

SUPPLEMENTAL MEMORANDUM

TO: Fairfield RTM's Legislation and Administration Committee

FROM: Jill Vergara (RTM District 7 and ordinance co-sponsor)

CC: Co-sponsors—Jeff Galdenzi (D3), Jay Wolk (D5), Andrew Graceffa (D6), Dru Georgiadis (D9)
Police Chief Kalamaras, Police Captain Weihe, Fire Chief McCarthy
Town Attorney Jim Baldwin

RE: Supplemental Revisions to Chapter 78, Noise, of Fairfield's Town Code [original revisions submitted 2/14/23]

DATE: April 24, 2023

This supplemental memorandum is meant to summarize the most recent revisions being proposed, which are a response to RTM colleagues' concerns as well as new issues that have surfaced.

Our original goals 1) to assist in police enforcement, 2) to broaden protections to include daytime hours and 3) to respond to constituent concerns remain the same. With these newest revisions, we hope to clarify the "plainly audible" standard as being a new tool for police officers to use solely for noise produced by "sound production devices" (i.e. music). We also found that our current ordinance conflicts with statewide noise regulations, and so adding "daytime hours" is required to comply with state statute.

I. PLAINLY AUDIBLE STANDARD ONLY APPLIES TO SOUND PRODUCED BY SOUND PRODUCTION DEVICES

During the RTM's March 20, 2023 discussion of the noise ordinance revisions, it became clear that there was a misunderstanding of the newly added "plainly audible" standard. As stated in our original memorandum, the intent of this new standard is to assist the police department in enforcing the ordinance, as the ordinance as currently written is not being enforced. This new standard has helped several other police departments in towns such as Norwalk, Hartford Bloomfield, Rocky Hill and Torrington to more effectively regulate noise complaints. In Fairfield, this new standard would apply ONLY to noise produced by "sound production devices."

To clarify the "plainly audible" standard, we added the following language to the definition in Section 78-2: "Any sound produced by a SOUND PRODUCTION DEVICE that can be detected by a person using his or her unaided hearing faculties of normal acuity Only noise emitted by SOUND PRODUCTION DEVICES are subject to the PLAINLY AUDIBLE noise level

standards provided for in § 78-5.” A “sound production device” is defined in Section 78-2 as “Any device whose primary function is the production of sound, including, but not limited to any musical instrument, loudspeaker, radio, vehicle stereo, vehicle muffler, television, digital or analog music player, public address system or sound-amplifying equipment.” In laymen’s terms, sound production devices are limited largely to electronically amplified music. According to our data, approximately 90% of all noise complaints stem from loud music, so while “plainly audible” applies only to a fraction of all potential noise issues outlined in the ordinance, it will give the police department the necessary discretion and ease of enforcement for a large majority of the complaints they receive.

For clarity, we also added language to the noise level measurement procedures in Section 78-4 to make clear that the measurement procedures for plainly audible noise is only applicable to sound production devices. In addition, we added language to the noise level standards table to better distinguish “Noise Measured by Sound Level Meter” from “Plainly Audible Noise produced by Sound Production Devices.” Whereas sound level meter measurements are applicable to all noise complaints, plainly audible measurements taken at 100, 150, 200 or 250 feet (depending on the land use zone in which the receptor is located; and depending on the time of day) are limited only to complaints related to sound production devices. The enforcement agent may opt to use a plainly audible standard for noise produced by sound production devices or to use the applicable sound level readings. For all other noise, only the sound level measurements specified apply. Also note that we simplified the table to make it easier to read, and we removed “or inside a residence” as a way to determine whether a noise is plainly audible in response to specific comments made at the RTM Committees meeting.

II. FAIRFIELD’S CURRENT ORDINANCE IS OUT OF COMPLIANCE WITH STATE REGULATIONS ON NOISE AND MUST BE REVISED

Connecticut General Statutes section 22a-73 requires that “Any such municipal noise control ordinance shall be at least as stringent as any state noise control plan.” The state noise control plan can be found at 22a-69-1 through 22a-69-7.4 of the Regulations of Connecticut State Agencies. These regulations promulgated by the Department of Environmental Protection outline minimum standards for permissible noise levels during both the daytime and nighttime hours. Daytime hours are defined as 7:00 a.m. to 10 p.m., and permissible noise levels for residential receptors during the daytime hours range from 61 dBA to 55 dBA depending on whether the emitter is industrial (61 dBA), commercial (55 dBA) or residential (55 dBA). Therefore, our current ordinance’s failure to establish daytime noise protections conflicts with the state regulations and must be corrected to be in compliance with at least the minimum standards established by the State.¹ For this reason, regardless of what other

¹ Our original memorandum noted that Fairfield’s noise ordinance is the only municipal noise ordinance not to specify daytime hours. We are likely the only town not to specify daytime hours, because it is not compliant with state law to have no daytime hour noise level standards.

changes are made to the noise ordinance, we must incorporate daytime hour protections that are at least as stringent as the DEEP regulations to be compliant with state law.

Similarly, we must alter our existing nighttime hours so that they are at least as stringent as the state's defined nighttime hours. The State defines nighttime hours to be 10:00 p.m. to 7:00 a.m. local time. Therefore, our current weekend hours setting nighttime protections to span from 11 p.m. to 8:00 a.m. are more liberal than the state's regulations and must be changed to begin at least by 10 p.m.

III. ONE-YEAR RESET FOR THE ADMINISTRATION, ENFORCEMENT AND PENALTIES PROVISION IN SECTION 78-6

Our current section 78-7 (Penalties for offenses) contains a 24-hour reset when issuing violators fines, such that someone who violates the noise provisions first gets issued an infraction notice; then if the police are called back, the violator is fined \$50; and if the police are called back to the same property again, the violator is fined \$90 going forward for each offense within a 24-hour period. Once that 24-hour period elapses, the record is wiped clean, and the person will be issued only an infraction notice if a violation occurs only 25 hours later. This penalty framework is an anomaly within our own Town Code (and well as other town codes), and is not a strong enough deterrent for recidivism. Although most other towns' noise ordinances do not incorporate ANY sort of reset, we have added a reset back in as a compromise for those who feel having no reset is overly harsh. We chose a one-year reset period, because our alarm ordinance, which is also referenced in the noise ordinance, contains a one-year reset period.² In addition, Norwalk's noise ordinance contains a one-year reset period.

IV. SECTION 78-7 EXCLUSIONS

In Subsection B of 78-7, we added a clause specifically excluding the unamplified human voice: "The noise level standards defined in § 78-5 shall not apply to any noise emitted by or related to: The unamplified sounding of the human voice." While we do not believe the noise levels and standards specified in the ordinance revisions could have been applied to children playing or loud conversations, and perhaps some of the concerns expressed stem more from a misunderstanding of the plainly audible standard than anything else, incorporating a specific exclusion seemed to be a direct and easy way to address these concerns.

In Subsection P of 78-7, we clarified the provision regarding exclusions for public celebrations sanctioned by the town. The language "open to the public" was criticized as being overly broad and undefined. The intent was to limit to specific events authorized by the state or the town that are public, and not private, in nature (as the current language already establishes). Parades, sporting events, concerts and block parties that are authorized by the town and open to the community are excluded from the noise provisions; whereas, events in

² Note that Recovery of Costs for Disorderly Conduct (Chapter 61 of the Town Code) has a three-year reset.

which the Town rents its building assets for a profit to private, discrete groups/entities and ultimately acts as a business entity engaging in commercial activity should be subject to our normal zoning laws and town regulations for noise.

In subsection Q of 78-7, we added a fireworks provision to enable Fairfield residents to obtain permits for fireworks displays as long as the displays are completed by 10:30 p.m. The Police Department issues permits for fireworks displays. Approximately 3-4 applications for fireworks permits are received by the town annually. On recommendation by Chief McCarthy, we addressed people's concerns about fireworks by limiting the times that fireworks could occur. Chief McCarthy suggested a 10:30 p.m. cutoff time, and that is what we incorporated into the proposed revisions (as reflected in both section 78-7 and 78-8).

V. SECTION 78-8 SPECIFIC PROHIBITIONS

Due to concerns that weekend hours to do yardwork were too restrictive, we increased the time cut-off for construction, demolition, power tools, home maintenance tools, landscaping and/or yard maintenance equipment to 8:00 p.m. (previously 6:00 p.m. on the weekends). The current proposal would allow for these activities to occur (and exclude these activities from the noise provisions) between 7:00 a.m. and 8:00 p.m. on weekdays and between 8:00 a.m. and 8:00 p.m. on weekends; outside of those times, these activities are prohibited.

