BP WIND ENERGY
POLICIES AND PROCEDURES

Respiratory Protection

Document Control Details

Respiratory Protection

TABLE OF CONTENTS

Respiratory Protection

1.0 Purpose/Scope

1.1 BPWE employees and contractors shall be provided protection from occupational exposure where a potential hazard to dusts, fumes, mists, gases, vapors, biological airborne contaminants, or oxygen deficiency exists.

1.2 Where feasible, exposure to contaminants at concentrations presenting a potential health hazard will be eliminated by engineering and administrative controls.

1.3 This HSSE procedure provides a strategy to be followed when respiratory hazards are encountered and cannot be controlled with engineering or administrative controls.

2.0 Reference

2.1 OSHA 29 CFR 1910.134, Respiratory Protection
2.2 OSHA 29 CFR 1926.103, Respiratory Protection
2.3 OSHA 29 CFR 1910.1200 Hazard Communications Standard
2.4 OSHA 29CFR Subpart I, Personal Protective Equipment
2.5 OSHA 29 CFR 1918.94 Ventilation
2.6 ANSI Z-88 1992, Respiratory Protection
2.7 NIOSH 42 CFR 84 and 30 CFR 11, Certified Respiratory Equipment
2.8 HSSE 14.10.01, BPWE Hazard Identification and Risk Assessment Procedure
2.9 HSSE 50.10.01, BPWE Hazard Communication Program
2.10 HSSE 14.20.01, BPWE JSEA Procedure

3.0 Responsibilities

3.1 Facility / Project Managers, Supervisors

Managers and Supervisors must address respiratory hazards in the Job Safety Environmental Analysis (JSEA), Group Risk Assessment (GRA), and/or HSSE Plans completed for work tasks and projects. *Supervisors shall assure that:*

- Requirements of this Respiratory Protection procedure are implemented,
- Potential respiratory hazards are properly identified,
- Appropriate HSSE Advisors are consulted,
- Workers are medically qualified, fit tested, and trained prior to respirator use,
- Workers have been issued and use the proper equipment, and
- Provide data regarding use of chemicals in accordance with the BPWE Hazard Communication Program.

3.2 Personnel Assigned to Wear Respirators

Personnel must collaborate with the responsible line manager in the development of the JSEA to identify respiratory hazards and their controls.

Personnel shall comply with requirements of this respiratory protection program and the

respirator use training, that include:

- Being medically cleared, respirator fit-tested and trained prior to wearing a respirator,
- Informing their Supervisor of any medical, physical or psychological condition that would preclude respirator use.
- Proper equipment maintenance,
- Selecting the correct cartridges or canisters for air purifying respirators in accordance with usage charts, labels and direction from their Supervisor or HSSE Advisor.
- Complying with the established cartridge change-out-schedules.
- Replacing cartridges if odor is detected or if an increase in breathing resistance is noticed.
- Absence of face seal obstructions e.g. facial hair,
- Respirator user seal check, and
- Notification to appropriate line managers when work conditions change or otherwise present a potential health hazard.

Contractors must provide information to the appropriate line manager as requested for review in determining the adequacy and effectiveness of a contractor's respiratory protection program.

3.3 HSSE Advisor(s)

The appropriate HSSE Advisors (BP's and/or Contractor's) will assist site management with their duty to comply with this work instruction and will provide assistance with respiratory hazard anticipation, identification, evaluation, and control support.

The HSSE Advisor will:

- Assist site management with preparation of risk assessments and work plans;
- Advise the site management of anticipated respiratory hazards, and;
- Assist the site management by providing worker training and monitoring respirator use.

4.0 Procedure

4.1 Program Administration

Respiratory program administration details are contained in the following paragraphs. *Summary program components include:*

- Medical evaluations of personnel required to use respirators,
- Procedures for selecting respirators for use in the workplace,
- Fit testing procedures for tight-fitting respirators,
- Procedures for proper use of respirators in routine and reasonable foreseeable emergency situations,
- Training of respirator wearers in the respiratory hazards to which they are potentially exposed during routine and emergency situations,
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and maintaining respirators,

- Procedures to verify adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators, and
- Procedures for regularly evaluating the effectiveness of the program.

4.2 Medical Evaluation / Examination

A medical evaluation will be completed to determine the worker's ability to use a respirator before the respirator wearer is fit tested or required to use a respirator in the workplace.

