

### 3.1.2.7 Hearing Conservation



YOUR ORGANIZATION  
STANDARD OPERATING PROCEDURES/GUIDELINES

**TITLE:** Hearing Conservation

**SECTION/TOPIC:** Safety at Emergency Incidents

**NUMBER:** 3.1.2.7

**ISSUE DATE:**

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**PREPARED BY:**

**APPROVED BY:**

X

Preparer

X

Approver

These SOPs/SOGs are based on FEMA guidelines FA-197

#### 1.0 POLICY REFERENCE

CFR	
NFPA	
NIMS	

#### 2.0 PURPOSE

This standard operating procedure/guideline addresses standards for noise exposure, hearing protection, noise reduction, monitoring incident noise, assessment of hearing problems, documentation and reporting.

This program has been developed to comply with Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.95 and NFPA 1500 to ensure the prevention of occupational hearing loss for all Fire Department employees.

The permissible exposure level for City Fire Department Hearing Conservation Program (HCP) is 85 decibels A-weighted (dBA). All employees exposed at or above 85 dBA over an 8-hour time-weighted average (TWA) period, are required to wear hearing protection.

This program has established a noise "Action Level," defined as 82 decibels on the A-weighted scale (dBA), slow response, for an 8-hour time weighted average (TWA) period, or equivalently, a dose of 50%, based on an exchanged rate of 3 decibels (dB). All employees exposed to noise levels at or above this level must participate in this program.

### 3.0 SCOPE

This program applies to all fire personnel who respond to fires and EMS calls on a regular basis. The associated work tasks on fire and emergency medical scenes are suspected of exposing employees to noise levels at or above 82 dBA as an 8 hour TWA.

### 4.0 DEFINITIONS

These definitions are pertinent to this SOP/SOG.

Action Level – The sound level when reached or exceeded necessitates implementation of activities to reduce the risk of noise-induced hearing loss. The City currently uses an 8-hour TWA of 82 dBA as the criterion for implementing an effective HCP.

Attenuation – The estimated sound protection provided by hearing protective devices as worn in “real-world” environments.

Equal-Energy Rule – The relationship between sound level and sound duration based upon a 3 dB exchange rate, i.e., the sound energy resulting from doubling or halving a noise exposure’s duration is equivalent to increasing or decreasing the sound level by 3dB, respectively.

Exchange Rate – The relationship between intensity and dose. The City uses a 3 dB exchange rate. Thus, if the intensity of an exposure increases by 3dB, the dose doubles (i.e., if a 50% dose represents a sound intensity of 82 dB, then increasing that intensity by 3dB, to 85 dB, would double the dose, to 100%).

### 5.0 PROCEDURES/GUIDELINES & INFORMATION

#### 5.1 Standards for Noise Exposure:

##### TRAINING

Fire Department employees exposed to an 8-hour time-weighted average noise of 82 dBA and above shall be trained **annually** in the effects of noise; the purpose of hearing protectors; the advantages and disadvantages of the various types of hearing protectors; the selection, fitting and care of protectors; the purpose of audiometric testing and an explanation of the test procedures.

- The employee will be informed of the need for an otological examination if a medical pathology of the ear, unrelated to the use of hearing protectors, is suspected.

- If subsequent audiometric testing of an employee, whose noise exposure is less than an 8-hour TWA of 85dBA, indicates that a standard threshold shift is not persistent, the employer:
  1. Shall inform the employee of the new audiometric interpretation; AND
  2. May discontinue the required use of hearing protectors for that employee.

## **5.2 Hearing Protection:**

Hearing protectors must be made available to all workers exposed to 8-hour TWA noise levels of 82 dBA or above.

Types of hearing protectors selected for employee protection must attenuate the noise to levels less than 85 dBA.

Where equipment operators are required to maintain radio communications while operating equipment, headsets that provide noise attenuation as well as radio communications/intercom shall be provided and used.

The wearing of hearing protection devices by employees will be mandatory under the following conditions:

- Wearing the hearing protection device does not create an additional hazard to the user.
- Employees who are exposed to average noise levels at an 8-hour time weighted average of 85 dBA or above.
- Employees who have not had a baseline audiogram and are exposed to 8-hour average noise levels of 85 dBA or above.
- Employees who have experienced a standard threshold shift (STS).

