WAKE FOREST BAPTIST MEDICAL CENTER	
Title: **HEARING CONSERVATION PROGRAM**	
Approved by: David A. Brown, Co-Director, EH&S	*Effective Date:* December 2008 *Revised Date:* December 2012
Feodor Bijkersma, Co-Director, EH&S	

I. INTRODUCTION
II. REGULATORY OVERVIEW
III. ROLES AND RESPONSIBILITIES
IV. NOISE MEASUREMENTS AND EXPOSURE ASSESSMENTS
V. AUDIOMETRIC TESTING PROGRAM (MEDICAL SURVEILLANCE)
VI. HEARING PROTECTORS
VII. LABELING REQUIREMENTS
VIII. TRAINING REQUIREMENTS
IX. RECORD KEEPING
X. PROGRAM REVIEW
XI. APPENDICES
A. AUDIOMETRY QUESTIONNAIRE
B. HEARING CONSERVATION REQUIRED AREAS

INTRODUCTION

POLICY

It is the policy of the Wake Forest Baptist Medical Center in coordination with Environmental Health and Safety to provide employees with a safe and healthful working environment. This is accomplished by utilizing facilities and equipment that have all feasible safeguards incorporated into their design. When effective engineering controls are not feasible, or when they are being initiated, administrative controls will be used when and where possible followed by the use for personal protective equipment.

PURPOSE

This document establishes procedures, responsibilities, and requirements which are to be used by all Wake Forest Baptist Medical Center (WFBMC) supervisors with personnel exposed to excessive noise during work at Wake Forest Baptist Medical Center. The Wake Forest Baptist Medical Center Hearing Conservation Plan (HCP) is administered by Environmental Health & Safety Department (EH&S). The maximum permissible noise exposure limit (PEL) for Wake Forest Baptist Medical Center employees is 90 dBA. 85 dBA is the action level (AL) which triggers the Wake Forest Baptist Medical Center Hearing Conservation Plan.

SCOPE

It is the policy of Wake Forest Baptist Medical Center to comply with the OSHA Hearing Conservation Standard (OSHA 29 CFR 1910.95 Occupational Noise Exposure).

The Hearing Conservation Plan is designed to provide for timely evaluation of noise and the necessary implementation of engineering controls, hearing protector evaluation and use, and medical evaluation of those exposed to noise in the occupational setting.

This Hearing Conservation Plan applies to all employees at Wake Forest Baptist Medical Center facilities.

REGULATORY OVERVIEW

The following regulations or policies pertain to the management of occupational noise and hearing conservation.

Federal Regulation	Title/Description
29 CFR 1910.95	Occupational Noise Exposure

ROLES AND RESPONSIBILITIES

Environmental Health & Safety

- Designate a Hearing Conservation Plan Administrator.
- Conduct noise surveys and/or noise dosimetry to determine which areas require warning signs.
- Identify work areas and equipment within Wake Forest Baptist Medical Center facilities where noise levels equal or exceed 85 dBA.
- Identify noise control measures (including engineering and administrative controls) and recommendations.
- Post signs at the entrance to any work area where noise levels equal or exceed 85 dBA.
- Recommend hearing protection devices (HPD).
- Identify, through personnel monitoring, of Wake Forest Baptist Medical Center employees whose noise exposure level equals or exceeds an 8-hour TWA of 85 dBA.
- Notify employee, employee's supervisor and WFBMC Employee Health Services of exposure measurements
- Send a list of effected employees to WFBMC Employee Health Services for inclusion in annual audiology program.
- Provide hearing conservation training.
- Prepare and maintain the WFBMC written Hearing Conservation Plan.
- Maintain hearing conservation training records.

WFBMC Employee Health Services or External Healthcare Provider

- Administer a noise questionnaire to designated employees who are exposed to sound levels greater than or equal to 85 dBA on a time weighted average based on EH&S dosimeter results.
- Schedule baseline audiograms for new employees who may be exposed to sound levels greater than or equal to 85 dBA on a time weighted average based on EH&S dosimeter results.
- Schedule audiograms on an annual basis for employees exposed to sound levels greater than or equal to 85 dBA on a time weighted average.
- Evaluate the results of testing.
- Issue work restrictions for those employees whose noise exposure must be limited.

- If necessary, recommend employee to a specialist.
- Notify employee of audiometric results.
- Notify WFBMC EH&S of all employees who have experienced significant changes in hearing (standard threshold shifts) in order that follow-up investigations may be conducted.
- Maintain all audiometric test records and employee files.