Blasting was moved to its own subsection, because state guidelines for blasting seemed to set a more restrictive window for permissible times. Most other towns also have a narrower window to conduct blasting. We are proposing that blasting be conducted between 8:00 a.m. and 5:00 p.m.

Due to RTM colleagues' input and the desire to enable Fairfield residents to obtain fireworks permits, we altered the fireworks prohibition to be a time cutoff instead of a wholesale proscription.

VI. SECTION 78-9 VARIANCES

The state regulations contain variance procedures, as do the majority of town ordinances that we studied. Adding a variance procedure helps to address people's concerns that there be more flexibility in our noise regulation. We used stock language that appeared verbatim in several other town noise ordinances.

§ 78-9 Variances.

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- A. Any person living or doing business in the Town of Fairfield may apply to the Chief of Police for a variance from one (1) or more of the provisions of this chapter which are more stringent than the Connecticut Department of

Environmental Protection regulations for the control of noise, provided that the applicant supplies all of the following information to the Chief of Police at least twenty (20) days prior to the start of the activity for which the variance is sought:

1. The location and nature of the activity.
 2. The time period and hours of operation of said activity.
 3. The nature and intensity of noise that will be generated.
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B. No variance from this Chapter shall be granted unless it has been demonstrated that:

1. The proposed activity will not violate any provisions of the Connecticut Department of Energy and Environmental Protection regulations;
 2. The noise levels generated by the proposed activity will not constitute a danger to the public health; and
 3. Compliance with this Chapter constitutes an unreasonable hardship on the applicant.
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C. The application for a variance shall be reviewed and approved or rejected at least five (5) days prior to the start of the proposed activity. Approval or rejection shall be made in writing and shall state the condition(s) of approval, if any, or the reason(s) for rejection.

D. Failure to rule on an application within the designated time shall constitute approval of the variance.

Chapter 78 Noise

[HISTORY: Adopted by the Representative Town Meeting of the Town of Fairfield 6-25-1985. Amendments noted were applicable.]

GENERAL REFERENCES

Alarms producing exterior audible sound — See Ch. 45, § 45-5.

§ 78-1 Legislative intent.

§ 78-2 Definitions.

§ 78-3 Excessive noise prohibited.

§ 78-4 Noise level measurement procedures.

§ 78-5 Noise level standards.

§ 78-6 Administration, ~~and~~ enforcement and penalties.

§ 78-7 ~~Penalties for offenses~~ Exclusions.

§ 78-8 ~~Exceptions~~ Specific prohibitions.

§ 78-9 ~~Exemptions~~ Conflict with other regulations Variances.

§ 78-10 ~~Existing noise sources~~ Conflict with other regulations.

§ 78-11 Severability.

§ 78-1 Legislative intent.

Government is instituted to protect life, liberty and property. Loud, excessive and unreasonable noise ~~during the nighttime hours~~ is an interference with a person's right to the use and enjoyment of his/her property, especially in residential areas where human beings sleep or areas where serenity and tranquility are essential to the intended use of the land. ~~The purpose of this chapter is to provide an objective standard and procedure for enforcing property rights.~~ This chapter is enacted to protect, preserve and promote the health, safety, welfare and quality of life in Fairfield through the reduction, control and prevention of noise. (Norwalk Chapter 68, Noise, 2020)

§ 78-2 Definitions.

As used in this chapter, the following items shall have the meanings indicated:

~~AMBIENT NOISE or BACKGROUND NOISE~~

~~Noise of a measurable intensity which exists at a point as a result of a combination of many distant sources individually indistinguishable. [Deleted due to its ambiguity and difficulty in measuring ambient/background vs. nuisance noise. Rocky Hill does not measure ambient/background noise].~~ (Rocky Hill Chapter 180. Noise, 2016)

BUSINESS DISTRICT

Any business district, including Business District No. 1, Business District No. 2, Business District No. 3, Designed Business District No. 1, Designed Business District No. 2, Designed Business District No. 3 and Designed Business District No. 4, as defined in the Zoning Regulations of the Town of Fairfield.

DAYTIME HOURS

~~Hours not defined as nighttime. (Rocky Hill Chapter 180. Noise, 2016)~~ The hours between 7:00 a.m. and 9:00 p.m., Monday through Thursday; the hours between 7:00 a.m. and 10:00 p.m. on Friday; the hours between 8:00 a.m. and 10:00 p.m. on Saturday and during any state or national holiday; and the hours between 8:00 a.m. and 9:00 p.m. on Sunday.

DECIBEL

A logarithmic unit of measurement of the sound level. ~~measure in measuring magnitudes of sound. The symbol is "dB."~~ In this chapter, the decibel level is expressed in terms of dBA (A-weighted decibels). (Rocky Hill Chapter 180. Noise, 2016)

EMERGENCY

Any occurrence or set of circumstances involving actual or imminent physical or property damage which demands immediate action.

EMITTER

A person who creates, causes to be created or allows the noise.

IMPULSE NOISE

Sound of short duration (generally less than one second) with an abrupt onset and rapid decay.

INDUSTRIAL DISTRICT

Any industrial district, including Industrial District No. 1, Industrial District No. 2, Designed Industrial District No. 1, Designed Industrial District No. 2 and Designed Research District, as defined in the Zoning Regulations of the Town of Fairfield.

MOTOR VEHICLE

Shall be defined as per Section 14-1(26) of the Connecticut General Statutes (Revision of 1958, as amended).^[1]

NIGHTTIME HOURS

[Amended 9-25-2017]

- A. The hours between 9:40:00 p.m. and 7:00 a.m., Sunday night through Friday morning (weekday schedule); and the hours between 10:44:00 p.m. and 8:00 a.m., Friday night through Sunday morning (weekend schedule).

Weekday Schedule:

- 9:40:00 p.m. Sunday through 7:00 a.m. on Monday
- 9:40:00 p.m. Monday through 7:00 a.m. on Tuesday
- 9:40:00 p.m. Tuesday through 7:00 a.m. on Wednesday
- 9:40:00 p.m. Wednesday through 7:00 a.m. on Thursday
- 9:40:00 p.m. Thursday through 7:00 a.m. on Friday

Weekend Schedule:

- 10:44:00 p.m. Friday through 8:00 a.m. on Saturday
- 10:44:00 p.m. Saturday through 8:00 a.m. on Sunday

- B. During any state or national holiday, the weekend schedule will be in effect the night before the holiday through the morning of the holiday.

NOISE

Any sound, the intensity of which exceeds the standards set forth in § 78-5 of this chapter.

NOISE LEVEL

The sound pressure level, as measured with a sound level meter.

PERSON

Any individual, including the singular and plural, firm, partnership, association, syndicate, company, trust, corporation, municipality, agency or political administrative subdivision of the state or on other legal entity of any kind.

PLAINLY AUDIBLE

Any sound produced by a SOUND PRODUCTION DEVICE that can be detected by a person using his or her unaided hearing faculties of normal acuity. As an example, if the sound source under investigation is a portable or vehicular sound amplification device, the enforcement officer need not determine the title, specific words, or the artist performing the song. The detection of the rhythmic bass component of the music is sufficient to constitute a plainly audible sound. (Rocky Hill Chapter 180. Noise, 2016)_(Zwerling, 2012) Only noise emitted by SOUND PRODUCTION DEVICES are subject to the PLAINLY AUDIBLE noise level standards provided for in § 78-5.

PREMISES

Any building structure, land or portion thereof, including all appurtenances, and shall include yards, lots, courts, inner yards and real properties without buildings or improvements, owned or controlled by a person. The emitter's premises includes contiguous publicly dedicated street and highway rights-of-way and waters of the state.

PROPERTY LINE

That real or imaginary line along the ground surface and its vertical extension which:

- A. Separates real property owned or controlled by another person; and
- B. Separates real property from the public right-of-way.

RECEPTOR

The person who receives the noise impact and initiates the noise complaint. *[clarifying language]*

RESIDENTIAL DISTRICT

Any residential district, including Residential Districts AAA, AA, R-3, R-2, A, B, C, Designed Residence District No. 1 and Designed Residence District No. 2, as defined in the Zoning Regulations of the Town of Fairfield, and all uses permitted therewith either as a right or as a special use.

