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ASA TECHNICAL REPORT

# Evaluating the Effectiveness of Hearing Conservation Programs through Audiometric Data Base Analysis

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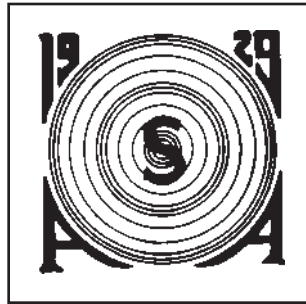
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ASA Technical Report

**Evaluating the Effectiveness of  
Hearing Conservation Programs  
through Audiometric Data Base Analysis**

Secretariat  
**Acoustical Society of America**

ASA Technical Report Registered: 26 August 2002  
**American National Standards Institute, Inc.**

**ABSTRACT**

This ASA Technical Report describes methods for evaluating the effectiveness of hearing conservation programs in preventing occupational noise-induced hearing loss by using techniques for audiometric data base analysis. The rationale is given for using the variability of threshold measurements in annual monitoring audiograms as the basis for judging effectiveness. Guidelines are discussed concerning how to select a restricted data base to which the analysis procedures will be applied. Specific procedures for data analysis are defined, and criterion ranges are given for classifying program effectiveness as acceptable, marginal, or unacceptable. Sample results for industrial audiometric data bases contributed to Working Group S12/WG12 are included as an annex for reference and illustration.

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# Contents

	Page
<b>Foreword</b> .....	iv
<b>0 Introduction</b> .....	1
<b>0.1 Need</b> .....	1
<b>0.2 Rationale</b> .....	1
<b>0.3 Alternative Approaches</b> .....	1
<b>0.4 Brief Historical Review</b> .....	2
<b>0.5 Report Development Process</b> .....	2
<b>0.6 Benefits of ADBA</b> .....	2
<b>0.6.1 Enhancing Prevention of Noise-Induced Hearing Loss</b> .....	2
<b>0.6.2 Providing Cost-Effective Data for Regulatory Compliance</b> .....	3
<b>0.6.3 Guiding Internal Management Decisions</b> .....	3
<b>0.6.4 Motivating Workers and Supervisors</b> .....	4
<b>1 Scope, purpose and applications</b> .....	4
<b>1.1 Scope</b> .....	4
<b>1.2 Purpose</b> .....	4
<b>1.3 Applications</b> .....	4
<b>1.3.1 Assumptions</b> .....	4
<b>1.3.1.1 Effective Hearing Conservation Program</b> .....	4
<b>1.3.1.2 Audiometric Variability as an Indicator</b> .....	4
<b>1.3.1.3 Analysis of a Restricted Data Base</b> .....	5
<b>1.3.1.4 Reliance on ADBA Results</b> .....	5
<b>1.3.1.5 Interpretation of Undesirable Results</b> .....	5
<b>1.3.2 Data Requirements</b> .....	5
<b>1.3.2.1 Annual Audiometry</b> .....	5
<b>1.3.2.2 Constant Restricted Population</b> .....	5
<b>1.3.2.3 Minimum Number of Audiograms</b> .....	5
<b>1.3.2.4 Representative Restricted Population</b> .....	5
<b>1.3.2.5 Minimum Size of Restricted Population</b> .....	5
<b>1.3.2.6 Identification of Obvious Contaminants in the Data</b> .....	5
<b>1.3.2.7 Audiometric Testing During Workshifts</b> .....	6
<b>2 References</b> .....	6
<b>3 Definitions</b> .....	7
<b>4 Recommended ADBA Statistics</b> .....	7
<b>4.1 Procedures</b> .....	7
<b>4.2 Criterion Ranges</b> .....	7
<b>5 Implementing the Procedures</b> .....	7
<b>5.1 Selecting the Restricted Data Base</b> .....	7
<b>5.1.1 Early Tests</b> .....	8
<b>5.1.2 Later Tests</b> .....	8
<b>5.2 Examining the Data for Contamination</b> .....	8
<b>5.3 Applying the ADBA Procedures</b> .....	8
<b>5.3.1 Percent Worse Sequential (%W<sub>s</sub>)</b> .....	8
<b>5.3.2 Percent Better or Worse Sequential (%BW<sub>s</sub>)</b> .....	8
<b>6 Interpreting the Results</b> .....	9
<b>6.1 Classifying HCP Effectiveness</b> .....	9
<b>6.2 Identifying Sources of High Variability</b> .....	9