Faculty, Managers, Supervisors

- Ensure that all of their employees exposed to noise levels equal to or greater than 85 dBA on a time weighted average have access to appropriate hearing protective devices in the work area.
- Supply hearing protection to his/her employee(s) at no cost to the employee(s);
- Ensure and enforce that employees use hearing protection devices (i.e. ear plugs or muffs) as required by the Hearing Conservation Plan.
- Use and maintain hearing protection devices (HPD) in a clean and sanitary manner as originally intended and in accordance with instructions provided.
- Attend annual training as scheduled.
- Complete annual audiometric examination

WFBMC Employees

- Comply with requirements of the Hearing Conservation Plan.
- Complete a noise questionnaire.
- Participate in the Audiometric Testing (Medical Surveillance) program, which includes baseline and annual audiometric testing.
- Participate in annual training.
- Wear and maintain hearing protective devices as instructed.

Contractors/Visitors

- Wear hearing protection in designated areas or when operating noise producing equipment.

NOISE MEASUREMENTS AND EXPOSURE ASSESSMENTS

All noise monitoring will be conducted by EH&S. Monitoring for noise exposure is made up of two parts, area and personal monitoring. Area measurements are generally obtained first. If noise levels are at or above 85 dBA, personal monitoring using dosimeters will be performed.

Area Measurements

In an area survey, measurements of environmental noise levels are recorded using a sound level meter to identify work areas where employees' exposures may be above hazardous levels, and where more thorough exposure monitoring may be needed. Area monitoring is conducted using a calibrated sound level meter set to the A scale, slow response. Within the area of interest, several different locations will be measured.

Typical measurement locations would include:

- In the hearing zone at the employee's normal work location.
- Next to the noise source(s).

- At the entrance(s) to the work area.
- At other locations within the area where the employee might work.

A rough sketch of the area will be included with the results showing the locations where the noise readings were obtained.

If the noise levels are below 85 dBA on a time-weighted average basis in the area, no further routine monitoring will be required for that area.

If the noise levels are equal or above 85 dBA on a time-weighted average basis in the area, then the designated areas shall be updated at least annually (**APPENDIX B**). If changes have occurred, then positing of signs and/or monitoring of exposed personnel will be performed.

Personal Monitoring

Initial Hire

New WFBMC employees who work in designated areas based on EH&S odosimeter measurements will be informed of their attributed exposure upon assignment in designated areas.

Determination of the noise exposure level will be accomplished using calibrated noise dosimeters. Each employee to be monitored will have a dosimeter placed on him/her at the beginning of his/her normal work shift with the microphone placed in the "hearing zone". The dosimeter will be worn for the full duration of the work shift while the employee performs his/her normal work routine. Background information will be collected from each employee detailing job description, unusual job activities, etc., for the time period sampled.

- If the TWA exposure results are less than 85 dBA, then the employee and employee's supervisor will be notified of the monitoring results within 15 days after the completion of the noise monitoring.
- If the TWA exposure results are equal or above 85 dBA, then the employee, employee's supervisor and Employee Health will be notified of monitoring results within 15 days after the completion of the noise monitoring.

Annual

Annually, EH&S will re-assess noise exposure levels for affected employees. Determination of the noise exposure level will be accomplished using calibrated noise dosimeters.

- If the TWA exposure results are less than 85 dBA, then the employee and employee's supervisor will be notified of the monitoring results within 15 days after the completion of the noise monitoring.

- If the TWA exposure results are equal or above 85 dBA, then the employee, employee's supervisor and Employee Health will be notified of monitoring results within 15 days after the completion of the noise monitoring.

AUDIOMETRIC TESTING PROGRAM (MEDICAL SURVEILLANCE)

WFBMC Employee Health Services or a designated external occupational healthcare provider has the responsibility for administering the Audiometric Testing Program portion of the WFBMC Hearing Conservation Plan. The object of the audiometric testing program is to identify workers who are beginning to lose their hearing and to intervene before the hearing loss becomes worse. Audiometric testing will be provided to all employees whenever employee noise exposures equal or exceed an 8-hr. time-weighted average (TWA) of 85 dBA.

Any personnel experiencing difficulty in wearing assigned hearing protection (i.e., irritation of the canals, pain) will be advised to immediately report this to their supervisor and make arrangements to go to WFBMC Employee Health Services or a designated external occupational healthcare provider for evaluation as soon as possible.

Initial hire

All new WFBMC employees receive a baseline audiometric test who may be exposed to sound levels greater than or equal to 85 dBA on a time weighted average based on EH&S dosimeter results. This must be done within the first 6 months of employment.

WFBMC Employees will complete an Audiometric Questionnaire (**APPENDIX A**) which WFBMC Employee Health Services or a designated external occupational healthcare provider will review.

