

Edward G. Bauer, City Solicitor - Law Department, 1610 MSB

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Anthony J. Durkin, Administrative Services Director - Dept. of Records, 158 CH

REGULATIONS PERTAINING TO HEARING CONSERVATION IN PLACES OF EMPLOYMENT

The above regulations promulgated by the Department of Public Health were filed with the Department of Records on October 14, 1969.

Inasmuch as there were no requests for hearings these regulations became effective November 12, 1969.

cc: Norman R. Ingraham, M. D., Health Commissioner
540 MSB

Approved by the Board of Health June 6, 1969.
Approved by the Department of Law September 25, 1969.

P R O P O S E D

CITY OF PHILADELPHIA

DEPARTMENT OF PUBLIC HEALTH

REGULATIONS PERTAINING TO HEARING CONSERVATION IN
PLACES OF EMPLOYMENT

The Philadelphia Code

Title 6 - Health Code

Section 6-401 - Occupational and Industrial Hygiene

(1) Industrial Establishments

(a) All industrial establishments shall be conducted, operated and maintained in accordance with the Health Code and such regulations as the Board may prescribe to protect the health and life of all persons within or about such establishments from health hazards. Such regulations shall be based upon recognized public health standards and may include, but shall not be limited to, reasonable requirements to control and insure:

- (.1) sufficient illumination for the work being performed
- (.2) sufficient and adequate ventilation, circulation, and conditioning of air to prevent or eliminate health hazards, resulting from dust, fumes, gases, material particles or other concentrations of atmospheric contaminants or toxic substances.
- (.3) prevention of harmful combinations of heat and humidity
- (.4) sufficient and adequate housekeeping and sanitation or service facilities to prevent health hazards.
- (.5) prevention of the use of manufacturing processes, materials, equipment or supplies which have been

- demonstrated to be potential health hazards unless adequate protective devices are established and used.
- (.6) prevention of employment of persons in specifically described hazardous industries without adequate pre-employment and subsequent health examinations by a physician or osteopath and without adequate study of the causes and means of preventing the specific occupational health hazards or diseases described for the industries involved.

- (.7) the control of arthropods and rodents.

Pursuant to Section 5-301(b) of the Home Rule Charter and Section 6-401 of the Philadelphia Code, the following regulations are promulgated by the Board of Health.

1. PURPOSE

The purpose of this regulation is to prescribe requirements and standards for the prevention of noise-induced hearing loss by limiting exposure to intense noise in places of employment. Noise induced hearing loss increases with the intensity of the noise and the duration of exposure. Generally, many years of exposure to high noise levels are required to produce permanent hearing impairment. A portion or all of a hearing impairment may be due to causes other than noise exposure. These rules and regulations are directed toward the prevention of that portion of the permanent hearing loss resulting from habitual exposure to excessive noise.

2. DEFINITIONS

- (a) USASI. United States of America Standards Institute, 10 E. 40th Street, New York, New York, formerly known as American Standards Association or ASA.

- (b) Broad Band Noise. Sound whose energy is distributed approximately uniformly through the reference frequency band
- (c) Cycles per second or hertz, abbreviated "cps" or "Hz". The number of complete oscillations of a pressure wave per second
- (d) Department. The Philadelphia Department of Public Health.
- (e) Ear Protective Devices. Insert or muff type ear protective equipment designed to attenuate noise exposure.
- (f) Habitual Exposure. Continuous or intermittent exposure of worker to noise.
- (g) Octave Band Analyzer. An instrument meeting specifications S1.11 - 1966 and S1.6 - 1967 of USASI.
- (h) Place of Employment. A location or site where an individual is employed in a trade, occupation, or profession.
- (i) Reference Frequency Bands. The frequency bands of 300-600, 600-1,200 and 1,200-2,400 cps or 354-707, 707-1,414 and 1,414-2,828 cps (with center frequencies of 500, 1,000 and 2,000 cps).
- (j) Sound Level Meter. An instrument meeting specification S1.4-1961 of USASI.
- (k) Sound Pressure Level. 20 times the logarithm to the base 10 of the ratio of the pressure of the sound to a reference pressure. The formula shall be: Sound Pressure Level (SPL), expressed in decibels = $20 \log_{10} \frac{p}{p_0}$

Where p_0 is a reference pressure of 0.0002 microbar and p is measured pressure in microbar(s), the decibel or dB shall be considered equivalent to SPL and shall be used to express SPL measurements.

