Respiratory Protection Plan

Updated March 2010
**Policy:** It is the policy of Oregon Freeze Dry, Inc. to establish and maintain an effective Respiratory Protection Program in order to prevent injury and/or illness as a result of work-related exposure.

**Purpose:** The primary purpose of this plan is to prevent atmospheric contamination as much as possible through use of engineering controls (enclosure or confinement of the operation, general and local ventilation, or substitution of less toxic materials). When engineering controls cannot be used, an appropriate respirator / filter will be used in accordance with the following requirements. This program has been established in accordance with the provisions contained in OSHA's Respiratory Protection Program, 29 CFR 1910.134.

**Scope:** This plan applies to all employees who work in areas that may contain harmful contaminants, and all employees who respond to hazardous chemical releases and are required to be familiar with the provisions of this Respiratory Protection Program.

Definitions:

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

Atmosphere-Supplying Respirator (ASR): A respirator that supplies the respirator user with breathing air through a source independent of the ambient atmosphere, and includes SARs AND SCBAs.

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

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.

Escape-Only Respirator (EOR): A respirator intended to be used only for emergency exit.

Fit Factor (FF): A quantitative estimate of the fit of a particular respirator to a specific individual; estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

Fit Test: The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

Immediately Dangerous to Life and Health (IDLH): 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 (LFF): A respiratory inlet covering that is designed to form a partial seal with the face.

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

Oxygen Deficient Atmosphere: An atmosphere with an oxygen content below 19.5% by volume.

Physician or other Licensed Health Care Professional (PLHCP): An individual whose legally permitted scope of practice (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 the medical evaluation section of this procedure.

Positive Pressure Respirator (PPR): A respirator in which the pressure inside the respirator inlet covering exceeds the ambient air pressure outside the respirator.

Powered Air-Purifying Respirator (PAPR): An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure Demand Respirator: 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): A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual’s responses 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.

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

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 to the wearer.

Supplied-Air Respirator (SAR) or Airline Respirator: An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Tight-fitting Facepiece Respirator (TFFR): A respirator inlet covering that forms a complete seal with the face.
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INTRODUCTION

Certain substances may be harmful if inhaled. These substances may be in the form of
dusts (chemical powders), fogs, fumes, gases, mists, smokes, sprays and vapors.
Harmful substances may exist in certain materials, processes, and tasks. The primary
objective of this plan is to prevent atmospheric contamination through use of engineering
controls such as enclosure or confinement of the operation, general and local ventilation,
or substitution of less toxic materials. When engineering controls cannot be used, the
appropriate respiratory protective equipment shall be used in accordance with the

It is the intent of this plan that, as necessary, Oregon Freeze Dry, Inc. shall:

• Evaluate tasks and workplaces to determine if engineering controls and/or
  respirator protection is needed.
• Evaluate employees’ medical status before issuing respirators and if necessary,
  accommodate employees who cannot wear respiratory protection for medical
  reasons.
• Provide training on proper selection, use, care, and limitations of respirators.
• Provide properly fitted respirators to employees who may need them.
• Perform any other tasks necessary to comply with OSHA 29 CFR 1910.134,
  Respiratory Protection.

No employee shall be fit tested, issued, or wear a respirator without complying fully with
the provisions contained under this Respiratory Protection Plan.

RESPONSIBILITIES

The Program shall be administered in accordance with criteria contained in OSHA

Employee / Respirator User Responsibilities

• Wear proper respiratory protective equipment for tasks and processes that require it.
• Report procedures or tasks that involve hazardous materials and may require use of
  respirators.
• Inspect respiratory protective equipment prior to each use.
• Repair or report damaged / malfunctioning equipment immediately.
• Perform fit check on respiratory protective equipment prior to each use.
• Clean and disinfect respiratory protective equipment regularly.
• Properly maintain and store respiratory protective equipment.
• Follow safety procedures contained in MSDS, SOPs, MPR, and Batch Records.
• Attend scheduled training classes.
• Keep scheduled medical clearance and fit test appointments.

