

State of Alaska  
Department of Labor  
Division of Labor Standards and Safety

DOSH Program Directive 89-7

Date: June 15, 1989

To: All LS&S/OSH Staff

From: Tom Stuart, Director



Subject: Audiometric Testing Using Insert Phones

A. Purpose. This DOSH PD establishes the compliance procedure to follow if an employer is observed using insert phones for audiometric testing.

B. Background:

1. Description. An insert phone for audiometric testing relocates the source of audiometric test signals from the standard outer pinna area to a point approximately 12 millimeters inside the ear canal. This arrangement may exclude external noise more effectively and also, may improve interaural isolation. It eliminates collapsed canal measurement problems and claims are also made for improved test repeatability.
2. Potential Logistic Advantage. The major logistic advantage that is foreseen for insert-type phones is the elimination of the need for an audiometric test room or booth.
3. Matters to Resolve. Use of these insert-type phones as opposed to the standard over-the-pinna (or supra-aural) ear phones will require correction factors due to the fact that an insert-type phone providing the same accoustical output as a supra-aural phone produces a different accoustic intensity in the ear canal. Moreover, requirements to ensure proper fit and requirements for proper calibration will be necessary. Etymotic Research of Elk Grove, Village, Illinois, manufacturer of an insert-type phone it designates ER-3A, claims that the American National Standards Institute (ANSI) will approve their use within one year under American National Standard Specification for Audiometers, ANSI S3.6-1969. It is anticipated that ANSI S3.6 will address the corrections, fit, and calibration questions.

C. Legal facts.

1. Audiometer Requirements. At 04.0104(1)(2), the standard for occupational noise exposure states that audiometers shall meet the specifications of, and shall be maintained and used in accordance with, ANSI S3.6. Moreover, Appendix E of the standard only considers the standard Telephonics TDH-39 and TDH-49 supra-aural earphones in its discussion of the acoustic calibration of audiometers. No consideration is given to any other type of audiometric test source.

2. Associated Audiometric Testing Requirements.

- a. 04.0104(1)(4). Audiometric examinations shall be administered in a room meeting the requirements listed in Appendix D: Audiometric Test Rooms.
- b. 04.0104(k)(7)(C)(iii). The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. The employer shall provide to the person performing this evaluation the measurements of background sound pressure levels in the audiometric test room as required in Appendix D; Audiometric Test Rooms.
- c. 04.0104(r)(4)(C). The employer shall maintain accurate records of the measurements of the background sound pressure levels in audiometric test rooms.

D. Reading Material. Some examples of material to read to acquire background information on insert phones follow.

1. Product information materials from manufacturers such as Etymotic Research, Elk Grove, Illinois.
2. Journal Articles.
  - a. Wilbur L. Kruger B. Killion M. "Reference thresholds for the ER-3A insert earphone." J. Acoust. Soc. AM. 1988; 83:669-76.
  - b. Clemis J. Ballard W. Killion M. "Clinical use of an insert earphone." Annals of Otology, Rhinology, and Laryngology 1986; 95:520-4.

E. Enforcement Policy.

1. Audiometric Measuring Instruments. Until such time as ANSI S3.6 recognizes the use of an insert phone as an acceptable method for audiometric testing and includes

specifications for the method, and Alaska OSH concurs by amending 04.0104, any use of insert phones for the intended purpose of complying with the audiometric testing requirements in 04.0104 shall be considered a violation of 04.0104(1)(2).

2. Associated Audiometric Testing Requirements. Employers using insert phones for audiometric testing may also be violating some of the other requirements of the noise standard quoted in this PD at C.2. Whenever employers are observed using insert phones for audiometric testing, always investigate compliance with these other requirements and issue citations for documented violations.
3. Classifying and Grouping Violations and Proposing Penalties. Violations of 04.0104(1)(2) and associated violations of 04.0104(1)(4), 04.0104(k)(7)(C)(iii), or 04.0104(r)(4)(C) shall all be classified as at least "other than serious." Any more severe classification of violations, the grouping of violations, and the penalty proposals, shall be done in accordance with the guidelines in the Compliance Manual.