 4. Description of the Activity Causing Pollution

The Respondent owns, operates, controls, and permits unstructured public pickleball play on outdoor courts located at Abbeywood Park, 2211 Abbeywood Drive, Lisle, Illinois. The courts are made available for continuous open public use without restrictions on frequency, duration, or hours of play. Courts were converted from tennis courts and are way too close to the properties. (45' from my property line)

Pickleball play at this location generates repetitive, impulsive, high-frequency noise emissions primarily from paddle-to-ball impacts. These impulsive sound events occur in rapid succession and at irregular intervals, producing a distinct and intrusive noise character that propagates beyond the park property boundaries and into nearby residential areas. The resulting sound emissions are readily perceptible at neighboring homes and interfere with the normal use and enjoyment of adjacent residential property.

### 5. Provisions Alleged to Be Violated

The Respondent has violated **Section 24 of the Environmental Protection Act (415 ILCS 5/24)**, which prohibits any person from causing or allowing the emission of contaminants, including noise, so as to cause or tend to cause air pollution, endanger human health or welfare, or unreasonably interfere with the enjoyment of life or lawful business or activity beyond the boundaries of the property on which the emissions originate.

The Respondent has also violated **35 Ill. Adm. Code 900.102**, which provides that no person shall cause or allow the emission of sound beyond the boundaries of the property on which the sound originates where such emission causes noise pollution in Illinois or otherwise violates any provision of the Board's noise regulations. The sound emissions at issue constitute noise pollution as defined in **415 ILCS 5/3.315**, in that they unreasonably interfere with the enjoyment of life or lawful activity. A violation of these provisions may be established through qualitative evidence and is not dependent upon the applicability of numeric sound level standards.

Although **35 Ill. Adm. Code 901.107** exempts sound emissions from certain recreational park activities classified under **LBCS Code 5500** from the numeric sound level limits set forth in **35 Ill. Adm. Code 901.102 through 901.106**, that exemption is limited in scope and does not preclude application of the Act's general prohibitions under **415 ILCS 5/24** or the qualitative noise prohibition contained in **35 Ill. Adm. Code 900.102**.

In addition, **415 ILCS 5/25(f)** limits the Board's authority to adopt numeric sound level standards applicable to organized amateur or professional sporting activities. The pickleball activity at issue here consists of informal, unscheduled, open public recreational use without leagues, officials, permits, or organized events, and therefore does not constitute an organized amateur or professional sporting activity within the meaning of Section 25(f). Accordingly, sound emissions resulting from such activity remain subject to regulation under the Act and the Board's general noise prohibitions where they cause or tend to cause noise pollution.

## 6. Type and Location of Pollution

The pollution is **noise**, consisting of high-frequency, impulsive sound emissions (approximately 900–1,800 Hz) generated by pickleball play. The source is Abbeywood Park pickleball courts at 2211 Abbeywood Dr, Lisle, Illinois. The noise crosses the property boundary and impacts nearby residences, including the Complainant's home at 6282 Timberview Dr.

Measured levels documented by a licensed professional engineer include peak levels exceeding 100 dBC (LCpeak), LAFmax values approaching 80 dBA, and sustained LAeq levels materially above residential background conditions. Exhibit A

## 7. Duration and Frequency

The noise has occurred since the conversion of the courts to pickleball use in approximately May 2022. It occurs repeatedly and frequently during park hours, often daily,

from early morning through evening, particularly during spring, summer, and fall. Individual impacts occur dozens of times per minute and persist for hours when courts are occupied. The condition is ongoing. Observed Usage log is attached. Exhibit C

## 8. Adverse Effects

The repetitive, impulsive pickleball noise unreasonably interferes with the Complainants' enjoyment of life and use of their residential property, including outdoor activities, rest, relaxation, job duties, and concentration. The noise's impulsive and high-frequency characteristics—rapid onset of approximately **1–2 milliseconds**, followed by high-density repetition over roughly **20 milliseconds**—make it particularly intrusive, penetrating, and stressful compared to typical ambient residential sounds, akin to living adjacent to a pistol firing range.

These impacts are documented in the attached peer-reviewed study, “*Pickleball Noise: The Physiological and Psychological Effects on Nearby Residents*” by **Kathleen M. Romito** and **Daniel Fink** (*Proceedings of Meetings on Acoustics*, Vol. 56, 050001 (2025)). The study analyzes **246 self-reported mentions of adverse health effects** from similar exposures, of which **45.9% were physical** (including **46.0% nervous system effects, 25.7% cardiovascular effects, and 25.7% sleep disruption**) and **54.1% psychological** (including **51.3% severe distress or use of the term “torture,” with two respondents reporting suicidal thoughts; 23.9% trauma or PTSD-like symptoms; and the remainder reporting anxiety, stress, and depression**).

The study further explains how sustained exposure to impulsive noise activates a harmful physiological stress response, resulting in elevated heart rate, increased blood pressure, adrenaline and cortisol release, and vascular inflammation. Documented long-term risks include cardiovascular disease, stroke, dementia, and cognitive decline. (*Exhibit B*)

Personally, within the past decade, during an insurance health screening, the male Complainant was informed that he ranked in the **top 5% of healthiest individuals** in his age group. However, after approximately **two years of exposure** to the pickleball noise, he was diagnosed with cardiovascular disease and underwent a **heart procedure (stent placement) in June 2024**. Since that time, he has required frequent physician visits, multiple MRI scans of the head, and ongoing cardiac medications.

The spouse of a Complainant has likewise suffered unexplained health deterioration, including high blood pressure and persistent stress, necessitating multiple surgeries related to **endocrine system dysfunction caused by chronic stress**. The noise exposure has induced severe psychological distress described as “torture,” exacerbating anxiety, hypervigilance, and PTSD-like symptoms, including nightmares and heightened sound sensitivity.

The male Complainant's employment requires night shifts, rendering him unable to sleep during daytime pickleball play hours and resulting in chronic sleep deprivation. As seniors who spend the majority of their time homebound, the Complainants are disproportionately

affected compared to surrounding neighbors, leading to a significantly reduced quality of life, potential diminution of property value, and ongoing mental anguish.

## 9. Relief Requested

Through numerous statements and actions, the Park District has demonstrated that it is fully aware of the noise problems but refuses to implement readily available common-sense measures. Complainant is a member of USA pickleball association and strongly believes relief measures requested are doable and reasonable.

The Complainants respectfully request that the Board enter an order finding that the Respondent has violated the Environmental Protection Act and the Board's noise regulations as alleged herein, and requiring the Respondent to take such actions as are necessary to abate the noise pollution and prevent its recurrence. Without limiting the Board's discretion, Complainants request that such relief include the following:

- a. An order requiring the Respondent to cease and desist from causing or allowing noise pollution originating from the pickleball courts at Abbeywood Park and to implement effective noise-abatement measures sufficient to prevent unreasonable interference with the enjoyment of life or lawful activity beyond the property boundary;
- b. An order requiring the Respondent to adopt and enforce reasonable operational controls governing the type of pickleballs permitted for use on the courts, including requiring the use of pickleballs meeting recognized quiet-performance criteria designed to substantially reduce impulsive, high-frequency noise emissions, such as foam or other low-noise pickleballs designated under the **USA Pickleball Quiet Category** or other objectively verifiable quiet-ball standards;
- c. An order requiring the Respondent to post clear and conspicuous signage at the pickleball courts informing users of any ball-use restrictions adopted to comply with the Board's order;
- d. An order requiring the Respondent to implement reasonable compliance measures sufficient to ensure adherence to any ball-use restrictions imposed pursuant to the Board's order, which may include monitoring, on-site provision of compliant balls, or other measures appropriate in light of the enforcement challenges identified in the attached expert **Sound Data Analysis Report** prepared by Robert M. Unetich, P.E. (Sept. 2025) ; Exhibit A
- e. An order requiring such additional or alternative measures as the Board determines are necessary and appropriate to abate the noise pollution and prevent future violations, including operational limitations or cessation of use, should the Board determine that equipment-based controls alone are insufficient to achieve compliance, as discussed in the attached expert report.

Complainants further request that the Board assess a civil penalty against the Respondent as authorized under the Environmental Protection Act and grant such other and further relief as the Board deems just and appropriate.

## 10. Duplicative or Similar Actions

The Complainant is not aware of any identical or substantially similar enforcement action brought before the Board or another forum against the Respondent for the same alleged noise pollution.

## 11. Representation

The Complainant represents himself as an individual and is not an attorney licensed to practice law in Illinois.

## 12. Attachments – additional material

The following exhibits are filed separately in support of this Formal Complaint:

- Exhibit A: Sound Data Analysis Report by Robert M. Unetich, P.E. (Sept. 30, 2025)
- Exhibit B: Peer-reviewed study 'Pickleball noise: The physiological and psychological effects on nearby residents' by Romito and Fink (2025)
- Exhibit C: Observed Pickleball Court Usage Log
- Exhibit S: Abbeywood park Pickleball story

## 13. Signature

---

Vitautas Matulyauskas  
Date: January 3, 2026, 2025

---

## Certification (Optional)

I, Vitautas Matulyauskas, on oath or affirmation, state that I have read the foregoing and that it is accurate to the best of my knowledge.

---

Vitautas Matulyauskas



## FRS-1 Data Analysis Report

**Robert M Unetich**  
**412-780-4575**  
**1811 Woodlands Circle**  
**Pittsburgh, PA 15241**

### Client Summary:

<b>Client Contact Name:</b>	Vitautas Matulyauskas	<b>Client Organization:</b>	Home Owner
<b>Client City &amp; State:</b>	Lisle, IL	<b>Report Date:</b>	9/30/2025
<b>Date Files Downloaded:</b>	9/2/2025	<b>Date Files Analyzed:</b>	11
<b>Analyzed By:</b>	Robert M. Unetich	<b>Total Time Analyzed:</b>	About 20 minutes
<b># Wav Files Downloaded:</b>	11	<b># Wav Files with Pickleball:</b>	7
<b>Number of Recording Sites:</b>	1	<b>Location IDs used:</b>	Sidewalk

---

### Background on Pickleball Sound & Human Hearing:

#### Description of Pickleball Sound

Pickleball is a game played with paddles, a ball, and a net on a court that is approximately one half the size of a tennis court. The paddles are made of wood, plastic, or composite materials, and the ball is made of plastic. The sound generated by pickleball is about 14 decibels louder than the sound generated by tennis, and it has a higher, more annoying pitch, usually around 1,000 Hz as opposed to 250 Hz. Homeowners in proximity to pickleball courts hear a louder sound than from tennis play. At some elevated sound level, pickleball sounds are considered as noise and become bothersome and intrusive. The background noise level varies but average noise levels can be used.