Supervisor / Manager Responsibilities

• Evaluate tasks and workplaces where respiratory protection is required.
• Report procedures or tasks that involve hazardous materials and may require use of
  respirators.
• Ensure employees are in compliance with this program.
• Establish SOP, MPR and/or Batch Record procedures for safely handling and
  processing materials.
• Provide employees with training for site-specific hazards, policies, and precautions.
Safety Officer Responsibilities

- Maintain the OFD written Respiratory Protection Plan.
- Evaluate tasks and workplaces where respiratory protection is required.
- Provide fit testing and training.
- Periodically review and update written respiratory protection policies and procedures.
- Provide compliance assistance to employees, supervisors and managers.
- Assist Supervisors in establishing procedures for the use and care of respirators.
- Establish record keeping guidelines for records related to this program (i.e., training records, medical clearance memos).

MEDICAL EVALUATION

- Employees who may need to wear a TFFR or SCBA will initially complete a medical questionnaire from a PLHCP. The medical questionnaire will be evaluated by the PLHCP before the employee is fit tested or wears a respirator.
- Medical factors considered by the PLHCP include emphysema, asthma, chronic bronchitis, heart disease, hypertension, anemia, hemophilia, hernia, lack of use of fingers or hands, epileptic seizures, or other factors that may inhibit the ability of an employee to wear a respirator.
- When the PLHCP deems necessary, cardio-respiratory testing and physical exams will be conducted to determine employee medical fitness. Physical exams shall include, but are not limited to, the following tests:
  - Blood pressure
  - Ear, nose, throat examination
  - Stethoscopic cardiopulmonary evaluation
  - Spirometry/Pulmonary Function tests
- Medical records and test results from the PLHCP will be maintained by Human Resources and will remain confidential as allowed by law.
- All respirator users’ medical status will be reviewed annually or as determined by the PLHCP.

Employees Who Cannot Be Medically Cleared

Employees who cannot be medically cleared to wear TFFR may wear a suitable PAPR if available and the employee can be medically cleared to use it. OFD may also accommodate the employee in other ways as recommended by the Supervisor, Human Resources and/or the Safety Officer. Employee’s who perform tasks which require SCBA, PAPR, or other SAR and who cannot be medically cleared may also be accommodated according to medical, safety, and legal procedures and requirements.

TRAINING

Training shall be provided before a user may wear a TFFR or SCBA. The training shall be conducted in a manner that is understandable to the user. Respiratory protection equipment users shall be properly trained in the selection, care and use of their respirators. The adequacy of training is ultimately determined by the employee’s ability to demonstrate familiarity with fitting, fit testing, use and care of respiratory protection equipment. Training shall provide the users with an opportunity to handle the respirator, have it fitted properly, test its facepiece seal, wear it in normal air and also a test atmosphere.

Training will cover the following:

- Why respiratory protection equipment is necessary and how improper fit, usage, or maintenance may compromise the respirator effectiveness.
• The limitations and capabilities of respiratory protection equipment (i.e. cartridge respirators for organic vapors are not suitable in oxygen deficient atmospheres, half mask negative pressure respirators are not suitable for more than 10 times the permissible exposure limit, etc.).
• How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
• Proper cleaning and disinfection of respiratory protection equipment as specified in “Care Of Respiratory Protective Equipment”.
• How to properly inspect, don, doff, wear and maintain respiratory protection equipment as specified in “Respirator Use”.
• Proper storage of respiratory protection equipment: Respiratory protection equipment shall be stored in clean, convenient, dry and sanitary locations. Routinely used equipment, such as dust respirators, may be placed in plastic bags. Respirators should be placed in a carrying case or carton when stored in a locker or toolbox where other objects could damage or misshape the face seal. Respirators for emergency response must be easily accessible in sealed containers in specific locations of OFD.
• How to recognize medical signs and symptoms that may limit or prevent effective use of respiratory protection equipment.
• Applications of the Standard (29 CFR 1910.134) to the employee's job duties.

Retraining will be provided at least annually or when any of the following occur:
• Changes in the workplace or type of respirator render the previous training obsolete.
• Inadequacies in the employee's knowledge or use indicate he/she has not retained the skills.

**FIT TESTING**

In order to ensure that respiratory protective equipment provides a good fit, and therefore good protection without excessive leaks, employees must successfully complete a fit test. Employees shall be fit tested with the same model, size, and style of respirator that they will use. Employees will be fit tested:

• Prior to initial use of the respirator.
• At least annually after initial fit test.
• A different size, style, or model of respirator is to be used.
• When changes in job duties affect use.

