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4.0 Respiratory Protection Program

4.0.1 Scope

The Respiratory Protection Program applies to all employees of the Criminalistics Laboratory in the Forensic Science Division (FSD) who need respiratory protection from airborne contaminants.

4.0.2 Purpose

The purpose of this program is to ensure that FSD criminalistics laboratory employees have adequate respiratory protection at their regular workplace or in the field. Engineering controls such as confinement of a harmful substance, providing ventilation to the area, or substitution of less toxic materials should be used, when feasible. But when a contaminated atmosphere cannot be controlled, employees must wear a respirator. This document provides information and guidance on the proper selection, use and maintenance of respirators as well as the administration of the program. The program meets the standards required by Title 8, Section 5144, of the California Code of Regulations.

4.1 Responsibilities

4.1.1 Criminalistics Lab Directors

The Lab Directors will:

Approve the program and program revisions

Appoint qualified Respiratory Protection Program administrator(s)

Ensure that adequate physical and financial resources are allocated for the respirator protection program to operate effectively

Ensure that the Respiratory Protection Program is implemented and being followed by the Division

4.1.2 Program Administrators

The program administrators are responsible for implementation and maintenance of the program. This position is a requirement of Title 8, Section 5144, of the California Code of Regulations. The program administrators will:

Assist with the selection of appropriate respirators and related equipment and maintain an inventory

Provide or coordinate respiratory safety training including annual refresher training

Arrange initial and annual fit testing, including inspection of equipment

Maintain the following records for employees: Medical Approval; Individual Training; Fit Test;

Maintain records for equipment inspection (full face mask only)

Stay abreast of current respiratory safety practice and regulatory changes

Perform an annual audit of the program; see Appendix C for audit procedure.

4.1.3 Supervisors

Supervisors will:

Request training for new employees

Have current copy of the Respiratory Safety Program available to employees

4.1.4 Employees

Employees will:

Adhere to all safety rules, regulations, procedures, and all Respiratory Protection Program requirements

Show proof of medical clearance annually. This can be done by showing proof of an up to date yellow Occupational Health Screening Card issued by the Personnel Division or by completing the Respirator Use Medical Questionnaire online and getting approval

Wear appropriate respiratory protection equipment as needed

Properly clean and store the respirators

Report any respirator malfunction to a program administrator

Complete annual training regarding respiratory protection and complete fit testing with the appropriate respirator

4.2 Definitions

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

Atmosphere Supplying Respirator: Respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere,and includes supplied air respirators (SAR) and self-contained breathing apparatus (SCBA) units.

Break-through: When the user can taste or smell chemicals while the respirator is being used.

Canister or Cartridge: A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

Clean Room Mask: A mask used to prevent the examiner's DNA (saliva) from contaminating evidence they are examining – NOT for protection.

Dusts: Tiny suspended particles resulting from a mechanical process such as grinding.

Employee Exposure: Exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory equipment.

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

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

Filtering Face Piece (dust mask): A negative pressure particulate respirator with a filter as an integral part of the face piece or with the face piece composed of the filtering medium.

Fit factor. 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: Use of a protocol to qualitatively or quantitatively evaluate the fit of the respirator on an individual.

Fumes: Small particles formed by a condensing gas or vapor.

Gases: Formless fluids that occupy the space in which they are enclosed.

High Efficiency Particulate Air (HEPA) Filter: A filter that is at least 99.97% efficient in removing particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Immediately Dangerous to Life or Health (IDLH): An atmosphere that poses an imminent threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Mists: Tiny liquid droplets usually created by spraying operations.

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

NIOSH Respirator Approval: This approval indicates that a respirator has been tested and listed as satisfactory by the National Institute for Occupational Safety and Health (NIOSH).

Permissible Exposure Limit (PEL): The PEL is the maximum permitted eight hour time-weighted average exposure concentration of an airborne contaminant during the workday. The PEL's are published and enforced by the California Occupational Safety and Health Administration (Cal/OSHA) as a legal standard.

Positive Pressure Respirator: Respirator in which the pressure inside the respiratory inlet exceeds the ambient air pressure outside the respirator.

Pressure Demand Respirator: A positive pressure atmosphere supplying respirator that admits breathing air to the face piece when the positive pressure is reduced inside the face piece by inhalation.

Program Administrator(s): The employee(s) responsible for administration of the Respiratory Protection Program.