**Annexes**

**A** Population Comparison ADBA Techniques .....9  
**A.1** Comparisons at One Point in Time .....9  
**A.2** Comparisons of Longitudinal Hearing Level Trends .....10  
**A.3** References .....10  
**B** Rates of OSHA STS as an Indicator .....10  
**B.1** Common Use of STS Rates .....10  
**B.2** Reasons for Excluding STS Rates from this Report .....10  
**B.3** References .....10  
**C** Research Performed by S12/WG12 .....11  
**C.1** Data Tape Availability .....11  
**C.2** Procedures Evaluated .....11  
**C.3** Recommended Procedures .....12  
**C.4** Data Base Comparisons Used to Define Criterion Ranges .....12  
**C.5** Defining the Criterion Ranges .....13  
**C.6** Conclusions and Recommendations .....13  
**C.7** References .....13  
**D** Analysis Example .....17

**Tables**

**Table 1** Criterion ranges (in percent) for rating HCP performance using the values of the statistics Percent Worse Sequential (%W<sub>s</sub>) and Percent Better or Worse Sequential (%BW<sub>s</sub>) .....7  
**Table D1** Steps in implementing ADBA .....17  
**Table D2** Example of determining whether an individual employee will be included in the Percent Worse sequential (%W<sub>s</sub>) and Percent Better or Worse sequential (%BW<sub>s</sub>) statistics in each of three sequential test comparisons .....17

**Figures**

Fig. 1 Sequence of events in a worker’s noise exposure history showing how ADBA indicates an inadequate degree of employee protection before a confirmed OSHA STS develops ..... 3

Fig. C1 Distribution of %W<sub>s</sub> values in sequential comparisons of tests 1-4 .....14

Fig. C2 Distribution of %W<sub>s</sub> values in sequential comparisons of tests 5-8 .....14

Fig. C3 Distribution of %BW<sub>s</sub> values in sequential comparisons of tests 5-8 .....14

Fig. C4 Distribution of percent AAO-HNS shifts in sequential comparisons of tests 1-4 .....14

Fig. C5 Distribution of percent AAO-HNS shifts in sequential comparisons of tests 5-8 .....14

Fig. C6 Distribution of standard deviations of differences in HTLs at single audiometric test frequencies in sequential comparisons of tests 1-4 for control data bases .....14

Fig. C7 Distribution of standard deviations of differences in HTLs at single audiometric test frequencies in sequential comparisons of tests 5-8 for control data bases .....15

Fig. C8 Distribution of standard deviations of differences in HTLs at single audiometric test frequencies in sequential comparisons of tests 1-4 for non-control data bases .....15

Fig. C9 Distribution of standard deviations of differences in HTLs at single audiometric test frequencies in sequential comparisons of tests 5-8 for non-control data bases .....15

Fig. C10 Distribution of standard deviations of differences in HTLs at averaged audiometric test frequencies in sequential comparisons of tests 1-4 for control data bases .....15

Fig. C11 Distribution of standard deviations of differences in HTLs at averaged audiometric test frequencies in sequential comparisons of tests 5-8 for control data bases .....16

Fig. C12 Distribution of standard deviations of differences in HTLs at averaged audiometric test frequencies in sequential comparisons of tests 1-4 for non-control data bases .....16

Fig. C13 Distribution of standard deviations of differences in HTLs at averaged audiometric test frequencies in sequential comparisons of tests 5-8 for non-control data bases .....16

Fig. D1 Mean hearing levels on the latest audiogram for noise exposure groups subdivided by race .....18

Fig. D2 Mean hearing levels at 2-6 kHz on the most recent five approximately annual audiograms for noise-exposed subjects, as a function of mean age at the time of each test .....19