Fit testing will be repeated whenever an employee reports or the PLHCP, supervisor, or safety officer observe changes in the employee's physical condition that may affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight as specified in 29 CFR 1910.134(f)(2).

Respirators will not be assigned to or worn if any condition prevents a good face seal. Facial hair may prevent a good seal from forming between the skin and seal surface. Corrective lenses with temple bars or straps may prevent a good seal and shall not be used when a full-face respirator is worn. An adaptor kit to accommodate eyeglasses will be provided to employees who must wear prescription lens as a requirement when driving a motor vehicle. Contact lenses may be worn with respirators as long as they are not exposed to hazardous material gases, fumes, vapors or liquids that could penetrate the lens and harm the eyes.

An employee who passes a fit test but later finds the fit of the respirator unacceptable must be given a reasonable opportunity to select a new respirator and be retested.
FIT TESTING PROTOCOL

Quantitative Fit Testing - The protocol for quantitative fit testing contained in Appendix A of 29CFR 1910.134 shall be used unless a different protocol is required by substance-specific OSHA standard. The facepiece shall be modified for the quantitative fit test by using a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece. The fit factor achieved must be at least 100 for a tight-fitting half-mask and 500 for a tight-fitting full facepiece respirator.

Qualitative Fit Testing - The protocol for qualitative fit testing contained in Appendix A of 29CFR 1910.134 shall be used. Qualitatively fit-tested negative pressure air-purifying respirators shall be assigned protection factors per NIOSH standards.

NIOSH Assigned Protection Factor (APF) Chart - Respirator Type and APF

<table>
<thead>
<tr>
<th>Respirator Type and APF</th>
<th>APF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air-Purifying Respirator (APR):</td>
<td></td>
</tr>
<tr>
<td>Filtering Facepiece (Dustmask)</td>
<td>5</td>
</tr>
<tr>
<td>Half-Mask</td>
<td>10</td>
</tr>
<tr>
<td>Full-Facepiece</td>
<td>50</td>
</tr>
<tr>
<td>Powered Air-Purifying Respirator (PAPR):</td>
<td></td>
</tr>
<tr>
<td>Half-Mask</td>
<td>50</td>
</tr>
<tr>
<td>Full-Facepiece</td>
<td>50</td>
</tr>
<tr>
<td>Loose-Fitting Facepiece</td>
<td>25</td>
</tr>
<tr>
<td>Hood or Helmet</td>
<td>25</td>
</tr>
<tr>
<td>Air-Line: Half-Mask</td>
<td></td>
</tr>
<tr>
<td>Demand</td>
<td>10</td>
</tr>
<tr>
<td>Continuous flow</td>
<td>50</td>
</tr>
<tr>
<td>Pressure demand</td>
<td>1,000</td>
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<tr>
<td>Full-Facepiece</td>
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<td>Demand</td>
<td>50</td>
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<td>Continuous flow</td>
<td>50</td>
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<tr>
<td>Pressure demand</td>
<td>2,000</td>
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<tr>
<td>Loose-fitting Facepiece</td>
<td>25</td>
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<td>Pressure Demand</td>
<td>10,000</td>
</tr>
</tbody>
</table>
The Assigned Protection Factor is the level of protection that a particular type of respirator can be expected to provide 95% of the time. An APF of 10 means that type of respirator (if used properly) can be safely used in an atmosphere that has a hazardous concentration of up to 10 times the Permissible Exposure Limit (PEL) for that hazard. APF's are determined by the National Institute of Occupational Safety and Health (NIOSH) and the American National Standards Institute (ANSI)... both establish APF's for various types of respirators. For example, a half face negative pressure air-purifying respirator typically has an APF of 10. Most full-face negative pressure air-purifying respirators typically have an APF of 50. APF's may vary depending on who publishes them.

The accepted practice in the United States is to use ten times the APF as the Fit Factor Pass Level for quantitative fit testing. Therefore, unless the regulation or standard you intend to comply with specifies a different value, a Fit Factor Pass Level of 100 and 500 respectively should be used for half and full face negative pressure air purifying respirators.

