

A Common Misunderstanding About Noise Exposure Assessment and the Regulations



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Knock, knock. Who's there? OSHA. OSHhhhhhh! Ever experience that sinking feeling in the pit of your stomach when you set out to conduct your plant's noise exposure survey, or are asked by management to describe where the company stands relative to compliance with the applicable noise regulation? If you conduct noise surveys on a regular basis, then you are probably quite comfortable and never feel stressed out. However, if you are like most Occupational Hearing Conservationists (OHCs), who may only conduct a survey once every year or two, then you can probably relate to that anxious sensation you feel as you think to yourself: "I know I took the seminar, and have been designated the plant's "expert," but I am not totally confident I am doing everything right." To help clear up a common misunderstanding about the noise exposure requirements and build upon, or reinforce, your current knowledge base for regulatory compliance, test yourself with the following question:

Question: When monitoring to determine actual or representative employee noise exposures under the Federal Occupational Safety and Health Administration (OSHA) Occupation Noise Exposure Regulation, 29 Code of Federal Regulations (CFR) 1910.95, or the Mine Safety and Health

Administration (MSHA) noise exposure regulation, 30 CFR Part 62, how many time-weighted averages (TWAs) do the regulations indicate you should determine per employee for compliance purposes?

Answer (choose one of the following):

- A. 1 TWA
- B. 2 TWAs
- C. 5 TWAs
- D. Not required to determine a TWA

If you answered one TWA, then you are wrong; however, rest assured you are probably in the majority of respondents. A few plausible reasons most OHCs think only one TWA is required for compliance will be discussed later in this article. The question above is really straightforward, and the answer is two TWAs. One TWA is assessed with a high threshold level and the second TWA with a low threshold level¹. Recall from the relevant OSHA and MSHA regulations you must determine compliance with both the Permissible Exposure Limit (PEL) and the Action Level (AL) for each employee. The PEL is equivalent to a TWA of 90 dBA, and the AL is equal to a TWA of 85 dBA. The PEL uses a high threshold level of 90 dBA, and the AL employs a low threshold level of 80 dBA. In other words, for compliance with the PEL all sound levels below 90 dBA are ignored in the exposure calculation. However, all sound levels below 80 dBA are disregarded for compliance determination with the AL. For example, the following table exhibits a noise exposure scenario for a wood worker in the Fabrication and Assembly

¹ Some State OSHA occupational noise exposure regulations only use a low threshold level (i.e., the State of Washington), superceding the Federal regulation that requires two separate thresholds.

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JOB TITLE: Wood Worker DEPARTMENT: Fabrication and Assembly SHIFT LENGTH: 8 hours						
Calculations are based on guidelines established by the Mine Safety and Health Administration (MSHA) and Occupational Safety & Health Administration (OSHA) Occupational Noise Exposure Standards 30 CFR Part 62 and 29 CFR 1910.95. (5-dBA EXCHANGE RATE)						
ACTIVITY OR SOURCE NUMBER	JOB ACTIVITY	SOUND LEVEL, dBA	REFERENCE DURATION, MINUTES (FROM REG.)	EXPOSURE TIME, MINUTES	ACTION LEVEL % DOSE PER SOURCE (80-dBA Thres.)	PEL % DOSE PER SOURCE (90-dBA Thres.)
1	Hammering	89	551	30	5.4	0.0
2	Band Saw	95	240	30	12.5	12.5
3	Planer	88	633	60	9.5	0.0
4	Jointer	93	317	60	18.9	18.9
5	Router	96	209	120	57.4	57.4
6	Lathe	89	551	90	16.3	0.0
7	Clean-up	82	1455	30	2.1	0.0
8	Lunch/Breaks	65	NA	60	0.0	0.0
USING ACTION LEVEL CRITERIA FOR INCLUSION IN A HEARING CONSERVATION PROGRAM:						
(Under MSHA use 30 CFR Part 62, Table 62-1)			TOTAL ACCUMULATED DOSE:		122.2 %	
(Under OSHA use 29 CFR 1910.95, Table G-16a)			CALCULATED TWA:		91.4 dBA	
USING PEL CRITERIA FOR ENGINEERING NOISE CONTROLS AND MANDATORY HEARING PROTECTION:						
(Under MSHA use 30 CFR Part 62, Table 62-1)			TOTAL ACCUMULATED DOSE:		88.9 %	
(Under OSHA use 29 CFR 1910.95, Table G-16)			CALCULATED TWA:		89.1 dBA	

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Department, as determined during an 8-hour work shift: The job activity presented in the table indicates the wood worker is exposed to 89 dBA for 30 minutes while hammering, various other levels and exposure durations throughout the shift, and 60 minutes for breaks and lunch at an average sound level of 65 dBA. The total duration of all job activities is 480 minutes, or 8 hours. As reported toward the bottom of the table, the first TWA with the low threshold (80 dBA) calculates to approximately 91 dBA, which means this worker or job activity is exposed to noise above the AL. The second TWA with the high threshold level (90 dBA) is roughly 89 dBA, which is below the PEL. Based on these results, the wood worker must be included in a hearing conservation program, but implementation of feasible administrative or engineering noise controls are not required. Hearing protection must be available and is recommended for use, unless the worker has a standard threshold shift in his or her hearing (as defined by the appropriate regulation), at which point hearing protection is then required for the affected worker. (See applicable regulation for specific program requirements, and/or see pp. 40-42 of the *Hearing Conservation Manual, 4th Edition*, authored by A.H. Suter, edited by E.H. Berger, for a list of program requirements.)