## **5.3 Noise Reduction:**

### **Identification of Work Areas**

Fire Department personnel shall wear hearing protection whenever exposed to noise at or above 85 decibels.

The following work areas have been identified as requiring hearing protection:

- While riding in Fire apparatus under Code 3 and normal driving conditions.
- Aircraft operating areas including parking aprons, runways and taxiways when aircraft are operational.
- All training activities which generate noise from sledgehammers, saws or any other fire equipment.
- Continuous work on or around a utility truck.

#### Identification of Equipment

Fire Department personnel are required to wear hearing protection when operating equipment that produces noise in excess of 85 decibels except in situations where the use of such personal protective equipment would create an additional hazard to the user.

Identified equipment includes but is not limited to the following:

- Apparatus pumps
- Extrication equipment
- Circular saws
- Air chisels

#### **5.4 Monitoring Incident Noise:**

##### **MONITORING**

OSHA requires employers to monitor noise exposure levels in a manner that will accurately identify employees who are exposed to noise at or above 82 dB averaged over 8 working hours, or an 8-hour TWA.

The exposure measurement must include all continuous, intermittent and impulsive noise within an 80 dB – 130 dB range, and must be representative of a typical work situation.

Monitoring should be repeated when changes in production, process or controls increase noise exposure. Such changes may mean that additional employee monitoring is needed and/or previously supplied hearing protection no longer provides adequate attenuation.

Fire Department Safety Section will evaluate noise exposures in work areas including fireground

operating areas.

Employees are entitled to observe the testing and monitoring procedures and must receive notification of the results of the tests in their workplace.

## **5.5 Assessment of Hearing Problems:**

### **AUDIOMETRIC TESTING**

Annual audiometric testing of all employees exposed to 8-hour time weighted-average noise of 82 dBA or above will be conducted in the Health Center as part of the annual employee physical.

All new employees shall be given an initial baseline audiometric exam, which is performed during the pre-employment physical for new employees.

Employees should be reminded to avoid exposure to loud levels of noise for at least 14 hours prior to the audiometric exam. If the employee believes that exposure to noise is unavoidable for this 14-hour period, he/she shall be instructed to wear hearing protection while exposed to noise.

### **STANDARD THRESHOLD SHIFT – FOLLOW-UP PROCEDURES**

A standard threshold shift (STS) is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000 and 4000 Hz in either ear.

Fire employees who have a *suspected* standard threshold shift (as defined above) indicated on the audiometric exam report, must have a retest within 30 days.

If the second audiometric exam, performed within 30 days of the first test, confirms a standard threshold shift, the affected employee shall be notified by the Health Center in writing within 21 days of this determination.

Unless a physician determines that the standard threshold shift is not work-related or aggravated by occupational noise exposure, the following steps must be taken:

- Employees not wearing hearing protectors shall be fitted with hearing protectors, trained in their use and care, and required to use them provided that the use does not create an additional hazard.
- Employees already using hearing protectors shall be refitted and retrained in the use of hearing protectors and provided with hearing protectors offering greater attenuation, if necessary.

- The employee shall be referred for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary or if the employer suspects that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors.

## **5.6 Documentation and Reporting:**

### **RECORD KEEPING**

Noise exposure measurement records shall be retained for five (5) years.

Employees with standard threshold shifts – STS- (25 dB shifts in hearing acuity) averaged over the frequencies at 2000, 3000 and 4000 hertz in either ear will be considered to have an OSHA reportable injury (from January 1, 2002 until December 31, 2002). This injury shall be included on the OSHA 300 Log. STSs will be determined by annual audiometric testing.

Effective January 1, 2004, employees with standard threshold shifts – STS – (10 dB shifts in hearing acuity) averaged over the frequencies at 2000, 3000 and 4000 hertz in either ear which results in a total 25 dB level of hearing above audiometric zero will be considered to have an OSHA reportable injury which must be recorded on the OSHA 300 Log by checking the “hearing loss” column.

Records of audiometric test results shall be maintained at the Health Center for the duration of employment of the affected employee plus 30 years.

Audiometric test records must include the name and job classification of the employee, the date of the test, the name of the examiner, the date of acoustic calibration of the testing equipment, background sound pressure levels in the audiometric test room, and the employee’s most recent noise exposure measurements.

Records of annual training shall be maintained in the Citywide database.