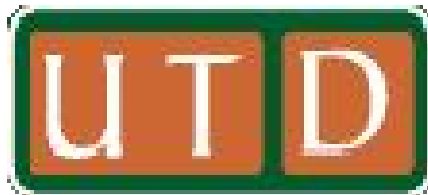


University of Texas at Dallas Respiratory Protection Program



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Environmental Health & Safety

RESPIRATORY PROTECTION PROGRAM

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RESPIRATORY PROTECTION PROGRAM

I. INTRODUCTION

A. It is the policy of The University of Texas at Dallas (UTD) that proper respiratory protection is provided and used in work areas where it is not feasible to reduce exposures to airborne contaminants to acceptable levels through the use of engineering controls or work practices. The following regulations, requirements, and guidelines are incorporated into the UTD *Respiratory Protection Program*.

1. Federal requirements for respirator selection and use, as outlined in 29 CFR 1910.134 (Appendix A), 29 CFR 1910.1048, 29 CFR 1910.1001, 29 CFR 1926.1101, and other applicable Occupational Safety and Health Administration (OSHA) regulations.
 2. OSHA regulations adopted by the Texas Department of Health (TDH)
 3. American National Standards Institute (ANSI) *Standard for Respiratory Protection*, Z88.2-1992.
 4. National Institute for Occupational Safety and Health (NIOSH) 42 CFR 84 and related guidelines and publications.
 5. Compressed Gas Association Pamphlets CGA G-7-1990, *Compressed Gas for Human Respiration* and CGA G-7.1-1997, *Commodity Specification for Air, Fourth Edition*.
- B. Definitions of terms for the purpose of this program are found in Appendix B of this program.

II. SCOPE

This program applies to the University of Texas at Dallas campus and affiliated facilities. Employees who wear respiratory protection during work activities or anticipate wearing respiratory protection during emergency activities are covered by this Program.

III. RESPONSIBILITIES

A. ENVIRONMENTAL HEALTH AND SAFETY OFFICE (EHSO)

1. The Program Administrator is the University Environmental Health and Safety Industrial Hygienist Sridhar Hanumanthaiah. Director, Zeke Barrera oversees the program with Safety Manager, Kathy White being the secondary person. The responsibilities of the Program Administrator include, but are not limited to:
 - a. Identifying areas and work practices where potential exposure above the OSHA Permissible Exposure Limit (PEL) or if not addressed by OSHA refer to the American Conference of Governmental Industrial Hygienist (ACGIH) Threshold Limit Value (TLV) for specific contaminants may occur and designating those areas and work practices as requiring respiratory protection;
 - b. determining airborne contaminant concentration(s) in designated areas or during work practices;
 - c. when no end-of-service-life indicator is available on selected air purifying cartridges or canisters, determining a change schedule based on objective information or data to ensure that the canisters and cartridges are changed before the end of their service life;

- d. training employees in proper care and use of the respiratory protective devices and documenting the training;
 - e. evaluating the skill of the respirator user during training and fit testing;
 - f. ensuring the proper selection of respiratory protective devices;
 - g. conducting fit testing at intervals specified in Section XI., *Fit Testing*;
 - h. coordinating the medical surveillance program and associated documentation for applicable employees covered under this program;
 - i. ensuring that the UTD *Respiratory Protection Program* is developed in compliance with ANSI, OSHA, NIOSH, and other applicable rules and regulations (in the event of any conflict between the rules or standards, the most stringent shall apply);
 - j. maintaining copies of records required by this program as required in Section XX., *Records*;
 - k. ensuring that persons administering quantitative fit testing are able to calibrate equipment and perform tests properly, recognizing invalid tests, calculate fit factor properly, ensuring that the test equipment is in proper working order, and properly calibrating the equipment according to manufacturer's instructions; and
 - l. evaluating the UTD *Respiratory Protection Program* for effectiveness on a routine basis.
2. The Program Administrator may delegate responsibility for various aspects of the UTD *Respiratory Protection Program* to other qualified person(s), but the ultimate program responsibility cannot be delegated.
 3. EHSO personnel will assist any employee in determining if a respiratory protective device is required and selecting a respiratory protection device following the guidelines specified in Section V., *Selection*.
 4. EHSO personnel will provide initial and annual refresher training as specified in Section XVII., *Training* to UTD employees using respiratory protective devices.
 5. EHSO personnel will conduct respirator fit testing as specified in Section XI., *Fit Testing*. Fit testing may be delegated to other specific individuals deemed competent by EHSO personnel.
 6. EHSO personnel will assist employees supplied with a respiratory protective device in procuring a medical evaluation specific for their work to determine the employee's physiological ability to wear the device. See Section XVIII., *Medical Evaluation*.
 7. EHSO personnel will maintain a file of records relative to the respiratory protection program as specified in Section XX., *Records*.

B. SUPERVISORS

Departmental supervisors who have employees required to wear respirators must:

1. Contact the EHSO if they or their employees who wear respirators have questions or concerns about respirator use;
2. Ensure that inspection, maintenance, and cleaning activities for the respiratory protective devices are properly carried out and recorded;
3. Ensure that written standard operating procedures (see Appendix C of this program) are kept current, followed, and copies sent to the EHSO;
4. Ensure that employees use, inspect, clean, maintain and store the respirator properly;
5. ensure that employees demonstrate an ability to use the respirator properly before allowing them to perform work requiring the use of the respirator, and that they are fit tested at least annually;

6. Retain copies of certain respirator records as specified in Section XX., *Records*;
7. Schedule medical evaluations and maintain documentation of medical records for employees in their department as required by Section XVIII., *Medical Evaluation*;
8. Conduct random inspections to assure that respirators are properly used, cleaned, and maintained;
9. Ensure employees are retrained and the EHSO is notified when the following situations occur:
 - a. changes in workplace operations,
 - b. changes in types of respirator, or
 - c. inadequacies in an employee's knowledge or use of required respirator.

C. EMPLOYEES

Employees are responsible for:

1. Notifying their supervisor and/or the EHSO if they:
 - a. have concerns or questions about workplace exposure,
 - b. questions about respirator use, or
 - c. exhibit possible signs or symptoms of workplace exposure;
2. Wearing the appropriate respiratory protective device when performing activities in locations designated by the EHSO as requiring respiratory protection;
3. Maintaining a facial surface consistent with a proper fit of the respiratory protective device;
4. Performing routine care and preventive maintenance of their selected respirator as described in this program and any manufacturers' specific recommendations and completing the appropriate records;
5. Guarding against damage to the respirator;
6. Participating in fit testing and having their respirator available for inspection during fit testing;
7. Participating in medical evaluation prior to respirator use and annually or as needed;
8. Inspecting their respirator prior to each use;
9. Immediately leaving the contaminated area if a respirator malfunction occurs and reporting the malfunction to the responsible person designated by the departmental supervisor in the written standard operating procedures; and
10. Complying with departmental standard operating procedures and other requirements specified in this program.

IV. TYPES AND STYLES OF RESPIRATORS

The most commonly recommended respirators to be used at the University of Texas at Dallas are disposable N95 respirators for protection against particulates or infectious aerosols and half or full face, negative pressure, air purifying respirators. Powered air purifying respirators may be used by medical personnel who use respiratory protection against infectious aerosols and cannot fit a tight fitting respirator due to facial size, shape, characteristics, or facial hair. Use of SCBA is limited to specialized applications like the clean room etc.

A. AIR PURIFYING RESPIRATORS (APRs)

Air purifying respirators can purify the air of gases, vapors, and particulates, but do not supply clean breathing air.