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

Quantitative Fit Test (QNFT): An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

Respiratory Inlet Covering: 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 face piece, helmet, hood, suit, or a mouth piece respirator with nose clamp.

Respiratory Protective Equipment (RPE): Respiratory protective equipment includes full and half face piece air purifying respirators, powered air purifying respirators, self-contained breathing apparatus, air line, and escape respirators.

Self-Contained Breathing Apparatus (SCBA): An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.

Service Life: The period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection for the wearer.

Short Term Exposure Limit (STEL): The STEL is a 15-minute, time weighted average exposure that is not to be exceeded at any time during a work day even if the 8-hour time-weight average is below PEL. These are published by Cal/OSHA for specific airborne contaminants. STEL's are enforced as a legal standard.

Smoke: A mixture of suspended particles and gases which are the result of combustion. Smoke can contain toxic contaminants.

Tight Fitting Face Piece: A respirator with an inlet covering that forms a complete seal with the face.

Vapors: Substances that evaporate from a liquid or solid.

User Seal Check: An action conducted by the respirator user to determine if the respirator is properly seated to the face.

Warning Properties: Warning properties are the detectable characteristics of a hazardous chemical including odor, taste and/or irritation effects that are detectable and persistent at concentrations at or below PEL. Exposure at levels below the PEL must not dull the sense of smell in order for the substance to be considered to have acceptable warning properties.

For additional definitions please reference Title 8, Section 5144 of the California Code of Regulations.

4.3 Respirator Selection and Use

FSD criminalistics laboratory only uses respirators that have been approved by the National Institute for Occupational Safety and Health (NIOSH). Surgical masks or unapproved dust filters must not be substituted for approved respirators. The selection of a respirator for any given situation requires consideration of the following factors:

The nature of the hazard

The characteristics of the hazardous operation or process

The general environment (confined space, poorly ventilated)

The period of time for which respiratory protection may be provided

The activity of the workers in the hazardous area

The physical characteristics, functional capabilities and limitations of various types of respirators

The respirator protection factor and respirator fit

A respirator wearer must leave the hazardous area if there is any indication that the respirator is not working properly. Reasons which require a respirator wearer to leave a hazardous area include, but are not limited to the following:

- Failure of the respirator to provide adequate protection
- Malfunction of the respirator

- Detection of leakage of an air contaminant in the respirator
- Increase in resistance of the respirator to breathing
- Severe discomfort in wearing the respirator
- Illness of the respirator wearer

If a hazardous environment cannot be identified or reasonably estimated, consider the atmosphere to be immediately dangerous to life and health (IDLH). If ventilation or other engineering methods cannot mitigate the hazard, do not enter the area. Only personnel that are trained and certified in self-contained breathing apparatus (SCBA) may enter an IDLH atmosphere.

4.4 Types of Respirators

4.4.1 Air Purifying Respirators

Single Use (disposable) respirators are lightweight masks that protect against dust or biological hazards. They offer no protection from chemical gases, vapors or mists. Single use respirators do not require the training described in this document before use.

Air Purifying Respirators (APRs) are half or full-face masks that use cartridges to remove contaminants from the atmosphere. These respirators do not protect against IDLH, oxygen deficiency or other atmospheres where contaminants are in unknown concentrations. The contaminants that are removed are determined by the type, efficiency and capacity of the cartridge or canister used.

The 3M 6000 series (half face) and Scott AV3000 series (full facepiece respirators) are the APRs used by FSD laboratory personnel. The cartridges selected for use (combination filter) do not have an end of service life indicator. Instead, the cartridges have a blank area to write in the in-service date and time. Refer to the instructions packaged with the cartridge for guidelines for the maximum amount of time the cartridge can be used before replacing it.

4.4.2 Atmosphere-Supplying Respirators

Self-contained Breathing Apparatus (SCBA) are respirators that provide uncontaminated air to the wearer. Currently, only the members of the FSD Hazardous Chemical Team are trained and certified to use SCBAs. The FSD laboratory does not maintain any SCBAs.

4.5 Medical Evaluation

All employees must be evaluated by the City of Los Angeles Personnel Department and cleared for respirator use prior to training. A copy of the yearly clearance will be kept on file.

4.6 Training

Each employee that uses an APR (except the single use disposable variety) must be trained by a qualified person to ensure the proper use of the respirator. The training must take place prior to respirator use.