SOUND

The transmission of energy through solid, liquid or gaseous media in the form of vibrations which constitute alterations in pressure or position of the particles in the medium and which, in

the air, evoke physiological sensations, including but not limited to an auditory response when impinging on the ear.

SOUND LEVEL METER

An instrument used to take sound level measurements and which should conform, as a minimum, to the operational specifications of the American National Standards Institute for sound level meters (TYPE s2A).

SOUND PRODUCTION DEVICE

Any device whose primary function is the production of sound, including, but not limited to any musical instrument, loudspeaker, radio, vehicle stereo, vehicle muffler, television, digital or analog music player, public address system or sound-amplifying equipment. (Norwalk Chapter 68, Noise, 2020)

[1] *Editor's Note: See now C.G.S. § 14-1(54).*

§ 78-3 Excessive noise prohibited.

[Amended 9-25-2017]

It shall be unlawful for any person to emit or cause to be emitted any noise from such person's property beyond the boundaries of his property lines in excess of the noise levels set forth in § **78-5** during ~~the daytime or~~ nighttime hours as defined in § **78-2**, except in those incidences provided for in §§ ~~78-7 78-8~~ and ~~78-878-9~~.

§ 78-4 Noise level measurement procedures.

For the purpose of determining noise levels as set forth in this chapter, the following guidelines shall be applicable:

When measuring with a sound level meter:

- A. Instruments used to determine noise levels shall conform, ~~at~~ a minimum, to the operational specifications of the American National Standards Institute for sound level meters (Type s2A), maintained in calibration and good working order, and used in accordance with the manufacturer's instructions. ~~[clarifying language] instrument manufacturer's instructions for use of the instruments shall be followed.~~

B. All personnel conducting sound measurements shall be trained in the current techniques and principles of sound-measuring equipment and instrumentation.

C.

Measurements shall be taken at a point that is located at least one foot beyond the boundary of the emitter's property line within the premises of the complaining receptor. The emitter's premises includes his/her individual unit of land or group of contiguous parcels under the same ownership as indicated by public land records.

When measuring Sound Production Devices with normal hearing acuity that are plainly audible:

D. Noise produced by Sound Production Devices will be plainly audible by a person with normal hearing when such noise can be heard at the distances enumerated in § 78-5. Distances may be measured by approximation from the source of noise. (Bloomfield, Hartford, Torrington Noise Ordinance, 2018, 2009, 2021) (Norwalk Chapter 68, Noise, 2020)

§ 78-5 Noise level standards.

A.

No person shall emit noise exceeding the levels stated herein during daytime or nighttime hours, except in those incidences provided for in §78-7 and §78-8 of this chapter:

Property Use:	All Noise Levels Measured by Sound Level Meter: <i>Measured in A-Weighted Decibels (dBA)</i>		Plainly Audible Noise produced by Sound Production Devices:
	Daytime: Hours <u>not</u> defined as nighttime.		
	Nighttime: 10:00 p.m. through 7:00 a.m. Sunday — Friday; 11:00 p.m. through 8:00 a.m. Friday — Sunday; the evening before and morning of state and national holidays		
Receptor	Time	Sound Level dBA	Plainly audible at...
Residential	Nighttime	<u>50-45</u> dBA	100 feet <u>or inside a residence</u>
Residential	Daytime	55 dBA	150 feet <u>or inside a residence</u>
Business	At all times	60 dBA	200 feet
Industrial	At all times	65 dBA	250 feet

(Model Community Noise Control Ordinance, 2020)

Zone in Which Emitter is Located	Zone in Which Receptor is Located		
	Industrial	Business	Residential
Industrial	70-dBA	66-dBA	51-dBA
Business	62-dBA	62-dBA	45-dBA
Residential	62-dBA	55-dBA	45-dBA

~~B. Background noise and impulse noise. In those individual cases where the ambient or background noise levels caused by sources not subject to this chapter exceed the standards contained herein, a source (impulse or sustained) shall be considered to cause excessive noise if the noise emitted by such source exceeds the background noise levels by five dBA, provided that no source subject to this chapter shall emit in excess of 80 dBA at any time, with the exceptions of those sources referenced in Subsection C, and provided that this subsection shall not be interpreted as decreasing the noise level standards of §78-5 of this chapter. [Deleted due to its ambiguity and difficulty in measuring ambient/background vs. nuisance noise. Rocky Hill does not measure ambient/background noise] (Rocky Hill Chapter 180. Noise, 2016)~~

~~C. B.~~ -All motor vehicles operated within the limits of the Town of Fairfield shall be subject to the noise standards and decibel levels as set forth in the regulations of the State of Connecticut Department of Motor Vehicles, Sections 14-80a-1a through 14-80a-10a, Maximum Permissible Noise Levels for Vehicles.^[1]

[1] *Editor's Note: See now C.G.S. § 14-80a, Maximum noise levels.*

§ 78-6 Administration, ~~and enforcement~~ and penalties.

A. The ~~Chief of Police~~Police Department shall be responsible for enforcing the provisions of this chapter upon the complaint of any person and shall, upon such complaint, carry out the intent of this chapter as specified in § 78-3. Upon receiving the first complaint, the police shall make the required sound level reading or plainly audible determination as specified in § 78-5.

B. If the sound level exceeds the standards enumerated in § 78-5, or is specifically prohibited under § 78-8, a verbal warning shall be given to the emitter for the first offense; an infraction notice of \$100 for the second offense; and \$250 for each additional subsequent offense within one year of the last offense. ~~If such noise does not cease, and upon receiving a second complain, the police shall follow the procedures as set forth in § 78-7.~~

C. Each violation shall constitute a separate offense. (Norwalk Chapter 68, Noise, 2020)

D. Refusing, hindering or interfering with enforcement of any provision in this Chapter is a separate offense. (Rocky Hill Chapter 180. Noise, 2016)

E. Failure to pay the fine in the time prescribed in the infraction notice will result in the issuance of a summons to appear in Superior Court. [old 78-7]

A.F. Notwithstanding that enforcement of this chapter shall be initiated by such complaint, no signed complaint shall be required by the Police Department to enforce or administer any of the provisions of this chapter.

~~§ 78-7 Penalties for offenses.~~

~~Any person found in violation of the provisions of this chapter shall be given an infraction notice which incorporates a fine of \$50 for the first offense and \$90 for each additional offense within a twenty-four-hour period. Failure to pay the fine in the time prescribed in the infraction notice will result in the issuance of a summons to appear in Superior Court. ["Failure to pay the fine" moved to 78-6]~~

~~§ 78-8-7 Exceptions Exclusions.~~ (Norwalk Chapter 68, Noise, 2020)

The noise level standards defined in § 78-5 shall not apply to any noise emitted by or related to:

- A. Natural phenomena.
- B. Any bell or chime from any building clock, school or church.
- C. Any siren, whistle or bell lawfully used by emergency vehicles or any other alarm systems used in emergency situations; provided, however, that burglar or fire alarms not terminating within 30 minutes after being activated shall be unlawful.^[1]
- D. [1] *Editor's Note: See Ch. 45, Alarms.*
- E. Warning devices required by the Occupational Safety and Health Administration or other state or federal safety regulations.
- F. Agricultural activities, when all internal combustion engines are equipped with a properly functioning muffler. (Norwalk Chapter 68, Noise, 2020)

G. The unamplified sounding of the human voice.

G.H. Noise created by public school construction. (Norwalk Chapter 68, Noise, 2020)

§ 78-9 Exemptions.

~~The following shall be exempt from these regulations, subject to special conditions as spelled out:~~

~~A.~~

~~H.I.~~ Noise created as a result of or relating to an emergency.

~~B.~~

~~I.J.~~ Noise created by snow-removal equipment.

~~J.K.~~ Noise created by road maintenance activities of the Department of Public Works and the Water Pollution Control Agency. (Norwalk Chapter 68, Noise, 2020)

~~K.L.~~ Noise created by refuse and solid waste collection, provided that the activity is conducted during daytime hours. (Norwalk Chapter 68, Noise, 2020)

~~G.~~

~~L.M.~~ Noise created by certificated aircraft operating under the control of the Federal Aviation Administration.

~~D.~~

~~M.N.~~ Noise created as a result of or relating to maintenance and repairs conducted by public utilities.

