Author:	M. Heminuk	Revision #:	4
Approved By:	Chris Peoples	Date Revised:	August 2022

SAFETY POLICY & PROCEDURE

Respiratory Protection SPP# 1910.134

Quick Reference

1.0 Purpose

The purpose of this safety policy and procedure (SPP) is to establish guidelines for using respiratory protection to protect the health of North Carolina Department of Transportation (NCDOT) employees from inhalation hazards.

2.0 Scope and Applicability

The human respiratory system is typically the quickest avenue of material entry into the human body. Toxic materials that enter the body through the lungs may present serious health risks.

This safety policy and procedure presents guidelines for the use of respiratory protection by NCDOT employees. Details are presented on the administration requirements of a respiratory protection program, the need for exposure assessments, provisions for training, and respirator selection guidelines. Additionally, details are presented on recordkeeping, purchasing, and medical requirements associated with respiratory protection. This document also describes the areas of responsibility for unit heads, supervisors, employees, Safety and Risk Management (SRM), Division Safety Engineers (SE), and central equipment units within NCDOT.

This SPP affects any employee who is exposed to air contaminants or hazardous environments where contaminants exceed the Occupational Safetyand Health Act (OSHA) Permissible Exposure Limit (PEL) or are immediately dangerous to life and health (IDLH). It also applies to employees performing an occupational activity that, per management, requires respiratory protection – even if the actual airborne hazard concentration is below the PEL or is otherwise unknown.

3.0 Reference

This SPP is established in accordance with OSHA standards for general industry which also includes shipyards (29 CFR 1910.134) and construction (29 CFR 1926.103)

4.0 Policy

It is the policy of NCDOT to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public. Engineering and administrative controls will always be explored prior to reliance on respiratory protection. NCDOT employees will use respirators when engineering and administrative controls are in the process of being explored/implemented or are unable to reduce air contaminants below their respective PEL. Safe work practices and employee training shall supplement the use of respiratory protection.

5.0 General Responsibilities

It is the responsibility of each unit head, supervisor, and employee to ensure implementation of NCDOT's safety policy and procedure on respiratory protection.

It is also the responsibility of each NCDOT employee to report immediately any unsafe act or condition to his or her supervisor. Specific responsibilities are found in Section 6.3.

6.0 Procedure

This section provides applicable definitions, establishes general provisions, and identifies specific responsibilities required by NCDOT's safety policy and procedure on Respiratory Protection.

6.1 Acronyms/Definitions

ACRONYMS

AIHA	American Industrial Hygiene Association
APF	Assigned Protection Factor
APR	Air-Purifying Respirator
CFR	Code of Federal Regulations
ESLI	End of Service Life Indicator
HEPA	High Efficiency Particulate Air
IDLH	Immediately Dangerous to Life and Health
IH	Industrial Hygiene/Hygienist
MSHA	Mine Safety and Health Administration
NCDOT	North Carolina Department of Transportation
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OV	Organic Vapor
PEL	Permissible Exposure Limit
PLHCP	Professionally Licensed Healthcare Provider
QLFT	Qualitative Fit Test
SE	Safety Engineer
SPP	Safety Policy and Procedure
SRM	Safety and Risk Management
STEL	Short Term Exposure Limit
TWA	Time Weighted Average

DEFINITIONS

Aerosol
Particles, solid or liquid, suspended in air.

Airline Respirator
An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Air-Purifying Respirator (APR)
Respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

American Industrial Hygiene Association (AIHA)
Professional organization of industrial hygiene.

Approved
Evaluated and listed as permissible by NIOSH/MSHA, for the respirator's intended use.

Assigned Protection Factor (APF)
The workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program.

Contaminant
A harmful, irritating, or nuisance airborne material.

Disposable Respirator
A respirator for which maintenance is not intended and that is designed to be discarded after excessive resistance, sorbent exhaustion, physical damage, or end-of- use-service-life renders it unsuitable for its intended use. (See: Dust mask)

Dust
An aerosol consisting of mechanically produced solid particles derived from the breaking up of larger particles.