1. Air purifying respirators are available in two general classes: disposable and reusable.
 - a. Disposable respirators consist of a particulate filtering media, straps, and may contain sorbents for nuisance levels of other contaminants. These respirators have negative pressure within the face-piece relative to the external pressure, e.g., N95 disposable respirators.
 - b. Reusable air purifying respirators have a face-piece and attached cartridges that contain specific material needed against a specific contaminant. There are two basic groups of cartridges for use with reusable air purifying respirators:
 - (1) Filtering media cartridges that trap particulates, dust, fog, fumes, mist, spray, and smoke.
 - (2) Activated charcoal or another sorbent material that traps gases or vapor contaminants.
2. Air purifying respirators can also be divided into negative pressure or positive pressure types.
 - a. Negative pressure respirators are the most common respirator at UTD. They function when the wearer inhales and creates a negative pressure inside the respirator causing contaminated air to pass through an air purifying element into the respirator.
 - b. Positive pressure or "powered" air purifying respirators use a blower both to pass contaminated air through an element that removes the contaminant and to supply purified air to a face-piece, helmet, or hood. Positive pressure respirators have pressure inside the face-piece that is positive to the external pressure.

B. ATMOSPHERE SUPPLYING RESPIRATORS

1. General

- a. All breathing air supplied to employees will meet the requirements for Type 1-Grade D breathing air as described in Compressed Gas Association *Commodity Specification for Air*, G-7.1-1997 and *Compressed Air for Human Respirator*, G-7-1990. Breathing air, as specified by the Compressed Gas Association, contains the following:
 - (1) Oxygen content of 19.5 to 23.5%,
 - (2) Oil (condensed) content of 5 milligrams or less per cubic meter of air,
 - (3) Carbon monoxide content of 10 ppm or less,
 - (4) Carbon dioxide content of 1,000 ppm or less, and
 - (5) Odor may be slight, but the presence of a pronounced odor is unacceptable.
- b. In addition, all requirements specified in 29 CFR 1910.134 (i)(1)-(9) will be met (see Appendix A). See specific procedures for SCBA use in Section VI., *Respirator Use*.

2. Self Contained Breathing Apparatus (SCBA)

- a. Employees using SCBA will be trained annually in proper SCBA donning, doffing, and operating procedures.
- b. The SCBA are maintained and inspected by the SCWP personnel to whom these respirators are assigned. Their use is specifically limited to response by designated SCWP employees who would accompany Richardson Fire Department firefighters into the facility in case of a fire.

3. Air Line Respirators

- a. Air line respirators utilize a half or full face mask with a hose attached. The other end of the hose is attached to a clean air supply source such as series of compressed breathing air cylinders (cascade system) or a compressor.

b. If air line respirators are used, the air supplying system will meet all applicable federal and state requirements; additional employee training, respirator and system inspections, will be conducted; and the manufacturer's operating instructions will be followed.

V. SELECTION

A. GENERAL

1. Examples of contaminants and work practices found at UTD include, but are not limited to, infectious aerosols, organic solvents, dust, pesticides, herbicides, paints, paint strippers, paint thinners, asbestos, formaldehyde and numerous other chemicals. The respiratory protective devices will be those approved for use against the hazard encountered as recorded in the current edition of the NIOSH Certified Equipment List (see <http://www.cdc.gov/niosh/celintro.html>).
2. Only respirators and cartridges jointly approved by the Mine Safety and Health Administration (MSHA) and NIOSH under the provisions of 30 CFR Part 11 or approved by NIOSH under the provisions of 42 CFR Part 84 should be used. Respirators and cartridges with the joint MSHA/NIOSH approval may still be used after that date. Nuisance dust masks without NIOSH approval will not be issued to employees of UTD.
3. Respirator selection will follow the guidance in 29 CFR 1910.134, 29 CFR 1910.1001, 29 CFR 1926.1101, 29 CFR 1910.1017, 29 CFR 1910.1045, 29 CFR 1910.1051, ANSI *Standard for Respiratory Protection Z88.2-1992*, applicable federal and state regulations, and Appendix D, which contains a partial listing of chemicals for which air purifying respirator cartridges do not provide protection.
4. Respirators and cartridges will be selected by the EHSO based on:
 - a. the nature of the hazardous activity or process;
 - b. the type of respiratory hazard including physical, chemical, and physiological properties of the air contaminant(s);
 - c. the concentration of toxic material likely to be encountered;
 - d. the period of time for which respiratory protection must be worn;
 - e. determination of a published TLV, PEL, IDLH concentration, or any other available exposure limit or estimate of toxicity for the contaminant(s);
 - f. the existence of a comprehensive health standard (i.e., lead, asbestos) for the contaminant(s) requiring specific respirators;
 - g. the oxygen content and the potential for an oxygen deficient environment exists;
 - h. the activities of workers in the hazardous area;
 - i. the physical characteristics and functional capabilities and limitations of the various types of respirators;
 - j. the ability of the cartridge to protect against the contaminants (see Appendix D); and
 - k. respirator assigned protection factors.
5. If neither manufacturer information nor regulatory standards or information are available on cartridge selection, the following guidelines should be used:
 - a. Measure or make a reasonable estimate of, the concentration of contaminant to which the employee will be exposed (the concentration of the airborne contaminant that would occur if the employee were not using a respirator).
 - b. Ensure that the use of an air purifying respirator is appropriate for the specific contaminant at the specific exposure concentration.

c. No air purifying cartridge may be worn to protect an employee against a chemical contaminant with poor warning properties. Chemicals with poor warning properties are defined as those whose Permissible Exposure Limit (PEL) or Threshold Limit Value (TLV) are greater than their Geometric Mean Air Odor Threshold, as defined in Critiqued Odor Threshold Values of the AIHA publication “Odor Thresholds—for Chemicals with Established Occupational Health Standards.”

(1) Exception: Air purifying cartridges may be used if:

(a) Employee exposure concentration is determined;

(b) the exposure concentration is at all times less than 10 times the PEL or TLV, *and* is less than 100 ppm, notwithstanding the value of the PEL or TLV; and

(c) Air purifying cartridges will effectively remove the contaminant. One size or model of respirator will neither fit all types of faces nor be perceived as comfortable by every employee. Therefore, it is recommended that at least three different makes and models of respirators be made available by the department. Employee comfort should be considered as well as breathing resistance, impairment of vision, impairment of communications, and respirator weight.

B. RESPIRATOR SELECTION FOR SPECIFIC HAZARDS

1. General Particulates

Selection of particulate respirators and cartridges under the NIOSH approval based on the contaminant and whether the working environment contains oil-based aerosols.

Table 1 will be used to determine which class of particulate filter is required.

TABLE 1

Filter Classifications Under NIOSH 42 CFR 84

Minimum

Efficiency

No Oil Aerosol

Exposure

(Not Oil Proof)*

Some Oil Aerosol

Exposure

(Oil Resistant)*

Total Oil Aerosol

Exposure

(Oil Proof)

95 % N95 R95 P95

99 % N97 R97 P97

99.97 % N100 R100 P100

* There may be use restriction on these filter series based upon the aerosol and work conditions. Check with the EHSO for assistance with selection.