Fig. D3 Mean hearing levels at 2-6 kHz on the most recent five approximately annual audiograms for non-noise-exposed subjects, as a function of mean age at the time of each test .....19

Fig. D4 Percent Worse sequential results over the most recent four test comparisons for noise-exposed and non-noise-exposed groups .....20

Fig. D5 Percent Better or Worse sequential results over the most recent four test comparisons for noise-exposed and non-noise-exposed groups .....20

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## FOREWORD

[This foreword is for information only and is not an integral part of ASA S12.13 TR - 2002 *ASA Technical Report Evaluating the Effectiveness of Hearing Conservation Programs through Audiometric Data Base Analysis*]

This ASA Technical Report is a revision of Draft American National Standard S12.13-1991, which was published for a period of trial use and comment regarding the validity and usefulness of the recommended procedures for evaluating the effectiveness of hearing conservation programs (HCPs) through audiometric data base analysis (ADBA), and later unsuccessfully balloted for approval as a full standard. The ADBA procedures described are those recommended by the members of S12 Working Group 12 (S12/WG12) based on the results from their original research in applying suggested procedures to actual audiometric data bases (see Annex C), as well as the additional experience and feedback obtained from S12/WG12 members and other interested users following publication of the draft standard.

In spite of the unsuccessful ballot to convert the draft standard to a full standard, S12 deemed the contents of the document of substantial value for the hearing conservation community, and hence decided to publish them for guidance as an ASA Technical Report. The substantive negative comments during the balloting involved the following issues:

- a) the possibility that gradual hearing loss in excess of that due to aging may occur in subgroups of the population evaluated in spite of acceptable ADBA criteria results on a year-to-year basis,
- b) objections to the year-to-year nature of ADBA evaluations, which intentionally provide a set of indicators with values that vary annually to reflect current HCP status changes to alert personnel to incipient problems (in contrast to a single overall indicator across a long period of time),
- c) concern that an inadequate selection of restricted groups for analysis by the evaluator might lead to failure to detect that different subgroups of the HCP population may show lesser degrees of protection from noise than the group selected for analysis,
- d) the derivation of the numerical ranges for the criteria,
- e) the fact that this results-oriented method does not address failures of omission by the HCP (such as failure to identify and include all noise-exposed individuals in the program) or failures of implementation by the HCP (such as failure to provide annual educational programs).

The Working Group chair did not elect to pursue reversal of the negative votes because the scope of changes desired by negative voters would have fundamentally altered the nature of the document. The ADBA method was developed as a tool for evaluating HCP effectiveness in terms of audiometric data variability from year to year. Other types of methods that reflect cumulative hearing loss over time are briefly described in Annexes A and B, but the intent of this document was to describe only the ADBA method.

Publication of this ASA Technical Report has been approved by the Acoustical Society of America. This document is registered as a Technical Report in a series of publications according to the Procedures for the Registration of ANSI Technical Reports. This document is not an American National Standard and the material contained herein is not normative in nature. Comments on the content of this document should be sent to the following address:

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This ASA Technical Report was developed under the jurisdiction of Accredited Standards Committee S12, Noise, which has the following scope:

Standards, specifications, and terminology in the field of acoustical noise pertaining to methods of measurement, evaluation, and control, including biological safety, tolerance, and comfort, and physical acoustics as related to environmental and occupational noise.

At the time this ASA Technical Report was submitted to Accredited Standards Committee S12, Noise, for final approval, the membership was as follows:

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Working Group S12/WG12, Evaluation of Hearing Conservation Programs, which assisted Accredited Standards Committee S12, Noise, in the preparation of this ASA Technical Report, had the following membership:

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When preparation of this ASA Technical Report was begun, Larry H. Royster was WG chair.

Suggestions for improvement will be welcomed. Send suggestions for improvement to Accredited Standards Committee S12, Noise, in care of the ASA Standards Secretariat, 35 Pinelawn Road, Suite 114E, Melville, New York 11747-3177.

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