Dust Mask
A negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece composed of the filtering medium. NOTE: the elastic, fabric face covers typically used in medical settings are separate from dust masks. They are not respirators and are not considered by NCDOT to provide any respiratory protection.

End-of-Service-Life Indicator (ESLI)
A system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

Exposure Limit
The maximum allowable concentration of a contaminant in the air to which an individual may be exposed. These may be time-weighted averages, excursion limits, ceiling limits and short-term limits.

Filter
A component used in respirators to remove solid or liquid aerosols from the inspired air.

Fit Check
A test conducted by the wearer to determine if the respirator is properly sealed to the face.

Fit Test
The use of challenge agent to evaluate the fit of a respirator on an individual.

Fume
Solid aerosols formed by the condensation of metal.

Hazardous Atmosphere
An atmosphere that contains a contaminant(s) in excess of the exposure limit or is oxygen deficient.

High-Efficiency Particulate Air (HEPA) Filter
A filter that removes from the air 99.97 percent or more of the aerosols having a diameter of 0.3 micrometers.

Immediately Dangerous to Life or Health (IDLH)
Any atmosphere that poses an immediate hazard to life or poses immediate irreversible debilitating effects on health.

Negative Pressure Respirator (tight fitting)
A respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Permissible Exposure Limit (PEL)
Regulatory limits for contaminants that include:

- Eight-hour time weighted average (TWA)
- Short Term Exposure Limit (STEL)
- Ceiling (c)
- Excursion Limits

Powered Air-Purifying Respirator (PAPR)
An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering. Loose-fitting (hooded) PAPRs do not require fit testing. PAPRs with a tight face seal will still require fit testing.

Qualitative Fit Test (QLFT)
A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Workplace Exposure Assessment
Evaluation of respiratory hazards by activity observation, material data sheets, historical data review, and/or air monitoring by a Safety Engineer or Industrial Hygienist.

6.2 General Provisions

This section details the provisions of this SPP with each provision discussed in a separate subsection. These provisions are:

- Training
- Written Respiratory Program
- Administration
- Exposure Assessment
- Respirator Selection
- Respirator Fit Test
- Recordkeeping
- Purchasing
- Medical Surveillance

6.2.1 Training

Employees who use or who are assigned respirators shall be trained in:

- Respirator limitations under various conditions
- Protection factors of the various types of respirators
- Proper use, maintenance, cleaning, disinfection, and storage of respirators
- Testing of the respirator face seal

This training shall be provided upon initial job assignments requiring the use of respirators and shall occur annually and when job conditions change. The training (and retraining) will include a fit test if employees are assigned tight-fitting respirators. Upon initial training employees shall be provided the information in Appendix D: Voluntary Respirator Use Information. A signed copy of Appendix D shall be retained by the supervisor.

6.2.2 Written Respiratory Program

This safety policy and procedure provides an overview of the key components of respiratory protection. Each unit shall have a written respiratory program if respirators are provided to employees. The key elements of this written respiratory program are:

- Using standard operating procedures for respirator training, selection, use, maintenance, storage, procurement, and medical examinations
- Selecting respirators based upon employee exposure hazards
- Training respirator users on the proper use and limitations of respirators
- Respirator fit testing
- Assigning respirators to individual workers for their exclusive use
- Cleaning and disinfecting respirators on a regular basis
- Storing respirators in convenient, clean and sanitary locations
- Inspecting respirators during routine cleaning for worn or damaged parts
- Conducting surveillance of work area conditions and degrees of employee exposure or stress
- Conducting regular inspections and evaluations to determine the continued effectiveness of the program

- Not assigning respirators until it has been determined that the employee is physically able to perform the work and use the equipment

A comprehensive Written Respiratory Program can be found in Appendix B. Units may adopt the Written Respiratory Program provided in Appendix B or produce their own with more specific guidelines to their operations.

6.2.3 Administration

Each Division Safety Engineer shall administer the written respiratory protection program. SRM will assist in the implementation of the program, selection of approved respirators, training, and recordkeeping.

