



Your Essential
Connection

September 20, 2004

Docket Management Facility
U.S. Department of Transportation
400 Seventh Street, SW
Nassif Building, Room PL-401
Washington, DC 20590-001

Docket Number: FRA 2002-12357 RIN 2130-AB56

RE: Notice of Proposed Rulemaking – Occupational Noise Exposure for Railroad Operating Employees

Docket Officer:

The American Industrial Hygiene Association (AIHA) appreciates the opportunity to provide input and offer comments and recommendations regarding the Federal Railroad Administration (FRA) notice of proposed rulemaking for hearing conservation for railroad operating employees. The notice of proposed rulemaking was published in the Federal Register on June 23, 2004 (Volume 69, Number 120, pages 35145-35192).

Founded in 1939, AIHA is a nonprofit association comprised of over 12,000 members and more than 75 local sections. AIHA has more than 30 technical committees (including the Noise Committee) that deal with the health and safety challenges facing occupational health and safety experts and workers everywhere.

The AIHA Noise Committee provides health professionals, the industry, and the community a forum for disseminating and exchanging ideas and information about the effects of exposure to noise and vibration, the control thereof, and methods of hearing conservation. The comments submitted to the FRA by AIHA were developed and approved by the AIHA Noise Committee.

AIHA

***Your Essential Connection:
Advancing Occupational and Environmental Health
and Safety Globally***

2700 Prosperity Ave., Suite 250, Fairfax, VA 22031 U.S.A.
703-849-8888; Fax 703-207-7266; www.aiha.org

The Federal Railroad Administration should be commended for proposing to refresh their regulation governing noise in the railroad workplace, and for their careful attention to the issues and concerns surrounding hearing loss prevention for these workers.

After careful review of the proposal, AIHA suggests the following changes where we believe the rule may be improved in order to offer workers even better protection from the effects of hazardous noise.

AIHA COMMENTS

§227.1 Purpose and Scope

The American Industrial Hygiene Association (AIHA) supports the Federal Railroad Administration's (FRA) proposal to establish a uniform hearing loss prevention rule for railroad operating employees. A uniform standard will facilitate understanding of and compliance with regulatory requirements. While AIHA believes that general conformance with existing OSHA occupational noise exposure standards as reflected in 29CFR1910.95 is a good starting point, the lessons learned by OSHA in over 20 years of administering this rule may point to areas for potential improvement.

§227.5 Definitions

AIHA recommends that the following definitions be revised. Changes are underlined and italicized.

Action Level means an eight-hour time weighted average sound level (TWA) of 85dB(A), or, equivalently, a dose of 50 percent, integrating all sound levels from 80dB(A) to 140dB(A)

Most modern noise measurement equipment has the capability to integrate sound levels up to 140 dB. This improvement in equipment can and should be referenced here.

Audiologist means a professional who provides comprehensive diagnostic and treatment/rehabilitative services for auditory, vestibular and related impairments and who is certified by the American Speech-Language-Hearing Association (ASHA) and, where applicable, state licensed.

This definition is consistent with that contained in the American Speech-Language-Hearing Association (ASHA) Scope of Practice in Audiology (ASHA, 2004)

Exchange Rate – AIHA believes that employing a 3 dB exchange rate is more appropriate and protective for railroad employees. The noise exposure conditions, legacy of engineering

controls, and other criteria surrounding MSHA's adoption of the 5dB rule are not necessarily germane to the railroad industry. NIOSH supports a 3 dB exchange rate, as does most of the rest of the world. In addition, the MSHA comment cited clearly states that they will continue to monitor the situation with an eye toward adopting the more stringent exchange rate. FRA has an opportunity to do so now.

§227.103 Noise Monitoring Program

A. Effective Date

Instrumentation and protocols for assessing worker noise exposure are well understood in general industry, and this knowledge should be easily transferable to the specific requirements of the railroad industry. AIHA recommends that all aspects of the proposed rule be phased in within one (1) year from the date of promulgation.

B. Noise measurements

AIHA supports the integration of all continuous, intermittent, and impact noise levels between 80dBA and 140dB in the calculation of employee exposure or dose. Dosimeters and integrating sound level meters today are capable of dynamic ranges from 80dB to 140dB, which was not the case when the general industry noise standard (29 CFR 1910.95) was promulgated. This dynamic range is consistent with the recommendation made in *Criteria for a Recommended Noise Standard* (NIOSH, 1998).

Suter (1992) also states that certain trends are evident with the noise variables of spectrum, duration, and level. Specifically,

- High-level sound stimuli (i.e., greater than 120dB) produces greater task-performance decrements than sounds of lower intensity.
- High-frequency noise is more disruptive than low-frequency noise of comparable levels.
- Continuous noise appears to have little effect on simple tasks, even in relatively high sound levels.
- Intermittent noise appears to be more disruptive than continuous noise, especially when the intermittencies are unpredictable. Impact noise can disrupt task performance, at least for a limited period of time.