As described previously, two separate TWAs are specified for compliance purposes. Certainly, from a “best practice” standpoint it is likely most hearing conservation professionals recommend using only the TWA measured with the low threshold as the basis for all program decisions, such as mandatory hearing protection usage, noise controls, and tracking noise exposure with each worker’s audiometric test records. Hence, this may explain why a likely majority of OHCs answered one TWA to the question above.

For OHCs working with facilities under OSHA jurisdiction, another plausible reason for responding that one TWA is required can be traced to the fact the Hearing Conservation Amendment (29 CFR 1910.95 (c) - Hearing conservation program) went into effect in 1983, which was 12 years after the initial Occupational Noise Exposure regulation. Keep in mind the original 1971 Standard mandated three requirements upon employers whenever worker TWAs exceeded the PEL. The requirements were designed to protect workers against the effects of high noise exposure through: (1) feasible administrative or engineering controls, (2) mandatory usage of hearing protection, and (3) implementation of a continuing, effective hearing conservation program.

To this day under the OSHA regulation, the need for feasible administrative or engineering controls *and* the mandatory use of hearing protection is determined for compliance purposes using the TWA measured with the high threshold level. However, because of the ambiguity in the 1971 Standard as to what constituted “an effective hearing conservation program,” the 1983 Hearing Conservation Amendment became necessary to definitively spell out the requisite components of an effective program. It was with promulgation of the 1983 Amendment where establishment of the AL (85 dBA) and use of the low threshold level were introduced. Since OHCs and other health and safety professionals are trained to use the TWA measured using an 80-dBA threshold level for determining who must be included in a hearing conservation program, this TWA metric is most familiar to them. In addition, OHCs rarely get involved with

the administrative or engineering noise control aspects of the regulation, nor compliance with the PEL. In fact, as strange as this may sound, the OSHA Occupational Noise Exposure regulation never even uses nor defines the term PEL. So it is reasonable to conclude OHCs operate under the assumption only one TWA is required.

This is not necessarily the case for OHCs dealing with facilities under MSHA jurisdiction, as the current Occupational Noise Exposure regulation went into effect in September 2000. Since the MSHA rule is fairly recent, and discusses measurement of TWAs for comparison to both the PEL and hearing conservation AL, it is reasonable to expect that OHCs complying with the MSHA rule are most likely to answer two TWAs to the question above.

So what is the ramification if you had a misunderstanding about the requirement for two TWAs? In practice, very little, unless the management at your plant is rigorously trying to control short-term costs by limiting as much as possible the implementation of feasible engineering noise controls. In that case, it is certainly possible to reduce the number of areas in which noise controls may be required by lowering the measured TWAs using the higher threshold. However, if your plant’s or company’s hearing conservation efforts are managed solely using the low threshold level TWA, then the bottom line is the program follows the “best practice” approach advocated by many professionals. Consequently, an added level of protection above the regulatory requirements is being provided to the workers. From the author’s experience, many companies, both large and small, use only the low threshold level TWA to direct all hearing conservation efforts. So whether it is intentional or unintentional, managing a hearing conservation program with only the low threshold TWA is totally acceptable and advisable, and will certainly meet all regulatory requirements.

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COUNCIL REVISES EXPIRATION LIMIT FOR OHCs

Effective July 1, 2004 certification extensions for OHCs will be limited to 60 days beyond their current expiration date. All requests must be received at the CAOHC office 30 days prior to the expiration and are subject to the approval of the CAOHC Council. This is intended for OHCs having difficulty locating a course in a specific geographic area, for serious illness, or for a death or serious illness in the family (example: an OHC due for renewal July 1, 2004 would have until August 29, 2004 to take an 8-hour refresher course).

When submitting a request for extension: 1) mail, fax, or E-mail CAOHC indicating the circumstance a minimum 30 days prior to your expiration date. (*CAOHC address, fax and e-mail can be found on the inside front page of this newsletter.*) We will provide you with a written response from the Council indicating whether your extension has been allowed. If you are granted an extension, please present that to your CAOHC Course Director at the time of your recertification course. Your new certification expiration date will be five years forward of that course date.

If your recertification date expires, without approval for extension, you are required to take the 20-hour course.