If you can demonstrate a Fit Factor during a simulation of the workplace (the fit test) that is much higher than the APF, then you can be optimistic about achieving at least the APF in the actual workplace. In other words, a safety factor is used to recognize the fact that the fit test is only a simulation of the workplace.

REFER TO THE REGULATION OR STANDARD THAT APPLIES TO YOUR INDUSTRY. SEVERAL OSHA REGULATIONS CALL FOR HIGHER FIT FACTOR PASS LEVELS THAN YOU WOULD GET BY MULTIPLYING THE APF TIMES 10.

When calculating an individual's potential exposure to a particular hazard, use the APF not the Fit Factor. For example, if the Fit Factor measured on an individual was 5000, and the person is using a respirator with an APF of 10, you must use 1/10th the ambient concentration as the exposure level, not 1/5000th. The fit test is only a simulation of the workplace, not an actual measurement. The Fit Factor should never be used as if it was a Workplace Protection Factor.

TYPES OF RESPIRATORS

Air-Purifying Respirators
These respirators remove air contaminants by filtering, absorbing, adsorbing, or chemically react with the contaminants as they pass through the respirator canister or cartridge. This type of respirator is to be used only where adequate oxygen is available and the atmosphere is not oxygen enriched (19.5 to 23.5 percent by volume). Air-purifying respirators can be classified as follows:

- Particulate removing respirators, which filter out dusts, fibers, fumes, mists and microorganisms. These respirators may be single-use disposable respirators or respirators with replaceable filters.

NOTE: Dust masks do not provide protection against air contaminants. They must never be used to replace an APR. Dust masks only filter nuisance dusts.

- Gas and vapor-removing respirators, which remove specific individual contaminants or a combination of contaminants by absorption, adsorption or by chemical reaction. Gas masks and chemical-cartridge respirators are examples of gas- and vapor-removing respirators.
- Combination particulate/gas and vapor-removing respirators, which combine the respirator characteristics of both kinds of air-purifying respirators.
Powered air-purifying respirators (PAPR), which operate on the same principle as air-purifying respirators, but rely on a blower unit to move air through filters and deliver it to the user.

**Supplied-Air Respirators**

These respirators provide breathing air independent of the environment. Such respirators are to be used when the contaminant has insufficient odor, taste or irritating warning properties, or when the contaminant is of such high concentration or toxicity that an air-purifying respirator is inadequate. Supplied-air respirators, also called airline respirators, are classified as follows:

- Demand respirators, which supply air to the user on demand (inhalation), which creates a negative pressure within the facepiece. Leakage into the facepiece may occur if there is a poor seal between the respirator and the user's face.
- Pressure-Demand respirators maintain a continuous positive pressure within the facepiece, thus preventing leakage into the facepiece.
- Continuous Flow respirators maintain a continuous flow of air through the facepiece and prevent leakage into the facepiece.
- Self-contained Breathing Apparatus (SCBA) respirators allow the user complete independence from a fixed source of air and offer the greatest degree of protection, but are also the most complex respirator type. Training and practice in its use and maintenance is essential. This type of device shall be used in emergency situations, situations which are immediately dangerous to life or health, when there is an oxygen deficient or enriched atmosphere, or when hazards cannot be adequately characterized.

**DANGEROUS ATMOSPHERES**

**Immediately Dangerous to Life and Health (IDLH)**

Some circumstances may arise where it is not possible to accurately identify or estimate potential exposures. If this should occur, the task or area shall be considered IDLH. Oxygen deficient atmospheres shall also be considered IDLH. IDLH conditions require the use of either a full-face pressure demand self-contained breathing apparatus with at least 30 minutes of air, or a full-face pressure demand supplied-air respirator with auxiliary self-contained air supply. Any employee who enters an IDLH atmosphere shall do so only with appropriate respiratory protection equipment under the provisions set forth in 29 CFR 1910.134(g)(3).

**WARNING SIGNS OF RESPIRATOR FAILURE**

**Particulate Air-Purifying**

When breathing difficulty is encountered with a filter respirator (due to partial clogging with increased resistance), the filter(s) must be replaced. Disposable filter respirators must be discarded.

