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## Noise Survey Results of Construction Safety and Health Trainers

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## **Results: Noise Survey of Construction Safety & Health Trainers (2015)**

According to NIOSH, hearing loss is one of the most common work-related illnesses in the U.S. In the construction industry, up to half of all construction workers<sup>1</sup> suffer from some level of hearing loss due to occupational exposure.

From May to June 2015, CPWR fielded a survey of union trainers. The survey's two objectives were to:

1. Provide the OSHA-NIOSH-CPWR r2p Working Group with information on the training currently provided to construction apprentices and journey-level workers on noise controls and hearing loss prevention practices, the tasks health and safety trainers consider the noisiest, and the potential barriers to using controls.
2. Test the use of the formal research side of the r2p TRU-Net system from the researcher and trainer perspectives: Did the survey notification process work? If so, how many trainers were reached? Was there good participation? What challenges were encountered? What should be done differently in the future? Did the process create a time burden for the trainers?

To achieve these objectives, early drafts of the survey were reviewed by members of the Working Group and NIOSH researchers with specific expertise in noise hazards and hearing loss. The survey was tested with four CPWR trainers. The final version of the survey reflected their input.

The survey was sent to training directors at 14 national/international unions in two formats: a paper copy and a link to an online version using a leading online survey platform. CPWR asked the directors to 1) distribute the link and/or the paper copy to all of their trainers, 2) notify CPWR when the survey was sent out, and in which format it was sent (paper, link to the online survey, or both), and provide the number of trainers who were asked to participate. One union requested that CPWR send the survey directly to their trainers.

Nine of the unions distributed the surveys to an estimated 1,200 trainers. Six unions distributed the survey in both the print and online format, two unions distributed it online only, and one did not provide this information. The participating unions included the Boilermakers, Bricklayers, Carpenters, Insulators, Ironworkers, Painters, Plumbers & Pipefitters, Roofers, and Sheet Metal Workers. A total of 248 (roughly 21%) of the trainers responded to the survey – 24 completed the paper version and returned it to CPWR, and the remaining 224 completed the online version. Each union was provided a list of the trades they represent and provided space to list additional ones. The trainers identified 52 different trades, including 13 specialized, and one listed under “other.” *[Please note: responses to all of the questions were voluntary. Participants were not required to respond to any of the questions to move to the next one. As a result, there were not 248 responses for each question.]*

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<sup>1</sup> NIOSH Buy Quiet online resource and video <https://www.youtube.com/watch?v=MGJFQVwiDeM>

## Demographics

The survey participants had 28.7 years of experience in the construction industry on average (ranging from 8 to 60 years), and an average of 11.9 years as trainers (ranging from 1 year to 51 years). Just over half, (54%/127) of the trainers identified themselves as full-time trainers, and the remaining 46% (108) identified themselves as part-time trainers. When those who identified as part-time trainers were asked what occupied the rest of their time, 43% said they worked in construction, 32% said they worked for their union, 15% said they were retired, and 10% listed other positions and functions, such as training coordinator and training director.