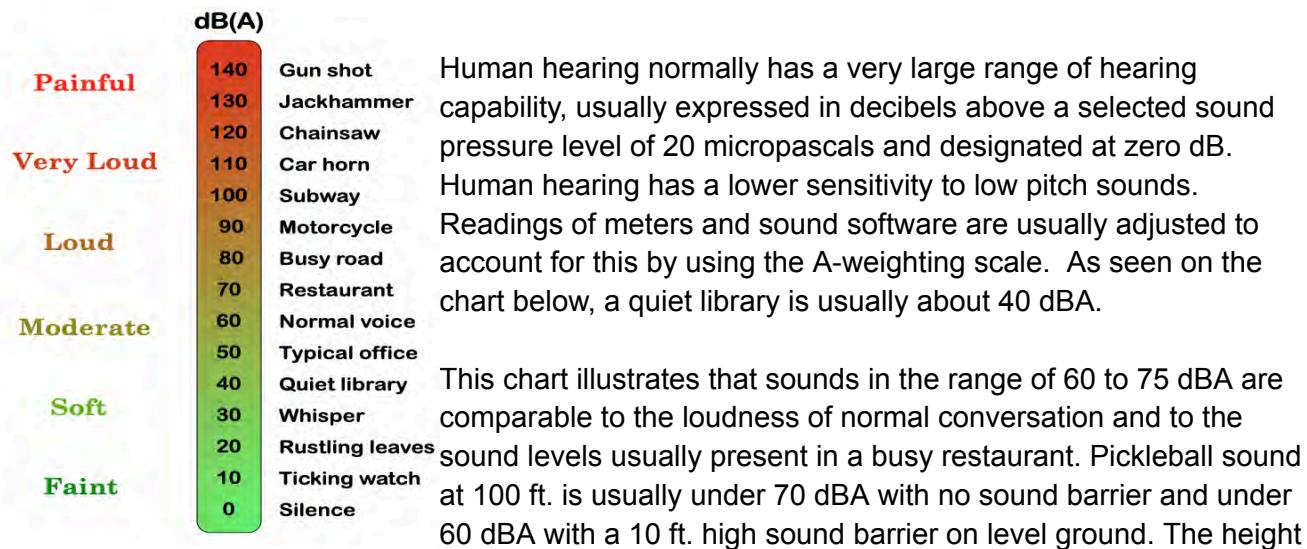
This report will provide measurement data for a home close to courts at this location.

## Human Hearing and Annoyance

The human ear is sensitive to a sound's level, its frequency content, and its duration. The higher the sound level, the greater the annoyance becomes. Each 10 dB increase in sound level is perceived as a doubling in the sound level, which is a 100% increase. Each 6 dB increase is perceived as a 50% increase and each 3 dB increase is perceived as a 23% increase.

The human ear is more sensitive to high frequency sounds than to low frequency sounds. It is also sensitive to the duration of noise. This characteristic is taken into account in the selection of back-up beepers for trucks. That pitch is about 1,200 Hz, close to the common pitch of pickleball hits.

## Typical Sound Levels



The American National Standards Institute (ANSI) for noise recommendation is 55 dBA. Based upon our experience PSM LLC recommends that pickleball sound levels be below 50 dBA at residential properties, whenever possible.

## FRS-1 Sound Recording and Output:

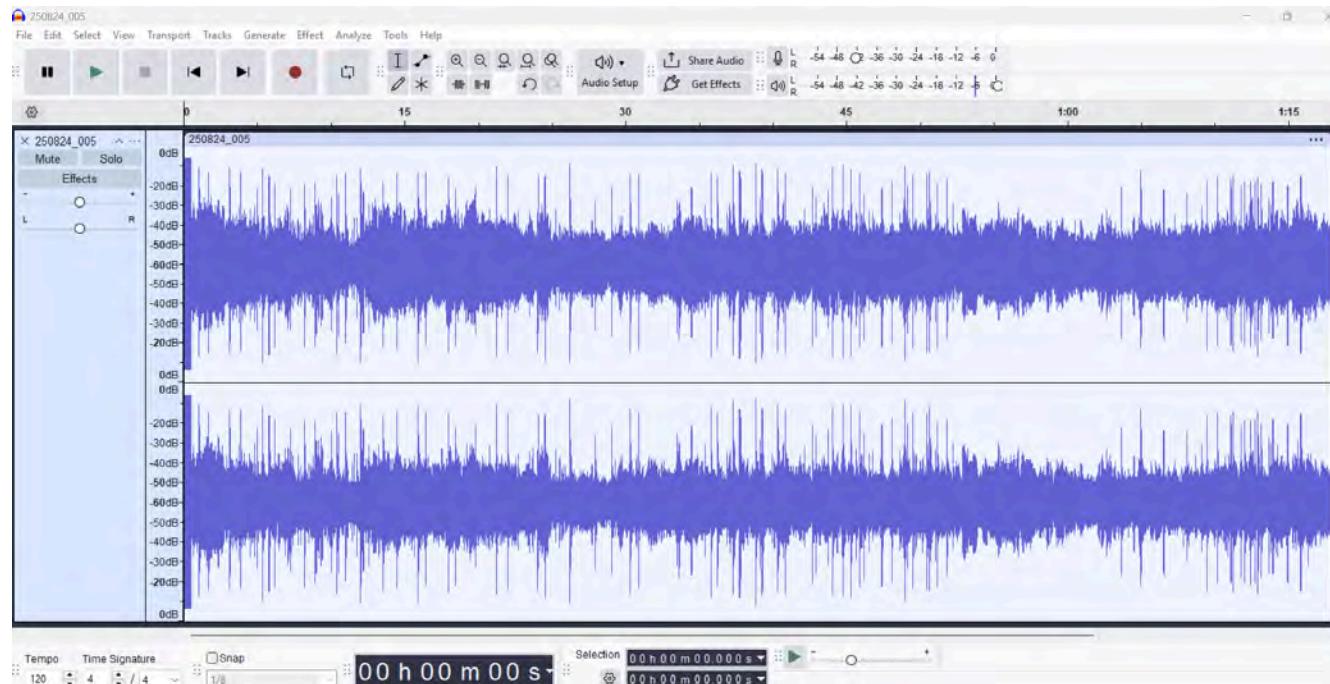
The following analysis will analyze the output recorded by the FRS-1 audio recording system near the Lisle, IL courts. The FRS-1 output is programmed to deliver two recordings from four microphones. The FRS-1 Recorder has been calibrated with actual pickleball sound levels by PSM LLC prior to delivery to this location.

The audio output is in a Wav file format. The waveform below represents the magnitude of 2 channels of sound recorded. The top trace is channel 1 and the lower trace is channel 2. These displays have logarithmic vertical scales, which enable us to see and measure the background noise floor clearly.

The vertical display is in decibels relative to the maximum value or a “Full Scale Reading”

The vertical display center is at -60 dB relative to the full value. The horizontal scale is time in seconds and minutes. The graph below is an example of recorded audio levels of both channels over the time of a typical recording from this site. The narrow vertical lines represent the levels of pickleball hit sounds. In this example, the pickleball sound levels are over 20 decibels higher than the sound level present between pickleball hits.

The following waveform represents an entire one minute 20 second recording, # 250824\_005, with Channel 1 data at the top and Channel 2 data at the bottom. It includes a ½ second long test tone and about 60 significant pickleball impulsive sounds:



---

## Defining The Sound Level Metrics

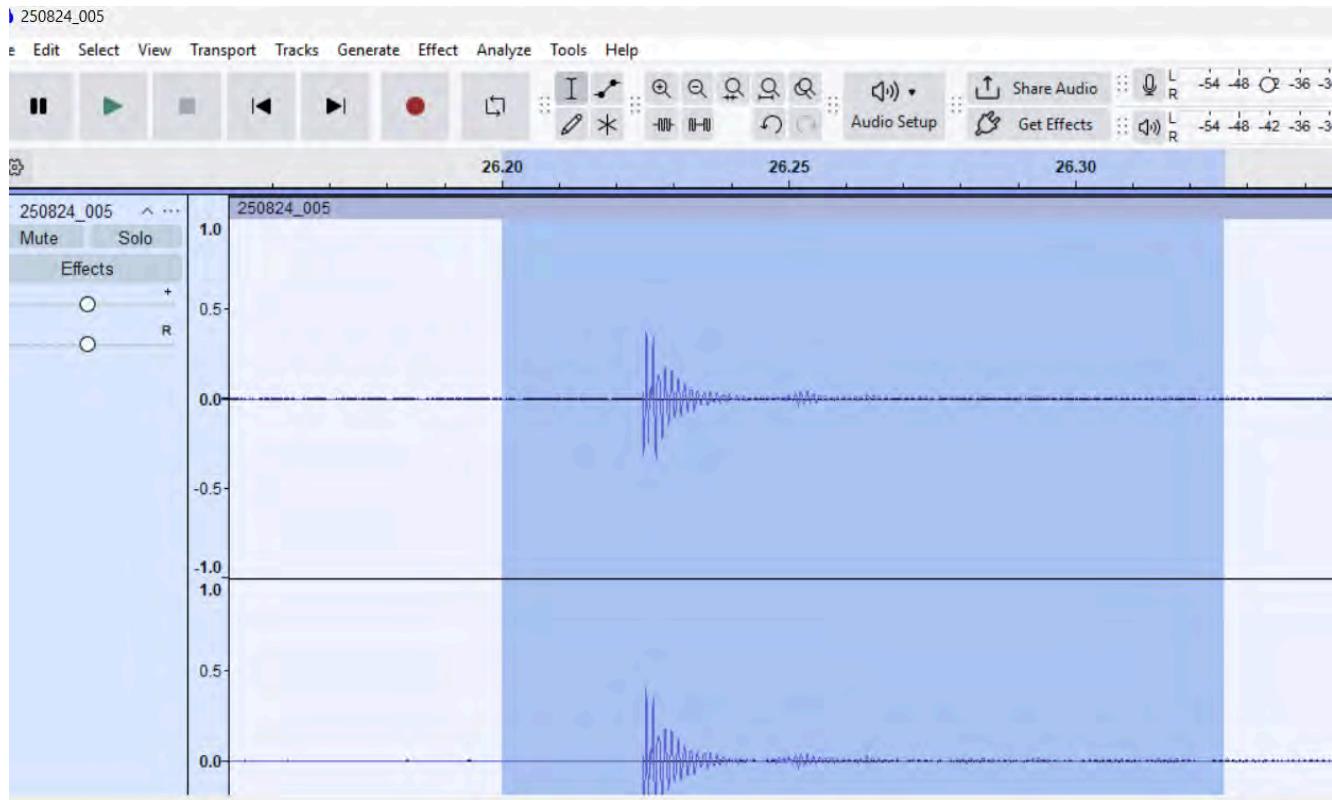
**LCpeak, LAFmin, Leq(30Seconds) (no pickleball), LAFmax and Leq(30s) (with [pickleball])**