Based on the findings of the medical evaluation, a medical examination may also be required.

A. Medical Evaluation Procedures

1. A physician or other licensed health care professional (PLHCP) performs all respirator user medical evaluations.
2. The medical questionnaire and examinations are administered confidentially during the respirator wearer's normal work hours or at a time and place convenient to the worker. The medical questionnaire is also administered in a manner that ensures the respirator wearer understands its content.
3. The respirator wearer is also provided an opportunity to discuss the questionnaire and examination results with the PLHCP.
4. Any worker who refuses to be medically evaluated for respirator use will not be allowed to use a respirator.

B. Medical Examinations

1. Answers provided on the medical questionnaire may indicate the need for a medical examination.
2. The medical examination shall include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make final determination on the respirator wearer's ability to use a respirator.

C. Supplemental Information for the PLHCP

1. Supplemental information concerning the specific type(s) of respirator to be used and the anticipated working conditions is provided to the PLHCP, with each Medical Questionnaire for Respirator Users, before the PLHCP makes a recommendation concerning a worker's ability to use a respirator.
2. A copy of this Respiratory Protection Program will be provided to the PLHCP.

D. Medical Recommendation

1. Following the evaluation and/or examination, a written recommendation regarding the worker's ability to use the respirator must be provided by the PLHCP. *The recommendation shall provide the following information:*
   - Any limitations on respirator use related to the medical condition of the worker or to the workplace conditions in which the respirator will be used, including whether or not the worker is medically able to use the respirator;

- The need, if any, for follow-up medical evaluations; and
- A statement that the PLHCP has provided the worker with a copy of the PLHCP's written recommendation.

2. For negative pressure respirator work, if the PLHCP finds a medical condition that may place the worker's health at increased risk, a powered air-purifying respirator (PAPR) can be provided if the PLHCP determines that the worker can use the PAPR.
3. If a worker is wearing a PAPR because of medical restrictions and if a subsequent medical evaluation finds that the worker is medically able to use a negative pressure respirator, then there is no longer a requirement to provide a PAPR.

E. Additional Medical Evaluations and/or Examinations

1. An additional medical evaluation and/or examination shall be conducted if:
   - A worker reports medical signs or symptoms that are related to ability to use a respirator;
   - A PLHCP, Site Manager, or Supervisor, determines that a worker needs to be re-evaluated;
   - Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for worker re-evaluation; or
   - A change occurs in workplace conditions, e.g., physical work effort, protective clothing, temperature, that may result in a substantial increase in the physiological burden placed on a worker.

4.3 Respirator Selection

This section presents the types of respirators available and the criteria and procedure to be used to determine respiratory protection needed for specific tasks.

A. Criteria for Respirator Selection

1. For each type of task for which respiratory protection is required, the questions or issues listed below shall be addressed, as applicable:
   - The task description and whether the task is routine or related to a non-routine task.
   - Is exposure to hazardous material(s) anticipated throughout the duration of the work task?
   - Is there potential for exceeding the IDLH concentration of the hazardous material(s)?
   - Identification of the major contaminant(s) associated with the work task.
   - The occupational exposure limit for each major contaminant. Usually, this is the OSHA PEL, ACGIH TLV, NIOSH REL, or, when these are not available, the client or trade association exposure limit. Their limits are based on full 8-hour-shift time weighted average or short-term exposure limit (15 min.), or

ceilings, or peaks above the acceptable ceiling concentration.

- Estimated exposure concentration aids in respirator selection and determination of the cartridge change schedule. The estimated concentration should be based on actual personal or area exposure monitoring data, exposure data from a similar operation, or an engineering estimate.

2. For each listed respiratory protection task, the respirator manufacturer and model shall be listed.
3. For particulate exposures, the particulate cartridge Types N, R, and P refer to standard performance designations established by NIOSH.
   - N refers to no oil exposure and 95%, 99%, or 100% (99.97%) filter efficiency.
   - R refers to some oil up to eight hours and 95%, 99%, or 100% (99.97%) filter efficiency.
   - P cartridge types can be used with oil exposure with no time restriction and 95%, 99%, or 100% (99.97%) filter efficiency. Individual manufactures may have different designations. To aid in decision-making on the appropriate type of respirator, individual manufacturer literature will also be used.

