

Manual Section 7	Issue Date 11/15/10	Revision Date 01/01/24	Policy Number LLCP-104
	Respiratory Protection		

Purpose

The purpose of this procedure is to insure the protection of all Company employees from respiratory hazards through the proper use of respirators. In this Respiratory Protection plan, hazard assessment and selection of proper respiratory PPE is conducted in the same manner as for other types of PPE. In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators, training and medical evaluations shall be instituted and used; provided by the Company at no cost to the employee.

Scope

All LLC Companies including, Blanchard Industrial, LLC, GIS Engineering, LLC, Grand Isle Shipyard, Inc., and GWIS, Mack Steel, NuWave, Sun Industries, Valvemax, Discovery Industries, Inc.; hereafter identified as “Company”.

Applicable Standards

Title 29 Code of Federal Registration (CFR) 1910.134 – Respiratory Protection.

Responsibilities

All employees shall follow the requirements of the Respiratory Protection Program.

Management

- Implement the requirements of this program
- Provide a selection of respirators as required
- Enforce all provisions of this program
- Appoint a *Specific Designated* individual to conduct the respiratory protection program

Program Administrator

- Review sanitation/storage procedures
- Ensure respirators are properly stored, inspected and maintained
- Monitor compliance for this program
- Provide training for “Affected Employees”
- Review compliance and ensure monthly inspection of all respirators
- Provide respirator fit testing

Designated Occupational Health Care Provider

- Conduct medical aspects of program

Program Administrator

The Company has designated the HSE Director as the program administrator and is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer and oversee the respiratory protection program and conduct the required evaluations of program effectiveness.

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Voluntary Use of Respirators is Prohibited

OSHA requires that voluntary use of respirators, when not required by the company, must be controlled as strictly as possible under required circumstances. To prevent violations of the Respiratory Protection Standard, employees are not allowed voluntary use of their own or company supplied respirators until the employer has determined that there is no airborne hazard that would *require* the use of a respirator of any type. Exception: Employees whose only use of respirators involves the voluntary use of filtering (non-sealing) face pieces (dust masks).

Program Evaluation

Evaluations of the workplace are necessary to ensure that the written respiratory protection program is being properly implemented. This includes consulting with employees to ensure that they are using the respirators properly. Evaluations shall be conducted as necessary to ensure that the provisions of the current written program are being effectively implemented and that it continues to be effective.

Program evaluation will include discussions with employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment shall be corrected. Factors to be assessed include, but are not limited to:

- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Appropriate respirator selection for the hazards to which the employee is exposed;
- Proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

All information evaluated shall be documented on the annual Management System audit and filed in the Corporate electronic filing system.

Record Keeping

The Company is required to establish and retain written information regarding medical evaluations, fit testing, and the respirator program. Records of medical evaluations required by this section must be retained and made available in accordance with 29 CFR 1910.1020 where and by whom the records are kept. This information will facilitate employee involvement in the respirator program, assist the Company in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.

Training and Information

Effective training for employees who are required to use respirators is essential. The training must be comprehensive, understandable, and recur annually or more often, if necessary. Training will be provided prior to requiring the employee to use a respirator in the workplace. The training shall ensure that each employee can demonstrate knowledge of at least the following:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator
- Limitations and capabilities of the respirator
- How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions

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- How to inspect, put on and remove, use, and check the seals of the respirator
- What the procedures are for maintenance and storage of the respirator
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators
- The general requirements of this program

Retraining shall be conducted annually and when

- 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
- Other situations arise in which retraining appears necessary to ensure safe respirator use

Training will be conducted by the Corporate Industrial Training Education Center, ITEC who has been trained by a third party compliance corporation contracted by the Company's insurance carrier.