(l) A-scale. The weighting network labeled A on the sound level meter meeting specification Sl.4-1961 of USASI.

(m) Day. Any continuous 24 hour period.

3. NOISE EXPOSURE LIMITS

(a) For habitual exposure of unprotected workers to broad band noise, for periods in excess of 4 hours per day, the sound pressure level in any one of the reference frequency bands shall not exceed 95 dB.

(b) No unprotected worker shall be exposed to a sound pressure level in any of the reference frequency bands in excess of 115 dB.

(c) As an alternative to the reference frequency bands, exposure limits may be stated in terms of sound levels measured using the A-scale standard sound level meter. Permissible A-weighted sound levels are numerically 5 dB greater than those allowed for the reference frequency bands.

(d) For habitual exposure of unprotected workers to broad band noise, the sound pressure level in any one of the reference frequency bands shall not exceed the values in Table I. When the sound pressure levels in (dB) in the reference frequency bands differ, the total exposure time shall be limited by the highest sound pressure level (in dB).

TABLE I

PERMISSIBLE NOISE EXPOSURES¹

Duration per day, hours	Sound Pressure Level (Reference Freq. Bands) dB	Equivalent Sound Level dBA
More than 4	95	100
Greater than 3 up to 4	97	102
Greater than 2 up to 3	100	105
Greater than 1½ up to 2	102	107
Greater than 1 up to 1½	105	110
Greater than ½ up to 1	110	115
½ or less	115	120

¹When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1 + C_2/T_2 . . . C_n/T_n$ exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level.

4. CRITERIA FOR MEASURING NOISE

(a) Noise measurements shall be made with instruments meeting the specifications stated in the definitions for sound level meters and octave band analyzers. Sound pressure levels shall be determined for the reference frequency bands, or when elected, the A-scale of a sound level meter.

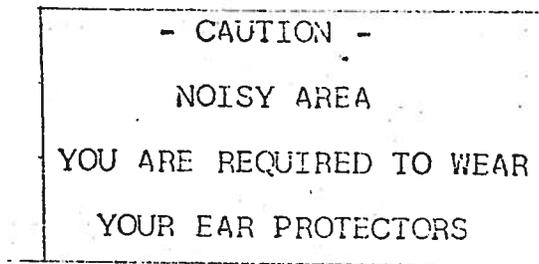
5. EMPLOYERS DUTIES

(a) No employer shall permit the exposure of any unprotected employee to noise in excess of the limits provided in Section 3 of this regulation. The employer shall take steps to reduce noise exposure to employees to levels consistent with Section 3 by noise abatement where effective and practical methods are available. Where it can be demonstrated to the Department that it is not feasible to reduce noise to acceptable levels, the employer shall provide and require the use of ear protective devices for each employee capable of reducing noise levels in the ear canal to levels consistent with Section 3. The employer shall prohibit the exchange of insert-type ear protective devices from one employee to another.

(b) Where the noise level in any one of the reference frequency bands may exceed 85 db for more than 4 hours, the employer shall undertake a survey to assure compliance with Section 3 of this regulation. The survey shall be performed by or under the direction of a qualified expert using instruments, meeting the specifications of Section 4 of this regulation.

- (c) Where control measures or ear protective devices are required, every employer shall instruct his employees in the proper methods for utilizing such equipment.
- (d) All areas where ear protection devices are required, shall be conspicuously posted with a durable and legible sign as illustrated in Figure 1.

FIGURE 1



6. EMPLOYEES DUTIES

- (a) Where ear protective devices are required, it shall be the duty of the employee to use such protective equipment in a proper manner and to exercise due care to keep same in efficient and sanitary condition.