

ENVIRONMENTAL STANDARDS

Revised February 12, 2021

ARTICLE : To see if the Town will vote to amend the Zoning Bylaw, Section 7.3 Environmental Standards, by deleting it in its entirety and replacing it as follows:

7.3. ENVIRONMENTAL STANDARDS

- A. **Purpose.** The intent of this section is to provide standards for uses which, by their operation, may generate impacts that are potentially hazardous, harmful to the environment, disturbing, offensive or objectionable.
- B. **Enforcement:** The Zoning Bylaw, § 3.1, Enforcement, Violations, and Penalties authorizes the Building Commissioner, or designee, to interpret and enforce the Bylaw. At the discretion of the Building Commissioner, a technical consultant may be engaged by the Town of Medway to investigate and document violations pursuant to this section.
- C. **Definitions:** For purposes of this section of the Bylaw, the following terms shall be defined as follows:

Ambient Noise: The sound pressure level at a given location produced by everything else excluding the source of sound being monitored, analyzed, or evaluated. Also referred to as background noise. Ambient noise includes environmental noises from sources such as traffic, aircraft, waves, alarms, animals or noise from existing mechanical devices such as air conditioning, power supplies, or motors that are present prior to introduction of a new intrusive sound source that is being evaluated.

(Hz)Hertz: A unit of frequency of change in the cycle of a sound wave

(dB)Decibel: A unit of measurement of the intensity of sound

(dBA)A weighted decibel: An expression of the relative loudness of sound in the air as perceived by the human ear.

Detection Threshold – The lowest concentration or intensity of noise, odor, vibration, or other environmental hazard regulated by this bylaw that is noticeable to a reasonable person with normal sensory sensitivities.

Disturbing, offensive or objectionable odors: Those which are at or above the detection threshold of a person with normal olfactory sensitivity.

Octave Band: A frequency band where the highest frequency is twice the lowest frequency.

Odor Plume: The cloud of odor created when odor molecules are released from their source and are expanded through air movement.

Sensitive Receptor: An occupied residence or facility whose occupants are more susceptible to the adverse effects of noise and odor including but not limited to hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.

D. **Standards.** The following standards shall apply to all zoning districts.

1. **Smoke, Fly Ash, Dust, Fumes, Vapors, Gases, Other Forms of Air Pollution:** All activities involving smoke, fly ash, dust, fumes, vapors, gases, other forms of air pollution, as defined in [CMR 310, § 7](#), Air Pollution Control Regulations, as amended, which can cause damage to human health, to animals or vegetation, or other forms of property, or which cause any excessive soiling at any point are prohibited.
2. **Noise Disturbance:** The Building Commissioner may determine that a noise source is subject to investigation, and if it is determined to be in violation of this bylaw, may take appropriate enforcement action, including the issuance of orders requiring the development and implementation of corrective measures, and/or imposition of fines or non-criminal penalties.
 - a. **Standards.** No person or persons owning, leasing, or controlling the operation of any source or sources of noise shall permit the establishment of a condition of noise pollution. Disturbing, offensive or objectionable noises shall not be produced in any zoning district or impact any space where people live, work or assemble in a way that unreasonably interferes with the comfortable enjoyment of life or the use of property.
 - 1) **Continuous Noise.** For the purposes of this bylaw, continuous noise restrictions apply to permanent non-residential uses and home-based businesses where noise is a by-product of business operations (such as from exhaust equipment). Maximum permissible sound pressure levels measured at the property line of the noise source shall not exceed the values specified in the tables below. In addition, maximum permissible sound levels measured at sensitive receptors positioned anywhere on a property that is wholly or partially located within one-thousand feet of the property line of the source of continuously radiated noise shall not exceed the values in the table below. Daytime is defined as between the hours of 7:00 a.m. and 9:00 p.m. and Nighttime is defined as between the hours of 9:00 p.m. and 7:00 a.m.

The tables below apply to both property lines and remote Sensitive Receptors.

