RESPIRATORY PROTECTION PROGRAM

1.0 Purpose

Western University of Health Sciences has determined that employees and students in the Embalming Room within the Anatomy Laboratory, Banfield surgery, BSL 3 Labs, and Veterinary Medicine are exposed to respiratory hazards during routine operations. These hazards include fumes and vapors that may in some cases, present situations which may represent Immediately Dangerous to Life or Health (IDLH) conditions. The purposes of this program is to ensure that all employees and students in this identified area are protected from exposure to respiratory hazards.

Engineering controls, such as ventilation and substitution of less dangerous chemicals, are the first line defense; however, engineering controls have not completely controlled potential exposures in the area identified. Respirators and other protective equipment must be used to ensure employee safety and health. The work process requiring respirator use in the Embalming Area is outlined in Section 2.0, Scope and Application.

Additionally, some employees and students may elect to voluntarily use respirators during certain operations that do not require respiratory protection. These include but are not limited to maintenance and facilities support operations such as painting (latex paint), woodworking and sanding. As general policy, the University will review each of these on a case-by-case basis. If a respirator in a specific case will not jeopardize the health or safety of the worker(s), the University will provide respirators for voluntary use. Voluntary use is subject to certain requirements of this program as outline in the Scope and Application Section if this program.

Requirements outlined in this manual that are mandatory by regulation where the word "shall" is used and are advisory in nature where the word "should" is used.

This Respiratory Protection Program document is designed to protect employees and students by establishing accepted practices for respirator use, providing guidelines for training and respirator selection, and explaining proper storage, use and care of respirators. This program shall conform to California OSHA requirements.

2.0 Scope and Application

This program applies to all employees and students who are required to wear respirators during normal work, and academic operations. This includes the embalming operations within the Anatomy Laboratory, Banfield surgery, BSL 3 Labs, and Veterinary Medicine. Respective employees and students are required to follow this written program and applicable rules and regulations.

Any employee and students who voluntarily wears a respiratory when the respirator is not required; i.e., in certain maintenance and facilities operations or projects, is subject to the
medical evaluation, cleaning, maintenance, and storage elements of this program, and
must be provided with certain information specified in this section of the program.
Employees and students who voluntarily wear filtering face pieces (dust masks) are not
subject to the medical evaluation, cleaning, storage, and maintenance provisions of this
program.

Employees participating in the program do so at no cost to them, but a charge to their
department. There is a cost to students. The expense associated with the training,
medical evaluations and equipment will be borne by the University for employees only.

Voluntary and Required Respirator Use

<table>
<thead>
<tr>
<th>Respirator</th>
<th>Development/Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtering Dust Mask</td>
<td>Voluntary for maintenance/facilities</td>
</tr>
<tr>
<td>Full Face</td>
<td>Embalming operations Banfield</td>
</tr>
<tr>
<td></td>
<td>surgery, BSL 3 Labs</td>
</tr>
</tbody>
</table>

3.0 Responsibilities

3.1 Supervisors and Principal Investigators

Supervisors have the primary responsibility for implementation of the Respiratory Protection
Program in their work area.
This involves:
• Supervising employees and students to ensure that the Respiratory Protection Program
elements are followed. [8CCR3203(a)(4),(6), & (7); 8CCR5144(a)(2)]
• Identifying employees and students and their jobs or tasks which may require respiratory
protection, providing this information to the Program Administrator (Environmental Health &
Safety), and seeking their assistance in evaluation of respiratory hazards. [8CCR3203(a)(4),(6),
& (7); 8CCR5144(a)(2)]

Purchasing appropriate respirators and making them available for authorized use by respirator
users.[8CCR5144(a)(2)]
• Enforcing the proper use of respiratory protection.
• Ensuring that respirators are properly cleaned, maintained and stored according to this
program.
• Ensuring that respirator users under their supervision (including new hires) receive appropriate
training, fit testing and annual medical evaluation.
• Identifying changes in jobs or tasks which may require re-evaluation of the respirator use and
notifying the Respirator Protection Program Administrator (Environmental Health & Safety).
[8CCR3203(a)(4); 8CCR5144(l)(2)(B)&(C)].