4. For each task involving the use of a cartridge respirator, a respirator cartridge change schedule shall be provided. Two options are available for those jobs involving vapor or gas exposures.
   - The cartridge change-out schedule can be based on end-of-service-life indicator (ESLI) on the cartridge. There are ESLIs for mercury vapor cartridges and carbon monoxide, chlorine, ethylene oxide, and hydrogen sulfide canisters.
   - Manufacturers' change schedules may be used.

4.4 Immediately Dangerous to Life and Health (IDLH)

A. Worker exposure to any of the following task conditions shall be avoided:
   - Oxygen concentrations less than 20.8% or greater than 22.5%, or
   - Atmospheres greater than 1% of the Lower Explosive Limit, or
   - Atmospheres that are potentially Immediately Dangerous to Life or Health (IDLH), or
   - Unprotected exposure to known human carcinogens, mutagens, or teratogens, or
   - Unprotected exposure to known chemical sensitizers.

B. Work in IDLH atmospheres is prohibited by BPWE without regard to respiratory protection except in cases where trained personnel must use respirators in the course of rescue operations.

4.5 Potentially IDLH Atmospheres

A. For tasks for which there is the *potential* to become IDLH atmosphere, the respirator must be a facepiece supplied-air respirator in positive pressure mode and 5-minute (minimum) escape cylinder.

B. In *potential* IDLH atmospheres, ongoing air monitoring shall be conducted under the supervision of a competent HSSE Advisor to verify contaminant concentrations and to detect changes.

C. For work in atmosphere with the *potential* for IDLH conditions, trained rescue standby person(s) located outside the *potential* IDLH are posted and equipped with an SCBA or supplied-air respirator on separate supply. This includes work in confined spaces that require supplied-air respiratory protection.

Standby person will be equipped with:

- Continuous-flow or pressure-demand SCBAs or a continuous flow or pressure-demand, supplied-air respirator with a 5 minute (minimum) escape air cylinder and
- Appropriate retrieval equipment (harnessed, wristlets, anklets) for removing an employee, who enters the hazardous atmosphere.

4.6 Fit Testing Requirements

Respirator fit testing is performed in accordance with the fit test protocols and procedures described below.

A. General Fit Test Protocols

1. The designated PLHCP will appoint a qualified person on his or her staff to conduct qualitative and/or quantitative fit tests depending on the type of respiratory equipment selected and the hazards present.

   The following fit testing requirements will be met.

   - Each respirator wearer will be fit-tested on each, specific (model, size) respirator worn prior to initial use and annually thereafter.
   - Spectacles (glasses), goggles, faceshields, or welding helmets will be worn in a manner that does not interfere with the facepiece seal of the respirator.
   - Contact lenses (soft and gas permeable only) may be worn with a full-facepiece respirator.
   - Respirator wearers shall be clean-shaven. Facial hair shall not interfere with the sealing surface of the facepiece and the face or interfere with valve function.
   - User seal checks are performed each time the respirator is donned.

2. Fit tests shall be documented and retained until the next fit test is administered.
3. Qualitative Respirator Fit-Test Record or Quantitative Respirator Fit-Test Record, or similar forms provided by the PLHCP may be used to document the fit test.
4. The respirator wearer shall be allowed to pick the most acceptable respirator from

a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

5. Prior to the selection process, the respirator wearer shall be shown how to don a respirator, how it should be positioned on the face, how to set strap tension, and how to determine an acceptable fit.
6. A mirror will be available to assist the respirator wearer in evaluating the fit and positioning of the respirator. This instruction does not constitute the respirator wearer's formal training on respirator use, because it is only a review.
7. Respirator wearers shall be informed that they are being asked to select the respirator that provides the most acceptable fit.
8. The respirator wearer shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit. The more acceptable facepieces are noted in case the one selected proves unacceptable.
9. The most comfortable facepiece is donned and worn at least five minutes to assess comfort. If the respirator wearer is not familiar with using a particular respirator, then he/she shall be directed to don the facepiece several times and to adjust the straps each time to become adept at setting proper tension on the straps.

Assessment of comfort shall include a review of the following points with the respirator wearer.

- Position of the respirator on the nose
- Room for eye protection
- Room to talk
- Position of respirator on face and cheeks

The following criteria shall be used to help determine the respirator fit.

- 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

4.7 General Respirator Use Requirements

A. General Requirements

1. All respirators, filters, cartridges, and components used on BPWE sites shall be certified by NIOSH and shall be worn in accordance with all manufacturers' instructions.
2. Respirators shall be used only for the purpose intended and shall not be modified in any way.
3. Tight-fitting facepiece respirators are not to be worn by workers, who have any condition that interferes with the face-to-facepiece seal or valve function (such as

facial hair).