**Gas or Vapor Air-Purifying**

If, when using a gas or vapor respirator (chemical cartridge or canister), any of the warning properties (e.g., odor, taste, eye irritation, or respiratory irritation) occur, promptly leave the area and check the following:

- Proper face seal
- Damaged or missing respirator parts
- Saturated or inappropriate cartridge or canister
- End of service life indicator (ELSI)

If no discrepancies are observed, replace the cartridge or canister. If any of the warning properties appear again, the concentration of the contaminants may have exceeded the
cartridge or canister design specification. When this occurs an airline respirator or SCBA is required.

**Supplied Air Respirator**

When using an SCBA leave the area as soon as the air pressure alarm is activated.

**RESPIRATOR SELECTION**

To avoid exposure during processing of certain materials, employees may be required to wear a respirator. The level of protection may vary from a dust mask to a TFFR or PAPR.

Some materials that we process contain dusts, vapors and/or gases in quantities less than the TWAL for which a respirator is required. Even though the TWAL for the material is less than the TWAL, your respiratory system could be irritated over time. When working with these materials, respirators or PAPR with appropriate filter cartridges are required.

In the event of an ammonia release, ammonia detection meters are used to determine concentrations to level of personal protective equipment that is required.

In new product applications personal monitoring badges, air sampling devices and/or Dräger Tubes may be used.

Proper respiratory protection selection is made only after a determination has been made as to the real and/or potential exposure of employees to harmful concentrations of contaminants in the workplace atmosphere. This evaluation will be performed prior to the start of any routine or non-routine tasks requiring respirators. The following items will be considered in the selection of respirators:

- Effectiveness of the device against the substance of concern
- Estimated maximum concentration of the substance in the work area
- General environment (open shop or confined space, etc.)
- Known limitations of the respiratory protective device
- Comfort, fit, and worker acceptance
- The task to be performed
- Other contaminants in the environment
- Potential for oxygen deficiency
- A verification of the respirator’s NIOSH certification for its intended use

Some common examples of work, which may require the use of respirators, include, but are not limited to:

- Abrasive blasting
- Cutting or melting lead or stripping lead-based paints from surfaces
- Welding or burning
- Painting, especially with epoxy or organic solvent coatings
- Using solvents, thinners, or degreasers
- Any work which generates large amounts of dust
- Working in a permit-required confined space

No respirator will be used for any purpose unless it has been NIOSH certified for that purpose. Check the materials’ MSDS for the proper filter, cartridge or canister type.

**FILTERS, CARTRIDGES, AND CANNISTERS**

Respirator filters, cartridges, and canisters are designed to protect against individual hazards or a combination of potentially hazardous atmospheric contaminants, and are specifically labeled and color-coded to indicate the type and nature of protection they
provide. All filters, cartridges, and canisters must be approved by the National Institute for Occupational Safety and Health (NIOSH). The NIOSH approval label on the respirator will also specify the maximum concentration of contaminant(s) for which the cartridge or canister is approved. For example, a label may read:

"DO NOT WEAR IN ATMOSPHERES IMMEDIATELY DANGEROUS TO LIFE. MUST BE USED IN AREAS CONTAINING AT LEAST 20 PERCENT OXYGEN. DO NOT WEAR IN ATMOSPHERES CONTAINING MORE THAN ONE-TENTH PERCENT ORGANIC VAPORS BY VOLUME. REFER TO COMPLETE LABEL ON RESPIRATOR OR CARTRIDGE CONTAINER FOR ASSEMBLY, MAINTENANCE, AND USE."

No respirator or respirator filter cartridge may be used in a way that is not consistent with its labeling, manufacturers recommendations, and instructions on the MSDS, SOP, MPR, Batch Record or this document.

Service Life of Air-Purifying Respirator Filters, Cartridges, and Canisters

The canisters or cartridges of air-purifying respirators are intended to be used until filter resistance precludes further use, or the chemical sorbent is expended as signified by a specific warning property, e.g., odor, taste, end of service life indicator (ELSI), etc. New canisters, cartridges or filters shall always be provided when a respirator is reissued. Replace filters, cartridges or canisters if you’re unsure as to whether or not they have already been used.

Filter, Cartridges, and Canister Change Schedule

Chemical odor and irritation are inadequate warnings to change chemical cartridges; OSHA standards limit use of air purifying respirators for protection against chemicals that produce gases and/or vapors. Change out schedules for filter cartridges that are used with respiratory protection against gases and/or vapors are required. The purpose of this requirement is to prevent exposure and ensure “breakthrough” does not occur. All filters, cartridges and canisters shall be labeled and color-coded with the NIOSH approval label. The label shall not be removed and must remain legible.