There is an audio tone at the beginning of each recording that is used to check the calibration. Its level is at 99 dBC and it is used as a comparison level for the LCpeak sound readings and all other measurements.

In the listed metrics, “L” means level, “C” stands for wideband C weighting, “A” stands for A-weighted, which adjusts for normal human hearing, “F” stands for “Fast Mode”, an ANSI defined sampling period for impulsive sounds like pickleball. Min and Max are abbreviations for minimum and maximum values. We generally want to know how quiet does a site occasionally get, or **LAFmin**, and how loud does it get when the loudest pickleball sounds are measured, **LCpeak** and **LAFmax**.

The first measurement sequence involved measuring the Minimum Noise Level metric, called **LAFmin**, and the average noise levels over longer periods of time, called **Leq**, or equivalent noise level over a 30 second time period, with no pickleball sound present.

Analyzing one hit we get this waveform from File 250824\_005:

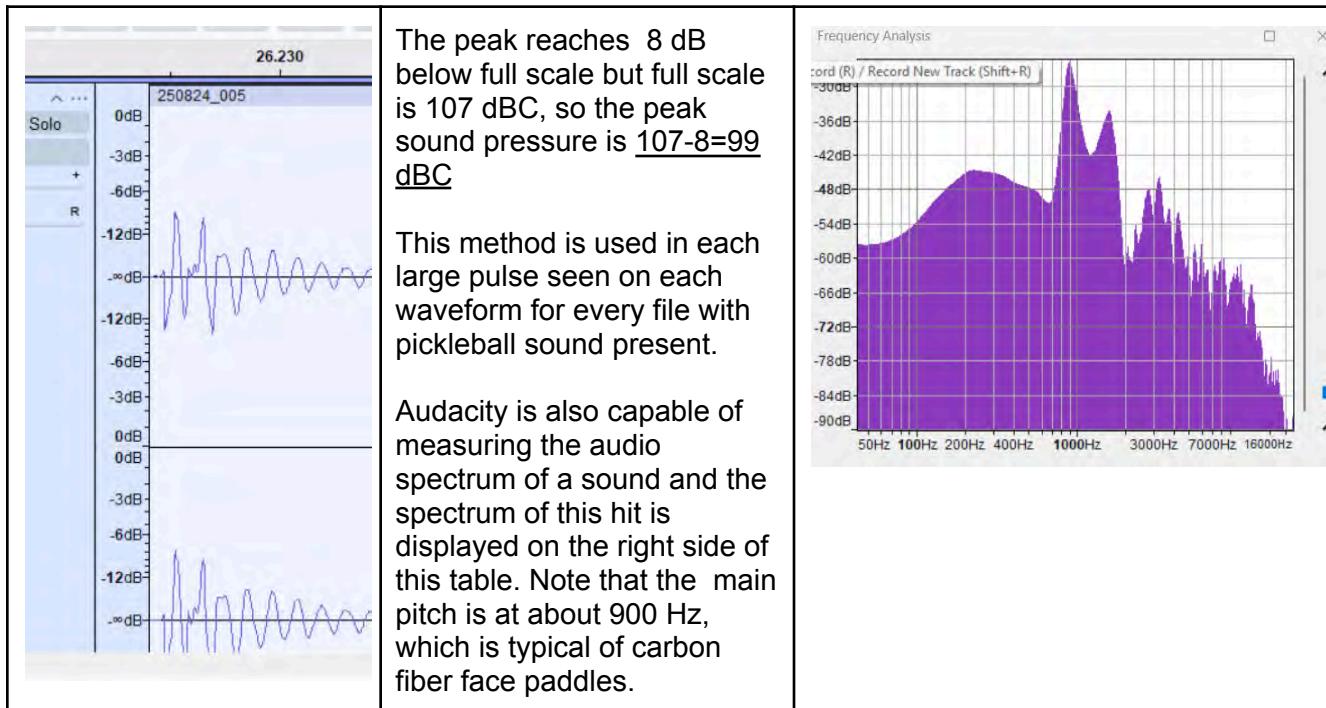


The blue area is 125 ms long or Fast Mode and the level reported by Audacity is **78.5 dBA LAFmax**.

Looking closer at this waveform we see in the following page a view of the waveform decaying and its associated audio spectrum.

The spectrum graph on the right shows sound level vs. audio frequency from 20 Hz to 20,000 Hz with a peak near 9,000 Hz and another peak at a harmonic frequency of 1,800 Hz. This is a common spectrum for a pickleball strike sound.

Next we measure the sound level of the pickleball hits, which we term **LCpeak** and **LAFmax** along with **LASmin**, the quietest sound level measured and **LAeq**, the “Equivalent” sound level, which is an excellent metric to measure background noise levels. Those measured values are shown in the table



## The Location

The measurement location is about 55 feet from the court fence and sits between two lots, separating the properties at 6282 Timberview and 6286 Timberview as shown in red in this satellite photo:



## Data Collected

### Recordings Analyzed

#	File ID	Conditions	LCpeak Peak Amplitude In dBC	LASmin dBA Quietest sound at site over a selected 1 second period	LAeq (no pb) Average Sound over 30 seconds	LAFmax dBA Loudest sound at site measured in Fast Mode No Pickleball
1	250816_001	Ambient	N/A	43	45.5	56.8
2	250816_002	Ambient	N/A	41.8	44.2	53.3
3	250817_002	Ambient	N/A	42.7	45.8	50.7
4	250824_001	Ambient	N/A	41.7	54.7	58.1
		With Active Pickleball Play on Multiple Courts	dBc	Between shots with no pickleball	LAeq Average Sound Level with pickleball	LAFmax dBA Loudest sound measured in Fast Mode
5	250824_005	pickleball	99	49.1	64.2	78.5
6	250824_006	pickleball	95	45.7	60.2	73.2
7	250825_001	pickleball	87.5	48.3	59.8	61.9
8	250825_002	pickleball	93.1	45.7	56.6	69.5
9	250825_003	pickleball	95	48.1	55.6	74.1
10	250902_002	pickleball	101	52.5	59.5	79.1
11	250902_003	pickleball	96	51.3	60.1	76.0

The above figures were calculated by both listening to and analyzing the waveforms of all of the recordings using Audacity software.

During that analysis, time windows of 0.125 seconds, 1.0 and approximately 30 seconds were used to determine the sound power level present to provide readings for the table above. These are the time periods defined by the ANSI standard for Fast Mode and Slow Mode sound measurements and **LAeq** in 30 second selections. **LCpeak** was the observed maximum pressure level shown on the waveform for each pickleball strike. **LCpeak** was not measured during ambient tests since incidental background sounds are all factored into the average equivalent level, **LAeq**.

The data above therefore represents the sound levels present during the quietest periods of noise and the loudest periods of pickleball sound detected at this measurement location.

---

## **Summarizing the Results:**

The measured levels with pickleball sound present exceed American National Standards of 55 dBA for **Leq** and they well exceed our company recommendation of 50 dBA using the **LAFmax** metric.

*The measured levels are louder than that of ordinary conversation and they could be expected to be objectionable in any community. Considering that these levels were measured close to a two story home, installing barriers under 15 feet high would do very little. It would require the installation of a well designed building covering the courts to reach the above goals. Based on our firm's own experience analyzing the sound of pickleball in over 200 locations in the US, the only reasonable solution in this instance is to close these courts.*

## **Pickleball to Noise Ratio and Recommendations:**

The background noise level in this neighborhood is frequently below 43 dBA, which is typical of quiet residential communities. Sound levels at this location are about eight times as loud as the ordinary background noise level. There is no practical way s to bring the levels down close to the ambient noise level short of covering these courts in a building

## **The Use of Quieter Gear**

In public court locations, it has been proven to not be practical to enforce the use of quieter gear. Using quieter paddles at this location would not be a sufficient solution. Mandating the use of foam balls instead of pickleballs would be of great benefit but it is not likely that this could be done at this location and enforcement would be impractical if it was attempted.

## **The CV of the Author Follows**

## Robert M. Unetich | Professional Engineer

1811 Woodlands Circle  
Pittsburgh, PA 15241  
Cell: 412-780-4575  
Email: [itsrmu@aol.com](mailto:itsrmu@aol.com)

### Professional Profile

---

An electrical engineer by training and active now as a consulting engineer specializing in pickleball sound. Experienced in electronic product development and sound barrier design with over 50 years of engineering experience. Licensed as a professional Engineer in Pennsylvania since 1976.