Industrial/Industrial Properties

Octave Band Center Frequency (Hz)	Daytime (dB) 7:00 a.m. – 9:00 p.m. @ Property Line	Nighttime (dB) 9:00 p.m. – 7:00 a.m.	
		@ Property Line	@ Remote Sensitive Receptor
63	72	65	55
125	60	55	48
250	53	48	42
500	47	43	38
1000	43	39	36
2000	40	36	33
4000	37	34	30
8000	33	30	27
Overall Level (dBA)	52	47	42

Industrial/Residential Properties

Octave Band Center Frequency (Hz)	Daytime (dB) 7:00 a.m. – 9:00 p.m. @ Property Line	Nighttime (dB) 9:00 p.m. – 7:00 a.m.	
		@ Property Line	@ Remote Sensitive Receptor
63	72	55	45
125	60	48	37
250	53	42	33
500	47	39	29
1000	43	36	27
2000	40	33	25
4000	37	30	23
8000	33	27	20
Overall Level (dBA)	52	42	32

Commercial & Home Based Businesses/Commercial & Residential

Octave Band Center Frequency (Hz)	Daytime (dB) 7:00 a.m. – 9:00 p.m. @ Property Line	Nighttime (dB) 9:00 p.m. – 7:00 a.m.	
		@ Property Line	@ Remote Sensitive Receptor
63	63	55	45
125	55	48	37
250	48	42	33
500	43	39	29
1000	39	36	27
2000	36	33	25
4000	34	30	23
8000	30	27	20
Overall Level (dBA)	47	42	32

Compliance with all octave band limits is required. If the Building Commissioner determines that the noise source contributes significantly to ambient noise levels at any distance from the property, sound levels may be measured in those locations beyond the source property line.

- 2) **Temporary Noise.** For the purposes of this bylaw, non-continuous noise restrictions apply to permanent non-residential installations and home-based businesses where noise is periodically produced. No person shall use or cause the use of any noise-producing equipment or tool (such as for construction, repair, or demolition operations) between the hours of 9:00 p.m. and 7:00 a.m.
- 3) **Construction Noise.** Work at construction sites and in the operation of construction equipment including start-up and movement of trucks, vehicles, and machines shall commence no earlier than 7:00 a.m. and shall cease no later than 6:00 p.m., Monday through Saturday. No construction shall take place on Sundays, federal holidays or state legal holidays without the advance written approval of the Building Commissioner.

Advisory Note – State regulations authorize municipal police departments, fire departments, and board of health officials to enforce noise standards that are based on certain sections of [310 Code of Massachusetts Regulations \(CMR\), § 7](#), Air Pollution Control Regulations. Such regulations are distinct and separate from the Town’s zoning regulations for noise.

- b. **Investigation.** The Building Commissioner may determine that a noise source is subject to investigation, and, if it is determined to be in violation of this bylaw, may take appropriate enforcement action, including the issuance of orders requiring the

development and implementation of corrective measures, and/or imposition of fines or non-criminal penalties. If the Building Commissioner determines that an investigation is warranted, he or she or a designee, may undertake a noise study to determine if a non-compliant noise condition exists. The Building Commissioner may enlist the assistance of other Town personnel for the investigation. At the discretion of the Building Commissioner, a qualified acoustical consultant whose qualifications include Institute of Noise Control Engineering (INCE) board certification or equivalent experience may be engaged by the Town to assist in the investigation including measurements and documentation of violations. Depending on the particular site and its noise generators, the noise study shall include, at a minimum, measurements of:

- Ambient noise (Daytime and Nighttime) and
- Operational noise levels (Daytime and Nighttime) at the facility property line and at Sensitive Receptors located anywhere on a property that is wholly or partially located within one thousand feet of the facility property line.