- Maintaining, storing, and monthly inspection of emergency use respirators as required so they are readily accessible and operational when needed.[8CCR5144(h)(3)(A)2.]

### 3.2 Program Administrator

The Program Administrator is responsible for administering the program. Duties include:

- Identify work areas, processes or tasks that require employees and students to wear respirators, and evaluating hazards.
- Selection of respiratory protection options.
- Monitor respirator use to ensure respirators are used in accordance with their certifications.
- Arranging for and/or conducting training.
- Ensuring proper storage and maintenance of respiratory protection equipment.
- Conducting qualitative fit testing with Bitrex.
- Administering the medical surveillance program.
- Maintaining records required by the program
- Evaluating the program.
- Reviewing and updating the program as needed.

The Program Administrator at the University is the Director of Environmental Health and Safety.

### 3.2 Department Heads, Supervisors

The personnel are responsible for ensuring that the program is implemented in their particular areas of responsibility. They must be knowledgeable of the program contents and requirements as well as enforcing the implementation of the program. Their specific duties include:

- Ensuring that employees and students under their supervision have received proper training, fit testing and annual medical evaluation.
- Ensure the availability of appropriate respirators and accessories.
- Being aware of tasks requiring the use of respirators.
- Enforcing the use of respiratory protection when necessary.
- Ensure that the respirators and associated equipment is properly cleaned and maintained.
- Ensure that respiratory protection fits properly.
- Continually monitor work areas and operations to identify respiratory hazards.
- Coordinating with the Program Administrator on how to properly address respiratory hazards or other concerns regarding the program.
3.3 **Employees and Students**

Each employee/student has the responsibility to wear their respirator when and where required and in the manner in which they were trained. Employees and students must also:

- Care for and maintain their respirators as instructed, and store them in a clean, sanitary location.
- Inform their department head or supervisor if the respirator no longer fits properly and request a new unit that fits properly.
- Inform their department head or supervisor of any respirator hazards that they feel are not adequately protected against or addressed, and any other concerns they have regarding this program.

3.4 **Respirator User**

- The respirator user is responsible for following the requirements of the written program. This involves:
  - Using the respirator in accordance with the manufacturer's instructions and the training received.
  - Storing, cleaning, maintaining, and guarding against damage to the respirator. [8CCR5144(h)(1)&(2)].
  - Reporting any malfunction of the respirator to his/her supervisor.
  - Inspecting the respirator before each use.[8CCR5144(h)(3)]
  - Promptly reporting to his/her supervisor any symptoms of illness that may be related to respirator usage or exposure to hazardous atmospheres.
  - Informing the supervisor of operation changes or health status changes that could affect the safe use of the equipment.

4.0 **Program Elements**

4.1 **Section Procedures**

The Program Administrator will select respirators and associated equipment based upon the hazards to which employees and students are exposed and in accordance with applicable safety regulations. The Administrator will conduct a hazard evaluation of each
area, operation or process where airborne contaminants may be present in routine operations or during an emergency. The hazard evaluation will include:

- Identification and development of a list of hazardous substances used in the workplace, department or process.
- Reviewer of processes to determine where potential exposures to these hazardous substances occur. The review will be conducted by surveying the area, reviewing the operational records, and talking with department heads, supervisors, and employees and students.
- Exposure monitoring will be completed to quantify potential hazardous exposures. Monitoring will be completed by a Certified Industrial Hygienist and samples will be analyzed by an accredited laboratory.

4.2 Updating the Hazard Assessment

Initially and whenever supervisors identify new substances, processes, or equipment that may represent an occupational safety and health hazard, they shall contact Environmental Health & Safety Program at 5528 to provide workplace exposure assessment. Based on data collected, the need for respiratory protection is determined.