4.6.1 APR Training

The training must include the following elements:

The general requirements of CCR, Title 8, section 5144

The employee's responsibilities in the FSD Respiratory Protection Plan

Why the respirator is necessary

The limitations and capabilities of the respirator

How to inspect, put on and remove, use, and check the seals of the respirator

The procedures for maintenance and storage of the respirator

How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators

Information regarding using a respirator, when not required by FSD protocol – for personal comfort, not for protection, i.e. for use around decomposed bodies or tear gas.

4.6.2 Refresher Training

APR refresher training must be administered annually, and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill
- Any other situation arises in which retraining appears necessary to ensure safe respirator use

4.6.3 SCBA Training

FSD Hazardous Chemical Team members are trained and recertified annually. This training meets the requirements of CCR, Title 8, Section 5144.

4.7 Respirator Fit Tests

Each employee that uses an APR must be fit tested to determine the type and size of mask that fits their face. A proper seal between the user's face and the mask is essential for the respirator to work correctly. Only a properly fitting mask can seal against the face, which protects the wearer. Fit testing also involves learning to wear and adjust the mask. The fit test must take place prior to respirator use. All FSD employees who are authorized to use an APR will be fit tested annually according to the procedures in Appendix D of this manual.

A user must demonstrate how to perform a seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure

checks listed below or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

Face piece Positive and/or Negative Pressure Checks

A. 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.

B. Negative Pressure Check

Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by covering the openings of the exhalation valve with the palm of the hands. Inhale gently so that the face piece collapses slightly, and hold the breath for ten (10) seconds. 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. If the face piece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

4.8 Respirator Care

4.8.1 Cleaning Interval

The respirators shall be cleaned and disinfected at the following intervals:

- Respirators issued for the exclusive use of one employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition. Disposable (non-alcoholic) wipes may be used periodically at the discretion of the employee

- Respirators issued to more than one employee shall be cleaned and disinfected per the procedure given below on a yearly basis or when deemed necessary by the Respiratory Protection Program administrator(s)

- Respirators used in fit testing and training shall be cleaned using a disposable wipe such as the 3M Respirator Wipe Pad after each use

Cleaning and Disinfecting Procedure For Shared Respirators:

- Remove cartridges. Disassemble face pieces by removing the exhalation valve. Discard or repair any defective parts.

- Wash components in warm (110ºF (43ºC) maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

- Rinse components thoroughly in clean, warm (110ºF (43ºC) maximum) preferably running water. Drain.

- When the cleaner used does not contain a disinfecting agent, respirator components shall be immersed for two minutes in one of the following:

  - Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 110ºF (43ºC); or

  - Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 millimeters of tincture of iodine (6-8 grams ammonium and/or potassium iodine/100 cc of 45% alcohol) to one liter of water at 110ºF (43ºC); or

  - Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

  Rinse components thoroughly in clean, warm (110ºF (43ºC) maximum) preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on face pieces may result in dermatitis. In addition, some disinfectants may cause deterioration or rubber or corrosion of metal parts if not completely removed.

- Components shall be hand-dried with a clean lint-free cloth or air-dried.

- Reassemble facepiece.

4.8.2 Inspection

All respirators shall be inspected before each use. The respirator inspections shall include:

- A check of respirator function
- A check of tightness of connections
- A check of the condition of the various parts including, but not limited to, the face piece, head straps, valves, and cartridges, or filters; and
- A check of rubber parts for pliability and signs of deterioration;

The checklist in Appendix B will be used to inspect the full-face respirators on a yearly basis.

4.8.3 Maintenance

Repairing, Discarding, and Maintaining Respirators

The employer shall ensure that respirators that fail an inspection or are otherwise found to be defective are removed from service and discarded, repaired or adjusted in accordance with the following procedures:

Repairs or adjustments to respirators should only be made by program administrators according to the manufacturer's recommendations and specifications for the type and extent of repairs performed, using only NIOSH-approved parts designed for the respirator

The cartridge must be changed per the manufacturer's guidelines

The employer ensures that all filters, cartridges, and canisters used in the workplace are labeled and color coded with the NIOSH approved label and that the label is not removed and remains legible.