- c. **Noise Control Plan.** If the Building Commissioner determines that there is a violation, he or she shall order the owner or operator to come into compliance. The owner and/or operator of the noise producing use shall provide a noise control, abatement and mitigation plan to the Building Commissioner for review and approval, or otherwise bring the property into compliance with this bylaw and the order of the Building Commissioner. The plan shall address how the site will become compliant. Compliance shall be achieved through industry best practices and suitable mitigation measures. The plan shall be prepared by a qualified acoustical consultant whose qualifications include Institute of Noise Control Engineering (INCE) board certification or equivalent experience.
 - d. **Corrective Measures** - Non-residential uses that produce non-compliant noise must install and maintain noise reducing equipment in accordance with the approved noise control plan to meet the requirements of this section. The Building Commissioner may require the provision of reports to document ongoing noise compliance.
3. **Vibration:** No vibration which is discernible to the human sense of feeling for three minutes or more in any hour between 7:00 a.m. and 9:00 p.m. or for thirty seconds or more in any one hour from 9:00 p.m. to 7:00 a.m. shall be permitted. No vibration at any time shall produce an acceleration of more than 0.1g or shall result in any combination of amplitude and frequencies beyond the "safe" range on the most recent edition of Table 7, U.S. Bureau of Mines Bulletin NO. 442 (U.S. Department of the Interior).
4. **Odors:** The Building Commissioner may determine that an odor is disturbing, offensive or objectionable and is subject to investigation, and, if it is determined to be in violation of this bylaw, may take appropriate enforcement action, including the issuance of orders

requiring the development and implementation of corrective measures, and/or the imposition of fines and non-criminal penalties.

- a. **Standards** – Disturbing, offensive or objectionable odors as defined in Paragraph C. shall not be produced in any zoning district or impact any space where people live, work or assemble in a way that unreasonably interferes with the comfortable enjoyment of life or the use of property. Failure to meet either the Reasonableness Standard or the Measurement Standard listed below shall constitute a violation of this section.
 - 1) **Sensorial Reasonableness Standard** –The Building Commissioner, or designee, may determine, using only her or his sense of smell, that an odor is one which is disturbing, offensive or objectionable to a reasonable person with normal olfactory sensitivity.
 - 2) **Measurement Standards** – No disturbing, offensive or objectionable odor greater than that caused by the lowest odor detection thresholds as listed in the most recent edition of the [American Industrial Hygiene Association \(AIHA\) Odor Thresholds for Chemicals with Established Occupational Health Standards, Reported Odor Thresholds \(EG Table 6.3 in 2nd Edition\)](#) shall be permitted. Due to the potential of odorant mixtures causing more intense odors than individual odorant compounds in isolation, nothing in this Bylaw shall be interpreted as allowing for any disturbing, offensive or objectionable odors at or above the cited detection thresholds.
- b. **Investigation.** The Building Commissioner or designee shall investigate odor complaints until determined to be without merit or resolved to the satisfaction of the Building Commissioner.
 - 1) **Assessment Area** – The Building Commissioner or designee shall investigate odor complaints for odors emanating from:
 - a) **Immediate Impact Zone** - Any resident, occupant, or owner of property located within 1,000 feet of the property line of the property with a source generating and emitting the disturbing, objectionable or offensive odor, as measured from property line to property line.
 - b) **Secondary Impact Zone** - A collection of complaints from five or more residents, occupants, or owners of property located within 2,500 feet of the property line of the property with a source generating and emitting the disturbing, objectionable or offensive odor as measured from property line to property line.
 - 2) The Building Commissioner or designee may investigate possible odor violations upon their own initiative or at the request of Town officials or staff and shall investigate public complaints about an odor of a suspicious or dangerous nature.