6.2.4 Exposure Assessment

A safety professional or industrial hygienist shall assess employee exposures to airborne contaminants prior to the employee using a respirator. Based on the assessment, the proper respirator shall be selected. Exposure assessments shall be based on such data as air monitoring results, process information, work environment, historical data, and/or work practices relative to the type of contaminant.

The OSHA Permissible Exposure Limit (PEL) of an air contaminant does not have to be exceeded for an employee to be required to use a respirator. The supervisor or safety professional may also require respirator use because of nuisance exposure or due to doubts in the exposure assessment findings.

6.2.5 Respirator Selection

6.2.5.1 Air Purifying Respirators (APR)

The majority of respirators used at NCDOT are air purifying respirators (APR). They rely on cartridge or material filtration of atmospheric air to lower contaminant exposure. The four most common types are:

- Disposable filtering facepiece APR
- Half face negative pressure APR
- Full face negative pressure APR
- Powered air purifying respirator (PAPR)

APRs are appropriate for low-level exposures to such contaminants as

- Silica
- Lead
- Asbestos
- Welding fumes
- Asphalt fumes
- Respirable dust
- Pesticides
- Hexavalent Chromium

Which could be expected from such activities as

- Sawing
- Hot work (welding, torching, metal grinding)
- Grinding
- Paving
- Painting

NOTE: these lists are not exhaustive, and an exposure assessment must be performed on any activity to dictate proper respirator assignment.

6.2.5.2 Assigned Protection Factor (APF)

- APF [10]: Disposable filtering facepiece, half face negative pressure APR
- APF [50]: Full face negative pressure APR
- APF [25]: Powered air purifying respirator (PAPR)

The number that appears in brackets ([ ]) after each APR above is the assigned protection factor (APF). A respirator's APF corresponds to its level of contaminant reduction. For example, a respirator with an APF of 25 will reduce actual user exposure of atmospheric contaminants by a factor of 25. To further illustrate, if an employee is exposed to 200 µg/m^3 of lead, if he/she is using a respirator with an APF of 25 (e.g. PAPR), the actual exposure would be 8 µg/m^3 (200 / 25 = 8). Higher APF respirators, therefore, may be required in atmospheres of higher contaminant concentration. The proper APF respirator should always be used to lower employee exposure below the PEL.

6.2.5.3 APR Cartridge Selection

The types of filtering cartridges/materials used on APRs vary between particulate filters and chemical filters.

Particulate filters are rated both on an oil resistance scale:

- N – not resistant to oil
- R – partially resistant to oil
- P – resistant to oil

And on an efficiency scale:

- 95 – when properly used this filter removes 95% of 0.3 µm-sized particles
- 99 – when properly used this filter removes 99% of 0.3 µm-sized particles
- 100 – when properly used this filter removes 99.97% of 0.3 µm-sized particles

Chemical cartridge filters are more substance specific. They include:

- OV – organic vapor filter
- Acid gas – hydrogen sulfide, chlorine, sulfur dioxide
- Hg – mercury filter

The proper respirators and filters shall be selected to provide the protection factor to achieve compliance with a PEL for the particular airborne contaminant(s). Filter cartridges are color coded for clarification. Some cartridges protect against multiple contaminants (e.g. OV/P100). Other filters are built-in to the respirator (e.g. N95 filtering facepieces).

6.2.5.4 Supplied Air Respirators (SAR)

Unlike APRs, supplied air respirators (SARs), do not rely on filtration of atmospheric air. Instead, they provide breathing air either from a self-contained tank or from an airline source. SARs can be used for either high-exposure situations (e.g. abrasive blasting operations) or for emergency escape. SARs use grade-D breathing air which must be regularly tested. The APF for supplied air depends on the specific type of facepiece and pressure mode, the manufacturer's manual should be referenced to find the specific model's APF. Escape SARs are only to be used in emergency situations.

6.2.6 Recordkeeping

Medical evaluation records are to be kept by the employer and made available to the employee. Although they do not contain HIPA information, they will be treated as confidential medical records and kept securely and separately from the employee's personnel file. If the PLHCP maintains the records instead of NCDOT that is acceptable and preferred.

