

memorandum

DATE: December 6, 2021
TO: Rochester Hills Planning Commission
FROM: Jill Bahm & Joe Tangari, Giffels Webster
SUBJECT: Zoning Issue Discussion – Performance Standards

Introduction

The City of Rochester Hills has been facing a variety of situations that reflect a need to update ordinances related to mitigating off-site impacts of various land uses.

Current Ordinance

The ordinance addresses performance standards in Section 138-10.310. The purpose of these standards is to “preserve the environmental health, safety and welfare” of the City by regulating typical nuisances associated with a variety of permitted land uses. These include:

- Airborne emissions
- Odors
- Gases
- Noise and vibration
- Electrical disturbances
- Hazardous substances
- Glare and radioactive materials

Potential impacts and considerations

While the current performance standards are reasonable, there are few standards for measurement included. As ordinances are contemplated, it's important to consider the ability of the City to enforce ordinances as well as the ability to quantify issues related to each of the items discussed as “performance standards.” The Planning Commission may wish to consider the following:

- **Airborne emissions.** The current standard is updated to reflect the current environmental department in the State of Michigan. In addition, consistent with many other ordinances around the country, a standard for measuring smoke is included. This measurement, the Ringelmann Chart, is used by the US Center for Disease Control (CDC) to determine whether emissions of smoke are within limits or standards indicated in an ordinance. It is a commonly referenced resource and standard. The standards for “gases” have been moved to this section also for clarity.
- **Odors.** The current standard is lacking a measurement or measuring tool. An olfactometer varies in cost but is a tool used for measuring odor with respect to its dilution. The proposed amendment addresses this “dilution threshold” and applies a standard of seven (7) as the maximum dilution-to-threshold ratio.
- **Noise.** These standards are updated to clarify exemptions as well as establish noise levels based on the “emitter’s zone” and the “receptor’s zone.” In this way, it is recognized that uses in non-residential districts may have higher noise associated with them than would be expected near or in residential districts.

- **Vibration.** The current standards address different land uses that may be adjacent to industrial activities. Further, it addresses “steady-state” vibration, which means that the velocity of particles is a continuous periodic quantity. “Pact vibration” refers to individual and random impacts that generate vibration.
- **Electrical disturbance.** A minor change to include consistency with FCC regulations is added.
- **Hazardous substances.** Additional language is included to define hazardous substances and also define the “survey” required when such substances will be maintained/used on site. The standards for fire/explosive hazards is consolidated into this section.
- **Glare.** Glare is defined and a provision for drivers facing glare on roadways is added. The standard for radioactive materials is moved into its own section, although the issues seem to be addressed through the other above provisions.
- **Waste.** A cross-reference to the City’s wastewater standards is included. The City may wish to consider an update to provide additional standards to address limits on acidity/alkalinity, chlorinate solvents, sulfur dioxide and other chemicals.
- **Building mechanical equipment.** This section, while possibly related to the equipment needed to address the items in this section, may be more appropriately located in a section of the Zoning Ordinance related to building appearance.
- **Location of standards.** To better enable enforcement, the City may wish to move the Performance Standards from the Zoning Ordinance to a General Code ordinance.

Recommendation

Proposed amendments follow.

Section 138-10.310 **Performance Standards [TO BECOME A STAND-ALONE ORDINANCE]**

The following performance standards are established in order to preserve the environmental health, safety and welfare of the City. ~~No activity, operation or use of land, building or equipment shall be used or occupied in any manner so as to create any dangerous, injurious, noxious or otherwise objectionable element or condition that adversely affects the surrounding area.~~ All activities, operations, and uses of land, buildings and equipment shall be conducted in a manner that is not injurious, dangerous, noxious, or otherwise objectionable to the surrounding area. Any use permitted by this ordinance shall be operated in conformance with all applicable performance standards set forth in this [NEW ORDINANCE #]. The following standards are deemed the minimum requirements to be maintained.

A. Airborne Emissions.

1. Smoke and other air contaminants: It shall be unlawful for any person, firm, or corporation to permit the emission of any smoke or air contaminant in violation of the following:
 - a. All applicable air quality standards adopted by the Federal Clean Air Act and the Michigan Department of Environmental Quality Environment, Great Lakes and Energy (EGLE).
 - b. A density greater than that density described as No. 1 of the Ringelmann Chart provided that the following exceptions shall be permitted: smoke, the shade or appearance of which is equal to but not darker than No. 2 of the Ringelmann Chart for a period or periods aggregating four (4) minutes in any thirty (30) minutes.

Method of Measurement: For the purpose of grading the density of smoke, the Ringelmann Chart, as now published and used by the United States Bureau of Mines, which is hereby made a part of this Ordinance, shall be the standard. All measurements shall be taken as close to the emission point of the smoke as reasonably possible.

2. Gases. The escape or emission of any gas which is injurious or destructive, harmful to person or property, or explosive is prohibited.
3. Dust, Dirt and Fly Ash. All furnaces or combustion devices for the burning of any fuel materials shall be equipped and operated with recognized and approved equipment, means, methods, devices or contrivances to reduce the quantity of gasborne or airborne solids or fumes emitted into the open air, so that the quantity of gasborne or airborne solids shall not exceed 0.20 grains per cubic foot of the carrying medium at a temperature of five-hundred (500) degrees Fahrenheit.