The Administrator must revise and update the hazard assessment as needed; i.e., any time the work process changes or introduces new potentially hazardous materials which may be affected by respiratory protection needs. If an employee feels that they need a respirator, that employee must contact their department head or supervisor who will in turn, request the Administrator to perform an evaluation and if necessary, air monitoring as necessary to determine if exposure exists. If it is determined that respiratory protection is required, the Administrator will provide all elements of this program to the requesting employee.

4.3 Respirator Selection

Selection of a respirator for a specific operation and/or contaminants shall be made by the Environmental Health & Safety [8CCR5144(d)(1)(B)]. Selection shall be made from a sufficient number of models and sizes to allow proper fit [8CCR5144(d)(1)(D)].
4.4 NIOSH Certification

All respirators used at the University will be certified by the National Institute for Occupational Health and Safety (NIOSH) and shall be used in accordance with the terms of that certification. Also, all filters, cartridges, and canisters must be labeled with the appropriate NIOSH label that cannot be removed, defaced or altered while it is in use.

4.5 Voluntary Respirator Use

The University will provide respirators at no charge to employees for voluntary use for the following processes. Students shall pay for equipment and medical cost.

- Maintenance/facilities painting, woodworking or wood sanding.
- Welding or torch cutting under approved hoods.
- Laboratory personnel handling chemicals when exposure has been deemed to be nonexistent by sampling, or adequate protection has been provided by engineering means (fume hoods, exhaust ventilation, etc.).

The Administrator will provide employees and students who choose to voluntarily wear respiratory protection with the appropriate section(s) of this program. Employees and students who choose to wear a half-face respirator must comply with the requirements for Medical Evaluation, Respirator Use and Cleaning, Storage and Maintenance.

The Administrator will authorize voluntary use of respirators as requested by all other employees and students on a case-by-case basis, depending upon specific workplace consultations and the results of medical examinations.
4.6 **Medical Evaluation**

Those employees and students, who are required to wear respiratory protection, or those who choose to voluntarily wear an APR, must pass a medical examination before being permitted to wear a respirator on the job. Employees and students are not permitted to wear the respiratory protection until a physician has determined that they are medically able to do so. Any employee refusing a medical evaluation for respirator use will not be allowed to work in any area requiring respirator use.

- A licensed physician at a clinic selected by the University will provide the medical evaluations. Occupational Health Provider or other licensed health care professional (PLHCP) The medical evaluation procedure is:
  The Occupational Health Provider is responsible for:
  - Performing initial & periodic medical evaluations and any necessary follow-up examinations of employees and students to determine their ability to wear a respirator.
  - Providing a written evaluation of the employee's ability to use a respirator to Environmental Health & Safety.
  - Conducting periodic medical evaluation of respirator users as necessary.

- The evaluation will be conducted using the questionnaire provided in Appendix C of the OSHA standard. The Administrator will provide a copy of this questionnaire to all employees and students requiring medical evaluations. It is permissible for the clinic to also provide the questionnaire at the time of the actual medical evaluation.
• All affected employees and students will be given a copy of the questionnaire to complete plus a self-addressed, stamped envelope for mailing the questionnaire to the clinic. The questionnaire may be completed while at work, on paid time.

• Follow-up medical exams will be granted to employees and students as required by this program and the OSHA standard, or as deemed necessary by the University physician.

• All employees and students can discuss with the physician the results of their medical evaluation.

• The clinic has been provided with a copy of this program. The clinic has a copy of the OSHA standard and a list of hazardous materials used at the University. The affected employee’s profile containing department, operation description, title, physical work load, potential temperature and humidity extremes, and any other protective equipment or clothing required to be work by the employee.

• After the employee has received medical clearance and begins to wear the respirator, additional medical evaluations will be provided under the following circumstance:
  o Employee reports signs/symptoms related to their ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
  o The clinic physician informs the Administrator that the employee needs to be reevaluated.
  o Information in this program, including observations made during fit testing or program evaluation, indicates a need for reevaluation.
  o A change occurs in the workplace that may result in an increased physiological burden on the employee.
  o A list of employees and students currently included in the Medical Surveillance Program is provided in Section 4, Respirator Use, of this program.
  o All examinations and questionnaires remain confidential between the employee and the physician. The clinic retains all respective medical records.
  o Students must do a PFF and have a medical examination. Students shall pay for these expenses. A physician’s note is required for students.