~~E.~~

~~N.O.~~ Noise generated from swimming pool pumps, air-conditioning systems and heating systems which are in good working order and which meet the specifications accepted by federal, state and Town agencies designated to govern their installation and standards of performance.

~~F.~~

~~P.~~ Noise created by public celebrations and on-site recreational or sporting activities which are sanctioned by the State of Connecticut or the Town of Fairfield, including, but not limited to, parades, sporting events, concerts, and block parties and are open to the public. This exclusion does not apply to private rentals of town-owned buildings.

~~Q.~~ Permitted fireworks conducted after sunset and completed by 10:30 p.m. Fireworks conducted by the Town of Fairfield or its designee(s) for the Independence Day celebration are fully excluded from these noise regulations at all times.

~~R.~~ Noise created by public demonstrations and/or protests, provided that the activity is conducted during daytime hours.

~~G.~~

~~S.~~ Any person who owns or operates any stationary noise source granted a variance pursuant to Section 22a-69-7.1 of the Regulations of Connecticut State Agencies shall be exempt from provisions of this chapter by said variance. Any person seeking a variance pursuant to Section 22a-69-7.1 of the Regulations of Connecticut State Agencies shall not be subject to the provisions of this chapter while the variance application is pending.

§ 78-8 Specific Prohibitions.

The following shall be specifically prohibited:

A. Construction, ~~blasting, demolition, power tools, home maintenance tools, landscaping and/or yard maintenance equipment~~ shall not be operated between the hours of ~~7:00~~8:00 p.m. and ~~8:00~~7:00 a.m. on weekdays, and between ~~8:00~~ ~~6:00~~5:00 p.m. and ~~8:00~~ 9:00 a.m. on weekends or state/federal holidays, unless such activities can meet the limits set forth for nighttime hours in § 78-5. At all other times, § 78-5 does not apply. (Norwalk Chapter 68, Noise, 2020) Maintenance of town playing fields shall not be subject to this prohibition.

B. ~~Blasting shall not be conducted between 8:00 a.m. and 5:00 p.m. At all other times, § 78-5 does not apply, provided that a permit for such blasting has been obtained from the Town.~~

C. ~~Impulse noise such as vehicle backfiring, engine racing, and unnecessary horn blowing and leaf blower revving that annoys or disturbs the quiet, comfort or repose of persons.~~

D. ~~Igniting fireworks after 10:30 p.m., except by the Town of Fairfield or its designees for the Independence Day celebration. Special permits formust be obtained to ignite fireworks in the Town of Fairfield are prohibited. See CGS § 29-357.~~

~~Private use of Town property that exceeds the noise level standards set forth in § 78-5.~~

E. ~~Refusing, hindering or interfering with enforcement of any provision in this Chapter.~~

§ 78-10 Existing noise sources.

§ 78-9 Variances.

A. Any person living or doing business in the Town of Fairfield may apply to the Chief of Police for a variance from one (1) or more of the provisions of this chapter which are more stringent than the Connecticut Department of Environmental Protection regulations for the control of noise, provided that the applicant supplies all of the following information to the Chief of Police at least twenty (20) days prior to the start of the activity for which the variance is sought:

1. The location and nature of the activity.
2. The time period and hours of operation of said activity.
3. The nature and intensity of noise that will be generated.

B. No variance from this Chapter shall be granted unless it has been demonstrated that:

1. The proposed activity will not violate any provisions of the Connecticut Department of Energy and Environmental Protection regulations;

2. The noise levels generated by the proposed activity will not constitute a danger to the public health; and

3. Compliance with this Chapter constitutes an unreasonable hardship on the applicant.

C. The application for a variance shall be reviewed and approved or rejected at least five (5) days prior to the start of the proposed activity. Approval or rejection shall be made in writing and shall state the condition(s) of approval, if any, or the reason(s) for rejection.

D. Failure to rule on an application within the designated time shall constitute approval of the variance.

§78-10 Conflict with other regulations.

Existing noise sources pursuant to Section 22a-69-3.7 of the Regulations of Connecticut State Agencies shall be entitled to the allowances contained in said section.

In the event that any standards in this chapter conflict with regulations or standards set by the Town of Fairfield and/or the State of Connecticut Department of Environmental Protection, the stricter standard shall apply. (Norwalk Chapter 68, Noise, 2020) (Rocky Hill Chapter 180. Noise, 2016)

§ 78-11 Severability.

If any section, paragraph, sentence, clause or phrase of this chapter, or any part thereof, is for any reason held to be unconstitutional, invalid, or ineffective by a court of a competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portion of this chapter or any part thereof. (Rocky Hill Chapter 180. Noise, 2016)

End of Chapter 78 Noise

References

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MEMORANDUM

TO: Fairfield RTM's Legislation and Administration Committee

FROM: Jill Vergara (RTM District 7)

Cc: Ordinance revision co-sponsors—Jeff Galdenzi (D3), Jay Wolk (D5), Andrew Graceffa (D6), Dru Georgiadis (D9)
Chief Kalamaras and Captain Weihe
Town Attorney, Jim Baldwin

Re: Revisions to Chapter 78, Noise, of Fairfield's Town Code

DATE: February 14, 2023

We are submitting proposed revisions to the Town's Noise Ordinance with the following goals:

- 1) To give the police department more tools to use to assist in enforcement and to simplify standards applied
- 2) To broaden protections to include daytime hours
- 3) To be responsive to multiple constituent complaints and concerns regarding unregulated noise at town-leased/rented properties, disruptive yard maintenance noise, vehicular engine revving, loud mufflers, and fireworks

I. PLAINLY AUDIBLE STANDARD ADDRESSES THE NEED FOR ADDITIONAL ENFORCEMENT TOOLS

§ 78-2 PLAINLY AUDIBLE—Any sound that can be detected by a person using his or his unaided hearing faculties of normal acuity. As an example, if the sound source under investigation is a portable or vehicular sound amplification or reproduction device, the enforcement officer need not determine the title, specific words, or the artist performing the song. The detection of the rhythmic bass component of the music is sufficient to constitute a plainly audible sound.

In reviewing enforcement actions over the past few years, it has become clear that the police need additional enforcement tools. Our current noise ordinance relies exclusively on decibel readings to assess whether violations have occurred. These decibel readings must be taken by a sound level meter but taking these decibel readings at the emitter's property is cumbersome and impractical for our police officers. Not only are patrol cars are not equipped with sound meters, but our police officers already must manage several devices and any additional devices in our police officers' hands may impede them from protecting themselves or others. Rather than issuing infractions pursuant to our local noise ordinance that requires decibel measurement, our police officers issue violations pursuant to Connecticut General Statutes Section 53a-181a, or Creating a Public Disturbance (which uses a reasonableness

standard and requires intent to cause a public disturbance). Fines issued under public disturbance/breach of peace are collected by the State; whereas notice infractions issued pursuant to our local noise ordinance would be collected by the Town.

Several other towns have recognized the need to give their police officers more tools and standards to enforce their noise regulations. Norwalk, Rocky Hill, Hartford, Bloomfield and Torrington have successfully included PLAINLY AUDIBLE standards in their noise ordinances. In these towns, the PLAINLY AUDIBLE standard has proven to be an effective tool for their police officers.

Like these other towns, we have limited application of this standard only to noise produced by a SOUND PRODUCTION DEVICE (“Any device whose primary function is the production of sound, including but not limited to any musical instrument, loudspeaker, radio, vehicle stereo, vehicle muffler, television, digital or analog music player, public address system or sound-amplifying equipment.” §78-2 Definitions). With approximately 90% of noise complaints stemming from loud music, we are hopeful that this new standard will give the police the discretion they need for most complaints.

Under the revised Section 78-4 (Noise level measurement procedures) that we have proposed, “Noise will be plainly audible by a person with normal hearing when such noise can be heard at the distances enumerated in § 78-5. Distances may be measure by approximation from the source of noise.” The distances enumerated in Section 78-5 are: 100 feet or inside a residence during nighttime hours when the receptor is in a Residential Zone; 150 feet or inside a residence during daytime hours when the receptor is in a Residential Zone; 200 feet when the receptor is in a Business Zone; and 250 feet when the receptor is in an Industrial Zone. Simplifying and adding clarifying language to the noise level standards in Section 78-5 makes the rules and standards easier to understand for our residents and easier to enforce for our officers. Our current table is complex and confusing.