4.8.4 Storage

Respirators are stored as follows:

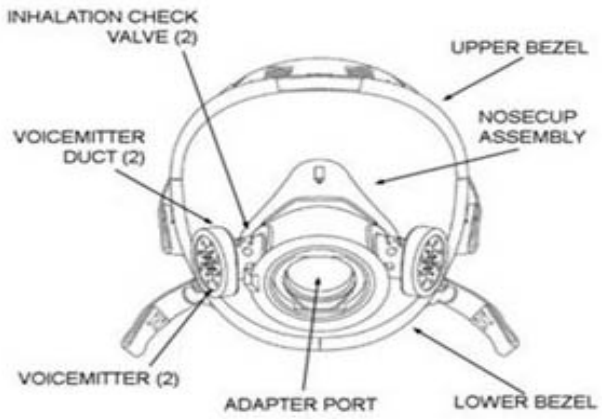
All respirators shall be stored in accordance with any applicable manufacturer's instructions. After cleaning and drying, store the mask and adapter protected from sunlight, grease and oil. Do not store the respirator with a used filter/cartridge attached.

Half face respirators that are issued to an individual should be stored in a plastic bag. Care should be taken to avoid deformation of mask during storage.

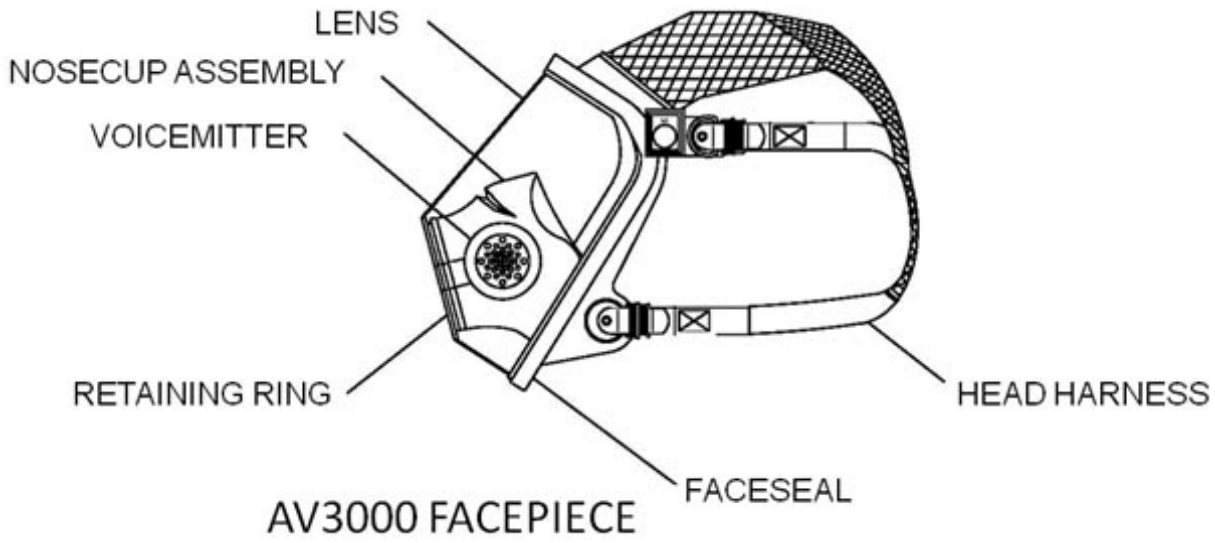
Full face respirators should not be stored with the head harness over the facepiece lens. Full face respirators should be stored in a respirator bag with a secure seal and placed in a marked cloth bag showing the respirator number and size.

Appendix A – Respirator Parts Defined

Section 4 Respiratory Protection Plan



AV-3000 Facepiece



Appendix B – Full Face Respirator Inspection Checklist

The following items must be checked yearly or as needed. Please note <u>any problems</u> on this form.

Type of Respirator:

Respirator Number:

A. Lens: _____

B: Inhalation Valve: _____

C: Exhalation Valve: _____

D: Adapter Port: _____

E: Upper and Lower Bezel: _____

F: Voicemitter: _____

G: Nose Cup Assembly: _____

H: Face Seal: _____

I: Gaskets: _____

J: Harness Assembly and Straps: _____

No Defects Found

Was this respirator removed from service? .....Yes No
Inspector Name/Serial Number_____
Date_____

Appendix C – Respirator Program Annual Audit Procedure

1. Verify that employees using APRs have authorization from City of Los Angeles Personnel Department for respirator use.
2. Verify that employees using APRs have received training for respirator use.
3. Verify that employees using APRs have a fit test prior to respirator use.
4. Verify that all employees using APRs receive refresher training annually and FIT testing.
5. Verify that APRs have been cleaned/inspected at the required intervals (full face APR only).
6. Check inventory of APRs and cartridges and re-order if necessary.