4.7 Fit Testing
Fit testing is required for employees and students wearing half or full face respirators. Employees and students who voluntarily wear APR’s may also be fit tested upon their request.

Employees and students who are required to wear the above forms of respiratory protection will be fit tested:

- Prior to being allow use of any respirator with a tight fitting face piece.
- Annually
- When there are changes in the employee’s physical condition that could affect respiratory fit; e.g., body weight, facial scarring, extreme facial hair, etc.

Employees and students will be fit tested with the make, model and size of respirator they will actually use. Employees and students will be provided with several models and sizes so they find the optimal fit.

The Administrator will conduct fit tests following the OSHA approve Bitrex Solution Aerosol QLFT Protocol found in the Respiratory Protection Standard. It is acceptable for the Administrator to use qualified outside contractors to conduct fit testing.

Only respirators certified by the National Institute of Occupational Safety and Health (NIOSH) shall be selected [8CCR5144(d)(1)(B)].

All appropriate filters, cartridges, and canisters shall be labeled and color coded with the NIOSH approval label. Labeling shall not be removed and shall remain legible [8CCR5144(j)].

4.8 Respirator Use

Respiratory protection is required for the following person:
4.9 General Use Procedures

- Employees and students will use respirators under conditions specified by the program, and in accordance with the training they receive on the use of each particular model.

The respirator will not be used in a manner for which it is not certified by NIOSH or by the manufacturer.
- All employees and students shall conduct user seal checks each time that they wear the respirator. They shall use either the positive or negative pressure check as described in Appendix B-1 of the OSHA Respiratory protection Standard.
- All employees and students shall be permitted to leave the work area to maintain their respirator whenever the employee deems it necessary.

- Employees and students are not permitted to wear tight fitting respirators if they have any condition, such as facial scars, facial hair, missing dentures, etc., that prevents them from achieving a good seal. Employees and students are not permitted to wear or use headphones, jewelry, or other articles that may interfere with the face-piece-to-face seal.

4.10 Emergency Procedures

The following work area has been identified as having foreseeable emergencies:

Embalming Room – Major spill or embalming fluids or component fluids.

If such a spill occurs, the embalmer or person in charge at the time of the spill will clear the room and adjacent laboratory of all personnel. A call to 911 and the University Security line will be made by the person in charge at the time of the spill.

The University Emergency Plan will be activated upon notification of the spill.

4.11 Respirator Malfunction
Any malfunction of the respirators being used will be cause for the employee to report this to their supervisor. The Administrator will provide a new respirator of similar model and type to the employee. The malfunctioning respirator will be returned to the manufacturer or supplier for repair or replacement.

4.12 IDLH Procedures

The Administrator has identified the following area as presenting the potential for IDLH conditions

**Embalming Room**

The Administrator will provide periodic air monitoring of fumes and vapors in this room, at least once per calendar year to ensure exposure levels have not changed. Additionally, specific emergency procedures for a chemical spill, fire exposure and other emergency conditions involving this area have been developed and are posted in the department. Department personnel have received training in these procedures.

4.13 Cleaning, Maintenance, Change Schedules and Storage

Cleaning

Respirators are to be regularly cleaned and disinfected at the designated respirator cleaning area located outside the embalming room.

Respirators issued for the exclusive use of an employee shall be cleaned as often as necessary, but at least once a day for employees and students in the embalming room.

The following procedure will be used when cleaning and disinfecting respirators:

- Disassemble respirator, removing any filters, canisters or cartridges.
- Wash the face piece and associated parts in mild detergent with warm water. Do not use organic solvent for cleaning.
- Rinse completely in clean warm water.
• Wipe the respirator with disinfectant wipes (70% isopropyl alcohol) to kill germs.

• Air dry in a clean area.

• Reassemble the respirator and replace any defective part(s).