- 3) If the Building Commissioner determines that an investigation is warranted, he or she or a designee, may undertake an odor observation to determine if a disturbing, objectionable or offensive odor exists. At the discretion of the Building Commissioner, a technical odor consultant may be engaged by the Town to assist in the investigation including odor observation and documentation of violations. The odor consultant shall be trained in the practices of ASTM (American Society for Testing Materials) - E679 and meet the selection criteria of EN13725 (international olfactometry standard). As a component of such investigation, measurements may be done in the field by using:
- a) Undiluted odor field observations (i.e. sniffing) or odor sampling to be performed at a frequency, duration, and locations appropriate for the odor source under investigation and the locations of odor complaints that have been received by the Town including those beyond the source property lines. The purpose is to detect and assess the presence of recognizable odors linkable to a specific source in ambient air. This may be accomplished by:
 - i. Grid method of analysis - Odor hours for a geographic area of evaluation to establish an odor hour frequency measurement.
 - ii. Plume method of analysis – Measurement of extent of the area where an odor plume originating from a specific odor source can be perceived and recognized under specific meteorological and operating conditions.

The following other forms of measurement may be used only as supplemental methods to evaluate persistent problems or higher intensity odors as a way to determine the severity of the situation.

- b) Field Olfactometry - A method to quantify odors in ambient air by means of a portable odor detecting and measuring device known as a field olfactometer. A field olfactometer measures odor strength and persistence using a Dilution-to-Threshold (D/T) ratio. The Dilution-to-Threshold ratio is a measure of odor concentration by determining the number of carbon filtered air dilutions needed to make the odorous ambient air non-detectable. The formula for calculating D/T with a field olfactometer is:

$$D/T = \frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}}$$

- c) Chemical Analysis – Instrumental methods of characterizing odor involving the identification and quantification of chemical compounds in an odor sample by means of gas chromatography coupled with mass spectrometry, analysis of hydrocarbon molecules, and analysis of single gases such as ammonia and hydrogen sulfide.

- d) Instrumental Odor Monitoring – Instruments designed to mimic human olfaction in the detection and characterization of simple or complex odors. Also referred to as electronic (E) - noses.
 - e) Any other method or best practice determined to be appropriate by the Building Commissioner.
- c. **Odor Control Plan** – If, based on the investigation, the Building Commissioner determines that there is a violation, the owner and/or operator of the odor-producing use shall be required to provide an odor control, abatement and mitigation plan to the Building Commissioner for review and approval, or otherwise bring the property into compliance with this bylaw and the order of the Building Commissioner. The plan shall address how the site will become compliant and specify suitable corrective measures. Compliance shall be achieved through industry best practices and suitable mitigation measures. The plan shall be prepared by a certified environmental engineer, certified environmental professional, or certified industrial hygienist with experience in odor management, abatement and mitigation technologies. The Building Commissioner may also require the plan to include the provision of reports of ongoing odor monitoring and compliance.
- d. **Corrective Measures** - Non-residential uses that produce non-compliant odors shall be required to install and maintain odor-eliminating equipment in accordance with the approved odor control plan to meet the requirements of this section.

E. Exemptions

- 1) **Farming.** Impacts resulting from agricultural, farm-related, or forestry-related activities as defined by [G.L., c 128, Agriculture, § 1A](#), as amended, and Medway General Bylaws, ARTICLE XXXI, §2 Right to Farm, are exempt from these restrictions when such activities follow generally accepted practices ([G.L., c 111, §125A](#)).
- 2) **Residential Uses.** Impacts resulting from residential activities such as but not limited to barbecues, wood stove exhaust, driveway paving, gardening, and house painting are exempt from these restrictions.
- 3) **Repair and infrequent maintenance activities.** Repair and infrequent maintenance activities such as but not limited to those for septic and sewer systems are exempt from these restrictions.
- 4) **Construction.** Impacts resulting from construction, demolition, or repair work that occurs between 7:00 a.m. and 6:00 p.m. on public improvements authorized by a governmental body or agency, utility work and repairs, and other similar work on private property pursuant to

an order by a governmental body or agency for safety purposes are exempt from these restrictions.

Or to act in any manner relating thereto.

PLANNING AND ECONOMIC DEVELOPMENT BOARD