4. If a worker wears corrective glasses or goggles or other personal protective equipment, the appropriate HSSE Advisor shall ensure that such equipment is worn in a manner that does not interfere with the seal of the facepiece to the face of the user.
5. For all tight-fitting respirators, a user seal check is conducted each time the respirator is donned. Tight-fitting respirators that cannot be seal-checked are not acceptable for use.
6. The appropriate HSSE Advisor shall ensure appropriate surveillance of work area conditions and degree of worker exposure or stress. *Frequency of monitoring should be no less than hourly but is dependent on the work conditions such as:*
   - Temperature
   - Physical activity level
   - Worker acclimatization
   - Worker fitness level
   - Other required PPE or clothing layers
7. When there is a change in work area conditions or degree of worker exposure or stress that may affect respirator effectiveness, the respirators continued effectiveness must be reevaluated.
8. The worker's line manager will ensure that workers can leave the area:
   - To wash their faces and respirator facepiece as necessary to prevent eye or skin irritation associated with respirator use;
   - If they detect vapor or gas breakthrough, changes in breathing resistance or leakage of the facepiece; or
   - To replace the respirator or the filter, cartridge, or canister elements, when vapor or gas breakthrough is detected, changes in breathing resistance occurs, or when there is leakage of the facepiece. The respirator will be replaced or repaired before allowing the worker to return to the work area.

B. Prior to use, the following items must be inspected according to respirator type and manufacturer's instructions. *Typical inspection points include:*
   1. Tightness of connections (air supply)
   2. Condition of facepiece
   3. Head straps
   4. Valves
   5. Cartridge/Canister
   6. Elastic parts (for pliability)
   7. Respirator function

4.8 Disposable Type / Single-Use Respirators (Non-IDLH)

A. Limitations

1. This respirator provides protection against low levels of certain dusts and/or fumes, but does not supply oxygen, and shall not be used in an oxygen deficient atmosphere.
2. These NIOSH approved respirators will not be used where airborne concentrations of dust and/or fumes equal or exceed 10 times the Permissible Exposure Limit (PEL).

B. Procedures for Using the Respirator

1. Inspect the respirator before use to verify that all parts are present and in good working order.
2. Follow the manufacture's instructions when donning and adjusting the respirator straps. Some disposable single-use respirators utilize elastic straps and adjustable buckles.
3. If detection of vapor inside the facepiece (by smell) or difficulty breathing is experienced, workers shall be trained to leave the area immediately, report the condition to their line manager, and provide the respirator to the appropriate HSSE Advisor for inspection.

4.9 Particulate Filter Respirator (Non-IDLH)

A. Limitations

1. Particulate Filter Respirators provide protection against low levels of certain dusts and/or fumes.
2. This respirator does not supply oxygen and shall not be used in an oxygen deficient atmosphere.
3. These respirators cannot be used in any atmosphere that is immediately dangerous to life or health.

B. Procedures for Using the Respirator

1. The respirator is inspected by the worker before each use to assure that all parts are present and in good working order.
2. Workers will don the respirator and adjust it to obtain a snug but comfortable fit.
3. Workers will then perform a user seal check.

4.10 Chemical Cartridge Respirator / Air Purifying Respirator (Non-IDLH)

A. Limitations

1. These respirators provide protection against low levels of certain gases and vapors. Respirator canisters or cartridges shall be specifically selected for concentrations of gases and/or vapors that may be encountered.
2. This respirator does not supply oxygen and shall not be used in an oxygen deficient atmosphere.

3. These respirators cannot be used in any atmosphere that is immediately dangerous to life or health.
4. Workers are trained to leave the area immediately if an odor is detected inside the respirator.
5. Air purifying respirators (APRs) shall not be used for rescue or emergency work.

B. Procedures for Using the Respirator

1. Respirators are inspected before each use to assure that all parts are present and in good working order.
2. Worker will then don the respirator and adjust it to obtain a snug but comfortable fit.
3. Workers then perform a user seal check.
4. Cartridges are replaced in accordance with cartridge change schedule.
5. If workers can smell or otherwise detect vapors inside the facepiece; or if difficulty breathing is experienced, the cartridges will be changed.