II. INCLUSION OF DAYTIME HOURS BRINGS OUR ORDINANCE IN LINE WITH ALL OTHER MUNICIPALITIES AND IS RESPONSIVE TO CONSTITUENT COMPLAINTS

§ 78-2 DAYTIME HOURS—Hours not defined as nighttime.

§ 78-3 It shall be unlawful for any person to emit or cause to be emitted any noise from such person’s property beyond the boundaries of his property lines in excess of the noise levels set forth in § 78-5 during the daytime or nighttime hours as defined in § 78-2, except in those incidences provided for in § 78-7 and § 78-8.

§ 78-5A—No person shall emit noise exceeding the levels stated herein during daytime or nighttime hours, except in those incidences provided for in § 78-7 and § 78-8 of this chapter: Residential receptor. Daytime. 55 dBA

Over the pandemic, the town experienced a steady increase in noise complaints, with 2021-2022 complaints (474 total) representing a 30% increase over complaints made in 2019-2020 (366). Many residents were working from home and continue to work from home, and constituents began to complain about daytime noise. The failure of our ordinance to specify daytime noise standards created a regulatory gap that was not meeting the needs of our residents and was not meeting the legislative intent to protect people from “[l]oud, excessive and unreasonable noise.” Fairfield Town Code, § 78-1.

Our review of other Connecticut municipalities’ noise ordinances, as well as the baseline state protections (Connecticut Department of Environmental Protection, Title 22a, §§ 22a-69-1—22a-69-7.4), revealed that Fairfield is the only town in Connecticut (of the 66 with their own local ordinances) not to include protections for the daytime hours. Indeed, Fairfield’s definition of nighttime hours is the least restrictive of all towns and exactly mirrors the baseline set by the State’s regulation for weekdays (10:00 p.m. to 7:00 a.m.) and is less restrictive for weekend hours (Fairfield’s extension of protections on the weekend are from 11:00 p.m to 8:00 a.m.). Setting standards for daytime noise is not only responsive to our residents’ complaints but brings Fairfield’s ordinance in line with all other municipalities and state regulatory guidance.

In Section 78-2, we define DAYTIME HOURS as “Hours not defined as nighttime,” which is a common definition used when towns have different weekday and weekend hours;¹ and in Section 78-5, we set the decibel level at 55 dBA only for complaints in residential zones.² We also expanded the activities excluded from regulation in Sections 78-7 and 78-8 to accommodate for the expansion of protections into daytime hours. The additional activities excluded from noise regulation include:

- agricultural activities (§ 78-7(F));
- public school construction (§ 78-7(G));
- road maintenance activities by DPW and WPCA (§ 78-7(I));
- garbage collection during daytime hours (§ 78-7(J));
- public demonstrations and protests during daytime hours (§ 78-7(P)); and
- construction, blasting, demolition, power tools, home maintenance tools, landscaping and yard maintenance conducted 7:00 a.m. to 8:00 p.m. on the weekdays and 8:00 a.m. to 6:00 p.m. on the weekends

III. THE NOISE REVISIONS ARE RESPONSIVE TO SEVERAL CONSTITUENT COMPLAINTS INCLUDING EXCESSIVE NOISE AT THE BURR MANSION, DRAG RACING THROUGH THE STREETS WITH LOUD MUFFLERS AND ENGINE REVVING, DISRUPTIVE YARD MAINTENANCE NOISE AND FIREWORKS

As discussed earlier, daytime noise concerns became more prevalent over the past few years. Constituents have written to RTM members about loud outdoor music (including but not

¹ See Farmington and Rocky Hill noise ordinances.

² 55 dBA is a standard DAYTIME HOURS sound level. See Norwalk, Farmington and Rocky Hill noise ordinances, See also R.C.S.A. § 22a-69-3.5.

limited to rented/leased town properties like the Burr Mansion), yard maintenance noise (mostly leaf blower complaints), building construction, loud mufflers, engine revving and unnoticed fireworks. In response to these complaints, we have sought legislative solutions to include in our proposed revisions.

In Section 78-8, a new section of the ordinance entitled, “Specific Prohibitions,” the following activities are specifically prohibited to address the above-outlined issues:

- Construction, blasting, demolition, power tools, home maintenance tools, landscaping and/or yard maintenance equipment operated between 8:00 p.m and 7:00 a.m. on weekdays and between 6:00 p.m. and 8:00 a.m. on the weekends/ federal holidays unless these activities can meet the limits set forth in § 78-5 for nighttime hours³
- Impulse noise such as vehicle backfiring, engine racing, and unnecessary horn blowing⁴
- Igniting fireworks, except by the Town of Fairfield or its designees
- Private use of town property that exceeds the noise level standards set forth in § 78-5⁵

With regards to leaf blowers specifically, several communities are considering banning gas leaf blowers (Westport successfully passed an ordinance limiting use of gas leaf blowers). Our revisions are a smaller step towards controlling some of the disturbing landscaping noise. Instead of targeting one activity and banning it wholesale, we have broadened nighttime protections to try to ensure more peaceful enjoyment of one’s property at times when people should be able to expect more quiet. If these changes do not achieve the protections necessary for Fairfield’s residents, we recommend further analysis and discussion with the police department and/or conservation (as the environmental concerns are as much, if not more, of a concern with regards to gas leaf blowers as the noise).

IV. CONCLUSION

These revisions are a culmination of much research and analysis regarding noise regulation across the State. Fairfield’s ordinance is outdated and neither meets our residents’

³ Note that these times have been changed since we first submitted the revisions to the Moderator. After receiving input from the police department, we narrowed the times in which these activities are prohibited by one hour in both the morning and night. Also note that after receiving input from both Park and Recreation Director Anthony Calabrese and the Fairfield Athletic Foundation, we have carved out an exception for maintenance of town fields from this prohibition: “Maintenance of town playing fields shall not be subject to this prohibition.” Fairfield Town Code § 78-8(A).

⁴ Note that we removed “leaf blower revving” from the list of impulse noises specifically prohibited in Section 78-8 (B) after receiving input from the police department.

⁵ This prohibition was added to address the issue that arose with Burr Mansion. We wanted to clarify that all events, even those permitted through the town, must abide by the noise level standards established in this ordinance. In addition, we added clarifying language in the exclusion of activities sanctioned by the town, that those excluded public celebrations must be open to the public and not private events. § 78-7 Exclusions: “Noise created by public celebrations and on-site recreational or sporting activities which are sanctioned by the State of Connecticut or the Town of Fairfield and are open to the public.”

needs nor gives the enforcement agent (our police department) the appropriate tools to enforce the ordinance. While these revisions do not address all problems, they are an important step forward.

Supporting Documents Noise Ordinance

Summary of Local Noise Data	% or #	Detail	Count
Towns in CT with a noise ordinance	39%	Of all towns	n=66/169
Fairfield is the only town in CT with a noise ordinance that does not have daytime noise standards	1	Of all towns with a noise ordinance that lack daytime noise standards	n=1/66
Towns in CT with “ plainly audible ” standards in their noise ordinance	8%	Norwalk, Rocky Hill, Hartford, Bloomfield, Torrington	n=5/66
Average number of noise complaints per year in Fairfield	436	Based on 3 years of data 2019-2021	N=1,309
# Noise complaints in 2019	366		N=366
# Noise complaints in 2020	469	28% increase from 2019	N=469
# Noise complaints in 2021	474	30% increase from 2019	N=474
Noise emitters who were issued an infraction	Less than 1%	In the past 3 years	n=10/1309
Loud music complaints	91%	Of all noise complaints (Oct-Nov 2019)	n=30/33
Beach area complaints	30%	Of all noise complaints (Oct-Nov 2019)	n=103/347

Total of 10 infractions (less than 1%) cited under CGS 53a-181a Creating a Public Disturbance in past 3 years:

- | | |
|---|--|
| <ul style="list-style-type: none"> ○ 6 infractions on Fairfield Beach Road ○ 1 infraction on Reef Road ○ 1 infraction on Colonial Drive ○ 1 infraction on Black Rock Avenue ○ 1 infraction on Garden Drive | <ul style="list-style-type: none"> Music/loud voices New Year’s Eve party Yelling Music and screaming Yelling |
|---|--|

Connecticut General Statutes, Executive Orders and Local Regulations relating to noise:

- **CGS 53a-181a Creating a Public Disturbance** (aka Breach of Peace, Infraction): “(a) A person is guilty of creating a public disturbance when, with intent to cause inconvenience, annoyance or alarm, or recklessly creating a risk thereof, he (1) engages in fighting or in violent, tumultuous or threatening behavior; or (2) annoys or interferes with another person by offensive conduct; or (3) makes unreasonable noise. (b) Creating a public disturbance is an infraction.
- **CGS 53a-182 Disorderly Conduct** (Class C misdemeanor). “a) A person is guilty of disorderly conduct when, with intent to cause inconvenience, annoyance or alarm, or recklessly creating a risk thereof, such person: (1) Engages in fighting or in violent, tumultuous or threatening behavior; or (2) by offensive or disorderly conduct, annoys or interferes with another person; or (3) makes unreasonable noise; or (4) without lawful authority, disturbs any lawful assembly or meeting of persons; or (5) obstructs vehicular or pedestrian traffic; or (6) congregates with other persons in a public place and refuses to comply with a reasonable official request or order to disperse; or (7) commits simple trespass, as provided in section 53a-110a, and observes, in other than a casual or cursory manner, another person (A) without the knowledge or consent of such other person, (B) while such other person is inside a dwelling, as defined in section 53a-100, and not in plain view, and (C) under circumstances where such other person has a reasonable expectation of privacy.”
- **CGS 22-363 Nuisance** (infraction): “No person shall own or harbor a dog or dogs which is or are a nuisance by reason of vicious disposition or excessive barking or other disturbance, or, by such barking or other disturbance, is or are a source of annoyance to any sick person residing in the immediate vicinity. Violation of any provision of this section shall be an infraction for the first offense and such person shall be fined not more than one hundred dollars or imprisoned not more than thirty days or both for each subsequent offense and the court or judge may make such order concerning the restraint or disposal of such dog or dogs as may be deemed necessary.”
- **Ned Lamont’s Executive Order No. 7MM ii:** “Outdoor Activities” shall not be deemed to include live entertainment, provided that nothing in this order shall be deemed to prohibit an independent approval of live entertainment pursuant to local regulation.”
- **Fairfield Zoning Regulations 12.9.3 Noise** (Performance Standards): “No noise which is objectionable due to volume, intermittence, beat frequency or shrillness shall be transmitted outside the property where it originates.”
- **Fairfield Zoning Regulations 12.9.5 Vibration** (Performance Standards): “No vibration shall be transmitted outside the property where it originates.”

- **Fairfield Zoning Regulations 21.6.2 Noise** (Designed Industrial District): “No noise or vibration which is objectionable due to volume, intermittence, beat frequency or shrillness shall be transmitted outside the property where it originated.”
- **Fairfield Zoning Regulations 22.4.2 Noise** (Designed Research District): “No noise or vibration which is objectionable due to volume, intermittence, beat frequency or shrillness shall be transmitted outside the property where it originated.”
- **Fairfield Zoning Regulations 24.7.7.4** (Land Excavation and Fill): “a schedule to be filed with the Commission showing the following: requirements as to control dust, noise, fumes and lighting, if permitted, so as to prevent results injurious or offensive to the general public and the environment.”
- **Fairfield Zoning Regulations 27.4.9.10** (Special Exception Regulations): “...Such recreation areas shall be designed to provide security and privacy and to prevent the emission of objectionable noise and light on to abutting properties.”
- **Fairfield Parks and Recreation Contracts:** 20. Sound must be kept at a reasonable level and the source of music must be confined to the interior of building. Speakers must be inside building, not near any open windows and pointing away from neighbor’s homes. Music/Noise must be kept at a moderate level 10pm weeknights; 11pm weekends. (Noise Ordinance)

From: Paul Hammick <p.hammick@bloomfieldpolice.org>

Sent: Tuesday, February 1, 2022 10:59 AM

To: alisrael@sbcglobal.net

Subject: Bloomfield Noise Ordinance

Good morning Ms. Israel,

It was a pleasure speaking with you this morning regarding the Town of Bloomfield Noise ordinance. As I explained in our conversation, Bloomfield developed the noise ordinance after consulting with prosecutors from the local Hartford Community Court, and reviewing neighboring community noise ordinances. After reviewing the available information, we felt that the City of Hartford Noise Ordinance was a good template, and together with the Zoning Enforcement Officer, The Town Manager and the Bloomfield Town Attorney's input, we constructed our ordinance to more effectively address the Bloomfield community. We have applied or enforced our ordinance in many different situations, including late-night gatherings, music and other quality of life issues.

Our "plainly audible" standard was adopted from the City of Hartford Noise Ordinance, and would be applied in situations when a decibel meter is unavailable, or at the discretion of the police officer or shift supervisor, the noise is unreasonable at a distance of 100 feet from its source. The officer would then attempt to record the violation on their body-worn camera, and preserve it as evidence if necessary. I should add, that most violations are addressed by officers through a warning, and a citation is normally reserved for repeated violations. It is our experience that most residents are compliant and want to be good neighbors in the community.

I wish you the very best in your attempts to create a suitable noise ordinance for the Fairfield community.

Paul Hammick

Paul B. Hammick

Chief of Police

Bloomfield Police Department

785 Park Avenue

Bloomfield, CT 06002

Tel. (860) 242-5501

Fax (860) 242-9316

p.hammick@bloomfieldpolice.org

From: Matthew Suplee <m.suplee@bloomfieldpolice.org>
Sent: Monday, June 13, 2022 10:51 AM
To: alisrael@sbcglobal.net
Subject: Noise Ordinance

Alyssa Israel,

Hello, my name is Lt. Matt Suplee. I'm the patrol commander here at the Bloomfield Police Department. I was asked to answer your request for information concerning how our Town Ordinance is enforced concerning noise. I'll try to answer the questions as you asked them in your e-mail.

Plainly Audible at 100 feet from its Source is measured either using a Laser speed device (they also read distance) or by approximation. Walking with a wheel onto someone's property could be questionable depending on where the officer was walking on the property.

The training received for using the sound meter was done through written instructions being given to the officers. The decibel meter is fairly simple to use so no extensive in person training was required.

The use of the noise meter is determined by the nature of the call and the time and circumstances of the complaint. It is used most frequently in cases where the fact there is noise at all does not give probable cause of a violation. It is used a lot for commercial property noise complaints and parties during the day and early evening hours where the decibel level of the noise is the main concern. It is also used for calls at residences where there are many noise complaints.

The main inconvenience is there is one meter so it can't be in every car and must be brought to the scene sometimes.

Our noise ordinance is a town ordinance so it has been upheld. We have been successful in superior court with the breach of peace/ creating a public disturbance enforcement.

Lieutenant Matthew Suplee
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Bloomfield, CT 06002

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Health effects from noise

From Wikipedia, the free encyclopedia 2/17/2022



An [audiologist](#) conducting an [audiometric hearing test](#) in a [sound-proof](#) testing booth

Noise health effects are the physical and psychological [health](#) consequences of regular exposure to consistent elevated [sound levels](#). Noise from traffic, in particular, is considered by the World Health Organization to be one of the worst environmental stressors for humans, second only to [air pollution](#).^[1] Elevated [workplace](#) or [environmental noise](#) can cause [hearing impairment](#), tinnitus, [hypertension](#), [ischemic heart disease](#), [annoyance](#), and [sleep disturbance](#).^{[2][3]} Changes in the [immune system](#) and [birth defects](#) have been also attributed to noise exposure.^[4]

Although age-related health effects ([presbycusis](#)) occur naturally with age,^[5] in many countries the cumulative impact of noise is sufficient to impair the hearing of a large fraction of the population over the course of a lifetime.^{[6][7]} Noise exposure has been known to induce [noise-induced hearing loss](#), [tinnitus](#), [hypertension](#), [vasoconstriction](#), and other [cardiovascular adverse effects](#).^{[8][9]} Chronic noise exposure has been associated with sleep disturbances and increased incidence of diabetes. Adverse cardiovascular effects occur from chronic exposure to noise due to the sympathetic nervous system's inability to habituate. The sympathetic nervous system maintains lighter stages of sleep when the body is exposed to noise, which does not allow blood pressure to follow the normal rise and fall cycle of an undisturbed circadian rhythm.^[2]

