

## Understanding Audiograms

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### Purpose

To recognize different types of audiograms

### Chapter Topics

- An Occupational Hearing Conservationist's Role in Audiogram Review
- About the Audiogram
- Characteristics of Audiograms
- Other Types of Audiograms
- Inconsistent Audiometric Monitoring Results

Regulatory agencies identify the tasks an **Occupational Hearing Conservationist** (OHC) may perform. Of primary importance is the validity, accuracy and documentation of the worker's hearing. The OHC ensures, through the standardized **audiometric monitoring** procedure, the validity and accuracy of the test results. The record of those results, the **audiogram**, stands as the medical-legal document that is used to chart the stability of hearing, the identification of possible medical pathologies, the basis for monetary compensation claims, and may even serve as the motivation for retention or removal from a job. The OHC must understand the different types of audiograms, how information is correctly recorded and, most important, when an audiogram needs to be referred to their **Professional Supervisor** of the **Audiometric Monitoring Program** (PS).

There are several relevant reasons for reviewing audiometric data. Obviously, changes in **hearing thresholds** can be early indicators of **noise-induced hearing loss** (NIHL). NIHL can be caused by excessive noise exposure due to inadequate noise controls, inadequate use of personal hearing protection, or high susceptibility to auditory damage. Prompt review of audiograms can allow reviewers to inform employees of any notable (and perhaps temporary) **hearing threshold shifts** so they can change their behaviors before permanent hearing impairments develop. Proficient reviewers can also provide benefits such as referring employees for further evaluation or medical attention, identifying signs of excessive **ambient noise** in the testing environment, and recognizing when an audiometric retest is appropriate. As a team, an OHC and PS can be of great value to both employers and employees. As OHCs gain

experience and work with their PS, they will become confident in their ability to review audiograms and coordinate follow-up procedures within the framework of their roles. The OHC relies on the PS for technical guidance.

The Council for Accreditation in Occupational Hearing Conservation (CAOHC) recognizes the benefits a qualified professional can offer a hearing conservation program (HCP) and has created a specialty recognition for the professional supervisor. This credential is tailored for an eligible physician or audiologist with experience and expertise in hearing-loss prevention. To learn more about the professional supervisor criteria and credentialing process, visit the CAOHC website ([www.caohc.org](http://www.caohc.org)).

An audiogram is simply a graph or numerical display that represents hearing levels measured by an audiometer by frequency and intensity. On a graphic audiogram, the vertical axis represents intensity (or loudness) measured in decibels hearing level (**dB HL**), and the horizontal axis represents **frequency** (pitch) measured in **Hertz** (Hz). An effective audiometric monitoring program involves much more than generating and storing audiograms. The information gathered from an audiometric session is helpful, but only if it is reviewed and appropriately acted on. The OHC and PS of an audiometric monitoring program share responsibilities for understanding audiograms and follow up.

### An OHC's Role in Audiogram Review

It is the OHC's responsibility, after coordinating with the PS, to determine the basic validity of the audiogram. Although the Occupational Safety and Health Administration (OSHA) regulation<sup>1</sup> has no specific requirement on this subject, the preamble to the 1983 version states that technicians are permitted a preliminary review of audiograms and that they must refer **problem audiograms** or audiograms of questionable validity to a professional reviewer for further evaluation. The Federal Railroad Administration (FRA) also uses the term *problem audiogram* to indicate audiograms that require additional scrutiny by the PS.<sup>2</sup> The Mine Safety and Health Administration (MSHA) regulation clearly states that a physician, audiologist,