Advanced Notice of Proposed Rulemaking

- OSHA published ANPR in August of 2002

- OSHA is considering the rule to revise the construction noise standards to include a hearing conservation component.

- IBT submitted comments on November 4, 2002.

The Federal Government has recognized the hazardous conditions caused by noise on construction projects for many years. It is well known that noise-induced hearing loss is an ever-increasing problem among workers in the construction industry despite the establishment of construction standards addressing occupational noise exposure (29 CFR 1926.52).

OSHA therefore decided to collect information from stakeholders by issuing an Advanced Notice of Proposed Rulemaking (ANPR) in August of 2002.
Construction Noise

- OSHA has recognized the hazardous conditions caused by noise on construction projects for many years, so why hasn’t anything been done?

- OSHA’s current standard for construction was derived in 1969 from the Bureau of Labor Standards under the authority of the Construction Safety Act.

- It was recodified at 29 CFR 1926.52.

According to the Construction Noise Standard, protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in the table when measured on the A-scale of a standard sound level meter at slow response.

When employees are subjected to sound levels exceeding those listed in the table, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of the table, personal protective equipment as required in Subpart E, shall be provided and used to reduce sound levels within the levels of the table.
Permissible Noise Exposures

<table>
<thead>
<tr>
<th>Duration per day (hours)</th>
<th>Sound Level (DBA)</th>
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<tbody>
<tr>
<td>8</td>
<td>90</td>
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<td>6</td>
<td>92</td>
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<td>4</td>
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<td>3</td>
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<td>1.5</td>
<td>102</td>
</tr>
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<td>105</td>
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</table>
### 29 CFR 1926.52

- Protection against the effects of noise exposure must be provided when sound levels exceed those shown in table.

- Employers must implement engineering or administrative controls to reduce noise at this point.

- If these controls fail, or are not feasible, the employees must be supplied with personal protective equipment.

Requirements set forth in the OSHA Construction Noise Standard, 29 CFR 1926.52
29 CFR 1926.52

- A continuing hearing conservation program must be administered.

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

Components of a hearing conservation program:

Monitoring
Employee Notification
Observation of Monitoring
Audiometric Testing Program
Hearing Protectors
Training
Access to Information and Training Materials
Recordkeeping

Exposure to impulse or impact noise, such as that coming from a piledriver, cannot exceed 140 dB.
| Hearing Conservation Program
<table>
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<td>Access to Information and Training Materials</td>
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<td>Recordkeeping</td>
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Monitoring

- When information indicates exposures have exceeded permissible levels, the employer must develop and implement a monitoring program.

- Sampling strategy should be designed to identify employees for inclusion in the hearing conservation program and to enable proper selection of hearing protective devices.

- Employees should be assessed for personal exposure to occupational noise.

If sound level meter measurements indicate a possible noise exposure problem, the employer must monitor those employees who work in noisy areas. If personal exposure monitoring indicates an exposure above 85 dBA (over an 8-hour work shift), the employee must be included in a hearing conservation program. Employees must be given hearing protective devices (ear muffs or plugs) if their exposure is expected to exceed 90 dBA.
Employee Notification and Observation of Monitoring

- The employer must notify each employee exposed at or above an 8-hour time weighted average of 85 decibels of the results of the monitoring.

- The employer must also provide affected employees or their representatives with an opportunity to observe any noise measurements conducted.

The Local Union may decide to observe the noise monitoring to ensure that the employer is performing the required tests. The Local Union can also contact the IBT Safety and Health Department for assistance with this as well.
Audiometric Testing

- Hearing testing program provided at no cost to employees.
- Baseline audiogram to be conducted within 6 months of an employee’s first exposure.
- Annual audiogram

A hearing testing program must be provided to employees free of charge if they are exposed to noise levels in excess of 85 dBA (over an 8-hour work shift). A baseline hearing test should be conducted within 6 months of the employee’s first documented exposure. This will give the testing agency a baseline measurement to measure future tests of hearing loss against.

A hearing test should be conducted every year.
Hearing Protectors

- Employers must make hearing protectors available to all employees who are exposed above the permissible exposure limit (PEL).

- Employees must be given the opportunity to select their hearing protection from a variety of suitable hearing protectors.