Audiometric test equipment, testing personnel, procedures, and medical follow-up shall meet the requirements of 29 CFR 1910.95 and appropriate professional recommendations. Audiometric test facilities must be maintained in accordance with 29 CFR 1910.95.

Annual

Annual retesting will be performed for all personnel enrolled in the Hearing Conservation Audiometric Program.

Significant Threshold Shift (STS)

Employee Health Services or a designated external occupational healthcare provider will inform affected employee in writing within 21 days of the determination of the existence of a significant threshold shift (STS) by the audiometric testing personnel. The audiologist or healthcare provider shall also notify EH&S of any employees suffering a STS or other noise induced health effect as soon as possible in order to investigate the work area and comply with the requirements of 29 CFR 1910.95. If the STS persist on a repeat audiogram after the employee has been out of the workplace for at least 24 hours, the affected employee should receive a clinical audiological examination to help determine the cause of the STS.

HEARING PROTECTORS

Hearing protection selected must reduce noise levels to below acceptable noise exposure limits. EH&S will recommend several types of hearing protectors for each type of noise exposure.

- Hearing protectors must be provided at no cost to all employees exposed above the permissible limits.

- Employees should have a choice of protection devices.
- Hearing protectors should fit properly so that maximum attenuation and comfort is provided.
- Ear muffs or plugs are acceptable if required noise reductions can be achieved.
- Personal hearing protection devices must be provided and must be used in areas where noise exposure is greater than 90 dBA TWA until such time that engineering or administrative controls can reduce exposures to less than 90 dBA.
- Personal hearing protection devices must be provided where noise exposure is greater than 85 dBA TWA.
- For employees who have experienced a significant threshold shift, hearing protection must be sufficient to reduce exposure to 85 dBA (TWA) or less.
- Other factors to be considered when selecting hearing protectors include:

LABELING OF AREAS and EQUIPMENT

Identification of Hazardous Noise Areas

EH&S will post signs at the entrance to any work area where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. The identified areas are listed in **APPENDIX B**.

All areas with noise levels exceeding 85 dB(A) will be labeled with the following sign to warn employees and visitors entering of the need for hearing protection.

CAUTION

HEARING PROTECTION MUST BE WORN IN THIS AREA

Stationary sources exceeding 85 dB(A) which are activated periodically, such as table saws, will have the following label affixed:

CAUTION

HEARING PROTECTION MUST BE WORN WHEN THIS EQUIPMENT IS IN OPERATION

Small, mobile high noise sources (exceeding 85 dB(A) such as weed trimmers, leaf blowers and circular saws will be affixed with small stickers that warn the user to ear hearing protection.

TRAINING REQUIREMENTS

All employees exposed at or above the permissible exposure level must receive appropriate training annually. The training program shall inform each employee of the following information:

- Contents of the noise standard including the Hearing Conservation Plan.
- The effects of noise on hearing.
- Noise-induced hearing loss

- Recognizing hazardous noise
- Specific machinery and equipment at the worksite that could produce hazardous noise exposures.
- The role of engineering and administrative controls in the reduction of noise exposure.
- The purpose of hearing protectors; the advantages, disadvantages, and attenuation of various types; and instruction on the selection, fitting, use, and care.
- The purpose of audiometric testing and an explanation of the test procedures.

RECORDKEEPING

EH&S must keep the following records:

- All non-medical records (ex., work area and equipment surveys) will be maintained for a period of five years.
- Area and employee exposure measurements.
- List of Hearing Conservation Required Areas (**Appendix B**).
- All personnel who routinely work in designated hazardous noise areas shall be identified and a current roster of such personnel shall be maintained by EH&S and updated periodically.
- Training records.

Employee Health Services or a Designated External Occupational Healthcare Provider must keep the following records:

- Audiometric test records
- Audiometric test room records

PROGRAM REVIEW

The Hearing Conservation Plan shall be reviewed annually by EH&S.

APPENDIX A - AUDIOMETRIC QUESTIONNAIRE

Name:_____ Date:_____
Job Title:_____ Department Number _____
DOB:_____
When was your last exposure to noise:_____

General Health

Serious Illness ☐ yes ☐ no
If **yes, describe:**_____
Head injury with loss of consciousness ☐ yes ☐ no
History of allergy problems ☐ yes ☐ no
Cold/flu symptoms in last 2 weeks ☐ yes ☐ no
Medications taken in the last month_____
Have you ever had any of the following?