- **General Daily Use Change Out Schedule**
  
  Follow the SOP, MPR or Batch Record filter change out schedule. For all other applications, filter cartridges may only be used for one shift and must be discarded by the end of the shift. Install new filter cartridges just prior to the next use. Change filter cartridges more frequently when you believe you should do so.

- **Hydrochloric Acid Change Schedule**
  
  When engineering controls are not used to remove initial release of vapors & gases (hood & exhaust), the employee who removes the bung from a barrel of Hydrochloric acid must change both filter cartridges as soon as the bung removal task is complete. All other employees must stay clear of the area when this process takes place to avoid having to change their filter cartridges as well.

- **Acetaldehyde Change Schedule**
  
  When engineering controls are not used to remove initial release of vapors & gases (hood & exhaust), the employee who removes the bung from a barrel of Acetaldehyde must change both filter cartridges as soon as the bung removal task is complete. All other employees must stay clear of the area when this process takes place to avoid having to change their filter cartridges as well.

**RESPIRATOR USE**

Employees may not wear respiratory protective equipment if anything such as facial hair, clothing, hairstyle, etc. may come between the sealing surface of the face piece and the face to interfere with proper fit and operation of the respirator.
Conditions that may interfere with face-to-facepiece seal or valve function:
- Missing Dentures
- Facial scars
- Wearing of jewelry
- Headgear that projects under the seal.

If an employee requires corrective lenses for operating a motor vehicle, lenses must be worn for tasks and processes involving respiratory protective equipment, and must be worn in such a way as to not interfere with the respirator’s seal or operation.

Employees who like to voluntarily wear respiratory protective devices in the absence of recognized exposures or hazards may do so. However, these employees must follow the section “Using Respirators When Not Required By OSHA” in this plan.

It is the responsibility of the supervisor to develop SOP, MPR and/or Batch Record, and to take whatever steps are necessary to ensure they are followed at all times.

Respirator Use in Laboratories Handling Biohazards
Respirators for use in areas where biohazards are used or stored must be selected based on a review of the laboratory procedures, protocols, biohazardous agents proposed for use, etc.

- Only employees that have been properly fit tested shall be allowed to wear tight fitting respirators.
- The employees are required to wear respiratory protection in a proper manner.
- Conditions or actions that result in face piece seal leakage are not permitted.
- Employees shall not remove respirators in hazardous environments.
- Employees shall make sure that the respiratory protection equipment is operating correctly in atmospheres that are immediately dangerous to life and health (IDLH).

**Seal Check Requirement**

The user seal check as it is referred to 29 CFR 1910.134 shall be performed each time a respirator is donned to ensure that an adequate seal is achieved each time the respirator is put on. Before an employee may wear any respirator with a tight fitting face piece, the employee shall be fit tested with the same make, model, style and size of respirator that he/she will use.

A. Face piece Positive and Negative Pressure checks.

1. **Positive pressure check.** Close off the exhalation valve and exhale gently into the face piece. The face fit is considered satisfactory if a slightly 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.

2. **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 replacing the filter seals, inhale gently so that the face piece collapses slightly, and hold breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. Covering the inlet opening of the cartridge with a thin latex or nitrile glove can perform the test. 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.

B. Manufacture’s Recommended User Seal Check Procedures
The respirator manufacturer’s recommended procedures for performing a user seal check may be used instead of the positive and negative pressure check procedures provided that the employer demonstrates that the manufacturer’s procedures are equally effective.

Respiratory protection is authorized and issued for the following employees:

- Workers in areas known to have contaminant levels requiring the use of respiratory protection or in which contaminant levels requiring the use of respiratory protection may be created without warning (e.g., emergency purposes such as hazardous material spill responses).
- Workers performing operations documented to be health hazardous and those unavoidably required to be in the immediate vicinity where similar levels of contaminants are generated.
- Workers in suspect areas or performing operations suspected of being health hazardous but for which adequate sampling data has not been obtained.