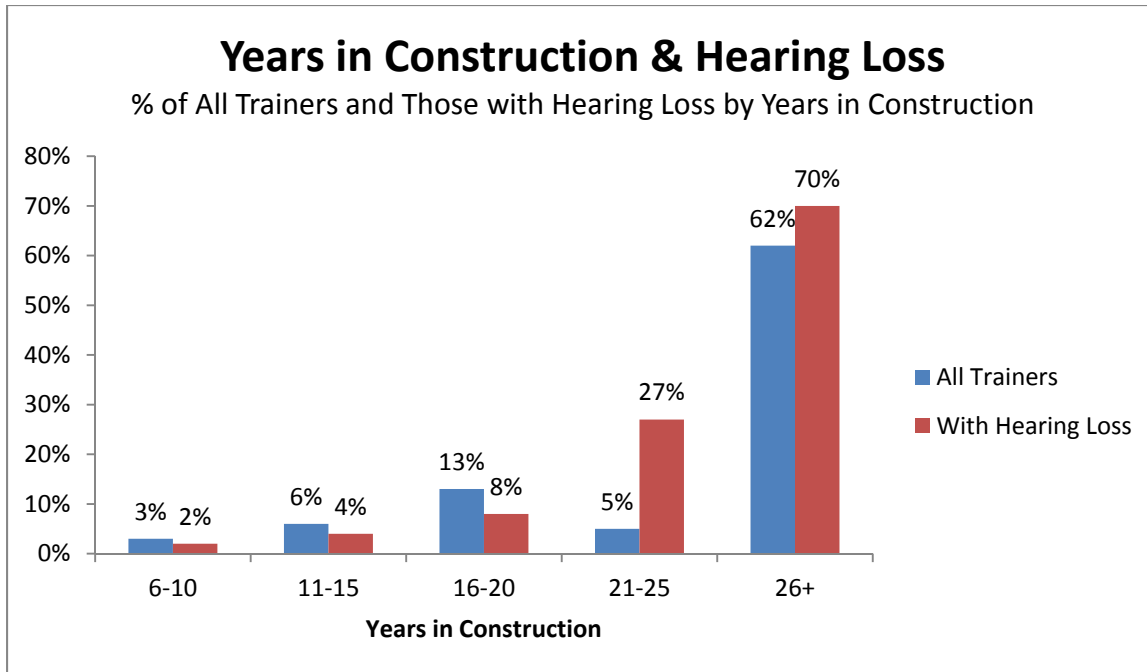
## Self-Assessment of Hearing

When asked to describe their hearing, 44% (96) of the trainers described their hearing as good to excellent and 56% (120) said they have some level of hearing loss.



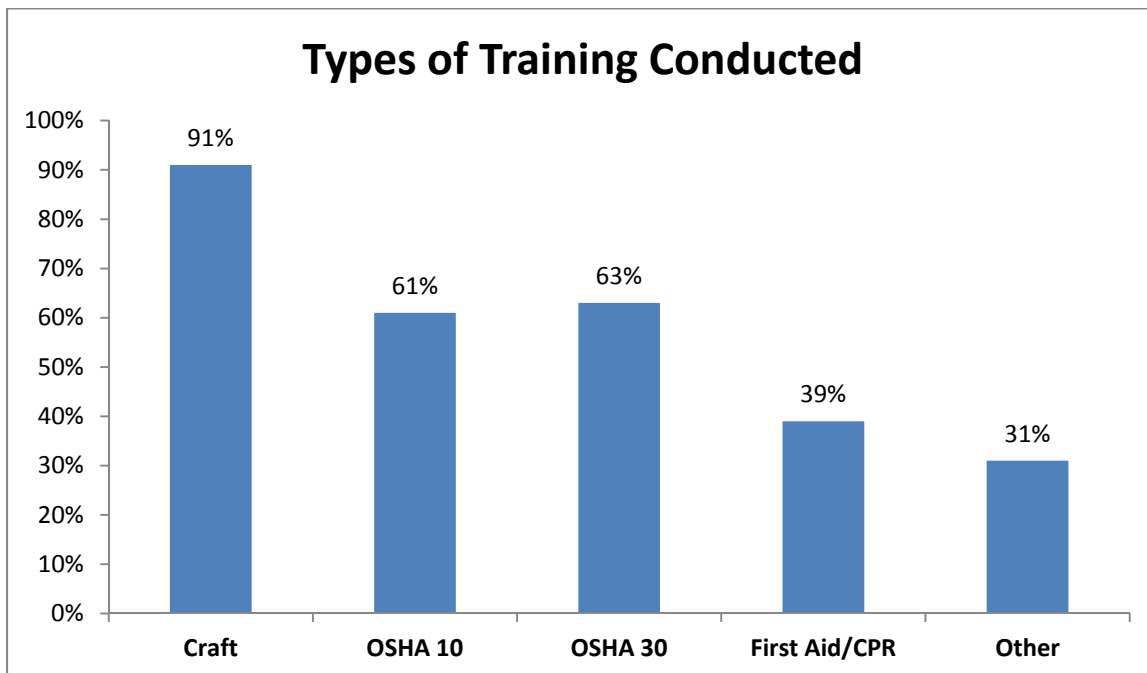
Since one sign of hearing damage is “ringing, roaring, or buzzing in your ears or head,” trainers were asked if they had been bothered by this type of noise lasting 5 minutes or more during the last 12 months. Overall, 32% (70) said they had experienced these symptoms. While this was lower than the 56% who said they have some level of hearing loss (moderate to a lot of trouble hearing), what’s interesting to note is that that 17% of the trainers who said their hearing is “Good” had experienced ringing, roaring or buzzing in their ears or head in the last 12 months.