### Engineering and Management Career Summary

---

2022 – Present	Founder of Pickleball Sound Mitigation and Pickleball Sound Laboratories, a pickleball sound test facility near Pittsburgh, PA
2004 – Present	Owner of GigaHertz LLC, an electrical engineering and acoustics consulting firm located near Pittsburgh, PA.
2004 – 2007	Owner of Axcera LLC, a manufacturer of analog and digital radio frequency transmitters for television and wireless digital microwave services
1998 – 2004	Adjunct Professor of Engineering at Carnegie Mellon University
1982 – 1997	President of ITS Corporation, a manufacturer of television transmitters. ITS Corporation was acquired by ADC Telecommunications in 1996.
1978 – 1982	Engineering Manager of Broadcast Transmitters, RCA Corporation, Meadowlands, PA
1976 – 1978	Engineering Manager of Television Transmitters, Harris Corporation, Quincy, IL
1970 – 1976	Chief Engineer and VP of Engineering of EMCEE Broadcast Corp., White Haven, PA
1968 – 1970	Design Engineer for Honeywell Information Systems, Clearwater, FL. Involved in the design of early satellite navigation receivers, the forerunner of GPS.

### Education

---

1964 – 1968 BSEE from Carnegie Mellon University, Pittsburgh, PA

### Patents

---

Several granted patents including a novel power supply design, a waveguide microwave filter and inventions in the field of diathermy.

### Publications

---

Extensively published in the fields of pickleball sound and radio wave propagation. Currently the author of Pickleball Magazine's Rules Guru Column and the co-administrator of the facebook group Pickleball Sound Mitigation,

### Memberships

---

The Acoustics Society of America and the Institute of Electrical and Electronic Engineers



Volume 56

<http://acousticalsociety.org/>

**ASA/ICA 2025 New Orleans**  
**188th Meeting of the Acoustical Society of America**  
**joint with**  
**25th International Congress on Acoustics**

New Orleans, Louisiana  
18-23 May 2025

**Psychological and Physiological Acoustics: Paper 4aPP1**

## **Pickleball noise: The physiological and psychological effects on nearby residents**

**Kathleen M. Romito**

*Scientific Advisory Board, Quiet Communities, Inc., P. O. Box 533, Lincoln, MA, 01773;  
kathleen@lfprograms.org*

**Daniel Fink**

*Quiet Communities, Inc., Lincoln, MA, 01773; DJFink@thequietcoalition.org*

Pickleball play creates a new type of unwanted noise - repetitive, impulsive "pops," exposing those living near courts to thousands of piercing pickleball pops per day. Noise has adverse health effects, but those from pickleball noise have not been previously studied. Content analysis, a scientific method which examines words or phrases in public content to identify patterns, was used to explore a possible link between long-term exposure to pickleball noise and self-reported adverse health effects. This physician-led analysis identified 246 such mentions. Physical health effects represented almost half (45.9%) of all mentions. Of these, 46.0% involved the nervous system and 25.7% the heart. Psychological health effects represented 54.1% of all mentions. Of these, over half (51.3%) described severe distress or used the term "torture," with two mentioning suicidal thoughts. Nearly a quarter (23.9%) reported trauma or PTSD-like symptoms. The remainder included anxiety, stress, and depression. Beyond these acute effects, the responses suggest a highly activated physiological stress response. Such responses are known to be harmful when sustained over time. These findings highlight a need for further research into the complex acoustical characteristics of pickleball noise and its health effects, which must be considered when making decisions about pickleball court placement.

02 January 2026 20:43:57

---

Published by the Acoustical Society of America



Page 1

Proceedings of Meetings on Acoustics, Vol. 56, 050001 (2025); <https://doi.org/10.1121/2.0002030>.

©2025 Author(s). All article content, except where otherwise noted, is licensed under a Creative Commons Attribution 4.0 International (CC BY) License (<https://creativecommons.org/licenses/by/4.0/>).

## 1. INTRODUCTION

Pickleball noise is repetitive impulse noise, exposing those living near busy pickleball courts to thousands of pickleball “pops”/day (1), creating a completely new type of unwanted noise in the residential sounds. One resident, quoted in a news article, likened it to living next to a pistol range (2). Pickleball is a racquet sport similar to tennis but played on smaller courts with hard paddles and plastic balls. Unlike tennis’s soft “ping,” pickleball produces a louder “pop.” In 2024, over 4,000 new courts were built (3), often by converting one tennis court into four pickleball courts. With smaller courts and four-player games, pickleball generates significantly more paddle-ball impacts than tennis. As new courts are built, pickleball noise is disrupting residential areas, leading to conflicts and complaints. One Google Map lists >360 pickleball noise hotspots across North America (4). This issue is the focus of >200 news reports, countless social media posts, and dozens of legal claims. An audio sample of the noise from 4 pickleball courts can be heard at <https://doi.org/10.5281/zenodo.15566001>.

Pickleball noise is impulse noise, sometimes referred to as impulsive noise. Although the implications are different, in acoustics the terms “noise” and “sound” are often used inter-changeably. As defined by the American National Standards Institute (ANSI), impulse sound is characterized by:

- “Brief excursions of sound pressure (acoustic impulses) that significantly exceed the ambient environmental sound pressure” and
- “Duration of a single impulsive sound is usually less than one second” (6).

Examples of impulse sound include:

- Highly impulsive (e.g., metal hammering, wood hammering, small-arms gunfire, pile driving, drop forging, pneumatic hammering, and riveting) (6,7).
- Regular impulsive (slamming of car door, outdoor balls games, such as football (soccer) or basketball, and church bells (6,7).

A typical pickleball pop has a rapid onset of 1-2 millisecond (ms) short duration that repeats, echoes, and reverberates in a high-density fashion for another 20 milliseconds, as shown in Figure 1 (8).

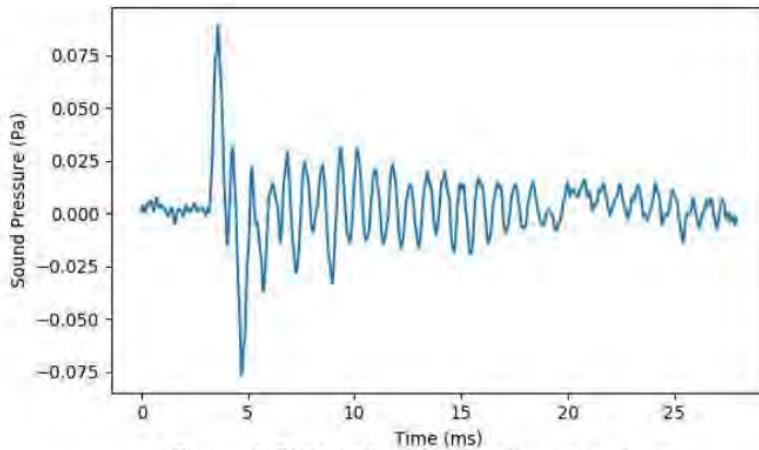


Figure 1. Pickleball noise sound pressure trace.

Reproduced with permission from Lance Willis, Spenderian and Willis, Tucson, AZ

Chronic exposure to impulse noise in the residential setting is a new phenomenon. There is only a small body of literature on the effects of impulse noise in occupational settings, with a focus on hearing loss. Pickleball noise averages fall below U.S. National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health (OSHA) hearing loss limits (9) although exposure times may exceed daily occupational limits. Impulse noise may have a disproportionate impact on hearing (10) and the long-term effects of environmental noise on the adult auditory system are not yet well understood (11).

The health effects of long-term non-occupational impulse noise exposure remain unclear. Impulse noise is more irritating than steady noise. ANSI Standards and additional research recommend adding a 5-12 decibel (dB) penalty to standard measurements when measuring impulse noise in general (6,12), including pickleball noise (13). When studied in relationship to intellectual tasks, impulse noise caused a measurable physiological stress response after just 50 minutes of exposure. The researchers noted that compared to steady state sound "there is additional stress effect related to the impulsiveness of the sound, reflected as a psychological experience". Impulse noise also affects concentration (14).

The pickleball pop has an average peak frequency near 1200 Hz, which falls within the highly sensitive range for human hearing, and matches the frequencies used in vehicle backup alarms (15). Pickleball pops measured courtside in LAeq, LASmax, and LCpeak were 69.7 dBA, 92.2 dBA, and 115.6 dBC, respectively (9). Each busy court produces approximately 900 pops/hour (1) and a set of busy public courts can produce 20,000-40,000 individual pops (noise events)/day. Aviation studies show that an increased number of noise events correlates with increased noise annoyance (16) and this is likely true for pickleball noise. Figure 2 demonstrates the hourly distribution of 21,208 total pops over one day at a private condominium complex with restricted access to courts.

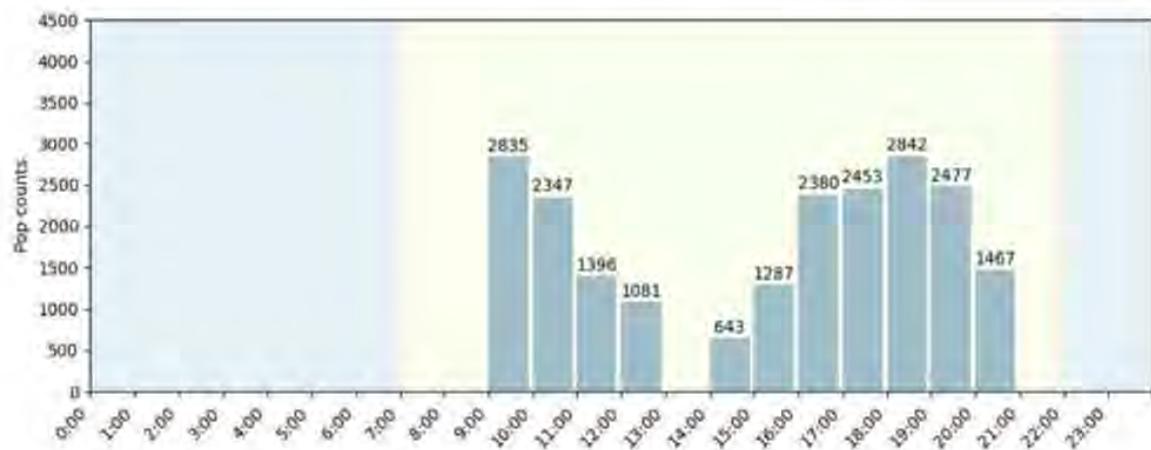
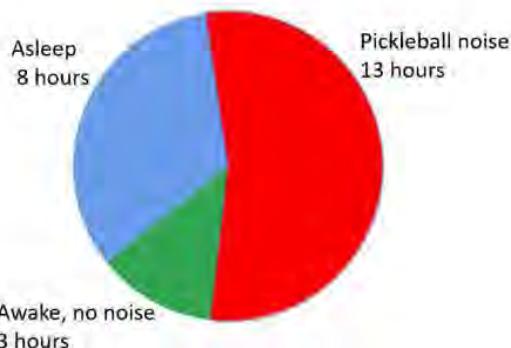


Figure 2. Pops per hour at 4 pickleball courts, Total of 21,208 total pops in one day.  
Reproduced with permission from NoiseNet US Operations, Brisbane, Australia.