2. Asbestos

a. Respirator selection for asbestos operations and maintenance activities will follow the applicable federal and state asbestos regulations. Asbestos workers shall wear, at a minimum, a full face air purifying respirator when performing preparation work or when removing friable asbestos. Half face respirators are permitted to be used only for sampling, disposal and load-out procedures provided no removal is involved, and non-friable asbestos abatement procedures.

b. Protection factors to be utilized for the selection of the proper respirator are provided in Table 2 which also includes the maximum use concentration for asbestos work based on 29 CFR 1926.1101(h)(3)(i)

TABLE 2

**Respirator Protection Factors and Maximum Use Concentrations
For Asbestos Operations and Maintenance Activities ***

**Respirator Selection Protection Factor Asbestos Maximum Use
Concentration**

Half Face APR* 10 0.1 f/cc

Full Face APR

Qualitatively fit tested 10 0.1 f/cc

Full Face APR

Quantitatively fit tested 50 0.5 f/cc

Powered APR

Must be a tight-fitting face-piece

100 1.0 f/cc

Full Face, Supplied Air Respirator,
Pressure Demand

1000 10.0 f/cc

Full Face, Supplied Air Pressure Demand with Auxiliary Positive Pressure

1000 >10.0 f/cc or unknown concentration

3. Visible Fungal Growth

At a minimum, an N95 respirator should be used when disturbing, cleaning, or removing visible fungal growth. Consult the EHSO for additional recommendations on personal protective equipment and procedures when encountering this type of situation.

VI. RESPIRATOR USE

A. GENERAL USE LIMITATIONS

1. Air purifying respirators cannot be used when there is:

a. an oxygen deficient atmosphere (<19.5%);

b. any IDLH or unknown situation;

c. a contaminant which is extremely toxic in any amount;

d. a contaminant that cannot clearly be detected by odor;

e. a concentration of a contaminant that is highly irritating to the eyes (unless eye protection is provided);

f. not an appropriate cartridge or filter available for the specific contaminant(s) present;

g. a fast cartridge breakthrough time for the contaminant(s) (see Appendix D for a partial listing); or

h. a concentration of the contaminant(s) that exceeds the maximum filter concentration of the appropriate air purifying cartridge(s) specified by the manufacturer.

2. If warning properties are less than desirable or are unknown for the contaminant in question, air purifying cartridges shall not be used unless the following conditions are met:

a. employee exposure to the contaminant can be quantified through measurement or by a reasonable estimate;

- b. the use of an air purifying respirator is appropriate;
 - c. suitable filters or cartridges will effectively remove the contaminant from the air; and
 - d. contaminant contains the element, carbon.
3. OSHA prohibits the use of a tight fitting respirator with facial hair that may interfere with the respirator face seal and allow leakage of contaminated air during inhalation.
 4. Head coverings, goggles and other PPE must be worn on the outside of the respirator so that nothing passes between the respirator sealing surface and the face. Spectacle kits will provided at no cost to the employee.
 5. A respirator wearer is permitted to leave the hazardous areas for any respirator related cause. Reasons may include, but are not limited to, the following:
 - a. failure of the respirator to provide adequate protection;
 - b. malfunction of the respirator;
 - c. detection of leakage of air contaminant into the respirator;
 - d. increase in resistance of respirator during breathing;
 - e. severe discomfort in wearing the respirator;
 - f. illness of the respirator wearer, including sensation of dizziness, nausea, weakness, breathing difficulties, coughing, sneezing, vomiting, fever, or chills;
 - g. to wash his/her face and the respirator face-piece to minimize skin irritation;
 - h. to change the air-purifying elements or other components, whenever needed; and
 - i. to take periodic breaks in an uncontaminated area.
 6. The respirator can never be altered.
 7. The respirator manufacturer's guidelines must always be followed.

B. CARTRIDGE LIFE

1. General

- a. If the selected cartridge or canister has an end-of-service-life indicator (ESLI), it should be utilized. When no ESLI is available, the EHSO should be consulted to determine a change schedule to ensure that the filters, canisters and cartridges are changed before the end of their useful service life.
- b. Many factors limit the useful life of respirator cartridges. Some of those factors that may be useful for estimating cartridge life are:
 - (1) humidity (humidity above 85% will reduce service life by approximately 50%);
 - (2) the type of the contaminant;
 - (3) the concentration of the air contaminant (reducing contaminant concentration by a factor of 10 will increase service life by a factor of 5);
 - (4) breathing demand of the wearer (service life is inversely proportional to work rate);
 - (5) multiple contaminants;
 - (6) variable contaminant concentrations; and
 - (7) breakthrough time of the contaminant(s).
- c. If the user experiences an odor, taste, any irritation, or excessive breathing resistance from the contaminant before the end of the estimated service time, the user must:
 - (1) immediately leave the contaminated area,
 - (2) change the cartridges before reentering the work area,
 - (3) consider changing cartridges more often, and
 - (4) contact the EHSO to determine if an accelerated cartridge change schedule is needed.
- d. All cartridges should be discarded and replaced if they fail during use, become damaged or wet, or if breathing resistance becomes excessive.

- e. Cartridges that become contaminated with hazardous substances should be treated as contaminated material, removed after every use, and disposed of accordingly.
- f. If cartridge changes must be made frequently, the use of a supplied air respirator should be considered. Contact the EHSO for recommendations.
- g. Cartridge end-of-service-life computer programs are available that may be used to determine a change schedule. The programs to be utilized by EHSO as needed are:
- (1) 3M™ Service Life Calculator
<http://csrv.3m.com/csrv/chempic.jsp>
 - (2) MSA™ Cartridge Life Expectancy Program
<http://www.msanet.com/msanorthamerica/msaunitedstates/cartlife/index.html>
 - (3) OSHA's Advisor Genius
http://www.osha.gov/SLTC/etool/respiratory/advisor_genius_wood/advisor_genius.html
 - (4) North esLife™ Cartridge Service Life Estimation.
http://northsafety.com/usa/en/bs_sproduct.html?GID=3693
- h. If manufacturer change out schedules are not available, the OSHA Respiratory Protection Advisor homepage featuring the Wood Math Model, should be consulted. Information may be taken directly from a prepared table, or data may be entered into the calculator. Both tables and the calculator can be accessed on the web at the following location: http://www.osha-slc.gov/SLTC/respiratory_advisor/mainpage.html.
- i. The math models are usually only directly applicable for single contaminant exposures. If there is a multiple contaminant situation, EHSO will use other methods as needed to derive a schedule or increase the safety factors.
- j. For contaminants containing carbon, estimate the exposure concentration and use the following guidelines:
- (1) 1 carbon atom, containing halogen - do not use air purifying cartridges
 - (2) 1 carbon atom, containing no halogen - 1 hour
 - (3) 2 carbon atoms - 4 hours
 - (4) 3 or more carbon atoms - 8 hours
- k. For chemicals with good warning properties:
- (1) If the concentration of the contaminant is estimated to be less than 100 ppm, and is below IDLH concentration, the service life of the cartridge is 16 hours, unless breakthrough of the chemical contaminant is detected.
 - (2) If breakthrough is detected, the cartridge must be replaced immediately.
- l. For chemicals with good warning properties:
- (1) If the concentration of the contaminant is estimated to be between 100 and 1000 ppm, and is below IDLH concentration, the service life of the cartridge is 2 hours, unless breakthrough of the chemical contaminant is detected.
 - (2) If breakthrough is detected, the cartridge must be replaced immediately.

2. Particulates

Cartridges or filters used for filtering particulates, dusts, fogs, fumes, mists, spray, smoke, or infectious aerosols should be discarded if:

- a. resistance increases and makes breathing difficult, or
- b. they become contaminated or wet.

3. Gases and Vapors

- a. Organic Vapors

(1) If an organic vapor's boiling point is greater than 70° C (158°F) and its concentration is less than 100 ppm, the organic vapor cartridge (activated carbon) should last 8 hours at a normal work rate (normal breathing).