Records shall be kept on each employee who receives training and fit testing. This record will include the name, location, type of contaminant(s), respirator type, fit tester, medical evaluation and results of fit testing. Fit test records are to be kept until the next fit test is administered, or for 5 years, whichever occurs first. See Appendix A for the form.

6.2.7 Fit Testing

Fit testing shall be conducted annually for all employees required to wear a tight-fitting respirator (e.g. half-face APR or filtering facepiece). Tested employees shall be clean shaven. Mustaches and goatees are not allowed to interfere with the sealing area of the respirator. At least two different brand/models of respirator shall be made available for employees to choose from. The fit test should be performed by a safety professional.

Annual fit tests may be quantitative (e.g. TSI Porta Count) or qualitative. Qualitative fit tests (QLFT) shall utilize one of the following irritants: isoamyl acetate (banana oil – recommended for organic vapor respirators), saccharin, bitrex, or irritant smoke. proceed as follows:

- If using banana oil, saccharin, or bitrex, perform a sensitivity test using thedilute irritant while the employee is not wearing the respirator.
- After determining the sensitivity threshold of the irritant, allow the employee 5 minutes for their senses to return to normal.

- Don the respirator and adjust the straps to provide a comfortable but snug fit.
- Perform a positive pressure seal check by covering the exhalation valve and exhaling. The APR should have some resistance during the check, as air should not pass freely around the respirator seal edges.
- Perform a negative pressure seal check by covering the cartridges and inhaling. The APR should collapse inward somewhat (depending on what type it is). Air should not pass easily around the respirator seal edges.

While wearing the respirator, the user shall perform the following exercises for at least 30 seconds each while being properly tested with the respective irritant or odorizer:

- Normal breathing
- Deep breathing
- Turning head side to side
- Moving head up and down (nodding)
- Talking (reciting a poem or song or counting backwards from 100)
- Grimacing
- Bending over (touching toes)
- Normal breathing

If the user does not taste/smell the irritant at any point during the exercises, the fit test should be considered passed.

Loose-fitting PAPRs do not require annual fit testing, nor do they require users to be clean-shaven. *The use of PAPRs does not exempt employees from the medical clearance and annual training requirements of this policy.*

6.2.8 Purchasing

Only NIOSH-approved respirators shall be purchased and kept in stock along with an adequate supply of cartridges and replacement parts. Respirators shall be provided by the employer at no cost to the employee.

6.2.9 Medical Surveillance

All employees who are required to use a respirator for any work activity shall complete the medical evaluation questionnaire or receive an initial medical examination that obtains the same information as the medical questionnaire.

- The questionnaire evaluation or initial medical examination must be performed by a professionally licensed healthcare professional (PLHCP).
- The PLHCP will provide a written recommendation to the employer regarding the employee's ability to use the specified respirator(s).
- If the recommendation demonstrates the need for one, or if an employee gives a positive response to any question among questions 1 through 8 in Section 2, Part A of the questionnaire, the employee will be sent to a PLHCP for a follow-up, in person medical examination.

***VOLUNTARY** use of filtering facepiece respirators (e.g. N95s) by employees does not require medical clearance.*

No employees will wear a respirator until medical clearance has been completed. Any medical event or substantial physical change which would affect an employee's breathing or their ability to wear a respirator shall warrant a follow-up medical examination. If employee annually documents that no significant changes to his/her job activity nor physical appearance has occurred that would change the effectiveness of the existing medical clearance, then the initial clearance remains valid. A copy of the required (Part A) medical questionnaire is attached in Appendix C. An additional (Part B) may optionally be included in the questionnaire submitted. For a copy of part B please reference the OSHA publication or reach out to SRM.

6.3 Specific Responsibilities

6.3.1 Industrial Hygienist

The NCDOT industrial hygienist (IH), or manager of the NCDOT IH program, will act as the program administrator for the department's respiratory protection program. As the program administrator, the IH shall have specific training and be knowledgeable about respirator use to supervise the program properly. All other responsible parties should administer the program in liaison with the IH.