**CARE OF RESPIRATORY PROTECTIVE EQUIPMENT**

Respirators will be maintained according to OSHA procedures in 29 CFR 1910.134 or procedures recommended by the manufacturer, provided that such procedures are of equivalent effectiveness. The following methods shall be used to maintain the equipment:

**Cleaning/Disinfecting**

Employees are issued a clean sanitary respirator that is in good working order. The respirator shall be cleaned and disinfected according to following procedures: (Disposable sani-wipes may be used when minimal cleaning/disinfecting is required).

1. Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
2. Wash components thoroughly in clean, warm (43º C - 110º F 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.
3. Rinse components in warm (43º C – 110º F maximum), preferably running water. Drain.
4. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:
   - Hypochlorite solution (50 ppm chlorine) made by adding approximately 0.8 milliliters of laundry bleach to one liter of water at 43º C (110º F).
   - Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodine/ 100cc of 45% alcohol) to one liter of water at 43º C (110º F).
   - Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
5. Rinse components thoroughly in clean, warm (43º C – 110ºF maximum), preferably running water, then 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 that dry on face pieces may cause deterioration of rubber or corrosion of metal parts if not completely remove.
6. Components should be hand dried with clean lint free clothes or air-dried.
7. Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
8. Test the respirator to ensure that all components work properly.
9. If you are not going to use the respirator right away, place it in a clean plastic bag and write your name on the bag.

**Cleaning Frequency**
- Respirators issued to individual employees shall be cleaned and disinfected as often as necessary to maintain a sanitary condition.
- Respirators used by more than one employee shall be cleaned and disinfected after each use and before being worn by another individual.
- Respirators for emergency use shall be cleaned and disinfected after each use.
- Respirators used in fit testing and training shall be cleaned and disinfected after each use.

**Inspection Procedures**
Respirators shall be inspected by each user before and after each use and during cleaning. The following items will be examined during inspection:
- Respirator inspection intervals:
  - Respirators used in routine situations shall be inspected before each use and during cleaning and disinfecting.
  - All respirators used for emergencies shall be inspected monthly and shall be checked for proper function before and after each use.
- Respirator inspection elements shall include the following:
- Check of respirator function, tightness or connections, the condition of various connections, and condition of the various parts including:
  - Face piece
  - Head straps
  - Valves
  - Connecting Tube
  - Cartridges
  - Canister or filters

**Monthly inspections:**
- SCBA shall be inspected monthly.
- Air cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the recommended pressure level.
- The inspector shall enter the date of the inspection, the initials of the inspector and findings.
- Only the persons trained to make repairs shall make respirator repairs. Only manufacturer’s NIOSH-approved replacement parts, designed for the respirator will be used.

**Rubber Facepiece**
- Cracked or broken air-purifying element holder(s), badly worn threads or missing gasket(s)
- Excessive dirt
- Cracks, tears, or holes
- Distortion
- Cracked, scratched, or loose-fitting lens (full face)
- Incorrectly mounted full facepiece lens or broken/missing mounting clips

**Head Strap**
- Breaks or tears
- Loss of elasticity
- Broken or malfunctioning buckles/attachments
• Excessively worn serrations on head piece
• Harness which might allow the facepiece to slip

**Inhalation / Exhalation Valves**
• Detergent residue, dust particles, dirt, or hair on valve or valve seat.
• Cracks, tears, distortion in valve material or valve seat
• Improper insertion of the valve body in the facepiece
• Cracks, breaks, or chips in the valve body particularly in the sealing surface
• Improper installation of the valve in the valve body

**Filter Elements**
• Incorrect cartridge, canister, or filter for the hazard
• Missing or worn gaskets
• Worn threads
• Cracks or dents in filter housing
• Incorrect installation, loose connections, or cross-threading in holder
• Evidence of prior use of sorbent, cartridge, or canister, indicated by absence of sealing material, tape foil, etc. over inlet.

**Repair**
Repair and replacement of damaged parts must be done before the respirator can be used. Replacement parts must be those of the manufacturer of the equipment. Replacement parts are available in Plant 3 laundry storage. Repairs must be performed by a qualified person.