A comparison of the trainers’ self-assessment of their hearing to the length of time they had worked in the construction industry showed that the longer they worked in the industry the more likely they were to say they suffered from some level of hearing loss.



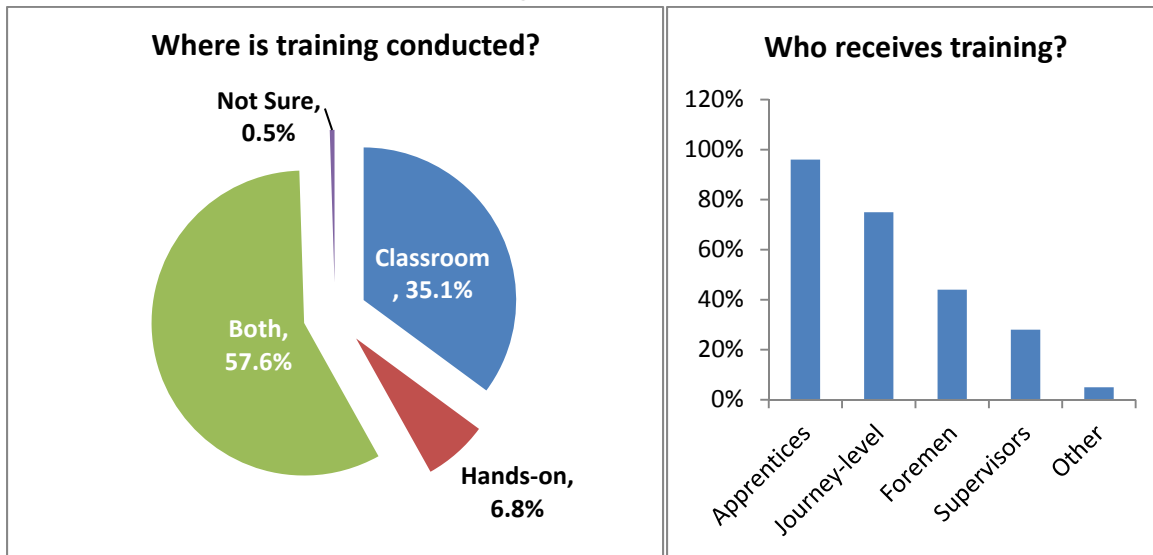
### Types of Training Provided

Trainers were asked to select the types of training they conduct from a list. The majority of the trainers said they conduct craft-related (skills) training, (91%/214), 63% (147) OSHA 30 training, 61% (144) OSHA 10 training, 39% First Aid/CPR (91), and 31% (73) listed another type, such as fall protection, hazard communication, rigging and signaling, MSHA, N.Y. City scaffold requirements, and computers.