Not all hearing protectors fit every worker the same. Having a variety of hearing protectors to choose from ensures that employees have an opportunity to select a device that is comfortable and fits properly.
Training

Training must be conducted annually and should address:

- Effects of noise on hearing
- Purpose of hearing protectors
- Purpose of audiometric testing

The employer must institute a training program for all employees with noise exposures at or above the action level and ensure employee participation.

Training must be repeated annually for each employee in the hearing conservation program.

Information must be updated to be consistent with changes in protective equipment and work processes.

The employer must ensure that each employee is informed of the following:

The effects of noise on hearing.
The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care.
The purpose of audiometric testing and an explanation of test procedures.

Access to Information and Training Materials

The employer must:

Make copies of the noise standard available to affected employees or their representatives and post a copy in the workplace.
Provide affected employees with any informational materials pertaining to the standard that are supplied to the employer by OSHA.
Provide, upon request, all material relating to the employer's training and education program to OSHA.
Access to Information

- The employer must make available to the employee or the employee representative copies of the standard.
Recordkeeping

- Exposure Measurements
  - 2 years

- Audiometric Tests
  - Duration of employment

- Access to Records
  - Employees
  - Former employees
  - Employee representatives

The purpose of OSHA recordkeeping regulations is to assist employers in recognizing and correcting workplace hazards by tracking work-related injuries/illnesses and their causes. Requirements according to the noise standard are:

**Exposure Measurements**
Employers must maintain an accurate record of all employee exposure measurements. [1910.95(m)(1)] These records must be retained for two years. [1910.95(m)(3)(i)]

**Audiometric Test Records**
The employer must retain all employee audiometric test records. [1910.95(m)(2)(i)] These records must include:

- Name and job classification of the employee. [1910.95(m)(2)(ii)(A)]
- Date of the audiogram. [1910.95(m)(2)(ii)(B)]
- The examiner's name. [1910.95(m)(2)(ii)(C)]
- Date of the last acoustic or exhaustive calibration of the audiometer. [1910.95(m)(2)(ii)(D)]
- Employee's most recent noise exposure assessment. [1910.95(m)(2)(ii)(E)]
- The employer must maintain accurate records of the background sound pressure level measurements in audiometric test rooms. [1910.95(m)(2)(ii)(F)]

These records must be maintained for the duration of the affected worker's employment. [1910.95(m)(3)(ii)]

**Access to Records**
All records required by the noise standard must be provided upon request to:

- employees,
- former employees,
- representatives designated by the individual employee, and
- OSHA. [1910.95(m)(4)]

**Transfer of Records**
Employers who cease to do business must transfer to the successor employer all records required by the noise standard.
How does this apply to the companies I am under contract with?

- Many small, family-owned ready-mixed concrete companies do not register on OSHA’s radar.
  - Complaint-based inspections

- Many of the larger companies are subject to planned inspections.
  - Complaint-based inspections
  - IDLH inspections

OSHA uses a computer-based program to prioritize inspections. Small companies with few employees and few reported accidents may not register during prioritization. Therefore the smaller companies may experience less programmed inspections than larger companies.

OSHA will sometimes inspect a facility based on a safety and health complaint. The complaint may include conditions that may be immediately dangerous to life or health (IDLH).
Exposure Monitoring in Construction

- Although it may be implied, there is no requirement for noise exposure monitoring in construction at the present time.

- Employers are not required to perform exposure monitoring to over-exposed workers.

Exposure monitoring in the Construction Noise Standard is only implied, not required.
IBT Comments to OSHA

- IBT recommended that the general industry requirements for hearing conservation be altered to reflect the unique characteristics of the construction industry.
- IBT also recommended the development of a task-based standard where requirements for hearing conservation are implemented based on tasks that are presumed to have high exposures.

It is the opinion of the IBT that standards for hearing conservation in the construction industry should be different, but no less stringent, than those set forth for general industry. The construction industry is much more diverse and transient than general industry. Occupational exposures are highly variable and inconsistent and may change from hour to hour, day to day. Some workers may only work at a specific job site for a matter of days while others may work at a job site for a number of months or years. Therefore, the general industry requirements need to be altered to reflect the unique characteristics of the construction industry.

