

# The Sweet Sound of Industry

The sound of industry has been sweet to hear! At least, to the man who owns the business, or maybe the Chamber of Commerce.

But, for a long time the sweet sound has been getting a bit loud. In fact, sometime it's downright noisy. Happily, since the middle of 1971 things are supposed to be getting quieter. Or, haven't you heard (no pun intended)?

July, 1971 is when the Occupational Safety and Health Act became law and, because of it, you may be one of the many people who's supposed to be making the change.

Find out. If you are, and don't, there are severe penalties involved and your operations could ultimately be shut down!

Start by knowing what OSHA has to say on the subject. That's contained in Section 1910.95, which is printed adjacent to this article for your convenience.

First, you need to know something about sound. The experts say that certain sound pressure levels above 90 decibels (dB) may be injurious to the hearing of some people. We aren't all

affected alike by these things, so just to play it safe the "threshold" level of 90 dB was agreed upon. Even now, some people think it should be lowered to 85.

Be that as it may, whether or not any particular sound level will be injurious to any given person depends on how long he's exposed to it. So, included in the regulations is Table G-16. This gives the time of exposure to various sound levels allowed in one day. For example, by OSHA laws a sound level of 92 dB can be safely tolerated for up to six hours a day, while a sound level of 110 dB is permitted for only 15 minutes.

Your first reaction to this might be, "Well, if I have a problem with a sound level of 110 dB, all I have to do is cut it in half, and wind up with 50 dB. That would put me home free, right?" Wrong! Because decibels don't add and subtract the way other things do.

Sound level is measured on a scale based on ratios and logarithms. When you cut a sound pressure level in half it goes down by only six decibels. If you double it, it goes up by only six. (In case you're wondering, when two equal sound sources are put together, the net

increase in sound pressure level is only three dB.) Seems very funny. But that's the way it is. Obviously, the problem of controlling sound is somewhat tougher than it first seems to be.

Sound frequency is important too, but all we have to know about it here is how it's taken care of when a sound level is measured. If you're interested, the sound level meter has three scales — A, B and C. Mostly, the difference between them is the way they discriminate against the very low frequencies, with the greatest discrimination being in the "A" scale. For each of these settings the meter can be set on either "slow" or "fast" response.

At fast response the meter needle will try to follow every change in sound level, which would make it hard to read. Set at slow response, there is much less needle movement, making the whole thing easier to read. So, any sound level measurements you use for compliance purposes must be made with a meter set on the "A" scale, slow response.

Note the column heading on the right in Table G-16. It reads, "dBA slow response". That means that the sound levels listed are as measured on the "A" scale of a sound level meter set at slow response.

Are you in compliance? If you don't know, find out. Chain saws, chippers, brush saws and, in fact, most equip-

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FINE LEAF FESCUE  
**Center:**  
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**Right:**  
KENTUCKY BLUE GRASS





**Sweet Sounds**

(from page 47)

ment powered by industrial engines produce over 90 dBA. Just how much more depends on many things: make, model, condition (especially muffler condition), local conditions (are sound reflecting surfaces present, such as concrete pavements?) and how the machine is being used.

Manufacturers should be able to tell you what the sound output of their equipment is, but remember that the figures they supply will be for machinery in new condition operated under optimum conditions.

Sound level meters cost several hundred dollars, and you probably won't want to buy one, so your best bet is to borrow one or employ a specialty service to make the measurement for you. But first check your insurance carrier — they may be able to do the work for you — free.

Let's assume that you do have a problem. You have a four man crew working with a machine that, when new, produced 100 dBA but now, because of a bad exhaust system and some worn gears, produces 110 dBA. One man runs the machine about 4 hours a day, so you give him some hearing protection and he uses it faithfully.

Are you in compliance? No, you are not!

Read paragraph (b) (1) in 1910.95 again. It says that when your employees are subjected to sound levels exceeding those in Table G-16, feasible administrative or engineering controls shall be utilized. That means that you must first do all you can to quiet the machine. In this case, a new exhaust system and engine overhaul would reduce the sound level to 100 dBA. A compliance officer would require you to do the work, and give you a limited time to do it. So you pay the price to have the work done only to find you're still not in compliance.

Note Table G-16 — daily allowable exposure to 100 dBA is two hours, but your man is getting four. You'd be expected to handle this administratively, by splitting the work between two men. This way, each man would be exposed to 100 dBA for only two hours a day, which is acceptable. If you could show administrative controls were not feasible, because the machine operator was the only man qualified for the job, then you would comply by using hearing protection.

Compliance with 1910.95 may seem to be a lot of trouble, and even unnecessary, to some. Realistically, it isn't. Excessive noise has been demonstrated to be injurious to our hearing. It's also annoying and can actually produce fatigue. Talk to any man who has been wearing hearing protection in a noisy environment he'd previously worked in without it. Invariably, they think it's great and will tell you that they feel better and more relaxed during the day, and less tired at the end of the day. Clearly, noise control is to everyone's advantage.

But, what about the future? The advisory committee on noise has recently recommended a revision in the regulations on noise which, if adopted, would include a requirement for audiometric testing for all employees exposed to sound levels above those in Table G-16, even though hearing protection has been worn. Such a regulation would require the employee to be tested within a short time after his initial exposure, and periodically thereafter. The test would have to be given by a fully qualified technician, and detailed records of the tests would have to be kept by the employer.

If you're located in an area where test facilities are readily available, tests can be made without too much trouble. If your employees are grouped together, a mobile unit can be brought to them at a relatively low cost per test. But, suppose these facilities are not available locally? You'd have to send the employees to wherever they are available. How would you like that?

The purpose of such an audiometric test program, it is said, is to insure or test the effectiveness of the hearing conservation program. But, would it? An employer can control his employees' exposure to noise only during the working day. What the employee is exposed

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to during the other 15 or 16 hours is something else. Audiometric testing can show that a man has, or has not, had his hearing ability impaired, but it cannot show where, when or how.

Clearly, there are two actions required by responsible employers.

First, know what the law requires, and comply. It's to everyone's advantage, including your own.

Second, keep informed on what your lawmakers are doing. Proposed regulations are published in the FEDERAL REGISTER, with information on how to make comment. When proposals are made that you don't agree with, say so. The people who write the regulations in Washington truly are interested in what you think and want your help. They're hardworking, concerned people who are trying to do a good job. But, as one OSHA official put it, "If we propose a regulation and hear no comments on it, we can only assume that we are exactly right or else nobody cares".

Need more be said?

#### 1910.95 Occupational noise exposure.

(a) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at slow response.

(b) (1) When employees are subjected to sound exceeding those listed in Table G-16, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of Table G-16, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

(2) If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous.

(3) In all cases where the sound levels exceed the values shown herein, a continuing, effective hearing conservation program shall be administered.

Table G-16—Permissible Noise Exposures<sup>1</sup>

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 or less	115

<sup>1</sup> When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:  $C1/T1 + C2/T2 + Cn/Tn$  exceeds unity, then, the mixed exposure should be considered to exceed the limit value.  $Cn$  indicates the total time of exposure at a specified noise level, and  $Tn$  indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

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### Landscape Awards Presented by First Lady

For the third time in the 21 year history of the program this year's Landscape Awards Ceremony of The American Association of Nurserymen took place at the White House. Mrs. Richard Nixon presented awards to individuals, business and industrial firms, institutions and municipalities involved in 21 outstanding environmental landscaping achievements at the White House.

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