

protectors offering greater attenuation, if necessary, and shall be required to use them.

(iii) If subsequent audiometric testing is necessary or if the railroad suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors, the railroad shall refer the employee for a clinical audiological evaluation or an otological examination.

(iv) If the railroad suspects that a medical pathology of the ear unrelated to the use of hearing protectors is present, the railroad shall inform the employee of the need for an otological examination.

(3) If subsequent audiometric testing of an employee, whose exposure to noise is less than an 8-hour TWA of 90 dB, indicates that a standard threshold shift is not persistent, the railroad shall inform the employee of the new audiometric interpretation and may discontinue the required use of hearing protectors for that employee.

(i) *Revised baseline.* A railroad shall use the following methods for revising baseline audiograms:

(1) Periodic audiograms from audiometric tests conducted through February 26, 2009, may be substituted for the baseline measurement by the Professional Supervisor of the Audiometric Monitoring Program who is evaluating the audiogram if:

(i) The standard threshold shift revealed by the audiogram is persistent; or

(ii) The hearing threshold shown in the periodic audiogram indicates significant improvement over the baseline audiogram.

(2) Baseline audiograms from audiometric tests conducted after February 26, 2009, shall be revised in accordance with the method specified in appendix C of this part: Audiometric Baseline Revision.

(j) *Standard threshold shift.* In determining whether a standard threshold shift has occurred, allowance may be made for the contribution of aging (presbycusis) to the change in hearing level by correcting the annual audiogram according to the procedure described in appendix F of this part: Calculation and Application of Age Correction to Audiograms.

§ 227.111 Audiometric test requirements.

(a) Audiometric tests shall be pure tone, air conduction, hearing threshold examinations, with test frequencies including 500, 1000, 2000, 3000, 4000, 6000, and 8000 Hz. Tests at each frequency shall be taken separately for each ear.

(b) Audiometric tests shall be conducted with audiometers (including microprocessor audiometers) that meet the specifications of and are maintained and used in accordance with ANSI S3.6–2004 “Specification for Audiometers.” The Director of the Federal Register approves the incorporation by reference of this standard in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated standard from the American National Standards Institute at 1819 L Street, NW., Washington, DC 20036 or <http://www.ansi.org>. You may inspect a copy of the incorporated standard at the Federal Railroad Administration, Docket Room, 1120 Vermont Ave., NW., Suite 700, Washington, DC 20005, or at the National Archives and Records Administration (NARA). For more information on the availability of this material at NARA, call 202–741–6030, or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(1) Pulsed-tone audiometers should be used with the following on and off times: F–J and J–K shall each have values of 225 ± 35 milliseconds (ms).

(2) Use of insert earphones shall be consistent with the requirements listed in appendix E of this part: Use of Insert Earphones for Audiometric Testing.

(c) Audiometric examinations shall be administered in a room meeting the requirements listed in appendix D of this part: Audiometric Test Rooms.

(d) *Audiometer calibration.*

(1) The functional operation of the audiometer shall be checked before each day’s use by testing a person with known, stable hearing thresholds or by appropriate calibration device, and by listening to the audiometer’s output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.

(2) Audiometer calibration shall be checked acoustically at least annually according to the procedures described in ANSI S3.6-2004. Frequencies below 500 Hz and above 8000 Hz may be omitted from this check. The audiometer must meet the sound pressure accuracy requirements of section 7.2 of ANSI S3.6-2004 of 3 dB at any test frequency between 500 and 5000 Hz and 5 dB at any test frequency 6000 Hz and higher for the specific type of transducer used. For air-conduction supra-aural earphones, the specifications in Table 6 of ANSI S3.6-2004 shall apply. For air-conduction insert earphones, the specifications in Table 7 of ANSI S3.6-2004 shall apply. Audiometers that do not meet these requirements must undergo an exhaustive calibration.

(3) Exhaustive Calibration. An exhaustive calibration shall be performed in accordance with ANSI S3.6-2004, according to the following schedule:

(i) At least once every two years on audiometers not used in mobile test vans. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

(ii) At least annually on audiometers used in mobile test vans.

§ 227.113 Noise operational controls.

(a) Railroads may use noise operational controls at any sound level to reduce exposures to levels below those required by Table A-1 of appendix A of this part.

(b) Railroads are encouraged to use noise operational controls when employees are exposed to sound exceeding an 8-hour TWA of 90 dB(A).

§ 227.115 Hearing protectors.

(a) *General requirements for hearing protectors.*

(1) The railroad shall provide hearing protectors to employees at no cost to the employee.

(2) The railroad shall replace hearing protectors as necessary.

(3) When offering hearing protectors, a railroad shall consider an employee's ability to understand and respond to voice radio communications and audible warnings.

(4) The railroad shall give employees the opportunity to select their hearing protectors from a variety of suitable

hearing protectors. The selection shall include devices with a range of attenuation levels.

(5) The railroad shall provide training in the use and care of all hearing protectors provided to employees.

(6) The railroad shall ensure proper initial fitting and supervise the correct use of all hearing protectors.

(b) *Availability of hearing protectors.* A railroad shall make hearing protectors available to all employees exposed to sound levels that meet or exceed the action level.

(c) *Required use at action level.* A railroad shall require the use of hearing protectors when an employee is exposed to sound levels that meet or exceed the action level, and the employee has:

(1) Not yet had a baseline audiogram established pursuant to § 227.109; or

(2) Experienced a standard threshold shift and is required to use hearing protectors under § 227.109(h).

(d) *Required use for TWA of 90 dB(A).* The railroad shall require the use of hearing protectors when an employee is exposed to sound levels equivalent to an 8-hour TWA of 90 dB(A) or greater. The hearing protectors should be used to reduce sound levels to within those levels required by appendix A of this part.

§ 227.117 Hearing protector attenuation.

(a) A railroad shall evaluate hearing protector attenuation for the specific noise environments in which the protector will be used. The railroad shall use one of the evaluation methods described in appendix B of this part; "Methods for Estimating the Adequacy of Hearing Protector Attenuation."

(b) Hearing protectors shall attenuate employee exposure to an 8-hour TWA of 90 decibels or lower, as required by § 227.115.

(c) For employees who have experienced a standard threshold shift, hearing protectors must attenuate employee exposure to an 8-hour time-weighted average of 85 decibels or lower.

(d) The adequacy of hearing protector attenuation shall be re-evaluated whenever employee noise exposures increase to the extent that the hearing