No additional costs are projected because currently available instrumentation already provides the dynamic range in question.

C. Measurement Instrumentation

AIHA agrees that it is sufficient for the FRA to include references only to American National Standards Institute (ANSI) standards for measurement instrumentation, which is consistent with the actions taken other federal agencies (e.g., Occupational Safety and Health Administration, Mine Safety and Health Administration).

It is recommended that the FRA require measurement instrumentation to be conducted using noise measurement equipment that meets the requirements of the most *current* version of the standards in question at the time of promulgation of the regulation. As with general industry, the accuracy reflected in Type II measurement equipment is sufficient for the needs of employee exposure determination for this rule.

§227.105 Protection of Employees

AIHA recommends adding the requirement for a 140dB unweighted peak limit to the FRA rule per OSHA 1910.95, Table G-16. This would eliminate exposures to high-level impulse noise, which is not captured with current SLMs.

§227.109 Audiometric Testing Program and §227.119 Training Program

Qualified Technicians

AIHA appreciates FRA's recommendation that only qualified providers be permitted to supervise audiometric testing programs. However, there is a wide range of medical specialties. Many physicians are not familiar with details regarding both hearing measurement and hearing loss due to noise exposure. AIHA recommends that an audiologist or a physician with specific training, experience and expertise in hearing and hearing loss be responsible for the audiometric testing program.

Furthermore, AIHA recommends that the FRA recognize technicians as "qualified" only with successful completion of Council for Accreditation in Occupational Hearing Conservation (CAOHC) certification requirements. CAOHC has a multidisciplinary board of professionals that collectively strive to maintain and increase the minimum standard of competency. By requiring CAOHC certification, the agency will assure a level of quality to this very important component of a hearing conservation program.

Baseline Audiogram

For new employees, AIHA recommends that an audiometric test be completed prior to an employee starting a job where sound levels are greater than or equal to 85 dBA or during pre placement. Where mobile test vans are used, baseline audiograms should be obtained within 90 days. If an audiogram is not obtained before placement on the job, hearing protection should be required until the audiogram is obtained for all employees whose noise exposures meet or exceed the action level. It is in the employer's best interest to obtain an accurate measurement of an employee's hearing levels as early as possible.

For existing employees that do not have a baseline audiogram, AIHA recommends that they be treated as new employees.

For existing employees who have baseline audiograms, AIHA agrees with FRA's proposal for grandfathering certain pre-existing baseline audiograms. AIHA also agrees that it is the responsibility of the professional supervising the hearing conservation program to determine which pre-existing audiograms are acceptable and which to choose as the baseline.

Periodic Audiogram

The most appropriate way to monitor change in hearing levels of any worker is through annual audiometric monitoring. Therefore, AIHA recommends that audiometric testing be required annually. A significant amount of hearing loss can occur in 3 years. AIHA believes it would be administratively more difficult for the FRA to track compliance with this aspect of the proposed rule with an allowable three year period between audiograms. Furthermore, in order to maintain consistency between the various federal noise exposure standards, it seems logical for the FRA noise standard to be the same as the OSHA general industry noise standard and the Mine Safety and Health Administration (MSHA) noise standard.

Follow-up Procedures

AIHA opposes the following language found in Section (h)(3) and requests that it be deleted. Specifically, it states

If subsequent audiometric testing of an employee whose exposure to noise is less than an 8-hour TWA of 90 decibels 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.

Temporary threshold shift (TTS) may be an early indication of a noise-susceptible employee. Rather than discontinuing use of hearing protection devices (HPD), it may be an indicator of need for intervention to further promote the effective use of HPD by offering a different selection of devices.

Standard Threshold Shift

AIHA opposes FRA's recommendation that an employee be retested within 90 days if a standard threshold shift (STS) has occurred. AIHA supports NIOSH's recommendation (NIOSH, 1998) for an immediate retest if an STS has occurred. If the retest audiogram does not show the same shift, the retest audiogram becomes the test of record and there is no need for a confirmatory retest within 30 days. AIHA also recommends that confirmation audiograms be conducted again within 30 days of any monitoring or retest audiogram that continues to show an STS, as the 90 day window permitted in the proposed rule permits too much time to lapse to permit effective comparison of tests.

Training Program

AIHA recommends that employers develop flexible education programs that encourage worker involvement and ownership of their own hearing health and conduct these programs annually as required in the general industry noise standard.