Stress from time spent around elevated noise levels has been linked with increased [workplace accident](#) rates and aggression and other anti-social behaviors.^[10] The most significant sources are vehicles, aircraft, prolonged exposure to [loud music](#), and industrial noise.^[11]

There are approximately 10,000 deaths per year as a result of noise in the European Union.^{[12][13]}



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Noise induced hearing loss [\[edit\]](#)

Main article: [Noise-induced hearing loss](#)

Noise-induced hearing loss is a permanent shift in pure-tone thresholds, resulting in sensorineural hearing loss. The severity of a threshold shift is dependent on duration and severity of noise exposure. Noise-induced threshold shifts are seen as a notch on an audiogram from 3000 to 6000 Hz, but most often at 4000 Hz.^[14]

Exposure to loud noises, either in a single traumatic experience or over time, can damage the auditory system and result in hearing loss and sometimes [tinnitus](#) as well. Traumatic noise exposure can happen at work (e.g., loud machinery), at play (e.g., loud sporting events, concerts, recreational activities), and/or by accident (e.g., a backfiring engine.) Noise induced hearing loss is sometimes [unilateral](#) and typically causes patients to lose hearing around the frequency of the triggering sound trauma.^[15]

Tinnitus [\[edit\]](#)

[Tinnitus](#) is an auditory disorder characterized by the perception of a sound (ringing, chirping, buzzing, etc.) in the ear in the absence of an external sound source. There are two types of tinnitus: subjective and objective. Subjective is the most common and can only be heard "in the head" by the person affected. Objective tinnitus can be heard from those around the affected person and the audiologist can hear it using a stethoscope. Tinnitus can also be categorised by the way it sounds in one's ear, pulsatile tinnitus^[16] which is caused by the vascular nature of Glomus tumors and non-pulsatile tinnitus which usually sounds like crickets, the sea and bees.

Though the pathophysiology of tinnitus isn't known, noise exposure can be a contributing factor, therefore tinnitus can be associated with hearing loss, generated by the cochlea and central nervous system (CNS). High frequency hearing loss causes a high pitched tinnitus and low frequency hearing loss causes a roaring tinnitus.^[17] Noise-induced tinnitus can be temporary or permanent depending on the type and amount of noise a person was exposed to.

Cardiovascular effects [\[edit\]](#)

Noise has been associated with important [cardiovascular](#) health problems, particularly [hypertension](#), as it causes an increase in levels of stress hormones and vascular [oxidative stress](#).^{[11][18][19][20]} Noise levels of 50 [dB\(A\)](#) or greater at night may increase the risk of [myocardial infarction](#) by chronically elevating [cortisol](#) production.^{[21][22][23]}

Traffic noise has several negative effects, including increased risk for [coronary artery disease](#), with night-time exposure to noise possibly more harmful than day-time exposure.^[1] It has also been shown to increase blood pressure in individuals within the surrounding residential areas, with railways causing the greatest cardiovascular effects.^{[24][25]} Roadway noise levels are sufficient to constrict arterial blood flow and lead to [elevated blood pressure](#).^{[26][24]} Vasoconstriction can result from elevated [adrenaline](#) levels or through [medical stress](#) reactions. Long-term exposure to noise is correlated to increase in cortisol and angiotensin-II levels which are respectively associated with oxidative stress and vascular inflammation.^[1] Individuals subject to great than 80 dB(A) in the workplace are at increased risk of having increased blood pressure.^{[27][28]}

A 2021 systematic review on the effect of occupational exposure to noise on ischaemic heart disease (IHD), stroke and hypertension, coordinated by the [World Health Organization](#) (WHO) and the [International Labour Organization](#) (ILO) located 17 studies that met the inclusion criteria, comprising a total of 534,688 participants (7.47% females) in 11 countries and in three WHO regions (the Americas, Europe, and the Western Pacific).^[29] The study found the low quality of evidence the effect of occupational exposure to intense noise (≥ 85 dBA), compared to occupational exposure below 85 dBA (< 85 dBA). They concluded that there is an inadequate evidence of harmfulness for the studied outcomes with the exception for the risk of acquiring IHD, which was 29% higher for those exposed to noise in their workplace.^[29]

Other physical health effects[\[edit\]](#)

Traffic noise may also increase the risk of sleep disturbances, stroke, diabetes, and becoming overweight.^[1]

Psychological impacts of noise[\[edit\]](#)

Causal relationships have been discovered between noise and psychological effects such as annoyance, psychiatric disorders, and effects on psychosocial well-being.^[4] Exposure to intense levels of noise can cause personality changes and violent reactions.^[30] Noise has also been shown to be a factor that is attributed to violent reactions.^[31] The psychological impacts of noise also include an addiction to loud music. This was researched in a study where non-professional musicians were found to have loudness addictions more often than non-musician control subjects.^[32]

Psychological health effects from noise also include depression and anxiety. Individuals who have hearing loss, including noise induced hearing loss, may have their symptoms alleviated with the use of hearing aids. Individuals who do not seek treatment for their loss are 50% more likely to have depression than their aided peers.^[33] These psychological effects can lead to detriments in physical care in the form of reduced self-care, work-tolerance, and increased isolation.^[34]

Auditory stimuli can also serve as psychological triggers for individuals with post traumatic stress disorder (PTSD).^[35]

Stress[\[edit\]](#)

Research commissioned by [Rockwool](#), a multi-national [insulation](#) manufacturer headquartered in [Denmark](#), reveals that in the UK one third (33%) of victims of domestic disturbances claim loud parties have left them unable to sleep or made them stressed in the last two years. Around one in eleven (9%)^[36] of those affected by domestic disturbances claims it has left them continually disturbed and stressed. More than 1.8 million people claim noisy neighbours have made their life a misery and they cannot enjoy their own homes. The impact of noise on health is potentially a significant problem across the UK given that more than 17.5 million Britons (38%) have been disturbed by the inhabitants of neighbouring properties in the last two years. For almost one in ten (7%) Britons this is a regular occurrence.^[36]

The extent of the problem of noise pollution for public health is reinforced by figures collated by Rockwool from local authority responses to a [Freedom of Information Act](#) (FOI) request. This research reveals in the period April 2008 – 2009 [UK councils](#) received 315,838 complaints about noise pollution from private residences. This resulted in environmental health officers across the UK serving 8,069 [noise abatement](#) notices, or citations under the terms of the Anti-Social Behaviour (Scotland) Act.^[36]

[Westminster City Council](#)^[37] has received more complaints per head of population than any other district in the UK with 9,814 grievances about noise, which equates to 42.32 complaints per thousand residents. Eight of the top 10 councils ranked by complaints per 1,000 residents were in [London](#).

Annoyance[\[edit\]](#)

Sudden impulse noises are typically perceived as more bothersome than noise from traffic of equal volume.^[38] Annoyance effects of noise are minimally affected by demographics, but fear of the noise source and sensitivity to noise both strongly affect the 'annoyance' of a noise.^[39] Sound levels as low as 40 dB(A) can generate noise complaints^[40] and the lower threshold for noise producing [sleep disturbance](#) is 45 dB(A) or lower.^[41]

Other factors that affect the "annoyance level" of sound include beliefs about noise prevention and the importance of the noise source, and annoyance at the cause (i.e., non-noise related factors) of the noise.^[42] Many of the interpretations of the level of annoyance and the relationship between noise levels and resulting health symptoms could be influenced by the quality of interpersonal relationships at the workplace, as well as the stress level generated by the work itself.^{[41][43]} Evidence for impact on annoyance of long-term noise versus recent changes is equivocal.^[42]

Approximately 35% to 40% of office workers find noise levels from 55 to 60 dB(A) extremely irritating.^[4] The noise standard in Germany for mentally stressful tasks is set at 55 dB(A),^[44] however, if the noise source is continuous, the threshold level for tolerability among office workers is lower than 55 dB(A).^[4]

Child physical development[\[edit\]](#)

The [U.S. Environmental Protection Agency](#) authored a pamphlet in 1978 that suggested a correlation between low-birthweight (using the [World Health Organization](#) definition of less than 2,500 grams (88 oz)) and high sound levels, and also high rates of [birth defects](#) in places where expectant mothers are exposed to elevated sound levels, such as typical [airport](#) environs. Specific birth abnormalities included [harelip](#), [cleft palate](#), and defects in the [spine](#).^[45]