**Storage**
The respirators shall be stored as follows:
• Dry, clean, disinfected respirators shall be stored in clean plastic bags out of direct sunlight with the face piece and exhalation valve in a non-distorted position. They will be stored in a manner so they’re protected from damage, contamination, dust, extreme temperatures, excessive moisture and damaging chemicals.
• Emergency respirators shall be:
  o Accessible to the work area.
  o Stored in containers that are clearly marked as containing emergency respirators.
  o Stored in compliance with manufacturer’s instructions.

**ACCESS TO RESPIRATORS, PARTS & SUPPLIES**
Standard filtering facepieces (dustmasks) are available in the laundry supply rooms in Plants 1, 2 & 3. Laundry personnel are responsible for maintaining supply. Employees involved in tasks or processes that require wearing a tight-fitted facepiece respirator will be issued their own respirator. The employees must be under medical surveillance, trained and fit tested before they can wear respirators. Each employee is responsible for maintaining his/her own respirator in a clean, sanitary, working condition at all times.

Spare cartridges, cleaning supplies and spare parts are stored in the Plant 3 office & supply room. Only persons trained to repair respirators shall make repairs. Only manufacturer NIOSH-approved replacement parts, designed for the specific respirator may be used.

Supervisors and laundry personnel are responsible for maintaining the inventory of cartridges, cleaning supplies and spare parts. Laundry personnel will act as a go-
between with the manufacturer and/or vendor in an instance where the employee is not able or certified to repair a respirator.

**BREATHING AIR QUALITY**

A. The supplied air used in SCBA shall meet the following specifications:

  Compressed breathing air shall meet at least the requirements for Type 1-Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specifications for air, G-7.0-1989 to include:

  a) Oxygen content (V/V) of 19.5 – 23.5 %
  b) Hydrocarbon (condensed) content of 5 millions per cubic meter of air loss
  c) Carbon monoxide (CO) content of 10 ppm or less
  d) Carbon dioxide content of 1,000 ppm or less
  e) Lack of noticeable odor.

B. Breathing air cylinders 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 type 1, Grade D breathing air.
  • The moisture content of the cylinder does not exceed a dew point of – 50 degrees F. at 1 atmosphere pressure.

**SURVEILANCE**

  OFD will identify and evaluate the respiratory hazards in the workplace in accordance with 29 CFR 1910.134 (d)(1)(iii). Exposure records, if necessary will be maintained by the Safety Officer.

**PLAN EVALUATION & REVIEW**

  Workplace evaluations shall be conducted as necessary to ensure that the provisions of the current written program are being effectively implemented. Employees who are required to use respirators shall be regularly consulted to assess the programs effectiveness. Factors to be assessed are:

  • Respirator fit
  • Appropriate respirator selection for the hazards to which the employee may be exposed.
  • Proper respirator use under the workplace conditions the employee encounters.
  • Proper respirator maintenance.

  The Respiratory Protection Plan will be reviewed and revised every two years or when:

  • Applicable regulations are introduced or revised.
  • Changes occur in chemicals stored or processed.
  • Changes occur in facility configuration.

**RECORDKEEPING**

  Records of employee fit testing and training shall be kept by the Safety Officer for a minimum of three years. Records will contain the following information: name of employee, date of fit testing and training, training topics covered, type of respirator (make, model, size) type of testing solution used, and person conducting the fit testing.
All medical records pertaining to respirator use will be maintained in the Human Resource Department.

**USING RESPIRATORS WHEN NOT REQUIRED BY OSHA**

*Voluntary (Comfort) Respirator Use* - Under some circumstances, employees may wish to use respiratory protection equipment for their own comfort or sense of well being, even when there is no recognized hazard or over exposure. In these cases, not all of OSHA’s respiratory protection requirements apply (i.e., fit testing is not required). In order to voluntarily use respiratory protective equipment in this way, the following criteria must be met:

- No recognized hazard or potential for over exposure exists.
- The respirator is NIOSH certified
- The respirator is cleaned, stored, and maintained as specified in *Care of Respiratory Protective Equipment*, below
- The respiratory protective equipment does not itself pose a hazard to the user
- The employee is medically certified to use a respirator (*Exception*: filtering facepieces (i.e., dust masks, “duck bill” respirators, etc.) do not require a medical clearance for voluntary use)
- The employee receives training for “Using And Maintaining PPE” or “Wearing Dustmasks Even When OSHA Standards Don’t Require Doing So”.

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