These worker and management training activities are one of the most effective and critical components of a hearing conservation program. Providing a forum for discussion not only involves workers, it also reveals problems they face in complying with components of a hearing conservation program.

Employees should receive training and be fit with HPD before they enter noise hazardous areas. In this situation, appropriate expectations are set from the beginning and early temporary threshold shifts are prevented. The six (6) month window for new employees and two-year window for existing employees is unnecessary and counterproductive.

AIHA supports the FRA's proposed requirements to train employees to (a) determine what conditions and/or events can trigger an excessive noise report and (b) file an excessive noise report. Employee recognition of excessive noise and use of hearing protection can provide an early intervention to prevent hearing loss.

Method of Training

AIHA recommends interactive training as the most effective way to communicate the message. Workers want to know whether they passed the hearing test. Interactive training provides a "teachable moment" when workers are more willing to receive information.

Although face-to-face training can prove burdensome and costly for all employers, it is imperative that the initial training be completed on a face-to-face basis to ensure that the worker understands the principles involved in the hearing conservation training program and how to correctly fit hearing protectors appropriate for the worker's occupational noise exposures. This training could be accomplished at the time of the annual hearing test.

Greater cost effectiveness and efficiency could be realized if annual training sessions were not conducted in a face-to-face setting—as long as resources are available (either on site or by phone) to answer workers' questions when they arise. Interactive training programs can be very effective if there are knowledgeable resources available to the worker to clarify issues. Additional re-training could be accomplished at the time of the recommended annual hearing test.

§227.113 Noise Operational Controls

AIHA supports FRA's proposal to allow railroads the option of using noise operational controls rather than mandating their use. In general industry, administrative controls, which are equivalent to FRA's noise operational controls, have proven problematic. Scheduling noisy operations to minimize the number of workers exposed and limiting time of operation of noisy equipment have in many cases taken a secondary role to production requirements, and have proven difficult to administer and enforce. While shortening the duration of

exposure is generally a good idea, most controls that would qualify as “noise operational” controls by distributing noisy jobs among more workers would expose some additional workers to some level of noise exposure risk. This control option should only be implemented if the resultant noise exposures for the affected workers are still at safe or acceptable levels.

Purchasing quiet equipment and controlling noise at the source have proven most effective; some limited success has been found in erecting barriers to shield workers from high noise levels, but the effectiveness of this approach has been limited in general industry due to maintenance and enclosure removal issues. The best way to manage exposure is to eliminate the source of noise by substituting quieter tools and operations where feasible.

§227.115 Hearing Protectors

AIHA applauds FRA’s recognition of the potential adverse impacts of overprotection on railroad operating employees. Overprotection is a concern as purchasing authorities oftentimes are under the false assumption higher noise reduction are better—regardless of local exposure conditions and needs. A “one size fits all” approach is inappropriate and other factors must be considered in the selection and fitting of hearing protectors. Factors to be considered include:

- comfort
- employees’ ability to understand and respond to voice and radio communication
- ability to hear and respond to audible warnings.

Employees will be safer and more satisfied with HPD if overprotection is limited or eliminated. The simpler the requirement, the more likely it is that more workers will use HPD. Therefore, AIHA recommends the following amendment to Section 227.115:

(d) “The railroad shall give employees the opportunity to choose from at least four different models of hearing protectors with an appropriate range of attenuation levels including at least two types of earplugs and one type of earmuff.”

The effectiveness of any hearing conservation program relies heavily on the workers’ willingness to wear HPD. The following factors have been identified as extremely important determinants in workers’ acceptance of hearing protectors.

- Convenience and availability
- Belief that the device can be worn correctly
- Belief that the device will prevent hearing loss
- Belief that the device will not impair the worker’s ability to hear important sounds
- Comfort
- Adequate noise reduction

- East of fit
- Compatibility with other personal protective equipment

FRA also requested comments on labor members' concerns that some railroads might use a mandatory hearing protector provision as a disciplinary tool or as a means for harassing an employee. HPD should be considered in the same light as all other mandatory personal protective equipment. Enforcement of HPD policy should be uniform and consistent, and should not be viewed by either labor or management as punitive or as a disciplinary tool.

The use of hearing protectors should be viewed as a means for the employer to ensure the safety and well being of their employees. Employees must be provided with appropriate education and training on the need for and use of hearing protectors and an appropriate range of devices sufficient and appropriate for the local noise conditions.

§227.117 Hearing Protector Attenuation

AIHA agrees with the FRA that ANSI S12.6-1997 Method B more closely resembles the real-world performance of hearing protectors and supports its inclusion in Appendix B.