In many neighborhoods, residents are exposed to pickleball noise from dawn to dusk, or with lighted courts, even later. Exposure to > 90 hours of pickleball noise per week, for months and years, is not unusual. While it is commonly believed that sensitivity to a noise decreases the longer one is exposed to it, longer exposure (e.g., years) increases sensitivity to certain types of noise (17). Figure 3 demonstrates a typical day of pickleball noise exposure for someone living near busy courts with hours of operation from 8 am to 9 pm.



1

Figure 3. A typical day for a neighbor, courts open 8 am -9 pm.

Finally, neighbors close to pickleball courts have no control over the noise. An external locus of control has been associated with higher noise annoyance levels (18).

Noise is defined as unwanted and/or harmful sound (19). Exposure to noise triggers the body's involuntary stress response. Almost instantaneously, the heart rate and blood pressure increase. Within minutes, stress hormones such as adrenaline and cortisol are released. Over time, repeated stress can cause inflammation in the blood vessels, which has been linked to heart disease and a higher risk of death (20).

Decades of research show that prolonged noise exposure, generally from transportation noise, triggers a physiologic stress response and is linked to serious health problems including cardiovascular disease, anxiety, and sleep disturbances (21,22,23). Additionally, noise may also contribute to an increased risk of stroke, dementia, and cognitive decline (24). Noise can also lead to learning problems in children and problems concentrating, annoyance, and stress (21,23,25).

There are no known reports examining the effects of impulse noise on the general public. This report, using the scientific method of content analysis, may be the first.

## 2. OBJECTIVE OF THIS STUDY

To assess self-reported adverse health effects associated with chronic exposure to impulse pickleball noise by evaluating public comments from people living near pickleball courts.

## 3. METHODS

Given the absence of published reports on the impact of chronic impulse noise exposure in residential settings, content analysis was chosen as an appropriate methodology for this early-stage research. A content analysis, often used in public health to identify early trends, uses only information available in unsolicited comments (e.g., public interviews, news reports, social media posts) as its data source. It does not rely on interviews, surveys, or other interpersonal interactions (26).

This physician-led conceptual content analysis used publicly available comments about pickleball noise from Facebook, Reddit, news reports, legal filings, and public websites. A list of 120 news reports about pickleball noise was identified (27) and updated monthly via Google searches from August 1, 2024 through February 28, 2025 using the search term "pickleball noise news report". Only one report, from

The New York Times, addressed the possibility of potential adverse health effects from pickleball noise (2). Some news reports referenced other sources, allowing identification of additional content for analysis. Publicly available legal filings were found with Google searches for "pickleball noise lawsuits" or by finding filings mentioned in news reports. Social media was searched using the term "pickleball noise." Two Facebook groups focused on pickleball noise were searched more thoroughly with the terms and concepts as identified in Table 1.

Categories were developed from an initial review of 20 comments, standard medical classification, and prior research on noise and health. Categories were defined narrowly, to minimize subjective interpretation, as seen in Table 1. Coding of the content to categories was performed by a physician and repeated independently by a second health professional. Inter-rater reliability was excellent at 89.4%. (Ideal >80%). For any one individual, multiple self-reported health effects could be reported, but duplicates within the same category were not tallied.

When possible, the distance between pickleball courts and the residence of the individual reporting a concern was estimated using available data including hotspot reports to the Facebook Pickleball Noise Relief group, public records, and Google Maps.

Table 1. Categories and definitions used for content analysis

Category	Definition
anxiety	used the terms "anxiety" or "anxious"
auditory	
hallucinations/phantom pops	hearing pickleball pops when no play is occurring
cardiovascular problems, other	any cardiac/heart reference or stroke, excluding heart rate abnormalities or high blood pressure
depression	used the term "depression" or "depressed"
difficulty concentrating	Inability to concentrate, difficulty with or hard time concentrating
disrupted/loss of sleep	any comment related to loss/lack/disrupted/interrupted sleep
elevated blood pressure	high, elevated, increased blood pressure
fast or irregular heart rate	any description of fast heart rate, flutters, irregular heart beat
gastrointestinal issues	nausea, diarrhea, any concern related to digestion
headaches	headaches, migraines
hypersensitization to sound	subjective, any description that described a hypersensitivity to sound
hypervigilant	any description that described a sense of uncomfortable waiting with heightened alertness for noise to begin.
neurology-other	Any neurologic reference, excluding phantom pops, difficulty concentrating, sleep, hypersensitivity to sound
nightmares	nightmares, bad dreams about pickleball
PTSD-like	used term "PTSD" or similar phrasing e.g. "pickleball stress disorder"
severe distress	Subjective (e.g., suicidal thoughts, "this is living hell". Does not include any comments that were assigned to other categories)
stress	used the term "stress", "stressful", "or "can't relax"
torture	used the term "torture"

#### 4. RESULTS

164 unsolicited public comments from 98 individuals mentioning adverse mental or physical health effects from pickleball noise were identified between May 3, 2022 and Feb. 14, 2025. Some comments referenced multiple types of health impacts, resulting in a total of 246 unique adverse impacts. Ten individuals reported adverse health effects in legal filings, 24 in news reports, and 64 in online comments.

Distance between court(s) and private residences could be determined for 67.3% of individuals. Of this group, 76.9% of comments came from residents living within 100 feet of courts and 86.3% were within 300 feet of courts. Comments did not mention daily exposure times. There was insufficient data on noise mitigation efforts (e.g., barriers, reduced hours, quiet paddles and balls) or number of courts at each location to allow analysis of these factors.

The self-reported health effects from pickleball noise are presented in Figure 4. Stress, anxiety, and sleep disruption and a variety of cardiovascular symptoms were reported, consistent with prior research on noise and health. A substantial portion of comments referred to trauma, torture, or a post-traumatic stress disorder (PTSD)-like experience. Hearing phantom pickleball pops (i.e. hearing the popping when no actual play is occurring) also represented a significant proportion of comments. Comments communicating severe distress were the most frequent type of comment. This category included two mentions of suicidal thoughts.

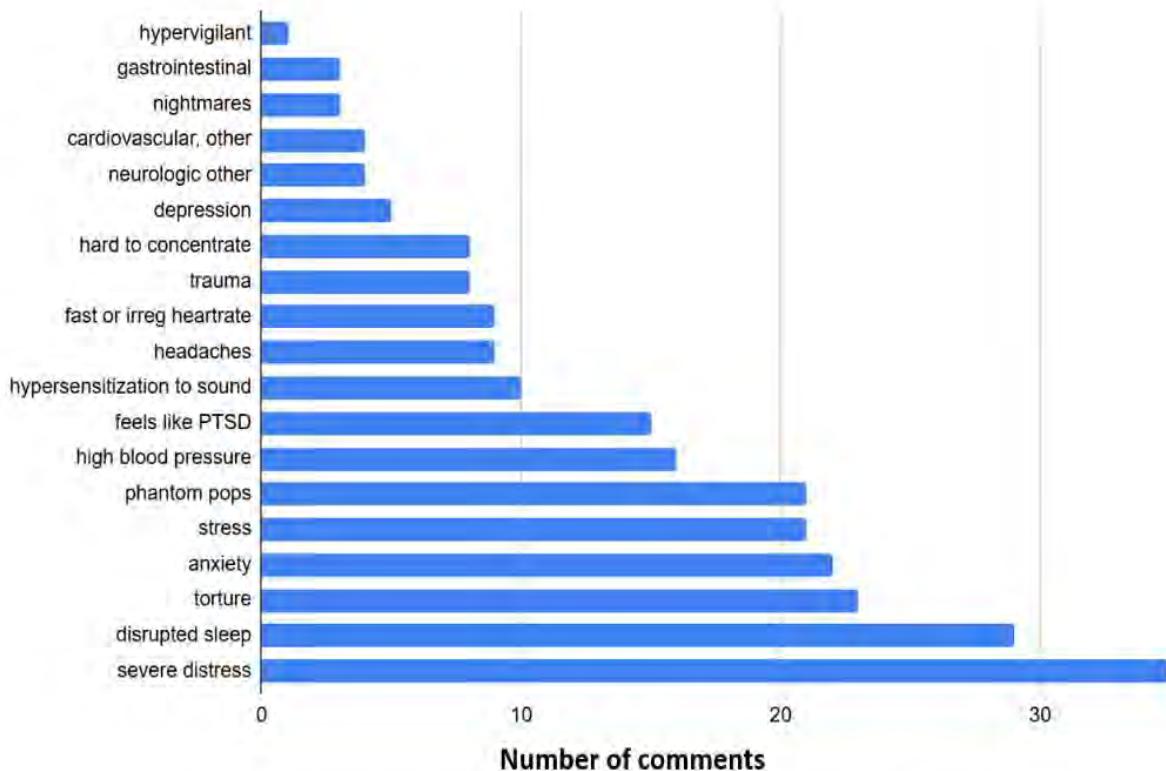


Figure 4. Self-reported health effects from pickleball noise, public comments.

Physical symptoms were noted almost as frequently as psychological symptoms. See Figure 5. While recognizing that physical and psychological symptoms often inter-relate, in this study, physical health effects are defined as a physical perception by the individual. Psychological health effects are defined as an emotional perception by the individual. Physical health effects from pickleball noise accounted for 45.9% of all comments. Of these, almost half (46.0%) were neurologic, a quarter (25.7%) were cardiovascular, and another quarter (25.7%) involved sleep disruption, as shown in Figure 5.