According to Lester W. Sontag of The Fels Research Institute (as presented in the same EPA study): "There is ample evidence that environment has a role in shaping the physique, behavior, and function of animals, including man, from [conception](#) and not merely from [birth](#). The [fetus](#) is capable of perceiving sounds and responding to them by motor activity and cardiac rate change." The effects of noise exposure are highest when it occurs between 15 and 60 days after conception, a period in which major internal [organs](#) and the [central nervous system](#) are formed.^[45]

Later developmental effects occur as vasoconstriction in the mother reduces blood flow and therefore [oxygen](#) and nutrition to the fetus. Low birth weights and noise were also associated with lower levels of certain [hormones](#) in the mother. These hormones are thought to affect fetal growth and to be good indicators of [protein](#) production. The difference between the hormone levels of pregnant mothers in noisy versus quiet areas increased as birth approached.^[45]

In a 2000 publication, a review of studies on birthweight and noise exposure note that while some older studies suggest that when women are exposed to >65 dB aircraft noise a small decrease in birthweight occurs, in a more recent study of 200 Taiwanese women including noise dosimetry measurements of individual noise exposure, the authors found no significant association between noise exposure and birth weight after adjusting for relevant confounders, e.g. social class, maternal weight gain during pregnancy, etc.^[4]

Cognitive development^[edit]

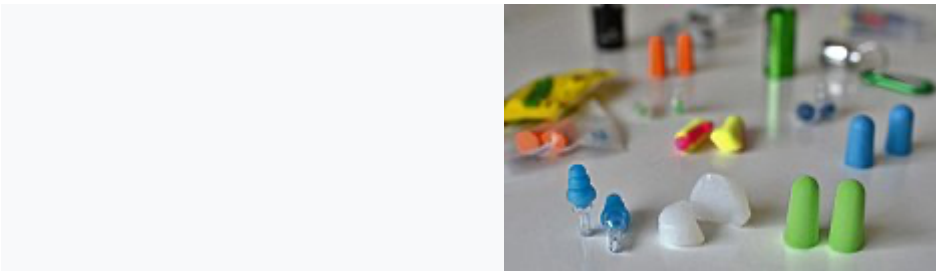
When young children are regularly exposed to levels of noise that interfere with speech, they may develop speech or reading difficulties, because auditory processing functions are compromised. Children continue to develop their speech perception abilities until they reach their teens. Evidence has shown that when children learn in noisier classrooms, they have more difficulties understanding speech than those who learn in quieter settings.^[46]

In a study conducted by Cornell University in 1993, children exposed to noise in learning environments experienced trouble with word discrimination, as well as various cognitive developmental delays.^{[47][48]} In particular, the writing learning impairment [dysgraphia](#) is commonly associated with environmental [stressors](#) in the classroom.^[49]

High noise levels have also been known to damage the physical health of small children. Children from noisy residences often have a heart rate that is significantly higher (by 2 beats/min on average) than those of children from quieter homes.^[50]

Prevention^[edit]

Main article: [Hearing protection device](#)



Different styles of earplugs are pictured. Left, pre-molded earplugs. Center, formable earplugs. Right, roll-down foam earplugs.

A hearing protection device (HPD) is an [ear protection](#) device worn in or over the ears while exposed to hazardous [noise](#) to help prevent [noise-induced hearing loss](#). HPDs reduce (not eliminate) the level of the noise entering the ear. HPDs can also protect against other effects of noise exposure such as [tinnitus](#) and [hyperacusis](#). Proper hygiene and care of HPDs may reduce chances of outer ear infections.^[51] There are many different types of HPDs available for use, including [earmuffs](#), [earplugs](#), electronic hearing protection devices, and semi-insert devices.^[52] One can measure the personal attenuation rating through a [hearing protection fit-testing](#) system.

Earmuff style hearing protection devices are designed to fit over the outer ear, or [pinna](#). Earmuff HPDs typically consist of two ear cups and a head band.^[52] Earplug style hearing protection devices are designed to fit in the [ear canal](#). Earplugs come in a variety of different subtypes.^[52] Some HPDs reduce the sound reaching the [eardrum](#) through a combination of electronic and structural components. Electronic HPDs are available in both earmuff and custom earplug styles. Electronic microphones, circuitry, and receivers perform [active noise reduction](#), also known as [noise-cancelling](#), in which a signal that is 180-degrees out-of-phase of the noise is presented, which in theory cancels the noise.^[52] Canal caps are similar to earplugs in that they consists of soft tip that is inserted into the opening of the ear canal.^[52]

Regulations^[edit]

Main article: [Noise regulation](#)

Environmental [noise regulations](#) usually specify a maximum outdoor noise level of 60 to 65 [dB\(A\)](#), while occupational safety organizations recommend that the maximum exposure to noise is 40 hours per week at 85 to 90 dB(A). For every additional 3 dB(A), the maximum exposure time is reduced by a factor 2, e.g. 20 hours per week at 88 dB(A). Sometimes, a factor of two per additional 5 dB(A) is used, however, these occupational regulations are acknowledged by the health literature as inadequate to protect against [hearing loss](#) and other health effects. In an effort to prevent noise-induced hearing loss, many programs and initiative have been created, like the [Buy Quiet](#) program, which encourages employers to purchase quieter tools and equipment, and the [Safe-In-Sound Award](#), which recognizes organizations with successful hearing loss prevention strategies.^{[53][54]}

With regard to indoor noise pollution in residences, the U.S. [Environmental Protection Agency](#) (EPA) has not set any restrictions on limits to the level of noise. Rather, it has provided a list of recommended levels in its *Model Community Noise Control Ordinance*, which was published in 1975. For instance, the recommended noise level for indoor residences is less than or equal to 45 dB.^{[55][56]}

[Noise pollution](#) control in residences is not funded by the federal government in part because of the disagreements in establishing causal links between sounds and health risks, since the effect of noise is often psychological and also, because it leaves no singular tangible trace of damage on the human body. For instance, hearing loss could be attributed to a variety of factors including age, rather than solely due to excessive exposure to noise.^{[57][58]} A state or local government is able to regulate indoor residential noise, however, such as when excessive noise from within a home causes disturbances to nearby residences.^{[57][59]}

Effects on dogs[\[edit\]](#)

While people are often educated on the effects of noise exposure in humans, there are also different noise exposure effects in animals as well. An example of this would be in dogs, and the noise exposure levels occurring within kennels. Dogs experience this noise exposure whether it be a long stay at an animal shelter, or a weekend stay at a boarding facility.

Organizations like [NIOSH](#) and [OSHA](#) have different regulations when it comes to the noise exposure levels in industrial workers. Currently there are no regulations related to the noise exposure for dogs even with such damaging effects related to their health. Health risks dogs are exposed to include ear damage and behavioral changes.

The average noise exposure in a kennel is greater than 100 dB SPL. According to OSHA these levels would yield in the use of hearing protection for the workers of those kennels due to the risk of noise induced hearing loss. The anatomical structures of the human and dog ears are very similar, so it is thought that these levels will negatively impact the hearing of canines in kennels. The [ABR](#) can be used to estimate the hearing threshold of dogs, and can be used to show either a temporary threshold shift or permanent threshold shift after being exposed to excessive sound levels.^[60]

Behavioral effects to excessive noise exposure include hiding, urinating, defecating, panting, pacing, drooling, disregard to commands, trembling, and barking.^[61] These behavioral patterns pose a much greater problem to canines than meets the eye. All of these behavioral patterns are characteristics that result in a longer stay at the kennels before being adopted.^[62] A longer stay at the shelter results in a longer duration of noise exposure and therefore more likely to show either a temporary or permanent threshold shift in the canine's hearing.^[60]

These excessive noise levels are not only harming the dogs physical and psychological state, but the workers' and potential adoptive families' physical and psychological state as well. The workers' psychological state could affect the care provided to the dogs. These loud noise exposures also have

the potential to reduce the amount of time that potential adoptive families spend in the facility. This can result in less dogs being adopted and more time being exposed to excessive sound levels.^{[631](#)}

To reduce the level of noise exposure poses a little more difficulty because the majority of the noise is coming from the dogs (barking), but structural changes can be made to the facilities in order to reduce the noise. Structural changes could include how many dogs are put in one area, more absorbing material rather than metal cages and cement walls and floors, and possibly in the future use of hearing protection devices ([HPD](#)) for the dogs. All of these structural changes would also benefit the humans involved as well as the use of HPD's (ear plugs).