Measles	☐ yes ☐ no
Scarlet Fever	☐ yes ☐ no
Diabetes	☐ yes ☐ no
Mumps	☐ yes ☐ no
Meningitis	☐ yes ☐ no
High Blood Pressure	☐ yes ☐ no

Hearing and hearing symptoms

Do you have a family member who had hearing loss before the age of 50?
☐ yes ☐ no
Repeated ear infections in the past? ☐ yes ☐ no
Have you had previous ear surgery ☐ yes ☐ no
Do you have frequent or severe dizziness ☐ yes ☐ no
Do you have ringing in your ears? ☐ left ☐ right ☐ both ☐ none
Punctured eardrum? ☐ left ☐ right ☐ both ☐ none
Do you have current ear pain? ☐ left ☐ right ☐ both ☐ none
Do you use a hearing aid? ☐ left ☐ right ☐ both ☐ none

Current noise exposure at work

Do you work in a noisy environment? ☐ yes ☐ no
Describe location: _____
Continuous exposure? ☐ yes ☐ no
Intermittent exposure? ☐ yes ☐ no
Do you wear ear plugs or any other device? ☐ yes ☐ no
If yes describe:_____

Non-work Environment

Military Service? ☐ yes ☐ no
Listen to loud music or play in a band? ☐ yes ☐ no
Do you or have you shot firearms? ☐ yes ☐ no
Scuba dive? ☐ yes ☐ no
Fly an aircraft, or drive a race car? ☐ yes ☐ no
Do you have noisy hobbies (motorcycles or power tools)? ☐ yes ☐ no
Other: ex. Farm or construction equipment? ☐ yes ☐ no
Have you worked at a noisy job prior to your current job? ☐ yes ☐ no
Did you wear earplugs or other devices ☐ yes ☐ no
Do you have a second job that is noisy? ☐ yes ☐ no

Employee Signature:_____
Date:_____

Clinician Review:_____
Date:_____

Comments:_____

APPENDIX B - HEARING CONSERVATION REQUIRED AREAS

Building	Internal Location	Measured Noise Levels (dBA)
A1	Basement Chiller Room	89.1
A1	5th floor Penthouse	95.0
A1A	Mechanical Room	89.5
PTCRC	Chiller	91.5
Clinical Sciences	3rd Fl Mechanical Room Emergency Gen	92.1
Clinical Sciences	Air Compressor#2	91.7
Gray	East Penthouse AHU#3 Exhaust Fan 3A	90.8
Gray	East Penthouse AHU#3 Exhaust Fan 3B	90.4
Gray	East Penthouse AHU#1 Exhaust Fan 1B	90.1
Gray	East Penthouse Center Exit	87.9
Gray	East Penthouse Center AHU#3 Supply Fan	90.2
Gray	East Penthouse Center AHU#1 Supply Fan	90.4
Gray	East Penthouse Center Rear	89.6
Gray	East Penthouse AHU#3 Supply Fan Rear	90.7
Gray	East Penthouse Left Exit	87.7

Building	Internal Location	Measured Noise Levels (dBA)
Gray	East Penthouse Rt Equip Room	86.8
Gray	West Penthouse AHU#2 Exhaust Fan 2B	90.6
Gray	West Penthouse AHU#2 Exhaust Fan 2A	90.6
Gray	West Penthouse AHU#2 Rear Supply Fan	90.1
Gray	West Penthouse AHU#2 Center Supply Fan	90.3
Gray	West Penthouse Cen Exit	88.0
Gray	West Penthouse Cen Rear	87.3
Gray	West Penthouse Left Exit	88.2
Hanes	Base Mechanical Room B022	89.0
Hanes	Base Mechanical Room B022	85.6
Hanes	Base Mechanical Room B022 Emergency Gen	89.0
Hanes	Base Mechanical Room B022 Fire Pump	88.0
Meads Hall	Ground Level Elevator Room	86.2
Meads Hall	Mechanical Room A1H Chiller	89.8
Meads Hall	Mechanical Room Roof Chiller #2	89.1
Meads Hall	Roof Emergency Generator	85.0
Meads Hall	Emergency Generator Roof, Dayton	85.0

Building	Internal Location	Measured Noise Levels (dBA)
NRC	Base Eng Room Emergency Gen	89.2
NRC	Basement Fire Pump	87.6
NRC	Penthouse EF 2	107.0
NRC	Penthouse (Nash Air Compressor)	105.8
Piedmont Plaza 1	Print Shop – Binding Room	91.2
Piedmont Plaza 1	Fire Pump	87.5
Piedmont Plaza 1	Chillers	89.0
Piedmont Plaza 1	Emergency Generator	88.3
Power Plant	Emergency Generators	114.0
OTP	Chiller Room	92.3