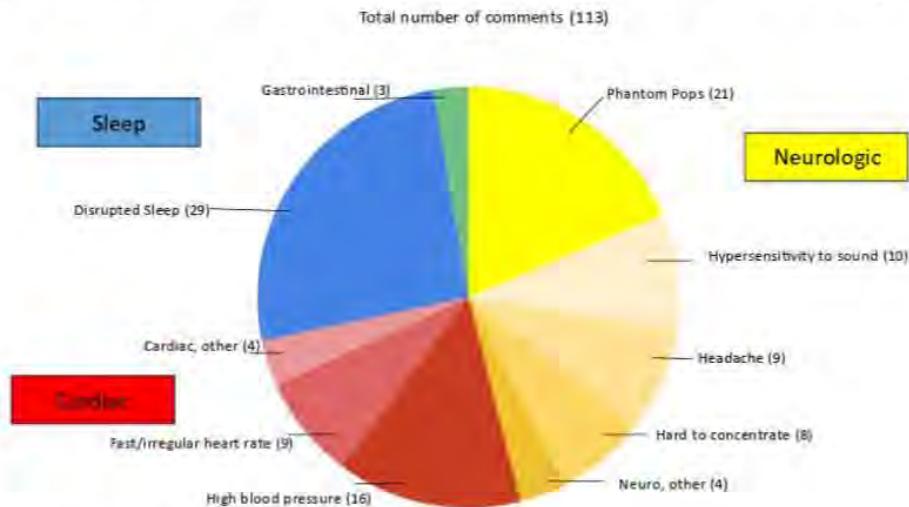


Figure 5. Self-reported physical symptoms from pickleball noise exposure

Psychological health effects from pickleball noise represented 54.1% of total comments, as shown in Figure 6. Of these, just more than half the comments (51.3%) communicated severe distress or used the term "torture." Almost a quarter (23.9%) experienced a sense of trauma. This included comments on "trauma," "nightmares," "hypervigilance," and "PTSD." Specifically, 15.3% (15/98) of individuals felt they were suffering from a PTSD like condition, using the term "PTSD" or a similar term (e.g. "pickleball stress disorder").

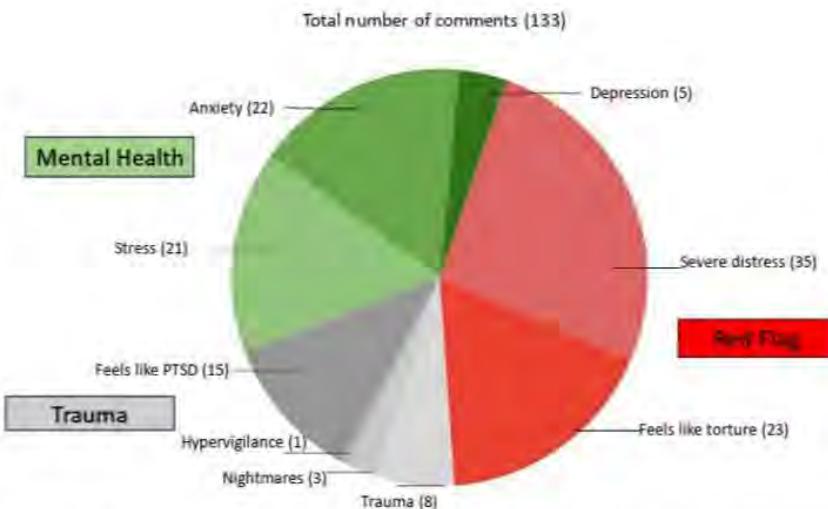


Figure 6. Self-reported psychological symptoms from pickleball noise exposure.

The remainder of comments on psychological health effects included stress, anxiety, and depression. Comments for stress, anxiety and depression were categorized narrowly, including comments only if they used the specific terms or derivatives (e.g., stress, stressful or depression, depressed). No other subjective interpretations of stress were included. A sample of comments categorized as “Severe distress” is provided in Table 2. The researcher noted multiple mentions of individuals forced to move, feeling trapped inside their home, or needing medication to manage symptoms due to pickleball noise.

Table 2 A sample of comments categorized as “severe distress”.

“Pickleball noise is worse than dying of cancer” (cancer patient, now deceased)
“I was told to kill myself or move”
“Suicidal thoughts”
“Extreme anguish”
“It makes me want to splatter my own brains all over the screaming yelling payers 20 feet from my bedroom”
“The pain, suffering and mental anguish is unbearable. Someday the perpetrators of this nightmare will pay.”
“The slow un-aliving of a person”
“Beyond distressing”
“This dangerous, involuntary noise torture experiment ran its full course. Now please stop it”
“I cannot live a normal life...for me, it's hell.”
“You feel as if someone is constantly punching your head”. Went on a hunger strike.
“I am not sure what I can do other than move from my home of 24 years because this play is seriously affecting my mental health”
“No one would choose to live this way. It is physically and emotionally debilitating”

## 5. DISCUSSION

### A. The health effects of pickleball noise exposure

This study links prolonged exposure to pickleball noise to health issues reported by nearby residents. Many of the reported health effects align with prior noise research, but some neurological and psychological effects may be more severe than previously reported. Manufacturing noise is typically separated from homes by zoning laws, construction noise is short-term, and sports-related impulsive sounds usually occur farther from residences and for limited durations. No other exposure introduces impulsive noise into residential areas with such high repetition and persistence.

Epidemiologic evidence has linked noise exposure to depression and anxiety (28). Depression and anxiety were noted in this study, aligning with results from previous noise research. Sleep disturbances, along with noise annoyance, contribute to noise-related mental health issues (29). Disrupted sleep was a significant concern and not an unexpected finding, as it is part of the physiologic stress response. However, some individuals described being awakened by hearing phantom pickleball noises and then being unable to fall back asleep. Pickleball nightmares were also mentioned.

Phantom pops were reported by 21.4% (21/98) of commenters, with some calling it "auditory hallucinations". The symptoms were noted both during the day and at night, sometimes associated with a racing heart. In some cases, these symptoms persisted months after exposure had stopped. Potential explanations include tinnitus or auditory hallucinations. Both tinnitus and hallucinations stem from central auditory processing issues, occurring within the brain.

Tinnitus, the perception of sound without an external source (30), has been linked to industrial and traffic noise annoyance. Research suggests neuroplastic changes in the brain may contribute to noise-related tinnitus (31). Tinnitus and prolonged noise exposure are associated with neuro-psychiatric diseases, cognitive decline, and dementia (32). Auditory hallucinations, also defined as sensory perceptions of hearing noises without an external stimulus, are associated with severe stress or psychiatric conditions, including post-traumatic stress disorder (PTSD), although the cerebral mechanism has not been completely defined (33).

"PTSD" or a "PTSD-like" response was mentioned by 15.3% (15/98) of commenters. Lay people often use the term "PTSD" to describe the effects of traumatic experiences. Although symptoms reported by those exposed to pickleball noise do not meet current criteria for a formal PTSD diagnosis (34), the comments do clearly communicate a personal experience of trauma and must be taken seriously. Combined with comments on nightmares, hypervigilance, or trauma, this group of concerns accounted for 20% of psychological complaints. Repeated exposure can worsen symptoms of trauma, which typically persist unless the trigger is removed.

While definitions of traumatic events vary, one definition is: "Traumatizing events are those that fundamentally uproot a person's sense of safety—whether through a single event, an ongoing set of experiences, or a proximity to violence" (35). The relationship between sound and trauma is complex and requires a multidisciplinary approach that considers context, culture, and psychology, as well as acoustics (36).

Comments categorized as "severe distress" or "torture" made up a notable portion of the responses. Some individuals compared the relentless impulse noise exposure to specific forms of torture, such as "dripping water torture." Although these categories are not part of standard medical classifications, they strongly suggest heightened activation of the physiological stress response and warrant further investigation.

Two comments mentioned suicidal thoughts, and another described chronic pickleball noise as "un-aliving." Given research linking transportation noise to a slight increase in suicide risk (37), these concerns should not be ignored.

#### B. The psycho-acoustics of pickleball noise exposure

The proportion of comments about phantom pickleball pops and the severity of some of the psychological health effects are concerning. The psychoacoustics of the pickleball pop may be a key factor behind these psychological and neurological health effects. The characteristics of pickleball noise that may contribute to the adverse health effects found in this study are outlined in Figure 7.

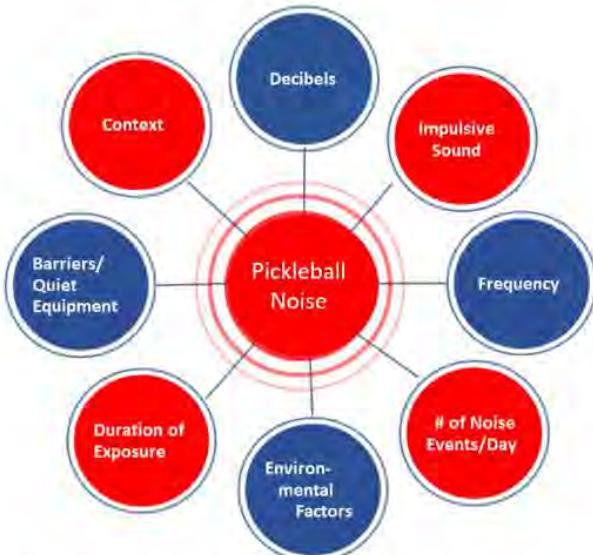


Figure 7. Factors contributing to human perceptions of pickleball noise.

Local U.S. noise ordinances often overlook key aspects of pickleball noise, relying mainly on decibel levels, often measured incorrectly-without accounting for impulse noise penalties (38). Many pickleball sound studies share this flaw, focusing only on decibels and omitting the impulsive nature of the sound. A review of 79 pickleball sound studies found that only one of 36 consultants classified the pickleball “pop” as highly impulsive and applied the full 12 dB penalty, while just three applied a 5 dB penalty (1). These inadequate measurements obscure the true auditory, physical, and psychological impacts. As pickleball noise expert Bob Unetich told NPR in 2023, “You can't take pop, pop, pop for 12 hours a day every day and remain sane” (39).