6.3.2 Unit Heads

Unit Heads are responsible for ensuring that adequate funds are available and budgeted for the purchase of respiratory protection equipment and related supplies. They will also be responsible for identifying the employees affected by this safety policy and procedure and assure those employees are provided a medical examination before being issued a respirator.

Unit Heads will also ensure compliance with this safety policy and procedure through their auditing process.

6.3.3 Supervisors

Supervisors will not allow any employee who has not received the required training or medical evaluation to perform any of the tasks or activities requiring respiratory protection. They will also ensure that respirators are properly worn and maintained.

Supervisors will request and coordinate the required training for the affected employees. Supervisors will be responsible for ensuring that an adequate supply of respirators, cartridges, and replacement parts are available.

6.3.4 Employees

Employees shall comply with all applicable guidelines contained in this SPP. They will maintain and clean the respirator assigned to them and properly store the respirator when not in use. Employees will be clean shaven if required to wear a tight-fitting respirator.

6.3.5 Safety Engineer

Safety Engineer will act as manager of the written respiratory program specific for the unit and provide assistance to unit heads and supervisors on respirator use and training.

Safety Engineer shall conduct respiratory training and fit testing on an annual basis.

Safety Engineer shall consult with an Industrial Hygienist as needed to perform exposure assessments and for proper respirator selection.

6.3.6 Safety and Risk Management

Safety and Risk Management (SRM) will provide prompt assistance to unit heads, supervisors, or others as applicable on any matter concerning this SPP.

SRM will provide consultative audit and exposure assessment assistance to ensure effective implementation of this safety policy and procedure.

6.3.7 Central Equipment Unit

Central Equipment Unit will maintain an inventory of approved respirators for NCDOT.

APPENDIX A: Respirator Fit Test Form

NCDOT

RESPIRATOR FIT TEST FORM

QUALITATIVE FIT TEST

Date: _____

Employee Name:_____Unit:_____

Division: _____

Job Description:

_____

Respirator:_____half-face_____full face_____Positive Pressure Check: **Yes No**

Negative Pressure Check: **Yes No** Facial Hair: **Yes No**

Prescription Glasses: **Yes No** Familiarity With Respirator: **Yes No**

Test Agent: Saccharin Irritant Smoke Isoamyl acetate Bitrex

Pre-test: Taste: Pass Fail Odor: Pass Fail Irritant: Pass Fail

FIT TEST RESULTS

Respirator Brand & Model	Normal	Deep Breathing	Head side to side	Head up and down	Speaking Passage	Jogging	Normal

P = Pass **F** = Fail Must have all **P**'s to have a satisfactory fit test.

Reason for failure to fit test:_____

By passing all the above fit tests, the employee is qualified to use the above respirator for the following contaminants:_____

I certify that I have trained the above individual on the use, care, limitations and maintenance of the respirator and performed the fit test in accordance with the respirator manufacturer's procedures and OSHA requirements.

Fit Tester Signature _____

I have been fit tested and trained on the above listed respirator. I will follow the NCDOT policies and procedures for the use, maintenance and care of the respirator. No changes to my health, appearance, or work activities has occurred that would negate my existing medical clearance.

Employee Signature _____

APPENDIX B: Comprehensive NCDOT Respiratory Program

NCDOT
DIVISION RESPIRATORY PROTECTION

I. Introduction

In the control of those occupational diseases caused by breathing air contaminants, the primary objective is to prevent harmful exposures. This is accomplished as far as feasible by accepted administrative, engineering control measures and work practice controls. When effective controlsare not feasible, or while they are being put in place, appropriate respirators may be required.