Four out of five trainers (81%/191) said they provide training on how to prevent noise-induced hearing loss. The majority of the trainers (96%/184) provide this training to apprentices, 75% (144) to journey-level workers, 44% (84) to foremen, 28% (53) to supervisors, and 5% to “others” such as contractors and pre-apprentices. More than half (58%/110) said this training is conducted both during classroom and hands-on training, 35% (67) said it is only provided in the classroom, 7% said it is only provided during hands-on training, and one trainer was not sure.

### Where is the training conducted and who is trained?



Trainers were then given a list of noise-related training topics and asked to identify the topics covered or fill in one of their own. The majority of trainers provide training on OSHA standards and the permissible exposure limit (86%/162), how to wear hearing protection (86%/162), and sources of noise (82%/155). But fewer provide training that focuses specifically on the signs and risk of hearing loss, limitations of hearing protection and when it should be replaced, and engineering controls.

Noise-Related Topics Covered	
<b>OSHA standards &amp; PEL</b>	<b>86.2%</b>
<b>How to wear hearing protection</b>	<b>86.2%</b>
How to determine when hearing protection is needed	77.1%
How to select hearing protection	77.1%
The limitations of hearing protection	53.2%
How to know when to replace hearing protection	42.6%
<b>Sources of noise</b>	<b>82.4%</b>
Risk for & signs of hearing loss	68.6%
Basic acoustic theory	46.2%
<b>Engineering controls</b>	<b>36.7%</b>
Benefits of low noise equipment	31.9%
How do identify low noise equipment	22.3%
Administrative controls	26.1%
Other	1.6%

## Noisiest Tasks & Equipment

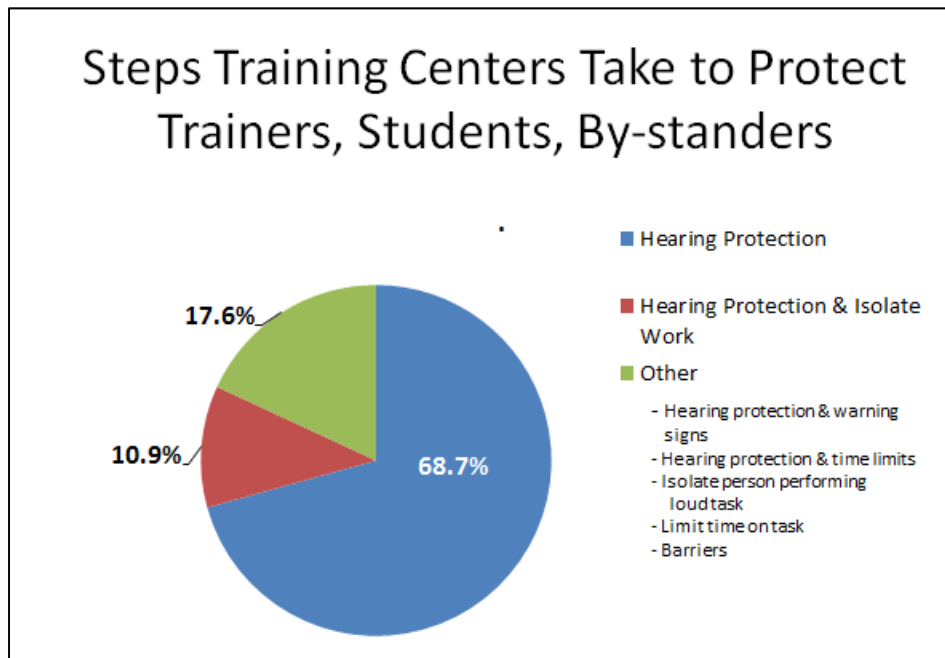
Trainers were also asked to identify the tasks and equipment that produce the most hazardous noise levels for their trades. Although the tasks and equipment identified varied by trade, the following were the most frequently cited:

# Tasks & Equipment that produce most hazardous noise levels

- **Grinding/Polishing**
  - Pneumatic & electric grinders, 4 1/2", 5", 6", 7", 9" grinders, floor grinders, buffing machines, bench grinder
- **Cutting/Sawing**
  - Chop saws, grinders, circular saws, table saws, band saws
- **Drilling**
  - Core drilling machine, hammer drills, roto hammer
- **Welding**
  - Torches, welding machines, heat welders, spot weld robots, generators
- **Gouging**
  - Gouging torches (air arc, carbon), generators
- **Blasting (abrasive, hydro, bead, sand)**
  - Compressors, blast pots, pumps, pressure washer, sand and bead blasters
- **Bolting/Fastening/Nailing**
  - Impact wrenches, pneumatic nail guns, screw guns, powder actuated equipment, generators
- **Demolition**
  - Jackhammers, chipping guns, gas saws, roto hammer, compressors, scarifiers, roof cutters, needle guns
- **Hammering**
  - Chipping hammer, rivet hammer, manual hammers, rotorhammer, pneumatic duct hammer
- **Insulating**
  - Fans, motors, live boilers, live industrial equipment
- **Milling**
  - Milling machines, millhog tube mill, BR-90 mill motors
- **Sanding**
  - Edgers/drum sanders, floor sanders
- **Spray Painting**
  - Compressors, booth and negative air machines
- **Threading/Grooving**
  - Pipe threaders/groovers, motors, rigid threaders/groovers
- **Routing**
  - Needle guns, power routers, roto peen grinder
- **Rigging**
  - Cranes and other mechanical equipment
- **Other**
  - Scissor lifts – equipment with back-up alarms
  - Mortar mixers
  - Roofing kettles
  - Ventilation systems
  - Tar pumps
  - Rock hopper
  - Backpack or push blower
  - Chillers
  - Hog ringer

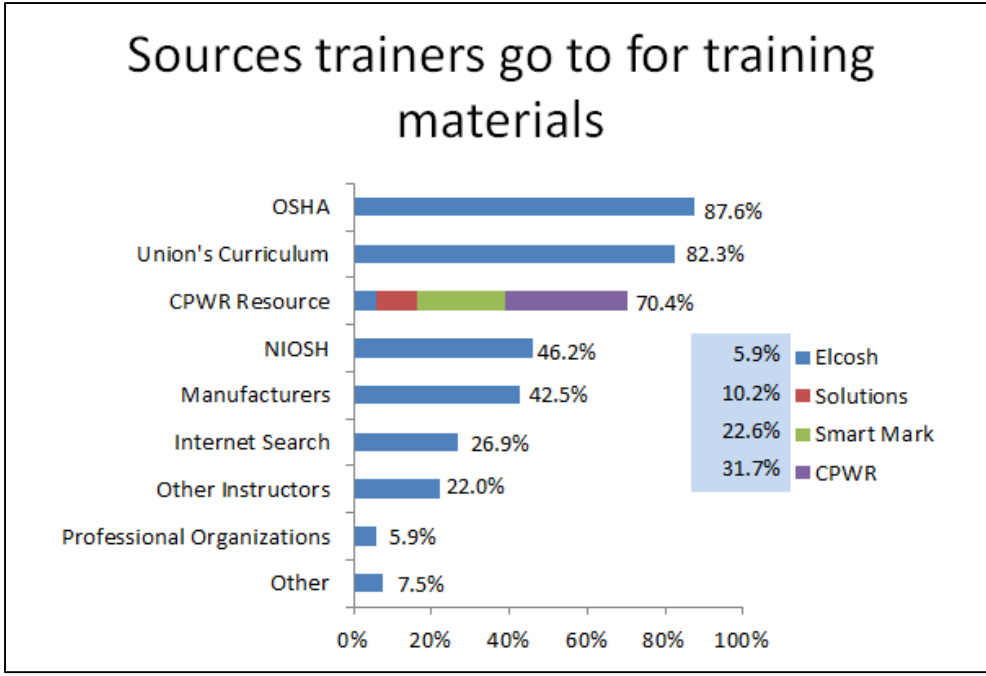
## Protecting Trainers, Students and By-standers

When asked what steps are taken in their training centers to protect students, instructors and others present when these tasks are being performed (an open-ended question), the majority (69%/145) only mentioned using hearing protection, 11% (23) said hearing protection and isolating the work, and the remaining trainers (18%/37) said hearing protection and some other step – such as putting up warning signs, limiting a person’s time on a task, isolating the person performing the task, or putting up barriers.