Civic leaders often interpret noise complaints as a NIMBY (Not in My Back Yard) issue or just an “annoyance.” However, from a health perspective, the findings of this study show that pickleball noise should be viewed as much more than an “annoyance”

Given the potential for serious health effects in nearby residents, immediate mitigation or closure of problematic courts and careful planning for new courts is recommended. The placement of courts should involve certified acoustic professionals who can predict and evaluate noise exposure levels and potential problems near residences. A multifactorial approach that fully assesses the human impact of pickleball noise exposure is recommended.

Acoustic consultants have already provided general recommendations for setbacks, while recognizing that each site brings unique factors that require thorough evaluation. One consulting company that has evaluated more than 150 pickleball court locations reports that “as a ‘general rule of thumb’, within 100 ft of residences, it is extremely difficult (i.e., costly) to adequately mitigate pickleball sound without enclosing the courts. (40). Courts 100–400 feet away typically also require multiple costly mitigation strategies and enforceable rules (8,41,42,43). Courts between 400-1000 feet should undergo individualized sound assessment (8,42,43). Of note, enforceable rules regarding quieter paddles and balls or shortened hours of operation appear to be enforceable only in private courts or in municipal courts with constant supervision.

Based on the acoustic consultant advice and our data, we suggest that existing courts <1000 feet from homes should undergo comprehensive sound evaluations including analysis of all factors influencing perception of pickleball noise sound. To avoid years of costly litigation, it may be advisable to delay locating new courts within 1000 feet of homes until further research is available. For courts within 100 feet of homes, our findings support the consultants' recommendations. Approximately 75% of the

reported health concerns noted in our study came from people living <100 feet from courts. We recommend that courts not be placed within 100 feet of homes unless completely enclosed.

Our preliminary findings raise serious concerns about the health effects of prolonged exposure to pickleball noise. Just as indoor smoking bans and designated smoking areas protect others from secondhand smoke, pickleball court locations must be planned to protect non-players living near the courts from intrusive impulse noise. And, just as no safe lower limit was found for secondhand smoke, it is possible that no safe exposure level exists for repetitive impulse noise either. Detailed acoustical, physiological, and epidemiological research is needed. Until then, every effort should be made to place new courts as far from homes as possible.

## 6. STRENGTHS AND LIMITATIONS OF THIS STUDY

Content analysis helps identify early patterns when research is limited and can guide future studies, but it does not measure prevalence or establish causation. It may be biased by self-selection, as those most affected may be more likely to speak out. However, gaslighting and harassment of neighbors has been reported in social media and may discourage some individuals from speaking out. Coding is subjective but follows standard health classifications to enable verification and replication. Potential bias exists as both reviewers of the data are members of related Facebook groups.

## 7. CONCLUSION

Once constructed, pickleball courts can be expected to operate for many years into the future. Local decision makers need comprehensive information as they make decisions about pickleball court location and local regulations. This should include not only a comprehensive sound study that includes all the acoustic measurements relevant to impulsive pickleball noise but also information about the potential adverse health effects on nearby neighbors.

This study links prolonged exposure to pickleball noise to self-reported adverse health effects in nearby residents. Chronic noise exposure is already known to be associated with heart disease, diabetes, disrupted sleep, and other adverse health effects. Our results also link pickleball noise exposure to reports of suicidal thoughts, a sense of torture, PTSD-like symptoms, and comments suggesting severe distress. Psychological concerns, sleep disruptions, and hearing phantom pickleball pops were found. Both the immediate stress responses and the long-term effects suggest a potential risk of long-term harm to the physical and mental health of those living near pickleball courts.

These findings underscore the urgent need for further research. Further study should address the complex acoustical properties of pickleball noise, as well as the significant psychological and physiological impacts of long-term exposure to impulse noise in residential settings.

## ACKNOWLEDGEMENTS

The authors gratefully acknowledge the many pickleball noise neighbors who publicly shared their experiences—an act of courage and a first step toward healing. Thank you to Rob Mastroianni, MPH, for independently categorizing health data; Nalini Lasiewicz for collecting the pickleball hotspots, news reports and other foundational information; David Sykes, MA, and Charles Leahy, JD, for editorial input; and David Wright and Bob Unetich for their acoustical expertise. We have no conflicts of interest to disclose.

The harassment experienced by neighbors is real, including reported death threats, and the authors respect the courage it takes to speak publicly about these concerns. A data file—including links to public sources—will be provided upon request to journalists or researchers at accredited institutions who agree to adhere to standard privacy protocols.

## REFERENCES

1. Leahy, C. Preliminary analysis of 79 pickleball noise consultant reports by 36 consultants. Proc. Mtgs. Acoust. 13 May 2024; 54 (1): 040009. <https://doi.org/10.1121/2.0001965>.
2. Keh A. Shattered nerves, sleepless nights: pickleball noise is driving everyone nuts. The New York Times; June 30, 2023. Accessed November 25, 2024. <https://www.nytimes.com/2023/06/30/sports/pickleball-noise-complaints-lawsuits.html>.
3. 2024 USA Pickleball annual facts & highlights, USA Pickleball, accessed April 2, 2025. <https://usapickleball.org/about-us/organizational-docs/pickleball-annual-growth-report/>.
4. Google Map of Pickleball Noise Hot Spots, created by Nalini Lasiewicz. Google Maps, accessed March 28, 2025. [https://www.google.com/maps/d/u/1/viewer?entry=yt&ll=40.430090946430944%2C-79.90188363766478&mid=1obF5UNxqSbADZn7kj\\_OeZYwWQCKcTx8&z=14](https://www.google.com/maps/d/u/1/viewer?entry=yt&ll=40.430090946430944%2C-79.90188363766478&mid=1obF5UNxqSbADZn7kj_OeZYwWQCKcTx8&z=14).
5. Leahy, C. Audio: Pickleball paddle strikes recorded courtside, California, 2024. MP3 file.
6. Quantities and procedures for description and measurement of environmental sound – Part 4: Noise assessment and prediction of long-term community response. American National Standards Institute, Inc. (ANSI) S12.9-2005/Part 4.
7. International Organization for Standardization (ISO). (2016). Acoustics — Description, measurement, and assessment of environmental noise — Part 1: Basic quantities and assessment procedures (ISO 1996-1:2016).
8. Pickleball noise impact assessment and abatement planning, Prepared for City of Centennial Colorado, Lance Willis, PhD, July 11, 2023. accessed December 7, 2024. <https://www.centennialco.gov/files/sharedassets/public/v1/documents/city-projects-and-initiatives/centennial-pickleball-noise-assessment.pdf>.
9. Lee L, Fitzpatrick TH, Irwin LA, et al. Making a racket in America's fastest growing sport: Evaluation of noise exposure in pickleball. Am J Otolaryngol. 2024; 45 (5). <https://doi.org/10.1016/j.amjoto.2024.104409>.
10. Suter AH. Occupational hearing loss from non-Gaussian noise. Semin Hear. 2017 Aug;38(3):225-262. [doi:10.1055/s-0037-1603726](https://doi.org/10.1055/s-0037-1603726).
11. Gourevitch B, Occelli, F, Edeline JM, et al. Is the din harmless? Long-term effects of non-traumatic noise on the adult auditory system. Nature Rev. Neurosci. June 2024. DOI: 10.1038/nrn3744
12. Rajala V, Hongisto V, Annoyance penalty of impulsive noise-The effect of impulse onset. BuildingEnviron.2020;168.<https://www.sciencedirect.com/science/article/abs/pii/S0360132319307516?via%3Dihub>.
13. Storm, M. The pickleball seven decibel challenge. NOISE-Con Congress and Conference Proc. NOISE-Con24, pp. 780-787 (8). [https://doi.org/10.3397/NC\\_2024\\_0099](https://doi.org/10.3397/NC_2024_0099).
14. Radun J, Henna M, Rajala V, et al. Acute stress effects of impulsive noise during mental work. J. of Environ Psych. 2022; 81. <https://doi.org/10.1016/j.jenvp.2022.101819>.
15. SAE. Alarm - Backup Electric Laboratory Performance Testing. 2009 Warrendale, PA, USA Society of Automotive Engineering SAE J994.
16. Quehl J, Basner M. Annoyance from nocturnal aircraft noise exposure: Laboratory and field-specific dose-response curves, J Environ Psych. 2006; 26 (2) pp127-140. <https://www.sciencedirect.com/science/article/abs/pii/S0272494406000302?via%3Dihub>.
17. Lefèvre M, Chaumond A, Champelovier P et al. Understanding the relationship between air traffic noise exposure and annoyance in populations living near airports in France. Environment International, 2020; 144. <https://doi.org/10.1016/j.envint.2020.106058>.
18. Thomas JR, Jones DM. Individual differences in noise annoyance and the uncomfortable loud-ness level. J Sound and Vibration1982; 82(2). [bit.ly/42VYZ1t](https://doi.org/10.1016/j.jsv.2020.106058).
19. Fink D. A new definition of noise: noise is unwanted and/or harmful sound. Proc. Mtgs. Acoust. 2019; 39, 050002. <https://doi.org/10.1121/2.0001186>.
20. Tawakol A, Ishai A, Takx R, et al. Relation between resting amygdalar activity and cardiovascular events: a longitudinal and cohort study. The Lancet. 2017; 389 (10071): 834-845. <https://pubmed.ncbi.nlm.nih.gov/28088338/>
21. Noise as a public health hazard. American Public Health Association. Policy Statement 202115. 26 Oct 2021. <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2022/01/07/noise-as-a-public-health-hazard>.

22. Münzel T, Gori T, Babisch W, Basner, M. Cardiovascular effects of environmental noise exposure. *Eur. Heart J.* 2014; 35, 829–836. <https://doi.org/10.1093/eurheartj/ehu030>.

23. Basner M, Babisch W, Davis A., et al. (2014). Auditory and non-auditory effects of noise on health. *The Lancet.* 2014;383(9925):1325-1332.<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3988259>.

24. Hahad O, Jiminez M, Kuntic M. Cerebral consequences of environmental noise exposure. *Environment International.* 2022;165 (107306). <https://doi.org/10.1016/j.envint.2022.107306>.