- B. Odors. Any condition or operation which results in the creation of odors of such intensity and character as to be detrimental to the health and welfare of the public or which interferes unreasonably with the comfort of the public shall be removed, stopped, or so modified as to remove the odor. Such odors shall be prohibited when perceptible at any point along the property line, or beyond the property line if a place where people live, work or assemble is impacted. Whether or not an odor emission interferes with the reasonable and comfortable use and enjoyment of a property shall be measured against the objective standards of a reasonable person of normal sensitivity. The use of a field olfactometer meter that provides a "dilution-to-threshold" (D/T) reading may be used for documentation, verification and enforcement as needed. A measurement reading of seven D/T or less shall be maintained at the property line.

~~C. Gases. The escape or emission of any gas which is injurious or destructive, harmful to person or property, or explosive is prohibited.~~

- C. Noise. Noise which is objectionable due to intensity, frequency, or duration shall be muffled, attenuated, or otherwise controlled, subject to the following:

1. Objectionable sounds of an intermittent nature, or sounds characterized by high frequencies shall be controlled ~~so as not to become a nuisance to adjacent uses, even if falling below the decibel limits, shall be so controlled~~ so as not to become a nuisance to adjacent uses. This shall

particularly apply to loading and unloading areas in commercial or industrial districts adjacent to residential districts.

2. The following shall be exempt from the provisions in this section:
 - a. Emergency repair activity directed at vital services or any emergency or alarm devices, Sirens and related apparatus used solely for public purposes are exempt from this requirement; however, any alarms not terminating with 30 minutes after being activated shall be unlawful;
 - b. Noise resulting from temporary construction activity conducted between 7:00am and 8:00pm Monday through Saturday.
 - c. Bells or chimes from any building, school or place of worship.
3. The emission of measurable noises from the premises shall not exceed 65 decibels as measured at the boundary or property lines, except that where normal street traffic noises exceed 65 decibels during such periods, the measurable noise emanating from the premises may equal, but shall not exceed, such traffic noises. Within the I district, sound levels not exceeding 75 decibels may be permitted. the levels provided in the table below, or at ambient level, as measured at the property line, whichever is higher.

Time period	Use receiving the sound		
	Residential	Commercial/Mixed Use/Institutional	Industrial
Daytime (7:00am-8:00pm)	65 dBA	65 dBA	75 dBA
Nighttime (8:00pm-7:00am)	50 dBA	65 dBA	65 dBA

- a. ~~In addition, objectionable sounds of an intermittent nature or sounds characterized by high frequencies, even if falling below the decibel limits, shall be so controlled so as not to become a nuisance to adjacent uses. This shall particularly apply to loading and unloading areas in commercial or industrial districts adjacent to residential districts.~~

~~D. Vibration. No use shall generate any ground transmitted vibration in excess of the limits set forth below. Vibration shall be measured at the nearest adjacent lot line. The vibration maximums set forth below are stated in terms of particle velocity, which may be measured with suitable instrumentation or computed on the basis of displacement and frequency. When computed, the following standards shall apply:~~

Particle Velocity in Inches Per Second	
Frequency in Cycles per Second	Displacement in Inches
0 to 9.99	0.0010
10 to 19.99	0.0008
20 to 29.99	0.0006
30 to 39.99	0.0004
40 and over	0.0002

- a. ~~If requested by the enforcement official the petitioner shall provide evidence of compliance with the above noted vibration calculations.~~

b. ~~Vibrations resulting from temporary construction activity shall be exempt from the requirements of this section.~~

D. Vibration.

1. Ground transmitted vibration is measured with a complement of instruments capable of recording vibration displacement and frequency, particle velocity, or acceleration simultaneously in three mutually perpendicular directions. The instruments used to measure vibration in industrial zone districts shall conform to the applicable ANSI standard for such equipment used to measure community vibrations.
2. Maximum permitted vibration levels. Vibration shall not exceed the maximum permitted particle velocities in the table below. When a vibration source can be identified and its effects are on more than one land use category, the limits of the most restrictive use shall apply at the boundaries between different land use categories. Readings may be made at points of maximum vibration intensity.

Use Affected by Vibration	Steady State Vibration (continuous)	Impact Vibration (discrete)
Residential*	0.02	0.04
Commercial	0.05	0.10
Institutional	0.05	0.10
Industrial	0.15	0.30

*includes the residential component of a mixed-use development.