Appendix D – Respirator Fit Testing Procedures

Fit Testing Procedure:

The program administrators shall conduct fit testing using the following procedures.

1. The test subject and fit tester shall pick the most acceptable respirator from a sufficient number of respirator sizes so that the respirator is acceptable to, and correctly fits, the user.

2. Prior to the subject's first fit test, 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 and how to determine an acceptable fit.

3. 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:

(a) Position of the mask on the nose

(b) Room for eye protection

(c) Room to talk

(d) Position of mask on face and cheeks

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

(a) Chin properly placed;

(b) Adequate strap tension, not overly tightened;

(c) Fit across nose bridge;

(d) Respirator of proper size to span distance from nose to chin;

(e) Tendency of respirator to slip;

5. The test subject shall demonstrate that they can conduct a user seal checks for both the negative and positive pressure. Another facepiece shall be selected and retested if

the test subject fails the user seal check tests.

6. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

7. 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.

8. If the employee or program administrator finds the fit of the respirator unacceptable, the test subject may be given the opportunity to select a different respirator and to be retested.

9. Test Exercises.
(a) Employers must perform the following test exercises for all fit testing methods prescribed in this appendix. Employers must ensure that employees perform the test exercises in the appropriate 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 position 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 such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

(6) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

Rainbow Passage
When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

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

(b) Each test exercise shall be performed for approximately thirty 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.

Qualitative Fit Testing Procedure for Half Face Masks – Isoamyl Acetate Protocol:

Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the banana-like odor of isoamyl acetate at low levels.

1. Three 1-liter containers are required.

2. Odor-free water shall be used for the solutions.

3. The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1-liter container, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

4. The screening test shall be conducted in a room separate from the room used for

actual fit testing. The two rooms shall be well-ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

5. The odor test solution is prepared in a second container by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

6. A test blank shall be prepared in a third container by adding 500 cc of odor-free water.

7. The odor test and test blank container lids shall be labeled (e.g., 1 and 2) for container identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

8. The test subject will shake each container for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. The subject will then indicate to the test conductor which bottle contains banana oil.

9. The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

10. If the test subject is unable to correctly identify the container containing the odor test solution, the IAA qualitative fit test shall not be performed.

11. If the test subject correctly identifies the container containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

Isoamyl Acetate Fit Test

1. The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

2. Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

3. After selecting, donning, and properly adjusting a respirator, the test subject shall

wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening.

4. Upon entering the test chamber, a piece of paper towel, or other porous, absorbent material, and wetted with pure IAA will be placed on the hook.

5. The subject shall then proceed with the test exercises listed in the qualitative fit testing procedures.

6. If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

7. If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait about 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

8. When the test subject leaves the chamber, the test administrator shall remove the saturated towel so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a sealed container.

Qualitative Fit Testing Procedure for Full Face Masks - Irritant Smoke (Stannic Chloride) Protocol:

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

General Requirements and Precautions

- The respirator to be tested shall be equipped with an appropriate cartridge.
- Only stannic chloride smoke tubes shall be used for this protocol.
- No form of test enclosure or hood for the test subject shall be used.

- The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

- The fit test shall be performed in an area with adequate ventilation.

Irritant Smoke Fit Test Procedure

1. The person being fit tested shall don the respirator without assistance and perform the required user seal check(s).

2. The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the squeeze bulb. The test operator shall move the smoke stream around the whole perimeter of the mask.

3. If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

4. The exercises identified above in the qualitative fit testing procedures shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator.

5. If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire fit test procedure.

6. Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

7. The test subject shall be allowed to smell a weak concentration of the irritant smoke to become familiar with its irritating properties and to determine if he/she can detect the

irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

8. If a response is produced during this sensitivity check, then the fit test is passed.

Quantitative Fit Testing Procedures for Half and Full-Face Masks

The administrator will conduct the quantitative fit test according to the procedures outlined in Chapter 4 of the *Portacount Pro 8030 and Portacount Pro+ 8030 Respirator Fit Testers Operation and Service Manual*. If the test subject fails the fit test, the testing will stop, and the test subject will re-fit the respirator or choose a different size mask before restarting the test.