25. Bronzaft, A. The effect of a noise abatement program on reading ability, *J of Environ Psychology.* 1981;1 (3). [https://doi.org/10.1016/S0272-4944\(81\)80040-0](https://doi.org/10.1016/S0272-4944(81)80040-0).

26. Columbia University Mailman School of Public Health. Content Analysis Method and Examples. Accessed April 6, 2025. <https://www.publichealth.columbia.edu/research/population-health-methods/content-analysis>.

27. Pickleball Noise in the News, Pickleball Noise Relief, YouTube. Accessed Jan 14, 2025. [https://www.youtube.com/playlist?list=PLiE\\_sJ-53KyaqmgbvSHRPJqLh1zbgEcq](https://www.youtube.com/playlist?list=PLiE_sJ-53KyaqmgbvSHRPJqLh1zbgEcq).

28. Hahad O, Kuntic M, Al-Kindi S, et. al. Noise and mental health: evidence, mechanisms, and consequences. *J Expo Sci Environ Epidemiol.* 2024. <https://doi.org/10.1038/s41370-024-00642-5>.

29. Hahad O, Prochaska J. Environmental noise-induced effects on stress hormones, oxidative stress, and vascular dysfunction: Key factors in the relationship between cerebrocardiovascular and psychological disorders. *Oxid Med Cell Longev.* 2019 Nov 11; 4623109. <https://doi.org/10.1155/2019/4623109>.

30. Baguley D, McFerran D, Hall D. Tinnitus. *The Lancet.* 2013; 382(9904) pp1600 –1607. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(13\)60142-7/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(13)60142-7/fulltext).

31. Hahad O, Döge J, Bahr-Hamm K, et al. Noise annoyance due to different sources is associated with tinnitus presence and distress in the general population. *J Expo Sci Environ Epidemiol.* 2025, 35, (118–123). <https://www.nature.com/articles/s41370-024-00668-9>.

32. Zhang Q, Shi M, Zhang J, et al. Tinnitus, noise exposure and the risk of dementia: a prospective cohort study based on UK biobank. *Age and Ageing.* April 2025 54(4). <https://doi.org/10.1093/ageing/afaf097>.

33. Thakur T, Gupta V. Auditory Hallucinations. Treasure Island (FL): StatPearls Publishing; Jan 2025 <https://www.ncbi.nlm.nih.gov/books/NBK557633/>.

34. American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.).

35. Dorahy M, Palmer R. Auditory Hallucinations in Chronic Trauma Disorders: Phenomenology and Psychological Mechanisms. In: Martin, C., Preedy, V., Patel, V. (eds) Comprehensive Guide to Post-Traumatic Stress Disorder. Springer (2005). [https://doi.org/10.1007/978-3-319-08613-2\\_45-1](https://doi.org/10.1007/978-3-319-08613-2_45-1)

36. Brooks E. When the echoes of the last shots have ceased. Music, Sound, and Trauma. *J of Am Musicological Society* (2024) 77 (2): 511–578 <https://doi.org/10.1525/jams.2024.77.2.511>.

37. Wicki B, Schäffer B, Wunderli JM, et al. Suicide and Transportation Noise: A Prospective Cohort Study from Switzerland. *Environ Health Persp.* 2023;131(3). <https://doi.org/10.1289/EHP11587>.

38. Blomberg L. Preliminary results of an analysis of 491 community noise ordinances. Presented at New England NOISE-CON-Revolution in Noise Control. Providence, Rhode Island, 13-15 June, 2016. <https://www.nonoise.org/regulation/preliminary%20results.pdf>.

39. Venkat M, Ermyas T. Pickleball has a noise problem. He's trying to fix it. National Public Radio. June 9, 2023. <https://www.npr.org/2023/06/09/1181246866/pickleball-noise-problem-courts-bats-play>. Accessed April 15, 2025.

40. Van Scoyk, D. PSM Consulting LLC. Personal communication, April 29, 2025.

41. Headrick, M, St. Clair, C. Noise. lights. crowds. pickleball problems plague neighbors. KSLTV. July 7, 2023. <https://ksltv.com/565667/noise-lights-crowds-pickleball-problems-plague-neighbors>.

42. Schmits, C. Chief Technical Officer, USA Pickleball, personal communication. April 26, 2025.

43. Wyerman B, Unetich R. Pickleball Sound 103 - Mitigating Pickleball Sound - Is Pickleball Compatible with Residential Environments? Noise Con: Congress and Conference Proceedings 2023. [https://doi.org/10.3397/NC\\_2023\\_0009](https://doi.org/10.3397/NC_2023_0009).

## Pickleball Court Occupancy ( 5 Weeks of records): X indicates - "Courts in Use"

Electronic Filing: Received, Clerk's Office 01/05/2026 \*\*PCB 2026-044\*\*

17-Sep 18-Sep 19-Sep 20-Sep 21-Sep 22-Sep 23-Sep 24-Sep 25-Sep 26-Sep 27-Sep 28-Sep 29-Sep 30-Sep 1-Oct 2-Oct 3-Oct 4-Oct 5-Oct

## **Exhibit S: Abbeywood park Pickleball story**

Pickleball experienced explosive growth during the COVID-19 pandemic, and many early court installations were rushed through without adequate planning, zoning review, or consideration of residential impacts. As a result, poorly sited courts were placed in close proximity to homes, triggering widespread noise complaints now reported across every continent.

Acoustic experts are now unequivocal: outdoor pickleball courts should be located no closer than **500–1,000 feet** from residences to prevent excessive noise intrusion. Even the most permissive guidelines allow only **250–400 feet** with substantial mitigation, while courts within **100 feet** are broadly deemed unsuitable without full enclosure due to pickleball's highly impulsive acoustic signature.

The Abbeywood Park courts in Lisle, Illinois—located approximately **45–55 feet** from nearby homes—represent one of the most extreme and problematic placements documented. The severity of this siting drew national attention when Abbeywood was featured in a national **NBC Nightly News** segment in August 2023 examining the growing pickleball noise crisis nationwide. Rather than prompting corrective action, this exposure further strained relations between affected residents, local officials, and the Lisle Park District.

Unlike tennis, which produces relatively diffuse and infrequent sound, pickleball generates sharp, repetitive, high-frequency “pops” that travel long distances and easily penetrate walls and windows. This creates a uniquely intrusive and inescapable form of noise pollution that cannot be mitigated by simple barriers or minor operational adjustments.

National and international acoustic research—including the professional engineering report by **Robert M. Unetich, P.E. (Exhibit A)** and the peer-reviewed **Romito/Fink study (Exhibit B)**—demonstrates that pickleball noise at distances of **100 feet or less** routinely exceeds recommended residential limits (typically **50–55 dBA**). These studies document serious health consequences, including cardiovascular strain, chronic stress, sleep disruption, endocrine system disturbances, and severe psychological distress frequently described by victims as noise “torture.”

Recognizing these harms, neighboring communities—including **Naperville**—have enacted strict siting policies prohibiting open-play pickleball courts within **500 feet** of residences to prevent exactly the conditions now imposed on Abbeywood neighbors.

The Lisle Park District itself has repeatedly acknowledged the severity of the Abbeywood problem through public statements, posted signage merely *suggesting* (but not requiring) quiet equipment, reduced hours, and the relocation of lessons. Yet despite these admissions, current

leadership—under pressure from a vocal and organized pickleball constituency—has refused to implement meaningful remedies such as mandating certified quiet balls or relocating or reconverting the courts.

As a result, a small group of residents is effectively confined within their own homes, overwhelmed by relentless noise, while a well-mobilized special-interest group minimizes or dismisses proven harms. Because only three homes are geographically close to the courts (there are no other nearby residences) and only these households are directly affected, the village and park district have dismissed the complaints on the grounds that “too few residents” are impacted.

This ongoing inaction perpetuates unnecessary suffering and directly contradicts the growing body of evidence and established remedies already adopted elsewhere, including legal settlements in numerous comparable cases where courts were ultimately reconverted to tennis-only use to abate the same impulsive noise nuisance.

I want to be clear that I am a **USA Pickleball Association member** and a player myself, and for recreational play, **quiet balls are a perfectly reasonable and effective solution** in this situation.

References:

[www.pickleballnoiserelief.com](http://www.pickleballnoiserelief.com)

<https://www.nbcnews.com/nightly-news/video/noise-complaints-arise-as-pickleball-grows-in-popularity-across-u-s-190097477605>

<https://www.denver7.com/news/front-range/denver/pickleball-is-back-at-denvers-eisenhower-park-with-new-quiet-balls>

## DOCUMENTATION OF SERVICE

Before the Illinois Pollution Control Board

**Vitautas Matulyauskas**, Complainant

v.

**Lisle Park District**, Respondent

PCB 26-\_\_\_\_ (for Board use only)

---

## AFFIDAVIT OF SERVICE

I, **Vitautas Matulyauskas**, on oath or affirmation, state as follows:

1. I am the Complainant in this matter.
2. On **January 3, 2026**, I served copies of the attached **Formal Complaint and Notice of Filing** upon the Respondent at the address listed below by the method indicated.

**B. U.S. Mail or third-party commercial carrier with a recipient's signature to be recorded upon delivery.**

On **January 3, 2026**, by **4:00 PM**, at **Lisle Post Office, 1225 Warrenville Rd, Lisle, IL 60532**, copies of the attached Formal Complaint and Notice of Filing were provided to the United States Postal Service, with the Respondent's address appearing on the envelope, and with proper postage prepaid.

The delivery confirmation containing the recipient's signature is not available at this time. Within seven (7) days after it becomes available, I will file with the Clerk of the Illinois Pollution Control Board the delivery confirmation identifying the Formal Complaint to which it corresponds.

---

## RESPONDENT'S ADDRESS

**Name:** Lisle Park District

**Street:** 1925 Ohio St

**City, State, ZIP:** Lisle, IL 60532

---

I certify under penalty of perjury that the foregoing is true and correct.

Vitautas Matulyauskas

6282 Timberview Dr

Lisle, IL 60532

Date: January 3, 2026