The most acceptable approach to address the unique characteristics of construction work-sites is the development of a task-based standard, such as that set forth in the lead and asbestos standards, where requirements for a hearing conservation program are implemented based on tasks that are presumed to have high exposures.
IBT Comments to OSHA

- A task-based approach will be less expensive for employers because employer can avoid the cost associated with new noise evaluations.
  - Historical data
  - Those routinely exposed would receive protection

The task-based approach would be less expensive for employers. For example, if implemented on construction sites, the general industry standard which requires employers to conduct an initial noise evaluation when exposure is expected to exceed 85 dBA would require employers to conduct a new evaluation for each task performed on each construction site. On the other hand, if tasks were classified based on historical noise exposure data, the employer can avoid much of the cost associated with new noise evaluations.
IBT Comments to OSHA

- OSHA should require hearing protection for workers who work in or near specific occupations which have been classified as “highly exposed”.
- Historical noise exposure data will determine which job classifications will be classified as “highly exposed”.

The British Columbia noise program presumes that employees in specific construction occupations are routinely exposed to noise in excess of the exposure limits. These occupations include carpenters, plumber pipefitters, sprinkler installers, mobile equipment operators, steel erectors, welders/fabricators, sandblasters, drillers, electricians, concrete workers operating concrete pumps, vibrators, jack hammers or powered finishing equipment, and drywallers shooting track or boarding. These occupations should serve as a basis for regulation in the United States with the addition of additional occupations where appropriate. It should be assumed, based on historical noise exposure data, that employees in specific construction occupations are routinely exposed to occupational noise in excess of the exposure limits. If there is existing historical noise exposure data characterizing any construction occupation as “highly exposed” (routinely exposed to an 8-hour TWA exposure above an action level of 85 dBA), then that occupation should be covered by a hearing conservation program.
### IBT Comments to OSHA

- Establishment of noise perimeter zones
  - Area monitoring
- OSHA should require annual audiograms for over-exposed workers
- OSHA should require Internal Traffic Control Plans to minimize backing distances
  - The use of hearing protectors on construction sites may affect the worker's ability to hear horns, backup alarms, etc.

Area monitoring on construction sites may be required to establish Noise Perimeter Zones, outside of which hearing protection is not required. These Noise Perimeter Zones should be established when engineering and administrative controls have failed to reduce noise levels to an acceptable level. These areas should be demarcated and signs should be posted to communicate the hazard zone to on-site workers. Area monitoring should not be used to evaluate personal exposure to occupational noise as it does not average the exposure over a full work-shift, but instead offers an instantaneous measurement of occupational noise.

Audiometric testing is an integral part of a hearing conservation program where workers are exposed to occupational noise in excess of 85 dBA. Although audiometric testing does not directly protect workers, it is the only real, reliable way to evaluate the hearing conservation program. The objective of the audiometric test program is to identify workers who are beginning to lose their hearing and to intervene before the hearing loss becomes worse.

Operators of delivery vehicles and heavy mobile equipment who need to communicate with other construction workers on-site need to be able to maintain effective two-way or multi-way communication while protecting their hearing. It is also essential for all construction workers to be able to hear and identify the location of warning signals, backup alarms, and spoken or shouted communication (localization). The latter is an important consideration for the IBT. Since most of our construction division membership is involved in materials hauling and delivery, it is of utmost importance that other construction workers on-site have the ability to hear and identify the location of warning signals and backup alarms.

There are several approaches to addressing this very serious problem. An approach that would reduce overall noise levels on the construction sites is the most acceptable approach, however, this is not always economically feasible. Second, the risk can be reduced by minimizing backups. Minimizing backups can be accomplished by developing an Internal Traffic Control Plan (ITCP) whereby vehicles are routed through the worksite in one direction. In addition, by separating vehicular traffic and pedestrian traffic, an ITCP can also reduce the risk of runovers and backovers (NIOSH, 2001).
Noise Exposure Among Ready-Mixed Concrete Drivers

- The IBT determined that construction drivers such as concrete drivers, materials hauling, boom truck operators, and water truck drivers would have a high risk of over-exposure.
- To date, only ready-mixed concrete drivers have been evaluated.

The IBT Safety and Health Department decided to study the noise exposures of our concrete drivers. We hypothesized (predicted) that these drivers would have a high risk for over-exposure.
Phase I

- Ready-mixed concrete drivers
  - Perform personal monitoring of concrete drivers in New York and Boston
  - Sound level measurements of different tasks (loading, mixing, dumping)
  - Characterization of exposure vs. task
  - Analysis of data

To date, the IBT Safety and Health Department has collected a total of 124 samples in 4 different metropolitan areas. Sound level measurements were collected during the concrete loading, mixing, and dumping phases. Drivers were monitored for their entire work shift through the use of noise dosimeters. Dosimeters are instruments which measure a worker’s average noise exposure over a full work shift.