(2) Because a chemical desorbs during storage or non-use, migration can occur through the cartridge even without air movement, organic vapor cartridges may be reused in limited cases only.

Contact the EHSO for information regarding specific circumstances and recommendations about all cartridge reuse.

In general:

(a) Cartridges used for organic chemicals that are very volatile may be reused under limited circumstances (boiling points < 65°C) (149°F).

(b) Cartridges used for chemicals of moderate volatility should never be reused after periods of nonuse of a few days, e.g., over the weekend.

(c) Cartridges used for chemicals of low volatility should never be reused after a longer period of use that is still less than the service life estimate, e.g., 1 or 2 weeks.

b. Other Vapors

(1) To make cartridges specific for certain chemicals, carbon is treated with a chemical reagent to remove gas or vapor by chemisorption. Table 3 below shows chemical cartridge types of removal mechanisms for selected cartridges

(2) Because chemisorption reactions form stronger bonds and is usually irreversible, reuse of treated organic vapor cartridges may be considered under certain circumstances. Consult the EHSO for specific recommendations.

4. Specific Contaminants

a. Asbestos

(1) A sufficient quantity of filters should be provided by the contractor or the supervisor in-charge of the worker, so workers can change filters during the workday.

(2) Filters shall not be used any longer than:

(a) One workday,

(b) After the respirator has entered the decontamination shower, or

(c) After a worker has requested a new cartridge(s) when required, except:

i) Respirator cartridges with NIOSH approved, factory supplied, waterproof seals which may be taken through the decontamination shower without wetting the cartridge may be reused, provided:

a) There is an on-site respirator cartridge flow measurement device which can determine the need for changing the filters, and

b) Workers obtain new cartridges when required.

b. Benzene (1910.1028)(g)(2)(ii)

Cartridges must utilize an ESLI or be changed at the beginning of each shift (whichever occurs first);

c. Formaldehyde (1910.1048)(g)(2)(ii)

Cartridges should be replaced after 3 hours of use or at the end of the work shift, whichever occurs first, unless the cartridge contains a NIOSH-approved ESLI to show when breakthrough occurs.

d. Acrylonitrile (1910.1045)(h)(2)(ii)

Cartridges must be replaced prior to the expiration of its service life or at the completion of each shift, whichever comes first. A label must be attached to the cartridge to indicate the date and time at which it was installed on the respirator.

e. Butadiene (1910.1051)(h)(2)(ii)

(1) If NIOSH approves an ESLI, the cartridge may be used until:

- (a) the ESLI shows no further useful service life, or
- (b) the element is replaced at the beginning of the next work shift, whichever comes first.

(2) If no ESLI is available, two methods may be used to determine a cartridge change schedule. The EHSO will use either:

- (a) the cartridge change schedule found in 1910.1051(h)(3)(i), or
- (b) the procedure found in 1910.1051(h)(2)(iii).

(3) A label must be attached to each filter element to indicate the date and time it is first installed on the respirator.

f. Methylene Chloride (1910.1052)(g)(2)(ii)

Canisters may be only used for emergency escape and must be replaced after use.

g. Vinyl Chloride (1910.1017) (g)(3)(ii)

Air-purifying canisters or cartridges shall be replaced prior to the expiration of their service life or the end of the shift in which they are first used, whichever occurs first.

C. CONTACT LENSES

1. Contact lenses may be worn with respirators, under the following conditions:

- a. the individual has previously demonstrated that he or she has had successful experience wearing contact lenses; or
- b. the contact lens wearer practices wearing the respirator while wearing the contact lenses before entering an atmosphere that requires the use of a respirator.

2. A contact lens that falls out of the eye while wearing a half face respirator can become contaminated by contacting any surface such as the ground, clothes, or gloves and must not be reused.

3. If a contact lens falls from the eye while wearing a full face respirator, the wearer must immediately leave the work area and follow proper decontamination and cleaning procedures before the contact lens is replaced.

D. RESPIRATORS USED FOR "COMFORT" ONLY

Numerous situations exist where employees choose to wear respiratory protection for protection against odors or respiratory/eye irritation only with an exposure below any regulated levels. Some examples include disposable masks for protection against dust, sand, sawdust and air purifying respirators with organic vapor cartridges to protect against organic solvent odor. This practice is acceptable under this program, but all of the following conditions must be met:

- 1. the EHSO should be contacted by the supervisor to perform exposure monitoring as specified in Section XVI., *Exposure Monitoring* to determine that respiratory protection is not required for that specific activity or area;
- 2. The individual(s) must attend annual and refresher respirator training as specified in Section XVII., *Training*;
- 3. The individual(s) must be medically qualified to wear a respirator as specified in Section XVIII., *Medical Evaluation*;
- 4. The supervisor must provide the information provided in Appendix F of this program to the employee; and

5. The individual(s) must immediately inform the supervisor when work activities change that may also change their exposure.

E. IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) ATMOSPHERES

1. Additional precautions and activities regarding respiratory protection are required in IDLH atmospheres (see Appendix B, *Definitions*). IDLH atmospheres are not generally anticipated on UTD campus and facilities except during:

- a. permit required confined space entry,
- b. major hazardous and biological spill response operations, or
- c. under conditions where an unknown exposure is present or a reasonable estimate of employee exposure cannot be made.

2. Entry into IDLH atmospheres and permit-required confined spaces by UTD employees is not allowed unless entrants follow all of the requirements set forth in the UTD *Confined Space Program (Contact EH&S)*. In the majority of cases, outside response agencies or other properly trained and fully qualified personnel will be utilized as needed for these types of situations.

3. The required respiratory protection for IDLH conditions is a positive pressure SCBA or a combination of air line supplied air respirator with an escape SCBA.

4. Employees outside the IDLH atmosphere must be equipped with:

- a. pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA, and
- b. appropriate retrieval equipment.

VII. DONNING

A. HALF FACE RESPIRATOR

1. Disposable Respirator

Because each N95 respirator may be unique in its style, and because different facilities may choose different brands, employees will be trained to follow the specific manufacturer's recommended procedures for fitting the facility's chosen N95 respirator to the face.

2. Cartridge Respirator

- a. Ensure that all straps are fully released prior to donning.
- b. Fit the face-piece on the nose bridge, making sure that you are able to breathe through the nose.
- c. Swing the bottom of face-piece into contact with the chin.
- d. Position the headbands with the longest straps above the ears, over the crown of the head, and the shortest straps below the ears, along the nape of the neck.
- e. Adjust the straps for comfortable fit by moving the adjustment slides to lengthen or shorten the straps. The straps should be just snug enough so air does not leak around the face-piece. It is not necessary to pull the straps so tight that the respirator digs into the face.

B. FULL FACE RESPIRATOR

1. Ensure that all straps are fully released prior to donning.
2. Fit the face-piece against face, making sure you are able to breathe.
3. Pull the head harness into place, tightening the lower straps first, then the temple straps, and then the forehead straps.

C. POWERED AIR PURIFYING RESPIRATORS

1. Ensure that all straps are fully released prior to donning.
2. Place the face-piece over the face with the power on so that air is being supplied.
3. Bring the bottom of the face-piece into contact under the chin.
4. Position the headbands with the longest straps above the ears, around the nape of the neck.
5. Adjust the straps for comfort to ensure that it is snug enough so air does not leak around the face-piece.