II. Purpose and Scope

The purpose of this program is to comply with 29 CFR 1910.134, the OSHA respiratory protectionstandards, ANSI Respiratory Protection Z88.2-1992, and to assure respirator users are protected against air contaminants in the workplace. The program applies when respirators are:

- Used to comply with OSHA requirements
- Required by the employer without explicit OSHA requirement
- Worn voluntarily

III. Responsibility

A. The Division Safety Engineer is responsible for:

1. Respirator selection
2. Training and instruction
3. Fit testing users for tight-fitting respirators
4. Medical evaluation
5. Respirator availability and use
6. Respirator maintenance and inspection
7. Quality and quantity of breathing air
8. Routine audit of the program
9. Records retention

B. The employee is responsible for:

1. Using the respirator provided according to instructions and training
2. Completing the medical evaluation
3. Performing seal checks each time he puts on his respirators.
4. Undergoing fit tests
5. Cleaning, disinfecting, inspecting, and storing his/her respirator
6. Making the most of the annual training provided

C. The supervisor is responsible for:

1. Supplying respirators
2. Assurance that respirators are worn safely

IV. Respirator Selection

The manager of the divisional respiratory program selects respirators based on the concentration of hazardous contaminants likely to be encountered and the nature of the work being done. Breathing zone air samples are the best measurement of employee exposure, however a reasonable estimate ofexpose can be used.

A. Lead
   PAPR with P100 filters
   Half face tight fitting respirator with P100 filters (Contract Inspectors only)

B. Respirable Crystalline Silica
   Half or full-face APR with P100 cartridges
   Disposable filtering facepiece respirator N95 under some circumstances

C. Herbicides and Pesticides
   Half-face APR with organic vapor cartridge with P100 filter

D. Nuisance Dust
   Disposable filtering facepiece respirator N95

E. Abrasive Blasting Dust
   Bullard or Clemco Abrasive Blast Helmet Type CE

V. Use of Respirators

Each employee shall use the respirator correctly. Failure to use or wear the respirator correctly willreduce the provided protection and may cause breathing difficulty for the user. Employees shall adhere to the following:

A. Put the respirator on as instructed during training.
B. For tight fitting respirators, the wearer must be clean shaven so no hair interferes with the face to respirator sealing area.
C. For tight fitting respirators, the wearer must perform the fit seal check prior to entering the work area.
D. Loose fitting respirators shall only be worn after the wearer assures that the respirator is being supplied with the required airflow. Wears do not have to be clean shaven. (see manufacturer's instructions)
E. Filters and cartridges shall be replaced as follows:
    1. P100 filters (purple/pink) when breathing resistance increases, when it becomes wet,or after a scheduled period of time. Replacement times are dependent on work activity, SE should provide consulting on when to replace cartridges.
    2. Organic vapor cartridges after each use and/or at the end of the shift.
    3. Disposable dust mask N-95 after each use and/or at the end of the shift.
    4. PAPR cartridges are to be flow tested periodically. See the manufacturer's instructions for how to perform test and for replacement procedure based on testresults.
F. Employee shall be allowed to take periodic breaks to maintain respirator and to relief discomfort.

VI. Medical Evaluation

Each employee shall be medically evaluated prior to using any respirator. The program manager shall have the medical provider conduct the evaluation to include the required OSHA questionnaireand additional necessary tests, and written clearance for use. The medical evaluation shall be repeated anytime the employee has a medical event which would affect the ability to wear a respirator. During annual respiratory training employees shall document that no significant job activity nor health changes have occurred that would negate the received medical clearance.

VII. Maintenance and Care of Respirators

Employees shall maintain their respirator to retain their original effectiveness by periodic inspection, repair, cleaning, and proper storage. Manufactures instructions shall be followed toinspect, repair, and cleaning.

A. Inspection

Employees shall inspect their respirators before each use and while cleaning to check the condition of the face piece, head straps, connecting tube, and canisters and elastomeric partsfor signs of deterioration.

B. Repair

Employee's respirators, which do not pass inspection, shall be replaced or repaired immediately. Employees can change canisters and head with OEM parts designed for therespirator. All other replacement or repairs are handled by person trained to repair respirators. (NOTE: Only the manufacturer or technician trained by the manufacturer canattempt to adjust or repair reducing and admission valves regulators, and alarms.)

C. Cleaning

Employees shall clean and disinfect their respirators as frequently as necessary to make surethey are sanitary. All reusable respirators shall be cleaned following use by the following methods:

1. Disassemble respirator
2. Wash with warm dilute dish soap solution or wipe with respirator cleaning wipes
3. Inspect all parts
4. Air dry or pat dry
5. Re-assemble respirator

D. Storage

Employees shall store respirators after inspection, cleaning, and necessary repairs, so therespirators are protected against damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. The preferred method is in aplastic bag inside a crush proof box.