Hearing protector ratings included in the noise reduction rating (NRR) are based on data obtained under optimal laboratory conditions in which the experimenters fit trained listeners. They differ markedly from the noise reduction that workers actually experience on the job. In the late 1970's and early 1980's, two NIOSH field studies demonstrated that insert-type hearing protectors provided less than half the noise attenuation measured in the laboratory (Edwards, et al., 1979; Lempert and Edward, 1983).

Royster, et al. (1996) addressed problems associated with the use of the NRR. They demonstrated that relying on the manufacturer's instructions or the experimenter to fit hearing protectors may be of little value in estimating the protection that workers would actually experience. The Royster, et al. study also demonstrated that having untrained subjects fit their own hearing protectors provided much better estimates of the hearing protectors' noise attenuation in the workplace than having the experimenter fit them. This method has been adopted for use in ANSI S12.6-1997 (R2002), *Methods for Measuring the Real-Ear Attenuation of Hearing Protectors* (ANSI, 2002).

NIOSH also recommends the use of subject-fit data based on ANSI S12.6-1997 (R2002) (ANSI, 2002) to estimate hearing protector noise attenuation. However, if subject fit data is not available, NIOSH recommends de-rating hearing protectors to correspond with available real-world data.

Specifically,

Earmuffs	Subtract 25% from the manufacturer's labeled NRR
Foam earplugs	Subtract 50% from the manufacturers labeled NRR
All other earplugs	Subtract 70% from the manufacturer's labeled NRR

Consideration should be provided for emerging technologies that permit on-site or personal tests of hearing protector effectiveness. Flexibility in this aspect of the standard to embrace new technologies is appropriate and essential.

§227.121 Recordkeeping

AIHA strongly opposes the FRA's recommendations that exposure measurements records should only be retained for 3 years, and that employee audiometric test records should be only retained for the duration of the employee's employment. AIHA recommends that the employer retain audiometric test records and noise exposure measurement records for the duration of the affected employee's employment plus 30 years, consistent with other health record maintenance standards. Noise exposure database records should be established and maintained for 40 years in order for the FRA to evaluate the effectiveness of its hearing conservation program. .

In addition, AIHA recommends that the audiometric test record for each worker be consistent with the recordkeeping requirements outlined by OSHA, which include the following information:

1. Name and job classification of the employee
2. Date of the audiogram(s)
3. The examiner's name
4. Date of the last acoustic or exhaustive calibration of the audiometer
5. Employee's most recent noise exposure assessment

AIHA further recommends that the following information be included in the test record:

- the model and serial number of the audiometer used for testing,
- the measurements of the background sound pressure levels in audiometric test rooms, and
- the name of the individual supervising the hearing conservation program.

In lieu of the FRA maintaining copies of the training materials, which may become burdensome, AIHA recommends documenting the date, content, attendees, and faculty for each training program.

References

American Speech-Language-Hearing Association. (2004). Scope of practice in audiology, *ASHA Supplement 24*

American National Standards Institute. (2002). Methods for measuring the real-ear attenuation of hearing protectors (*ANSI 12.6.1997*) [R2002]. New York: Acoustical Society of America.

Edwards, R.G., Hauser, W.P., Moiseev, N.A., Broderson, A.B., & Green, W.W. (1979). A field investigation of noise reduction afforded by insert-type hearing protectors. Cincinnati: U.S. Department of Health, Education, and Welfare, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, DHEW (NIOSH) Publication No. 79-115.

Lempert, B.L., & Edward, R.G. (1983). Field investigations of noise reduction afforded by insert-type hearing protectors. *Journal of the American Industrial Hygiene Association*, 44(2), 894-902.

National Institute for Occupational Safety and Health. (1998, June). *Criteria for a recommended standard: Occupational noise exposure*. Cincinnati, OH: NIOSH.

Occupational Safety and Health Administration. (1983). Occupational noise exposure: Hearing conservation amendment; Final rule (29 CFR 1910.95). *Federal Register*, 48(46), 9738-9785.

Royster, J.D., et al. (1996). Development of a new standard laboratory protocol for estimating the field attenuation of hearing protection devices (Part I: Research of Working Group 11, Accredited Standards Committee S12, noise). *Journal of the Acoustical Society of America*, 99, 1506-1526.

Suter, A.H. (1992, November). *Communication and job performance in noise: A review*. Rockville, MD: American Speech-Language-Hearing Association.

Again, AIHA wishes to thank you for the opportunity to comment on this notice of proposed rulemaking. The AIHA continues to look forward to partnering with the Department and the FRA on the critical issue of noise conservation. Should you have any questions, please contact me.

Sincerely,

(signature)

Donna M Doganiero

Donna M. Doganiero, CIH

President

cc: AIHA Board of Directors
Jonathon Thomas, AIHA Noise Committee Vice Chair
Steven Davis, AIHA Executive Director