D. SELF-CONTAINED BREATHING APPARATUS (SCBA)

1. Place the carrying case flat on the ground or level surface, open lid, and check the cylinder gauge for “FULL” indication. If not full, replace the cylinder before use.
2. Ensure that the cylinder is fully locked in position by the cylinder band and toggle strap.
3. Stand to the right (near top of cylinder) of the open case, lean forward, position and spread out the shoulder straps, grasp the back frame with both hands, one on each side of the cylinder. Do not grasp the pressure reducer.
4. Slip one arm, then the other arm through the shoulder straps, taking care with the regulator and the remote reading pressure gauge. Seek assistance from your partner as needed.
5. Rest the respirator on the back, while bending slightly forward. Pull down on the shoulder straps to get a snug fit with the respirator as high on the back as possible.
6. Connect the waist belt buckle and adjust by pulling forward on the 2 side mounted ends.
7. Readjust the straps to carry the weight on the hips.
8. Don the face-piece by the following procedure:
 - a. Ensure that all straps are fully released prior to donning. With the neck strap in the full outward position, hold the head harness out of the way or fold it back over the lens.
 - b. Place the face-piece on the face with the chin properly located in the chin pocket.
 - c. Pull the head harness over the head and tighten the neck straps by pulling on the 2 strap ends.
 - d. Stroke the head harness down the back of the head using one or both hands.
 - e. Retighten the neck strap.
9. When the face-piece is sealed to the face, cover the regulator opening with the palm of the hand and inhale for 10 seconds to perform a negative pressure fit check.
10. Fully depress the donning switch on top of the regulator and release.
NOTE: If the donning switch has not been depressed prior to opening the cylinder valve the alarm will not actuate due to the air flowing freely from the regulator.
11. Slowly open the cylinder valve fully. The user will both hear and feel the vibrating alarm in the regulator start and stop. There will be no free flow of air from the regulator yet.
12. The user is now in a “stand-by” condition. The respirator is in place, but not in use.

VIII. USER SEAL CHECKS

A. GENERAL

1. User seal checks must be conducted by each employee every time a tight fitting respirator is put on. The checks are performed after the straps are adjusted and the respirator is in place.
2. The respirator manufacturer's recommended user seal check may be used instead of the positive and/or negative pressure check procedures provided the EHSO has determined that the manufacturer's procedures are equally effective.

B. DISPOSABLE RESPIRATORS

Because disposable N95 respirators are unique and different departments may select different brands, styles, or sizes, employees will be trained to follow manufacturers' user seal check recommendations.

C. CARTRIDGE RESPIRATORS

1. Negative Pressure Check

- a. Close off the inlet opening of the respirator's face-piece canister(s), cartridge(s), or filter(s) by covering with the palm of the hand(s) or by replacing the filter seal(s). The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove.
- b. Inhale gently so that the face-piece collapses slightly, and hold your breath for ten seconds.
- c. If a face-piece remains in its slightly collapsed condition and no inward leakage of air into the face-piece is detected, the tightness of the respirator is considered satisfactory.

2. Positive Pressure Check

Close off the exhalation valve and exhale gently into the face-piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face-piece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

D. SCBA

1. Twist the regulator into the face-piece and snap shut.
2. Fully depress and hold the donning switch on the top of the regulator.
3. Inhale slowly and hold your breath momentarily. No leakage of the air should be detected and the face-piece will be drawn slightly to the face. (NOTE: If the red purge valve is adjusted to produce a flow, it will not be possible to perform this check).
4. Remove finger from the donning switch and inhale sharply. The respirator will function normally and supply air during inhalation.

NOTE: If the red purge valve is adjusted to produce a flow, it may not be possible to reset the donning switch by inhaling.

WARNING: Do not use the respirator if leakage of air into the face-piece is detected or if flow of air cannot be started automatically by inhaling. Repeat donning procedure and stroke the head harness from the top of the head downward toward the neck to stretch it into place. In the event the face-piece cannot be adjusted to eliminate these conditions, a different size face-piece may be required to obtain proper facial fit.

IX. DOFFING

- A. Respirator wearers must exit the contaminated area before removing their respirator.
- B. All workers exiting an asbestos containment area without exception shall wear their respirator into the shower and thoroughly wash the respirator while showering with soap and water.

X. SCBA SPECIAL PROCEDURES

A. SCBA LOW TEMPERATURE OPERATION

- 1. If the respirator must be unavoidably stored at a temperature below freezing between uses, all components of the respirator should be thoroughly dried after cleaning and before use.
- 2. Where it is expected that the SCBA will be used in ambient temperatures near or below freezing, the SCBA should be equipped with either a nose cup assembly or an into-fog appliqué to reduce the formation of vision impairing mist or ice on the interior of the face-piece.
- 3. When using a nose cup assembly, do not exhale into the face-piece until the face-piece is completely donned and the nose cup is properly in place against the face.
- 4. When using an anti-fog appliqué, don the face-piece without the breathing regulator attached. Breathe onto the appliqué surface of the face-piece while restricting airflow slightly by partially covering the face-piece inlet opening with one hand. Continue doing so until the appliqué surface inside the face-piece lens remains clear. If clearing does not occur within approximately one minute, the face-piece should be removed and placed under outerwear and warmed next to the body for approximately two minutes. Re-don the face-piece and again direct exhalation onto the surface of the face-piece lens while partially blocking the inlet opening. Once the face-piece lens remains clear in the appliqué area, connect the breathing regulator to the face piece and proceed with the respirator seal check instructions found in Section VIII., D.

NOTE: The effectiveness of the anti-fog appliqué in preventing fogging or moisture condensation on the interior surface of the face-piece assembly may diminish with repeated uses or over time. The appliqué can be replaced if it has diminished ineffectiveness or sustained damage.

- 5. If, after using the SCBA, the face-piece is removed in a safe breathing area which is at temperatures near or below freezing, place the face-piece with the regulator attached under outerwear to keep it warm next to the body if respirator reuse is intended.

B. SCBA CYLINDER REPLACEMENT PROCEDURE

- 1. Leave the contaminated area and be certain that respiratory protection is not required.
- 2. Remove the face-piece.
- 3. Push in and rotate the cylinder valve knob clockwise to close the cylinder valve.
- 4. Bleed down residual air pressure by opening the purge valve slightly. Close the purge valve fully when the flow of air from the face-piece stops. Remove the SCBA or have an assistant perform the following steps.
- 5. Loosen the hose coupling from the cylinder.
- 6. Unsnap the cylinder band toggle lock strap and release the toggle lever by pulling upward on, and then releasing the lock strap.

7. Gasp the cylinder below the band, push the locking tab below the valve, lift the cylinder free from the bottom hook and remove.
8. Replace with a fully charged cylinder. Slide the top of the cylinder upward under the band. Engage the cylinder hanger in the hood at the bottom of the back frame.
9. While holding the lock strap, push the toggle lever to secure the cylinder, then lock the toggle lever in position by attaching the cylinder band and toggle lock strap to the snap on the toggle lever.
10. Align and hand tighten the hose coupling to the cylinder valve.
11. The respirator is now ready for reuse.