VIII. Training

A. Training is required when respirators are used. The program manager provides training forworkers required by OSHA to wear a respirator and for their supervisors. The training includes:

1. Why respirators are needed
2. How improper fit, usage, or maintenance can compromise the protection provided.
3. Capabilities and limitations

4. How to use during emergencies and what to do if the respirator malfunctions
5. How to inspect, put on and remove, use and check the seals
6. Maintenance and storage
7. How to recognize medical signs and symptoms that affect use
8. General requirements of 29 CFR 1910.134 Training must be provided initially, annually, and anytime a significant job activity or health condition of an employeechanges that may change aspects of their respiratory protection.

B. Training is required when respirators are worn even though they are not required by OSHA. Employees who wear respirators even though they are not required to by OSHA need to be provided with the information in Appendix D of 1910.134, either orally or in writing.

C. Fit Test will be conducted as prescribed in 1910.134 Appendix A. Any employee required towear a tight-fitting respirator must be fit tested annually. Employees using only loose-fittingPAPRs or abrasive blast helmets are not required to be fit tested. Voluntary use of filtering facepieces do not require fit testing.

IX. Records

The respiratory program manager maintains the following records:

A. An up-to-date copy of the written respiratory program.

B. List of employees enrolled in the written respiratory program.

C. Fit test reports. These are to be kept until the time of the next annual fit test, or for 5 years from the latest occurrence.

D. Training records. These are to be kept until the time of the next annual training, or for 5 years from the latest occurrence.

E. Medical evaluation records for the duration of employment plus 30 years. These are to be treated appropriately as medical records and thus be kept confidential and separate from theemployee's personnel file.

F. Employee exposure records for duration of employment plus 30 years.

X. References

- **American National Standard for Respiratory Protection. ANSI Z88.2.**
- **American National Standard for Respirator Fit Test Methods. ANSI Z88.10**
- **NIOSH Respirator Decision Logic. October 2004. DHHS (NIOSH) Publication No. 2005-100.**
- **OSHA Respiratory Standard. 29 CFR 1910.134. Revised 2011.**
- **NCDOT SPP #1910.134 (latest revision)**

Division Safety Engineer:

_____

Date:

_____

APPENDIX C: Respirator Medical Evaluation Questionnaire

Part A Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date:
2. Your name:
3. Your age (to nearest year):
4. Sex (circle one): Male/Female
5. Your height: ft. in.
6. Your weight: lbs.
7. Your job title:
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code):
9. The best time to phone you at this number:
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Yes/No
11. Check the type of respirator you will use (you can check more than one category):
    a. ☐ N, R, or P disposable respirator (filter-mask, non-cartridge type only).
    b. ☐ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): Yes/No If "yes," what type(s):

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

	YES	NO
1. Do you currently smoke tobacco, or have you smoked tobacco in the last month?	☐	☐
2. Have you ever had any of the following conditions?		
a. Seizures	☐	☐
b. Diabetes (sugar disease)	☐	☐
c. Allergic reactions that interfere with your breathing	☐	☐
d. Claustrophobia (fear of closed-in places)	☐	☐
e. Trouble smelling odors	☐	☐
3. Have you ever had any of the following pulmonary or lung problems?	YES	NO
a. Asbestosis	☐	☐
b. Asthma	☐	☐
c. Chronic bronchitis	☐	☐
d. Emphysema	☐	☐
e. Pneumonia	☐	☐
f. Tuberculosis	☐	☐
g. Silicosis	☐	☐
h. Pneumothorax (collapsed lung)	☐	☐
i. Lung cancer	☐	☐
j. Broken ribs	☐	☐
k. Any chest injuries or surgeries	☐	☐
l. Any other lung problem that you've been told about	☐	☐
4. Do you *currently* have any of the following symptoms of pulmonary or lung illness?	YES	NO
a. Shortness of breath	☐	☐
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline	☐	☐
c. Shortness of breath when walking with other people at an ordinary pace on level ground	☐	☐
d. Have to stop for breath when walking at your own pace on level ground	☐	☐
e. Shortness of breath when washing or dressing yourself	☐	☐
f. Shortness of breath that interferes with your job	☐	☐
g. Coughing that produces phlegm (thick sputum)	☐	☐
h. Coughing that wakes you early in the morning	☐	☐
i. Coughing that occurs mostly when you are lying down	☐	☐