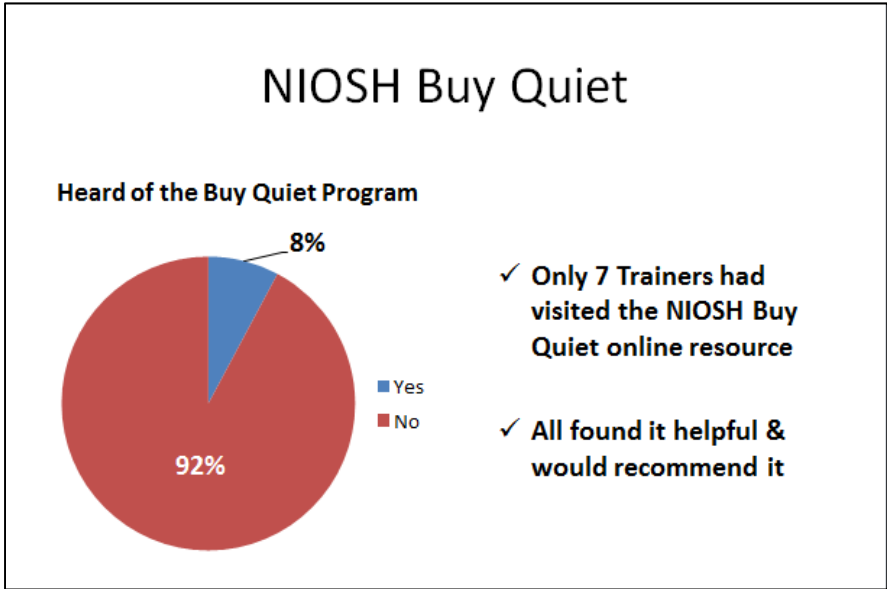


## Sources of Training Materials

Trainers were given a list of common sources for training materials and asked to select those they use or to fill in ones of their own. The top responses were OSHA (88%/163), their union’s training curriculum (82%/153), and a CPWR resource – CPWR, Smart Mark, Solutions, or eLCOSH (70%/131). These were followed by NIOSH (46%/86), manufacturers (43%/79), general Internet searches (27%/50), other instructors (22%/41), and professional organizations (6%/11). Under “Other” (8%/14), they cited sources such as: WorkSafeBC, provincial rules, Oil Sands Safety Association, the California Building Trades, and workers’ compensation materials.