3. The maximum particle velocity shall be the maximum vector sum of three mutually perpendicular components recorded simultaneously. Particle velocity shall be measured in inches multiplied by the frequency in cycles per second. For purposes of these standards, steady-state vibrations are vibrations which are continuous; or vibrations in discrete impulses more frequent than 60 per minute, shall be considered impact vibrations. Between the hours of 9:00 p.m. and 7:00 a.m. all the permissible vibration levels indicated in the previous table for residential district boundaries shall be reduced to one-half the indicated levels.
- E. Electrical Disturbance, Electromagnetic, or Radio Frequency Interference. ~~No use shall~~ The operations of any use shall not create any electrical disturbance that adversely affects any operations of equipment other than those of the creator of such disturbance, or cause, create or contribute to the interference with electronic signals (including television and radio broadcasting transmission) to the extent that the operation of any equipment not owned by the creator of such disturbance is adversely affected. All uses, activities and processes shall comply with applicable Federal Communications Commission regulations.
- F. Hazardous Substances. Hazardous substances include materials or products that may threaten the public health, safety or welfare because of combustibility, flammability, toxicity or disease potential.
1. Any person, firm, corporation or other legal entity operating a business of conducting an activity which uses, stores, or generates hazardous substances shall obtain the necessary permits and/or licenses from the appropriate Federal, State or local authority having jurisdiction. The property owner shall inform the City of any and all inspections conducted by a Federal, State or local authority in connection with a permit and/or license within 90 days of receipt of the result of said inspection.
 2. Any person, firm, corporation or other legal entity operating a business or conducting an activity which uses, stores, or generates hazardous substances shall complete and file a hazardous materials survey that describes such materials and their storage, disposal and plan for

containment in the event of a spill, leak or other unintended discharge. This survey shall be provided in conjunction with the following:

- a. Upon submission of a site plan.
 - b. Upon any change of use or occupancy of a structure or premise.
 - c. Upon any change of the manner in which such substances are used, handled, stored, and/or in the event of a change in the type of substances to be used, handled or stored.
3. Fire and Explosive Hazards. The storage and handling of flammable liquids, liquified petroleum gases and explosives shall comply with the state rules and regulations as established by Public Act No. 207 of 1941 (MCL 29.1 et seq., MSA 4.559(1) et seq.).
- G. ~~Glare and Radioactive Materials.~~ Glare is the sensation produced within the visual field by luminance that is sufficiently greater than the luminance to which the eyes are adapted, causing annoyance, discomfort, or loss in visual performance and visibility. The following standards are intended to reduce glare:
4. ~~Glare from any process, such as or similar to arc welding or acetylene torch cutting, which emits harmful ultraviolet rays shall be performed in such a manner as not to be seen from any point beyond the property line, and as not to create a public nuisance or hazard along lot lines. Radioactive materials and wastes, including electromagnetic radiation such as X-ray machine operation, shall not be emitted to exceed quantities established as safe by the U.S. Bureau of Standards, when measured at the property line.~~
 2. Glare from automobile headlights or commercial or industrial vehicle headlights shall not be directed into any adjacent property so as to become a nuisance.
 3. In nonresidential areas, exterior lighting shall be installed so that the source of light shall not be visible from any residential dwelling or passenger car driver's line of sight and shall be so arranged as far as practical to reflect light away from the residential use and public roadways. In no case shall more than one candlepower of light cross a lot line five feet above the ground into a residential district.
 4. Buildings more than one story in height where glass constitutes more than one quarter of the upper floor facade shall have a non-reflective coating on all upper story glass in order to mitigate glare onto roadways.
- H. Radioactive Materials. Radioactive materials and wastes, including electromagnetic radiation such as X-ray machine operation, shall not be emitted to exceed quantities established as safe by the U.S. Bureau of Standards, when measured at the property line.
- ~~I. Fire and Explosive Hazards. The storage and handling of flammable liquids, liquified petroleum gases and explosives shall comply with the state rules and regulations as established by Public Act No. 207 of 1941 (MCL 29.1 et seq., MSA 4.559(1) et seq.).~~
- J. Waste
1. Any waste discharged into the public sewer system shall comply with Chapter 102, Article V, Wastewater discharge.
 2. Waste and Rubbish Dumping. Garbage, sewage, filth, refuse, waste, trash, debris or rubbish, including cans, bottles, wastepaper, cartons, boxes and crates, or other offensive or obnoxious matter shall not be kept in open containers or piled, placed, stored or dumped on any land within the City in such a manner as to constitute a nuisance or create a hazard to health, safety, morals and general welfare of the citizens of the City. All uses in every zoning district shall place waste

materials in an appropriate covered container and properly dispose of it at least once each month in accordance with State Law. Refer to Section 138-10-311 of the Rochester Hills Zoning Ordinance for additional standards related to screening.

- K. Building Mechanical Equipment. For all uses, except single-family residential uses, heating, ventilation and air conditioning mechanical equipment located on the premises shall be screened from adjacent public or private streets and adjacent properties with a wall, fence, evergreen plant materials. The method of screening shall be approved by the Planning Commission or ~~official~~ approving the exterior of the building Zoning Administrator and shall be screened in a manner that is architecturally compatible with the building design. If the equipment is ground mounted, it shall be screened in the site plan. Other types of mechanical equipment located on the exterior of the building, such as dust collectors, hoppers, stacks, etc., that cannot practicably be screened, shall be designed, located and/or painted to minimize the adverse visual impact.
- L. Compliance. Where a preliminary investigation indicates that a site is not compliant with this chapter, it shall be the responsibility of the owner to verify compliance.

ITEM K BUILDING MECHANICAL EQUIPMENT TO REMAIN IN ZONING ORDINANCE