• Place in a clean, dry plastic bag or other air-tight container.

Maintenance

Respirators are to be maintained at all times in order to ensure proper function and adequate protection for the employee. Maintenance involves a complete visual inspection for cleanliness and defects. Worn or deteriorated parts will be replaced prior to use. No repairs or replacements will be made beyond those recommended by the manufacturer.

The following checklist items will be used when inspection respirators:

• Face piece
  Cracks, tears, or holes
  Facemask distortion
  Cracked or loose lenses/face shield

• Head straps
  Breaks or tears
  Broken buckles

• Valves
  Residue or dirt
  Cracks or tears in valve material

• Filters/Cartridges
  Approved designation
  Gaskets
  Cracks or dents in housings
  Proper cartridge for hazard

Cartridges will be changed according to manufacturer’s recommendations or more
often.

Storage

Respirators will be stored in a dry, clean area, in accordance with manufacturer’s recommendations. The employees and students will clean and inspect their own respirator and will store that respirator in an airtight bag in a safe designated area. The employee’s name will be on the respirator storage bag.

Spare parts and respirator components as well as replacement respirators, will be stored in a safe area in the manufacturer’s containers.

Defective Respirators

Respirators that are defective or have defective parts will be removed from service immediately, tagged as defective, and returned to the supplier or manufacturer for repair. Replacement respirators will be provided, identical to the unit that was defective.

4.14 Training

The Administrator will provide training to respirator users and their department heads and/or supervisors on the contents of this program. The training will include review of their responsibilities and on the OSHA Respiratory Protection Standard [8CCR5144(k)(1)]. Employees and students will be trained prior to using a respirator in their work area. The training session will include the following:

- The University Respiratory Protection program
- The OSHA Respiratory Protection Standard (Title 8 CCR Section 5144);
- Respiratory hazards at the University and their health effects
- Proper selection of respirators
- Limitations or respirators
• Respirator donning and user seal (fit) checks
• Fit testing

• Emergency use procedures
• Maintenance and storage

• Medical signs and symptoms limiting the effective use of respirators

Employees and students will be retrained annually, if they change departments, if they are a new hire, or if hazardous materials which need respirator protection are introduced to the work place [8CCR5144(k)(4 &5)]:

Employee and student must demonstrate their understanding of the training topics through hands-on demonstration and a written test. The training will be documented by the Administrator which will include training date and make, model and size of respirator for each involved employee as well as the fit test information for that employee.

4.15 Training for voluntary usage (for comfort purpose)

Before voluntary respirator use is approved by the Respiratory Protection Program, the employee or student:

must receive initial training in the proper use, care, and limitations of the selected respirator. shall review, sign, and submit the Voluntary Respirator Use Agreement (Appendix A) to Environmental Health & Safety [8CCR5144(k)(6)].

4.15 Authorized for use

Any respirator usage by employees and students, either required or voluntary (for comfort purposes), shall be pre-approved by the Respiratory Protection Program Administrator. Employees and students shall only wear the specific respirator-type(s) for which they were pre-approved [8CCR5144(c)].
[EXCEPTION: Voluntary use of filtering facepieces (disposable dust masks) does not fall under the requirements of the Respiratory Protection Program [8CCR5144(c)(2)(B)].]

5.0 Program Evaluation

The Administrator will complete periodic evaluations of the workplace to ensure that the provisions of this program are being effectively implemented. The evaluations will include regular consultations with respirator users, department heads, and supervisors. Air monitoring will also be conducted by a qualified CIH.

Program problems will be noted in an inspection log and will be addressed by the Administrator. The findings and problem resolutions, with completion dates, will be provided to Management via report by the Administrator.

6.0 Documentation and Recordkeeping

This program becomes a part of the University Injury and Illness Prevention Program (IIPP), but is considered a separate document for monitoring and recordkeeping purposes.