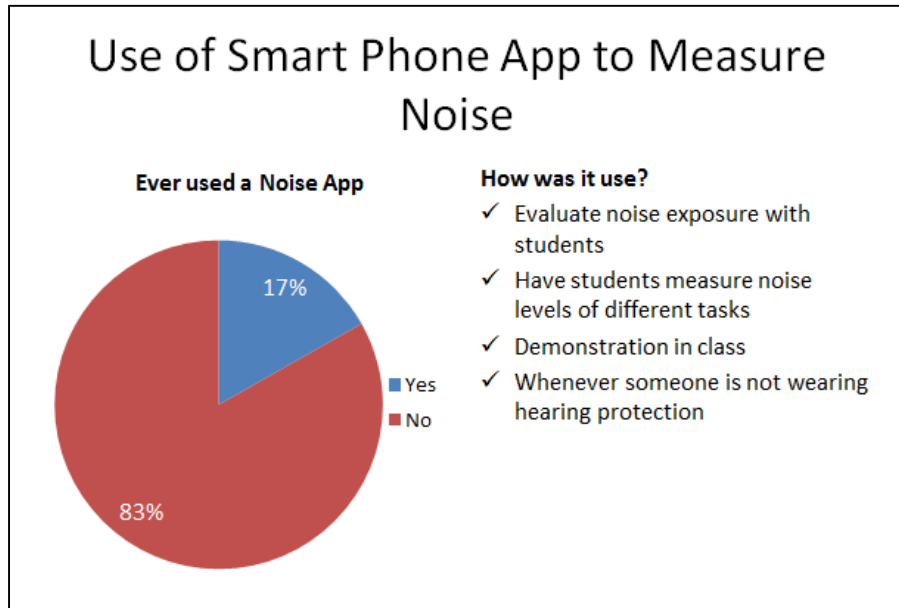


Although a significant number of trainers said they go to CPWR and/or NIOSH for training materials, very few had heard of NIOSH's Buy Quiet initiative, even though both CPWR and NIOSH have actively engaged in efforts to disseminate this information to the industry. Only 8% (18) of the trainers said they had heard of the initiative. Of those, seven had visited the online resource and all found it helpful and would recommend it to others. This lack of awareness could be an underlying reason why fewer trainers include information on low noise equipment and engineering controls in their training on noise and hearing loss.



There was limited use of noise apps, another resource that can help raising awareness of noise sources and hazards. When trainers were asked if they had ever used a smart phone noise

app, only 17% (37) said they had. Those who had used a noise app had done so to raise their students' awareness of noise hazards by: evaluating noise exposures with students; having students use an app to measure the noise levels of different tasks; demonstrating to a class how to use an app and why to use one; and using an app with individuals not wearing hearing protection to raise awareness of their exposure.



Finally, trainers were asked to identify the biggest challenges to and ideas for reducing the risk of hearing loss and providing training about hearing loss prevention.

Trainers said the biggest challenges to reducing the risk of hearing loss are convincing workers of the hazard and convincing workers of the need for hearing protection. These were followed by getting employers to use quieter equipment, getting workers to select the right hearing protection and use it properly, and raising awareness of noise sources. To address these challenges the trainers recommended: repeating the message; presenting real-life stories of workers who have suffered hearing loss; providing more training; increasing enforcement; requiring the use of hearing protection; and providing ready access to appropriate hearing protection.

The biggest challenges for training about hearing loss and prevention are: convincing workers to take the risk of hearing loss seriously; getting workers to apply what they've been taught; dealing with the lack of reinforcement by other trainers and employers – as one trainer responded “practice what we preach;” a lack of training materials; and not enough time, given all of the different topics they need to cover in their training programs. The lack of materials and time may explain why roughly a third of the trainers are not covering the risks and signs of hearing loss in their training programs, and two-thirds are not covering the use of engineering controls and low noise equipment. To address these challenges, the trainers once again recommended raising awareness of the life impact by using stories from other workers. They also recommended: repeating information and reinforcing the message; conducting more

training; having trainers set an example by using hearing protection; and raising awareness of the risk by demonstrating noise levels.

Taken together, the biggest challenges are convincing workers of the hazard, raising awareness of noise sources, and getting workers to apply what they learned.

When these results were reviewed with a group of 60 trainers during the 2015 CPWR Trainer Enhancement Program, participants offered several specific actions to address the challenges:

- Add noise-related training materials to the packets of materials that CPWR sends out for the OSHA 500 502, 10 hour, and 30 hour training programs.
- Send regular notices and reminders -- *“once is not enough.”*
- Include regular reminders in the unions’ magazines, newsletters, Facebook posts, and Twitter feeds.

Following up on these suggestions and stepping up efforts to provide trainers with short, easy-to-use instructional materials that focus on the training gaps identified in this survey could lead to greater awareness of the noise hazard and use of controls both by trainers and their trainees.