The IBT Safety and Health Department also looked at tasks performed by each driver (loading, mixing, driving, and dumping) and will evaluate average exposures during each of these tasks.
Phase II

- Other construction drivers (boom truck operators, materials hauling, water truck drivers)
  - Perform personal monitoring
  - Sound level measurements of different tasks
  - Characterization of exposure vs. task
  - Analysis of data
The IBT Safety and Health Department has since monitored workers in Chicago and San Francisco.
Preliminary Analysis

Parameters
- Truck (Make, Model, Year)
- OSHA 8-hour TWA
- NIOSH 8-hour TWA
- % Dose
- Peak Level
- Max Level

The IBT Safety and Health Department looked at the following parameters:

Truck make, model, and year. We predicted that older truck models would be noisier than newer models.

OSHA 8-hour TWA: OSHA specifies an exposure limit of 90 dBA per 8-hour work shift.

NIOSH 8-hour TWA: NIOSH specifies an exposure limit of 85 dBA per 8-hour work shift.

Percent Dose: A percentage of the maximum allowable daily noise exposure. For example, if an individual’s daily noise exposure is 87 dBA, his percent dose would be \((87/90) \times 100 = 96.7\%\).

Peak Level: Peak is the highest instantaneous sound pressure level recorded during a measurement interval.

Max Level: The highest sound level recorded during a measurement interval with a particular response setting (Slow or Fast) and weighting (A or C).
OSHA TWA vs. NIOSH TWA

- NIOSH Recommended Exposure Limit (REL) is 85 dBA with an exchange rate of 3 decibels.

- OSHA Permissible Exposure Limit (PEL) is 90 dBA with an exchange rate of 5 decibels.

Exchange Rate is the number of decibels that a sound must change in order to either halve or double the rate of dose accumulation.
The **peak level** is the highest instantaneous sound pressure level recorded during a measurement interval. Unlike the maximum level, the peak is detected independently of dosimeter settings for response rate or weighting. Under OSHA regulations, unprotected workers may not be exposed to peak sound levels greater than **140dB**.

**LMax**—the **maximum level**—is the highest sound level recorded during a measurement interval with a particular response setting (Slow or Fast) and weighting (A or C). LMax is the highest value that is included in TWA or dose calculations. Under OSHA regulations, unprotected workers may not be exposed to maximum sound levels greater than **115dB**, measured with a Slow response rate.
Preliminary Analysis

- 48 Total Samples
- Average OSHA TWA: 85.6 dBA
- Average NIOSH TWA: 89.6 dBA
- Average Peak Level: 145.9
- Average Maximum Level: 118.1

This summarizes data collected through December 2003. The data for the remaining samples collected since December of 2003 has remained relatively consistent with this data.
Preliminary Analysis

- Average OSHA TWA – 85.6 dBA
  – 30 samples out of 48 exceeded the 85 dBA action level (62.5%).
  – 2 samples out of 48 exceeded the 90 dBA PEL (4.2%).
- Average NIOSH TWA – 89.6 dBA
  – 46 samples out of 48 exceeded the 85 dBA REL (96%).

Summary of TWA data
Preliminary Analysis

- **Average Peak Level**: 145.9
  - 48 samples out of 48 exceeded the OSHA Peak Level limit of 140 dBA (100%).

- **Average Maximum Level**: 118.1
  - 35 samples out of 48 exceeded the OSHA Maximum Level limit of 115 dBA (73%).

Summary of Peak and Max Level Data
Conclusions

- Based on a preliminary analysis of the data, Teamster ready-mixed concrete drivers would be classified as “highly exposed” for the purpose of the proposed standard.

- This conclusion is based solely on the preliminary analysis of the data gathered to date.

It seems that the hypothesis (prediction) was correct and these drivers would be at a high risk for overexposure.
Conclusions

Based on the data gathered, Teamster ready-mixed concrete drivers are “routinely exposed” above the:

- OSHA Action Limit
- NIOSH REL
- OSHA Maximum Level limit
- OSHA Peak Level limit.