The Respiratory Protection Program Administrator shall ensure that records of the following are maintained [8CCR5144(m)(1-4)]:

1. Medical evaluation: EH&S will maintain the medical clearance form and the
2. Occupational Health Physician will maintain the questionnaires and any additional documentation
3. Respirator training (including completed Voluntary Respirator Use Information Sheets)
4. Respirator fit testing
5. Written copy of the current Respiratory Protection Program

The Supervisor shall ensure that records of the following are maintained [8CCR5144(m)(1-4)]:

1. Respirator training (including completed Voluntary Respirator Use Information Sheets)
2. Respirator inspection/maintenance records
3. Monthly inspection record for emergency use respirators.

Copies of all fit testing and training records are kept in the Administrator’s office. Records are updated for all initial and refresher training. Medical records are kept in confidence by the
examining physician at the clinic office. Only the physician’s recommendations regarding an employee’s ability to wear a respirator will be kept by the Administrator.

**Fit Testing**

A. Fit Testing Procedures--General Requirements. Fit-testing **shall** be conducted using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both qualitative and quantitative.

1. Prior to the selection process, the test subject **shall** be shown:
   • how to put on a respirator
   • how it should be positioned on the face
   • how to set strap tension
   • how to determine an acceptable fit

A mirror **shall** be available to assist the subject in evaluating the fit and positioning of the respirator.

This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

2. From the selection of pre-approved respirators, the test subject **shall** be asked to select the respirator type and size that provides the most acceptable fit.

3. The test subject **shall** be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.

4. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort.

Assistance in assessing comfort can be given by discussing the points in the following item A.5.

If the test subject is not familiar with using a particular respirator, the test subject **shall** be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

5. Assessment of comfort **shall** include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
   • Position of the mask on the nose
   • Room for eye protection
   • Room to talk
   • Position of mask on face and cheeks

6. The following criteria **shall** be used to help determine the adequacy of the respirator fit:

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• Chin properly placed;
• Adequate strap tension, not overly tightened;
• Fit across nose bridge;
• Respirator of proper size to span distance from nose to chin;
• Tendency of respirator to slip;
• Self-observation in mirror to evaluate fit and respirator position.

7. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in the Respiratory Protection Safety Training (IH Report No. 98-012) or those recommended by the respirator manufacturer which provide equivalent protection. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

8. The test shall not be conducted if there is any hair growth and/or clothing between the skin and the facepiece sealing surface.

9. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

10. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.

11. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

12. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

13. Test Exercises.
   (a) The following test exercises are to be performed for both fit testing methods described in Appendix B1 and B2. The test subject shall perform exercises, in the test environment, in the following manner:
      (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text, count backward from 100, or recite a memorized poem or song.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

Appendix B1: Bitrex™ Solution Aerosol Fit Test Protocol

Western University Respiratory Protection Program Bitrex™ Solution Aerosol Fit Test Protocol

1. General

(a) The individual administering the Bitrex fit testing shall able to prepare test solutions,
calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that the Bitrex™ fit testing equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Bitrex™ Solution Aerosol Qualitative Fit Test Protocol. Background: Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) The test subject shall don the test enclosure (3M Hood Assembly). Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

(2) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution (3M Bitrex Sensitivity Solution) into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(3) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

The test conductor will take note of the number of squeezes required to solicit a taste response.
If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste. The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

**Bitrex Solution Aerosol Fit Test Procedure.**

The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

The fit test uses the same enclosure as that described in 2. (a)(1) above. The test subject **shall** don the enclosure while wearing the respirator selected according to the General Fit Testing Procedure in Appendix B. The respirator **shall** be properly adjusted and equipped with any type particulate filter(s).

A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the 3M Fit Test Solution into the enclosure. This nebulizer **shall** be clearly marked to distinguish it from the sensitivity solution nebulizer.

As before, the test subject **shall** breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes given with the Sensitivity Solution. After generating the aerosol, the test subject **shall** be instructed to perform the exercises in the General Fit Testing Procedure in Appendix B.