4.11 Airline Respirator

A. Limitations

1. An airline respirator shall not be used in any atmosphere that is immediately dangerous to life or health, including an oxygen deficient atmosphere, unless equipped with a self-contained escape (5, 15, or 30 minute) air cylinder.

B. Procedures for Using Airline Respirators

1. Workers shall inspect all equipment before each use to assure all parts are present and in good working order.
2. Air must be bottled, compressed air meeting the requirements of this procedure.
3. If using an escape air cylinder, user will ensure that air supply is of sufficient capacity (5, 15, or 30 minute) to permit safe escape from work area.
4. The worker will then follow the manufacturer's instruction to select correct length of airline hose.
5. Connect hose to regulator and air supply. (The maximum air pressure at the point of attachment of hose to air supply is determined by manufacturer's instructions.)
6. The worker will then don the respirator and adjust to obtain a snug but comfortable fit and perform a user seal check.
7. Next the worker shall connect the respirator to the regulator and adjust the airflow in the facepiece.
8. In case of respirator malfunction, workers shall be trained to leave the area immediately, report the condition to the responsible line manager.

4.12 Self-Contained Breathing Apparatus (SCBA)

A. Limitations

1. Air supply is generally rated for 30 minutes or less.
2. Heavy exertion and excitement will increase the breathing rate and deplete the air supply sooner.
3. Workers shall be trained to leave the area when the alarm indicates low air supply.

B. Procedures for Using SCBA

1. Workers shall inspect the unit before each use and ensure a sufficient air supply (at or about 90%) and that the regulator and low pressure warning devices function properly.
2. The user will then open the cylinder air supply valve.
3. Next, don unit so cylinder is on the users back with the valve pointing down and engage and tighten the harness.
4. Then the worker will don the respirator and adjust to obtain a snug but comfortable fit and perform a user seal check.
5. The worker will then connect the facepiece hose to the regulator.
6. Workers shall be trained to use the bypass only in the event of regulator failure and to leave area immediately, whenever the low-pressure alarm sounds.

4.13 Breathing Air Quality

A. Air supply shall be free of harmful quantities of contaminants, and shall meet specification for Grade D Breathing Air in Compressed Gas Association Commodity Specification G-7.1-1989.

B. Grade D has an oxygen content of 19.5-23.5%, condensed hydrocarbon of 5 mg/m^3 or less, carbon monoxide of 10 ppm or less, carbon dioxide of 1,000 ppm or less, and lack of noticeable odor.

C. Compressed oxygen or “synthetic air” shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus.

D. Cylinders must have a dated label or sticker affixed to them indicating “Certified Breathing Air” or equivalent.

E. Workers shall be instructed to stop work immediately if they experience difficulty in breathing, smell any unusual odors, or experience an ill feeling such as a headache or upset stomach, etc. and report the situation to their Supervisor.

4.14 User Seal Checks

Workers shall test the seal of their respirator to their face prior to using by performing both negative-pressure and positive-pressure user seal checks according to the following guidelines.

A. Negative-Pressure Seal Check Procedure

1. Close inlet openings of the respirator, canister(s), cartridge(s), or filters(s) by covering with palm of hands, by replacing the inlet seal on the canister(s), or by squeezing a breathing tub or blocking its inlet so as not to allow the passage of air.
2. Inhale gently and hold breath for ten seconds.
3. Verify that a satisfactory fit has been achieved by assuring that the facepiece collapses slightly and no inward leakage of air into facepiece is detected.
4. If inward leakage is detected the respirator wearer will reposition the facepiece and/or straps and repeat this sequence until a satisfactory fit check is obtained.

B. Positive-Pressure Seal Check Procedure

1. Close exhalation valve or breathing tube or both.
2. Exhale gently.
3. Verify that a satisfactory fit has been achieved by assuring that a slight buildup of positive pressure is generated inside the facepiece without detection of outward leakage between the sealing surface and the face.
4. If outward leakage is detected, the respirator wearer will reposition the facepiece and/or straps and repeat this sequence until a satisfactory seal check is obtained.

4.15 Maintenance, Cleaning and Sanitization

The following provides guidelines for cleaning and sanitizing respirators. Recommendations provided by the equipment manufacturer may be used provided the procedures are as effective as those listed here.

A. Respirators will be cleaned and sanitized before being issued. Commercial wipes may also be used by the wearer to clean his/her respirator between uses during the work shift.