C. SCBA EMERGENCY OPERATION

1. When an SCBA alarm activates, it warns the user that approximately 20 to 25 % of the full cylinder pressure remains in the cylinder, or that there is a malfunction in the primary breathing circuit. In an area where more than one SCBA is being used, the wearer can identify his/her own alarm by sensing the vibrations through the face mask.
 2. In the event of any alarm or malfunction or suspected malfunction of the SCBA, even if the alarm activates before the air supply is depleted to 25 % of full capacity, implement the following emergency procedures and leave the area immediately.
 3. If the air supply is partially or completely cut off during use, or if airflow does not start automatically, fully open the purge valve (red knob on regulator) by turning it counterclockwise (pointer down).
 4. If the air supply begins to flow freely into the face-piece fully open the purge valve (red knob on regulator) by turning it counterclockwise (pointer downward) and partially close the cylinder valve by pushing in and rotating clockwise to regulate the flow of air to satisfy the requirements of the user. Do not close the cylinder valve completely. This particular emergency procedure is the only time the respirator may be operated with the cylinder valve less than fully opened.
- NOTE:** Use of these emergency procedures will increase the rate of consumption of the air supply and may cause the intensity of the vibrating alarm to be diminished or to stop completely.
5. If any of these procedures have been used, remove the SCBA in a safe area and send it for service and repair by an authorized service facility.

D. TERMINATION OF USE OF SCBA

1. Loosen the neck strap by simultaneously lifting the quick release levers outward (away from the head) and lifting the face-piece away from the face. The buckle release levers are U-shaped extensions of the face-piece buckle assemblies.
2. To stop the flow of air from the face-piece, fully depress the donning switch on top of the regulator and release. If the airflow from the regulator cannot be stopped by depressing the donning switch, immediately close the cylinder valve to prevent depletion of the air remaining in the cylinder.
3. Remove the face-piece by pulling it up and over the head.
4. To prepare the face-piece for quick re-donning, fold the head harness over the face piece lens.

XI. FIT TESTING

A. GENERAL

1. All qualitative and quantitative fit testing will follow the detailed procedures outlined in 29 CFR 1910.134 Appendix A, which is found in Appendix E of this manual.
2. Fit testing should not take place until medical clearance has been obtained.
3. Only EHSO personnel or persons designated by the EHSO will conduct respirator fit testing.
4. Fit testing is required for each size, type, style, or brand of respirator that will be used.
5. OSHA prohibits the use of a tight fitting respirator with facial hair that may interfere with the respirator face seal and allow leakage of contaminated air during inhalation. In the case of positive pressure devices, this condition will either reduce service time or waste breathing air. The EHSO will not fit test any employee with facial hair and a worker will not enter a contaminated work area when conditions prevent a good seal of the respirator to the face.
6. Employees who cannot achieve a fit for the respirators supplied by the facility or who have facial hair (e.g., a beard) which interferes with the face-to-face-piece seal of the respirator should find alternative protection (e.g., a positive pressure HEPA filtered, hooded respirator) or not be allowed to work in situations where an exposure might take place.
7. Fit testing is required annually or whenever changes render previous fit testing obsolete. The employee or supervisor must notify the EHSO so fit testing can be repeated immediately when the employee has:
 - a. an obvious weight change (approximately 10 %);
 - b. significant facial scarring in the area of the face-piece seal;
 - c. significant dental changes (multiple extractions without a prosthesis or acquiring dentures);
 - d. reconstructive or cosmetic surgery; or
 - e. any other conditions that may interfere with face-piece seal.
8. Fit test records will be maintained in accordance with Section XX., *Records*.

B. QUALITATIVE FIT TESTING

1. Qualitative fit tests for all air contaminants, including infectious aerosols, may use irritant smoke (stannic chloride), saccharin, Bitrex (denatonium benzoate®), or amyl acetate depending on the cartridges used and as specified by the EHSO.
2. Appendix G contains two qualitative fit test forms. The UTD *Respirator Fit Test Record* is used to document the majority of qualitative fit tests.

C. QUANTITATIVE FIT TESTING

If quantitative fit testing is desired, contact UTD EHSO.

XII. RESPIRATOR INSPECTIONS

A. FREQUENCY

1. All respirators used in routine situations must be inspected before each use and during cleaning.

2. All respirators maintained for use in emergency situations should be inspected at least monthly and in accordance with the manufacturer's recommendations, and should be checked for proper function before and after each use.
3. Disposable N95 respirators should be inspected according to the department's standard operating procedures.
4. SCBA should be inspected monthly and documented using the form found in Appendix K, *Monthly SCBA Inspection Sheet*. SCBA should be inspected every 2 years by a manufacturer authorized technician. SCBA tanks should be inspected every 3 to 5 years depending on tank materials (see Section XII., C. below).

B. GENERAL PROCEDURES

1. Follow all manufacturer recommendations.
2. Inspect every respirator before use according to the guidelines below.

C. DISPOSABLE HALF-MASK RESPIRATOR

1. Examine the face-piece of the disposable respirator to determine whether it is functional and has structural integrity. If it is physically damaged or if the respirator becomes damaged, difficult to breath through, contaminated, or wet, discard the respirator. Also discard the respirator if it has nicks, cuts, abrasions, or creases in the face-piece-to-face sealing material.
2. Check the straps to be sure they are not cut, damaged and are pliable. The straps should be connected at all connection points.
3. Make sure that the metal nose clip (if present) is in place and functions properly.
4. Make sure the respirator is NIOSH approved (marked on the mask, filter, filter package or respirator box).

D. REPLACEABLE FILTER HALF-MASK RESPIRATOR

1. Check respirator function, tightness of connections, and the condition of the various parts including the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and check elastomeric parts for pliability and signs of deterioration. Do not use if it is cut, torn, dirty, abraded, modified, or deteriorated.
2. Check to ensure headbands are in good condition (elastic and pliable) and attached to the mask properly. Check for breaks or tears in the material and make sure all clips, fasteners and adjusters are in place and work properly.
Straps should not be knotted to shorten them. The strap assembly usually has corrugations in the rubber that holds the strap tightly once it has been placed on the head and tightened. Be sure that the corrugations are not worn off.
3. Check face-piece for dirt, cracks, tears or holes. Inspect the shape of the face-piece for possible distortion that may occur from improper storage and make sure that rubber is flexible, not stiff.
4. Check for cracks, chips, tears, distortion, dirt, and build-up of material between valves and the valve seat. Valves should be pliable and lying flat on the surface of the valve seat.
5. Check to make sure cartridge holder gaskets are in place and check for cracks and damage to threads.
6. Check the exhalation valve cover to see that it is present and attached.
7. Check to see that the correct filters are in place and that the filter threads (if present) are not scratched, chipped, dented or otherwise damaged.. If the filters seal directly to the face-piece, be sure that the sealing surface is not torn, chipped, dented, or otherwise damaged.

E. FULL FACEPIECE RESPIRATOR

1. Check to see that the lens in a full face-piece respirator is not scratched, cracked, broken, or otherwise damaged. The lens should be completely sealed around the face-piece.
2. If the respirator has a speaking diaphragm, make sure that it is in place, not punctured, and that the gasket is in place.
3. Check the integrity of the face-piece to be sure it is not cut, torn, modified, deteriorated, or dirty. The elastomer should not be abraded and the sealing surface should be smooth and undamaged.
4. Make sure that all the required clamps are in place and are specific for the respirator being inspected.
5. Inspect the inhalation and exhalation valves to see that they are in place and pliable, functioning properly, and lying flat on the surface of the valve seat. The sealing surfaces must be clean and not chipped, scratched, or broken.
6. An approved full face-piece respirator includes the face-piece and the filters. Check the respirator to be sure the correct filters for the hazard are in place. The filter and filter holder threads should not be scratched, chipped, or otherwise damaged. If gaskets are required between the filter and filter holder be sure they are in place and in good condition.
7. Remove the gaskets to check for dirt under them.
8. The strap assembly will usually have corrugations in the rubber that holds the strap tightly once it is placed on the head and tightened. Be sure that the corrugations are not worn off, all clips are present, and the straps are attached to the mask.
9. Check to see that the straps on the respirator are elastic, pliable, and have not been knotted to shorten them. The buckles and any attachment must be present and working correctly.
10. Make sure that the exhalation valve covers are present and attached to the respirator.
11. Make sure that the gaskets fit properly in the filter holders.
12. If the filters seal directly against the face-piece, be sure that the sealing surface is not torn, chipped, cut, or otherwise damaged.
13. Inspect the filters to be sure that the threads are not scratched, chipped, dented, or otherwise damaged.