Every 30 seconds the aerosol concentration **shall** be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

The test subject **shall** indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator **shall** be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

**Appendix B2: Ambient Aerosol Portacount™ Fit Test Protocol**

Reviewed 05-08-2015
Western University Respiratory Protection ProgramAmbient Aerosol Portacount™ Fit Test Protocol

1. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol. The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount TM ) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Portacount Fit Test Requirements.

(1) The test subject shall don the respirator selected according to the General Fit Testing Procedure in Appendix B. The respirator shall be properly adjusted and equipped with a particulate filtration rating of at least N95.

(2) Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable.

(3) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

(4) The test subject shall be instructed to perform the exercises in the General Fit Testing Procedure in Appendix B.
(5) After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

(b) Portacount Test Instrument.

(1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether. A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

Appendix C: Supplied-Air Respirator Use Western University Respiratory Protection Program Supplied-Air Respirator Use

Procedures For Use of Supplied-Air Respirators in IDLH Atmospheres [8CCR5144(g)(3)]

For all IDLH atmospheres, the Supervisor shall ensure the following:

• One employee or, when needed, more than one employee is located outside the IDLH atmosphere;

• Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;

• The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;

• The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

• The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

• Employee(s) located outside the IDLH atmospheres are equipped with:
- Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

- Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or

- Equivalent means for rescue where retrieval equipment is unsuitable.

**Breathing Air Quality For Supplied-Air Respirators/ SCBAs**

Supervisors shall ensure that employees using atmosphere-supplying respirators (supplied-air and SCBA) be supplied with breathing gases of high purity.

- The compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall meet the following specifications:
  - Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
  - Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989.
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.
- Cylinders used to supply breathing air to respirators shall meet the following requirements:
  - Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178);
  - Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and the moisture content in the cylinder does not exceed a dew point of -50 deg.F (-45.6 deg.C) at 1 atmosphere pressure.
- Compressors used to supply breathing air to respirators are constructed and situated so as to:
- Prevent entry of contaminated air into the air-supply system;
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F (-5.56 deg.C) below the ambient temperature;

- Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality.

- Sorbent beds and filters shall be maintained and replaced or refurbished periodically following the manufacturer's instructions.

- Have a tag containing the most recent change date and the signature of the person authorized by the employer to perform the change. The tag shall be maintained at the compressor.

  • For compressors that are not oil-lubricated, the carbon monoxide levels in the breathing air shall not exceed 10 ppm.

  • For oil-lubricated compressors, a high-temperature or carbon monoxide alarm, or both, shall be used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

  • Breathing air couplings shall be incompatible with outlets for nonrespirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.

  • Only breathing gas containers marked in accordance with the NIOSH respirator certification standard, 42 CFR part 84, shall be used.

If any other departments have related materials, they will be considered a sub section and a link maybe added to this program.
Respiratory Protection Program
Voluntary Respirator Use Agreement

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 and care, and warnings regarding the respirators 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 Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

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 not protect 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.

Employee Information (Please print clearly)

Employee Name (Last, First) ____________________________________________

Department/ Shop ____________________________________________________

Respirator Type: _____ Filtering Facepiece (disposable dust mask) _____Other:

I have read and understood the information provided above regarding voluntary respirator use.

____________________________________________ ___________________
Employee Signature      Date

Respirator use profile

Employee Name (Last, First, M.I.)     Employee #

Department/ Job Title     Today’s Date

Respirator Use Category:
____ Respiratory Protection Required ____ Voluntary Respirator Use

Type of respirator(s) assigned:
Disposable Filtering Facepiece____ Negative Pressure Half-face____ Negative Pressure Full-face____ PAPR____ Airline____ SCBA____

Frequency of respirator use: (Check one) Duration of each respirator use: (Check one)
Daily___ Weekly___ Monthly___ Yearly___ Minutes____ Hours____
### Additional protective equipment worn while wearing respirator:

- ___ Safety glasses/ goggles
- ___ Faceshield
- ___ Hardhat
- ___ Gloves
- ___ Earplugs
- ___ Earmuffs
- ___ Protective coveralls
- ___ Other(s):