B. Cleaning, disinfecting, and storage of respirators shall be performed as follows:

1. Remove filters, cartridges, or canisters. Disassemble facepiece 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 in 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 thoroughly in clean, warm (43º C [110º F] maximum),

preferably running water. Drain.

4. When the cleaner used does not contain a disinfecting agent, respirator components will 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 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 iodide/100 cc of 45% alcohol) to one liter of water at 43º C (110º F); or
   - Other commercially available cleansers of equivalent disinfectant quality when used as directed, as recommended or approved by the respirator manufacturer.

5. Rinse components thoroughly in clean, warm (43º C [110º F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
6. Components are hand-dried with a clean lint-free cloth or air-dried.
7. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.
8. Test the respirator to verify that all components work properly

4.16 Inspecting and Storing

A. Respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the facepiece and exhalation valve.

B. Inspection and replacement of respirator parts shall be performed according to the following:

1. All respirators must be inspected by the wearer prior to each use.
2. Storage shall be in a convenient, clean, and sanitary location. At a minimum, respirators shall be stored in a sealed protective bag.
3. Self-contained breathing apparatus (SCBAs) shall be inspected monthly and after each use by a qualified person. The wearer shall self-inspect the SCBA prior to each use. SCBA inspections shall include checking cylinder pressure and units shall be brought to the rated pressure. Units shall be recharged after each use.
4. Airline respirators shall receive a functional check before and after each use.
5. Replacement of parts shall be made only with those specifically designed for the respiratory devise used. All maintenance and repair shall be performed only by appropriate trained persons and shall be documented.
6. For some respiratory equipment's maintenance and repairs, e.g., SCBAs, escape units, the manufacturer will provide training certification for the person doing the maintenance or repairs.

4.17 Repairing, Discarding, and Maintaining Respirators

A. Defective equipment shall be immediately removed from service and repaired prior to use.

B. Repairs shall be made only by an appropriately trained, designated qualified person, and only with the manufacturer's approved replacement parts.

C. Defective equipment not repaired immediately shall be tagged:

Danger - Do Not Use - Defective

D. Specific defect(s) will be listed on the tag.

4.18 Voluntary Respirator Use Requirements

A. Workers may voluntarily use a respirator with the approval of their line manager after seeking the advice of the appropriate HSSE Advisor.

B. The HSSE Advisor will evaluate requests for voluntary respirator use to determine if the worker can perform the activities safely and respirator use will not in itself create a hazard. Approval will be given to the line manager in writing, specifying the persons and the tasks for which they may voluntarily use a respirator.

C. If it is determined that voluntary use will be permitted, the line manager shall arrange for medical evaluation and fit testing of the worker in accordance with this procedure.

D. A medical evaluation and PLHCP's written determination must be provided for all workers who are permitted to use respirators voluntarily, prior to their use of a respirator.

E. Additionally, all requirements for cleaning, maintaining and storage of respirators contained in this Program shall also apply to workers permitted to use respirators voluntarily.

F. Respirators worn on a voluntary basis do not require fit testing.

G. Exception: Workers, whose only use of respirators involves the voluntary use of filtering facepieces (non tight-fitting, dust masks), are not required to submit to medical evaluation or fit testing.

Respiratory Protection

5.0 Training

5.1 Training must be provided to all workers who are required to use respirators, prior to requiring them to use the respirator in the workplace.

5.2 The training shall be provided by a competent person.

5.3 The training must be comprehensive, understandable, and conducted on an annual basis or more often, if necessary.

5.4 At a minimum, the training shall include the following topics:

- The nature of the hazard(s), including physical properties, odor characteristics, physiological effects on the body, and know concentration levels of toxic material or airborne radioactive level;
- How improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- How to use the respirator in emergency situation;
- How to inspect, don, doff, use and check the seal of the respirator;
- Procedures for maintenance and storage of the respirator; and
- How to recognize the medical signs and symptoms that may limit or prevent the effective use of respirators.

5.5 Training documentation shall be maintained for all workers who are assigned work that requires the use of a respirator.

5.6 Re-training is administered annually and when the following situations occur:

- Changes in the workplace or the type of respirator render previous training obsolete;
- Inadequacies in the respirator wearer's knowledge or use of the respirator indicate that the worker has not retained the requisite understanding or skill; or
- Situations arise in which retraining appears necessary to ensure safe respirator use.