F. POWERED AIR-PURIFYING RESPIRATORS (PAPRs)

1. Stretch out the corrugated breathing tube to inspect it for cuts, abrasions, and pinholes.
2. Inspect the blower assembly and batteries as described by the manufacturer.
3. Basic inspection procedures for half-masks and full face-pieces used with PAPRs are the same as those described above.
4. If the PAPR is equipped with a hood or helmet, inspect according to the manufacturer's instructions.

G. SCBA

SCBA will be inspected monthly by the person to whom the SCBA is assigned, according to the following procedures and documented on the form in Appendix K.

1. **Cylinder Inspection/Recharging**

a. Air-Pak cylinders should be recharged as soon as practical after use.

Cylinders should not be stored partially charged for two reasons:

- (1) If used without recharge, the duration of the apparatus is reduced; and

(2) The safety relief device is only designed to protect a fully charged cylinder from the effects of a fire.

b. Air and oxygen cylinders will be maintained in a fully charged state and will be recharged when the pressure falls to 90 % of the manufacturer's recommended pressure level. A gauge indication of other than full may indicate an air leak in the cylinder and valve assembly or a malfunction of the gauge assembly.

c. Prior to recharging, compressed gas cylinders should be examined externally for evidence of high heat exposure, corrosion, or other evidence of significant damage. Cylinders which show evidence of exposure to high heat or flame, or physical damage to the cylinder shall be removed from service and retested prior to recharging.

d. If there is any doubt about the suitability of a cylinder for recharge, it will be sent for a certified hydrostatic test facility for examination and testing.

e. Composite cylinders bearing the Department of Transportation (DOT) exemption CTC/DOT E 7235-2216 may be recharged to 2216 psi. Composite cylinders should be hydrostatically tested within a 3 year period and be properly labeled to indicate the test date by a certified hydrostatic test facility as prescribed in the Shipping Container Specification Regulation of the Department of Transportation (49 CFR part 173 and part 178).

f. Composite cylinders have a 15 year life span and cannot be used after that time.

Aluminum or steel cylinders have an unlimited life span unless damaged irreparably.

g. Empty cylinders are currently recharged by the EHSO, working through a cooperative agreement with the Midwest City Fire Department.

h. Cylinders may be pressure tested by any certified DOT hydrostatic testing facility.

2. SCBA Monthly Operational Inspections

a. Visually inspect the complete respirator for worn or aging rubber parts, worn or frayed harness webbing or damaged components.

b. Check to ensure the reducer hose coupling is hand tightened to the cylinder valve outlet. Use only hand pressure to open or close valves or knobs on the SCBA.

c. Check that the breathing regulator purge valve (red knob on regulator) is closed (pointer on knob is upward).

d. Fully depress the center of the donning switch on the top of the regulator and release.

e. Slowly open the cylinder valve fully by rotating the knob counterclockwise. The vibrating alarm should actuate and then stop. There should be no airflow from the face-piece.

f. Don the face-piece or hold the face-piece to the face to effect a good seal.

g. Inhale sharply to automatically start the flow of air.

h. Breathe normally from the face-piece to ensure proper operation.

i. Remove the face-piece from the face. Air will flow freely from the face-piece. Fully depress the donning switch on top of the regulator and release. The flow of air from the face-piece should stop.

j. Rotate the purge valve ½ turn counterclockwise (pointer knob downward). Air will flow freely from the regulator.

k. Rotate the purge valve ½ turn clockwise to the full closed position (pointer on the knob upward). Airflow from the regulator will stop.

l. Push in and rotate the cylinder valve knob clockwise to close. When the cylinder valve is fully closed, open the purge valve slightly to vent the residual air pressure from the

system. The Vibralert will actuate as the pressure drops below 500 psi. When the airflow stops, return the purge valve to the fully closed position (pointer on knob upward).

H. RESPIRATORS FOR EMERGENCY USE

1. For respirators maintained for emergency use, the respirator inspection will be documented by the employee performing the inspection. Such documentation will include:

- a. the date of the inspection,
- b. the name or signature of the person who made the inspection,
- c. the findings,
- d. the required remedial action, and
- e. a serial number or other means of identifying the respirator.

2. The above documentation should be provided on a tag or label attached to the storage compartment for the respirator, kept with the respirator, or kept with other inspection reports until replaced following a subsequent documented inspection. SCBA maintained for use as emergency respirators will be inspected according to the SCBA procedures.

XIII. CLEANING AND SANITIZING

A. All respirators except disposable respirators should be disinfected and inspected by the employee at the end of each day's use or as job assignment dictates. At the end of each week's use, the respirator will be totally dismantled, cleaned, disinfected, and inspected.

B. Respirators maintained for emergency use or utilized by more than one employee will be cleaned and disinfected after every use.

1. Respirators used for asbestos operations and maintenance activities will be totally dismantled cleaned, disinfected, and inspected after every use.

2. Disposable N95 respirators may be reused, but must be cleaned, disinfected and inspected prior to use. Those styles that cannot be cleaned and disinfected must be discarded. Disposable N95 respirators contaminated with blood or body fluids should be discarded.

3. Respirator parts should be washed in detergent solution, rinsed in clean water, immersed in disinfecting solution, and air dried in a clean area. A brush may be used to scrub adhering dirt.

4. Suggested procedures for cleaning and sanitizing respirators are given in Appendix H.

XIV. MAINTENANCE

A. Minor repairs, including valve replacement on air purifying respirators, are to be performed by the employee.

B. Major repairs, except for adjustments or repairs to reducing and admission valves, regulators and alarms, are to be performed by a properly trained and qualified person appointed by the departmental supervisor and approved by the EHSO.

C. Adjustments or repairs to reducing and admission valves, regulators and alarms, are to be performed only by the manufacturer or a technician trained by the manufacturer.

D. Only the respirator manufacturer's NIOSH approved parts designated for the respirator will be used. No attempt will be made to replace components or make adjustments, modifications or repairs beyond the manufacturer recommendations.

E. Maintenance records must be completed and maintained in accordance with Section XX., *Records*. The respirator maintenance form may be found in Appendix I.

XV. STORAGE

A. After inspection, cleaning, and necessary repairs, respirators are to be stored in a manner that protects against dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and should be packed or stored to prevent deformation of the Face-piece and exhalation valve.

B. Respirators will be stored in plastic bags or the original cartons and placed in specially designated cabinets or lockers with other protective equipment. Respirators should not be stored in a tool box, in the open, or hung on a nail.

C. In addition to these storage requirements, emergency respirators should be kept accessible to the work area and stored in compartments or in covers that are clearly marked as containing emergency respirators.

D. Disposable N95 respirators should be stored in a convenient, clean, sanitary location, but a wet respirator must never be sealed in a plastic bag. One method for accomplishing this is to install a box with sufficient compartments for storing all the respirators required in that area. The storage bin would look like a mail box with slots for each user's respirator. Each slot would be labeled with the user's name.

E. Never store disposable N95 respirators in pockets, plastic bags, or other confined areas. Disposable N95 respirators should not be folded or put in an abnormal shape that may impair the respirator's function.