### Working in hot or humid environments while wearing respirator? ___ Yes ___ No

### Level of physical exertion during respirator use:

- ___ Light (ex: Sitting or standing to control machinery, performing light hand or arm work)
- ___ Moderate (ex: Walking about with moderate lifting and pushing)
- ___ Heavy (ex: Pick and shovel work, heavy manual handling)

### Profile completed by:

___________________________  Date

EHS Staff Member

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### Respirator use Annual Questionnaire

### Employee Name (Last, First, M.I.)  Employee #

### Department/ Job Title  Today's Date

### RESPIRATOR FIT (explain any “No” answers below)

- Do you feel your respirator provides a proper face to facepiece seal?  Yes/ No
- Does your respirator allow you to work without affecting your work performance?  Yes/ No

Explain any “No” Responses:

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### EFFECTIVE RESPIRATORY PROTECTION (explain any “No” answers below)  Yes/ No

Reviewed 05-08-2015
Do you feel your respirator works well in providing respiratory protection?  
Do you know when to replace your filter cartridges?  
Do you know what to do if your respirator fails during actual use?  

**Explain any “No” Responses:**

<table>
<thead>
<tr>
<th>RESPIRATOR MAINTENANCE (explain any “No” answers below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have a proper container and location to store your respirator?</td>
</tr>
<tr>
<td>Do you wash your respirator often enough to keep it sanitary?</td>
</tr>
<tr>
<td>Do you inspect your respirator before every use and during cleaning?</td>
</tr>
</tbody>
</table>

**Explain any “No” Responses:**

### ADDITIONAL COMMENTS

### Definitions and Acronyms

**Respiratory Protection Program Definitions and Acronyms**

**Administrative Controls:** Controls include limiting the length of time an employee is exposed to hazardous atmospheres.

**Air-purifying respirator** means a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

**Assigned protection factor (APF)** is the minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of properly fitted and trained users. The APF for a respirator is assigned by NOISH and with the MUC helps to determined the appropriate respirator.

**Atmosphere-supplying respirator** means a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.

**Canister or cartridge** means a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

**Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
EH&S means Stanford University Environmental Health and Safety Program who is designated as the Respiratory Protection Program Administrator.

Emergency situation means any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure means exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

Engineering Controls: Controls may include working in fume hoods, enclosures, or modify work processes/equipment to decrease the exposure of hazardous atmospheres.

End-of-service-life indicator (ESLI) means 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.

Escape-only respirator means a respirator intended to be used only for emergency exit.

Filter or air purifying element means a component used in respirators to remove solid or liquid aerosols from the inspired air.

Filtering facepiece (dust mask) means a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

Fit factor means a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit test means the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

Helmet means a rigid respiratory inlet covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter means a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood means a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) means an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Loose-fitting facepiece means a respiratory inlet covering that is designed to form a partial seal with the face.

Maximum use concentration (MUC) is the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC usually can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the NIOSH recommended exposure limit (REL), permissible exposure limit, short term exposure limit, ceiling limit, peak limit, or any other exposure limit used for the hazardous substance.

Negative pressure respirator (tight fitting) means a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.

National Institute of Occupational Safety and Health (NIOSH) is the agency which tests and
certifies respirators.

**Oxygen deficient atmosphere** means an atmosphere with an oxygen content below 19.5% by volume.

**Program Administrator** means the Stanford University Environmental Safety and Health – Occupational Health and Safety Program

**Physician or other licensed health care professional (PLHCP)** means an individual whose legally permitted scope or practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by Sections 2.4 and 10.

**Positive pressure respirator** means a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

**Powered air-purifying respirator (PAPR)** means an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

**Pressure demand respirator** means a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

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

**Quantitative fit test (QNFT)** means an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

**Respiratory inlet covering** means that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

**Self-contained breathing apparatus (SCBA)** means an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

**Service life** means the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

**Supplied-air respirator (SAR) or airline respirator** means an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

**Tight-fitting facepiece** means a respiratory inlet covering that forms a complete seal with the face.

**User seal check** means an action conducted by the respirator user to determine if the respirator is properly seated to the face.