6.0 Auditing

6.1 BPWE Program Evaluation

A. It is not expected that BPWE personnel will perform many tasks that require respirator use therefore it is recommended that each task requiring respirator use be monitored closely.

6.2 Contractor Program Evaluation

A. Infrequent tasks requiring the use of respirators will most often be performed by contractors who are accustomed to and trained in the use of respirators.

B. In these situations the contractor's respiratory program must be evaluated and found to be equal to or more effective than this respiratory protection program.

C. Facility / Project Managers shall obtain information from the contractor certifying employee training, medical evaluation, and fit testing which meets the requirements of this procedure.

6.3 Content of Program Evaluations

A. Program administration,
B. Medical evaluations of employees required to use respirators,
C. Procedures for selecting respirator for use in the workplace,
D. Training of respirator wearers in the respiratory hazards to which they are potentially exposed during routine and emergency situations,
E. Initial and annual fit testing for tight-fitting respirators,
F. Procedures for proper use of respirators in routine and reasonable foreseeable emergency situations,
G. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and maintaining respirators,
H. Procedures for regularly evaluating the effectiveness of the program,
I. Voluntary use procedures, and
J. Other applicable observations.

6.4 The requirements called for in this procedure are subject to periodic inspection by the BP site manager and annually during the BPWE site specific audit.

6.5 This procedure shall be audited (and updated as necessary) every three years.

7.0 Acronyms and Definitions

Acronyms Table

Acronym	Definition
ANSI	American National Standards Institute
HAZWOPER	Hazardous Waste Operations and Emergency Response
HSSE	Health, Safety, Security and Environment
IDLH	Immediately Dangerous to Life and Health
JSEA	Job Safety Environmental Analysis
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
QNFT	Quantitative Fit Testing
SCBA	Self-Contained Breathing Apparatus

Definitions Table

Term	Definition
Administrative Controls	Methods of controlling employee exposures to contaminants by job rotation, work assignment, or time periods away from the contaminant.
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	A respirator that supplies the users 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	A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
Contractors	Contractors refer to all third party groups performing work on BPWE sites.
Dust	Solid particles generated by handling, crushing, or grinding organic or inorganic material.
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.
Engineering Controls	Methods of controlling employee exposures by modifying the source or reducing the quantity of contaminants released into the work environment.
Escape-only respirator	A respirator intended to be used only for emergency exit.
Filter facepiece (dust	A negative pressure particulate respirator with a filter as an integral part of the

Respiratory Protection

Term	Definition
mask)	facepiece or with the entire facepiece composed of the filtering medium.
Filter or air purifying element	A component used in respirators to remove solid or liquid aerosols from the inspired air.
Fume	Airborne solid particles that result from heating a solid material.
Gas	A state of matter in which the material has very low density and viscosity, can expand and contract in response to changes in temperature and pressure, easily diffuses into other gases, and that uniformly distributes throughout any container.
High efficiency particulate air (HEPA) filter	A filter that is at least 99.97% efficient in removing monodispersed particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100 and P100 filters.
Hood	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)	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.
Line Management	Employees whose primary responsibility is the direction and oversight of other employees. May also be referred to as Manager, Supervisor, Superintendent, Foreman, or Lead Person.
Mist	Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state such as splashing.
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%.
PLHCP	A physician or other licensed health care professional.
Positive pressure respirator	A respirator in which the pressure inside the respiratory 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.
Respiratory Program Administrator	An individual designated by a Site HSSE Manager who is qualified to recognize respiratory hazards and effectively implement the controls required by this procedure. Referred to in this procedure as Program Administrator.

Respiratory Protection

Term	Definition
Project Management Office Team (PMO)	The Project Management Office Team consists of the personnel who provide project management and construction services to BPWE. For the purpose of this Procedures, the PMO Team will be referred to as PM.
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.
Radionuclides	An atom capable of spontaneously emitting radiation.
Respiratory inlet covering	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 mouthpiece respirator with nose clamp.
Self contained breathing apparatus (SCBA)	A supplied-air respirator for which the breathing air source is designed to be carried by the user.
Supplied air respirator (SAR) or air line respirator	A supplied-air respirator for which the source of breathing air is not designed to be carried by the user.
Tight fitting facepiece	A respiratory inlet covering that forms a complete seal with the face.
User seal check	An action conducted by the respirator user to determine if the respirator is properly seated to the face.
Vapor	The gaseous form of a substance, which is normally in the solid or liquid state.

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