j. Coughing up blood in the last month	☐	☐
k. Wheezing	☐	☐
l. Wheezing that interferes with your job	☐	☐
m. Chest pain when you breathe deeply	☐	☐
n. Any other symptoms that you think may be related to lung problems	☐	☐
5. Have you ever had any of the following cardiovascular or heart problems?	YES	NO
a. Heart attack	☐	☐
b. Stroke	☐	☐
c. Angina	☐	☐
d. Heart failure	☐	☐
e. Swelling in your legs or feet (not caused by walking)	☐	☐
f. Heart arrhythmia (heart beating irregularly)	☐	☐
g. High blood pressure	☐	☐
h. Any other heart problem that you've been told about?	☐	☐
6. Have you ever had any of the following cardiovascular or heart symptoms?	YES	NO
a. Frequent pain or tightness in your chest	☐	☐
b. Pain or tightness in your chest during physical activity	☐	☐
c. Pain or tightness in your chest that interferes with your job	☐	☐
d. In the past two years, have you noticed your heart skipping or missing a beat	☐	☐
e. Heartburn or indigestion that is not related to eating	☐	☐
f. Any other symptoms that you think may be related to heart or circulation problems	☐	☐
7. Do you currently take medication for any of the following problems?	YES	NO
a. Breathing or lung problems	☐	☐
b. Heart trouble	☐	☐
c. Blood pressure	☐	☐
d. Seizures	☐	☐
8. If you've used a respirator, have you ever had any of the following problems?	☐	☐
(If you've never used a respirator, check NO and go to question 9.)		
a. Eye irritation	☐	☐
b. Skin allergies or rashes	☐	☐
c. Anxiety	☐	☐
d. General weakness or fatigue	☐	☐
e. Any other problem that interferes with your use of a respirator	☐	☐

	YES	NO
9. Would you like to talk to the PLHCP about your answers to this questionnaire?	☐	☐

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

	YES	NO
10. Have you ever lost vision in either eye (temporarily or permanently)?	☐	☐
11. Do you currently have any of the following vision problems?	☐	☐
a. Wear contact lenses	☐	☐
b. Wear glasses	☐	☐
c. Color blind	☐	☐
d. Any other eye or vision problem	☐	☐
12. Have you ever had an injury to your ears, including a broken eardrum?	☐	☐
13. Do you currently have any of the following hearing problems?	☐	☐
a. Difficulty hearing	☐	☐
b. Wear a hearing aid	☐	☐
c. Any other hearing or ear problem	☐	☐
14. Have you ever had a back injury?	☐	☐
15. Do you currently have any of the following musculoskeletal problems?	☐	☐
a. Weakness in any of your arms, hands, legs, or feet	☐	☐
b. Back pain	☐	☐
c. Difficulty fully moving your arms and legs	☐	☐
d. Pain and stiffness when you lean forward or backward at the waist	☐	☐
e. Difficulty fully moving your head up or down	☐	☐
f. Difficulty fully moving your head side to side	☐	☐
g. Difficulty bending at your knees	☐	☐
h. Difficulty squatting to the ground	☐	☐
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs.	☐	☐
j. Any other muscle or skeletal problem that interferes with using a respirator	☐	☐

APPENDIX D: Voluntary Respiratory Use Information

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning andcare, and warnings regarding the respirator's limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and HumanServices, certifies respirators. A label or statement of certification should appear on the respirator orrespirator packaging. It will tell you what the respirator is designed for and how much it will protectyou.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will notprotect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

I have read and understand the requirements laid out in this appendix and will follow them if I choose to voluntarily wear an air purifying respirator under working conditions where it is not required.

Name: _____ Date: _____