F. SCBA will be stored in their protective cases only inside out of extreme heat, sunlight, and cold.

XVI. EXPOSURE MONITORING

A. When a method for monitoring is available, personal and/or area air monitoring will be performed by the EHSO on a regular basis to confirm or re-evaluate the required level of respiratory protection for specific areas or work activities.

B. The type and extent of exposure monitoring will be based upon the contaminant(s) and work activity following established NIOSH, OSHA, or other published exposure monitoring guidelines.

C. Asbestos air monitoring during asbestos operations and maintenance work will be performed in accordance with the **OU *Asbestos Operations and Maintenance Program***.

XVII. TRAINING

A. Each employee who wears a respirator must be trained annually in the proper use of the respirator. The training includes:

1. The respiratory hazard, why there is a need for respiratory protection and the effect on the wearer if the respirator is not used properly;
2. The engineering and administrative controls being used and the need for respirators to provide protection;

3. The reason for selection of a particular respirator including a description and the intended use of the particular respirator;
 4. The function, capabilities, and limitations of the selected respirator;
 5. How to inspect, put on and remove, use, and check the seals of the respirator;
 6. How to recognize an improperly functioning respirator;
 7. Proper wearing (including the need to maintain a proper facial surface), maintenance, cleaning, inspection, repair and storage (where applicable);
 8. Procedures for obtaining replacement parts and equipment (where appropriate);
 9. Recognizing and procedures for how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
 10. How to recognize medical signs and symptoms that may limit or prevent the effective use of the respirator;
 11. The need for informing the supervisor of any problems experienced by them or their co-workers;
 12. A general explanation of the medical fitness determination requirements;
 13. An explanation of the fit test process and reasons when a fit test may need to be repeated;
 14. Demonstration and hands-on training to include an opportunity to handle the respirator, have it fitted properly, perform user seal checks, test its face-to face-piece seal, wear it in normal air for a familiarity period, and wear it in an appropriate test atmosphere; and
 15. Applicable governmental regulations for specific substances.
- B. Each affected employee must demonstrate an understanding of the training before being allowed to perform work requiring the use of a respirator. During annual training, skill will be evaluated by ensuring the employee:
1. Takes and passes an appropriate examination over various concepts,
 2. Demonstrates the ability to correctly disassemble and reassemble their respirator,
 3. Demonstrates the ability to perform the user seal checks required by the standard, and
 4. Demonstrates the appropriate user fit checks during fit testing.
- C. This training will be repeated as necessary and at least annually to ensure that employees remain familiar with the proper use of respiratory protection.
- D. When the departmental supervisor has reason to believe that an employee who has already been trained does not have the understanding and skill required to properly use and maintain the respirator, the departmental supervisor will ensure that the employee receives additional training. Situations when additional training is required include, but are not limited to, the following:
1. Changes in the workplace or the type of respirator render previous training obsolete;
 2. Inadequacies in an affected employee's knowledge or use of an assigned respirator indicate that the employee has not retained the requisite understanding or skill; or
 3. Any other situation arises in which retraining appears necessary to ensure safe respirator use.
- E. The EHSO will complete and distribute a written certificate or card for each employee who receives and demonstrates understanding of the training. The certificate will contain the name of each employee, the date(s) of training, type of training, and performance results.
- F. Training records will be maintained in accordance with Section XX., *Records*.

XVIII. MEDICAL EVALUATION

A. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. Prior to the employee being fit tested or using a respirator, all employees whose work requires respiratory protective devices shall be evaluated by a physician or other licensed health care professional (PLHCP).

B. Medical evaluations will be completed at least annually for all respirator wearers.

C. Persons whose respirator use falls under 29 CFR 1910.134 shall complete the medical evaluation questionnaire found in Appendix J of this manual.

D. A follow-up medical examination will be provided for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of 29 CFR 1910.134 Appendix C (see Appendix J of this manual) or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

E. The EHSO should be contacted by the supervisor to assist in coordinating the employee evaluation. The following information is to be provided to the PLHCP:

1. The type and weight of the respirator to be used by the employee;
2. The duration and frequency of respirator use;
3. The expected physical work effort;
4. Additional protective clothing and equipment to be worn;
5. Temperature and humidity extremes that may be encountered; and
6. A copy of this written respiratory protection program and a copy of 29 CFR 1910.134 and applicable appendices.

F. The final determination of whether an employee is medically qualified to wear a respirator rests with the examining health care professional. The PLHCP should provide to the employee and the employee's departmental supervisor:

1. a written recommendation regarding the employee's ability to use the respirator;
2. any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used;
3. The need, if any, for follow-up medical evaluations; and
4. a statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.

G. The departmental supervisor must retain the PLHCP's written recommendation for each employee. Records of PLHCP's written recommendations will be maintained as specified in Section XX., *Records*.

4. Facilities

Contact the EHSO to determine the appropriate location.

J. The EHSO should be contacted to assist in coordinating the employee evaluation. The following information is to the PLHCP:

1. The type and weight of the respirator to be used by the employee;
2. The duration and frequency of respirator use;
3. The expected physical work effort;
4. Additional protective clothing and equipment to be worn;
5. Temperature and humidity extremes that may be encountered; and

6. A copy of this written respiratory protection program and a copy of 29 CFR 1910.134 and applicable appendices.
- K. The final determination of whether an employee is medically qualified to wear a respirator rests with the examining health care professional. The PLHCP should provide to the employee and the employee's departmental supervisor:
 1. A written recommendation regarding the employee's ability to use the respirator;
 2. Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used;
 3. The need, if any, for follow-up medical evaluations; and
 4. A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.
- L. The departmental supervisor must retain the PLHCP's written recommendation for each employee and forward copies to the EHSO. Records of PLHCP's written recommendations will be maintained as specified in Section XX., *Records*.

XIX. PROGRAM EFFECTIVENESS EVALUATION

The respiratory protection program will be evaluated annually by the program administrator. This evaluation will include:

- A. employee training review;
- B. inspection of all maintenance records;
- C. respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- D. appropriate respirator selection for the hazards to which the employee is exposed;
- E. proper respirator use under the workplace conditions that employee's encounter;
- F. proper respirator maintenance;
- G. employee acceptance; and
- H. employee suggestions (if any).

XX. RECORDS

The EHSO will maintain a file of all training and fit testing records relative to the UTD *Respiratory Protection Program*. Other records listed below will be retained by the departmental supervisors. All records in this program will be made available to qualified persons or agencies as specified in 29 CFR 1910.1020 or 29 CFR 1926.33, *Access to Employee Exposure and Medical Records*.

A. MAINTENANCE RECORDS

The departmental supervisor (or his/her designee) is responsible for keeping a record of all maintenance, except cleaning and disinfecting. The record will indicate the date on which the maintenance was performed and what was done. Records will be maintained and reviewed periodically by the departmental supervisor, who will indicate the review by initialing and dating the record. An example of the respirator maintenance record is given in Appendix H.

B. INSPECTION RECORDS

Inspection of respirators maintained for emergency use will be documented by the employee performing the inspection as described in Section XII.D., *Respirators for*

Emergency Use. Inspection of SCBA will be documented on the form found in Appendix K.

C. MEDICAL RECORDS

Each department should maintain medical records for minimum of 30 years past the date of termination.

D. FIT TEST RECORDS

Fit test records, including those that indicate failure, will be maintained by the EHSO until the next fit test is performed.

E. RESPIRATOR TRAINING RECORDS

The EHSO will maintain all respirator training records for thirty (30) years past the date of last employment.

Appendices:

Please contact the EH&S office for Appendix A through K.