Training Is Divided into the Following Sections

- Classroom Instruction
 - Overview of the Company Respiratory Protection Program & OSHA Standard
 - Respiratory protection safety procedures
 - Respirator selection
 - Respirator operation and use
 - Why the respirator is necessary
 - How improper fit, usage, or maintenance can compromise the protective effect.
 - Limitations and capabilities of the respirator.
 - How to use the respirator effectively in emergency situations, including respirator malfunctions
 - How to inspect, put on and remove, use, and check the seals of the respirator.
 - What the procedures are for maintenance and storage of the respirator.
 - How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.
 - Change out schedule and procedure for air purifying respirators.
- Fit testing
 - For each type and model of respirator used
- Hands-on respirator training
 - Respirator Inspection
 - Respirator cleaning and sanitizing
 - Record keeping
 - Respirator storage
 - Respirator fit check
 - Emergencies

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Basic Respiratory Protection Safety Procedures

- Only authorized and trained employees may use respirators. Those employees may use only the respirator that they have been trained on and properly fitted to use.
- Only physically qualified employees may be trained and authorized to use respirators. A pre-authorization and annual certification by a qualified physician will be required and maintained. Any changes in an employee's health or physical characteristics will be reported to the Occupational Health Department and will be evaluated by a qualified physician.
- Only the proper prescribed respirator or SAR/SCBA may be used for the job or work environment. Air cleansing respirators may be worn in work environments when oxygen levels are between 19.5 percent to 23.5 percent and when the appropriate air cleansing canister, as determined by the manufacturer and approved by NIOSH or MESA, for the known hazardous substance is used. SCBAs will be worn in oxygen deficient and oxygen rich environments (below 19.5 percent or above 23.5 percent oxygen).
- Employees working in environments where a sudden release of a hazardous substance is likely will wear an appropriate respirator for that hazardous substance (example: Employees working in an ammonia compressor room will have an ammonia APR respirator on their person.).
- Only SCBAs will be used in oxygen deficient environments, environments with an unknown hazardous substance or unknown quantity of a known hazardous substance or any environment that is determined "Immediately Dangerous to Life or Health" (IDLH).
- Employees with respirators loaned on "permanent check out" will be responsible for the sanitation, proper storage and security. Respirators damaged by normal wear will be repaired or replaced by the company when returned.
- The last employee using a respirator and/or SCBA that are available for general use will be responsible for proper storage and sanitation. Monthly, and after each use, all respirators will be inspected with documentation to assure its availability for use.
- All respirators will be located in clean, convenient and sanitary locations.
- In the event that employees must enter a confined space, work in environments with hazardous substances that would be dangerous to life or health, should an RPE fail (a SCBA is required in this environment), and/or conduct a HAZMAT entry, a "buddy system" detail will be used with a safety watchman with constant voice, visual or signal line communication. Employees will follow the established Emergency Response Program and/or Confined Space Entry Program when applicable.
- Management will establish and maintain surveillance of jobs and work place conditions and degree of employee exposure or stress to maintain the proper procedures and to provide the necessary RPE.
- Management will establish and maintain safe operation procedures for the safe use of RPE with strict enforcement and disciplinary action for failure to follow all general and specific safety rules. Standard Operation Procedures for general RPE use will be maintained as an attachment to the Respiratory Protection Program and Standard Operation Procedures for RPE use under emergency response situations will be maintained as an attachment to the Emergency Response Program.

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Selection of Respirators

The Company has evaluated the respiratory hazard(s) in each workplace, identified relevant workplace and user factors and has based respirator selection on these factors. Also included are estimates of employee exposures to respiratory hazard(s) and an identification of the contaminant's chemical state and physical form. This selection has included appropriate protective respirators for use in IDLH atmospheres, and has limited the selection and use of air-purifying respirators. All selected respirators are NIOSH-certified. If you wish to obtain a list of applicable respirators, please contact the Corporate HSE department.

Filter Classifications - These classifications are marked on the filter or filter package

N-Series: Not Oil Resistant

- Approved for non-oil particulate contaminants
- Examples: dust, fumes, mists not containing oil

R-Series: Oil Resistant

- Approved for all particulate contaminants, including those containing oil
- Examples: dusts, mists, fumes
- Time restriction of 8 hours when oils are present

P-Series: Oil Proof

- Approved for all particulate contaminants including those containing oil
- Examples: dust, fumes, mists
- See manufacturer's time use restrictions on packaging

Respirators for IDLH Atmospheres

The following respirators will be used in IDLH atmospheres:

- A full face piece, pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full-face piece, pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.
- Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

Respirators for Atmospheres that Are Not IDLH

- The respirators selected shall be adequate to protect the health of the employee and ensure compliance with all other OSHA statutory and regulatory requirements, under routine and reasonably foreseeable emergency situations. The respirator selected shall be appropriate for the chemical state and physical form of the contaminant.

Identification of Filters & Cartridges

All filters and cartridges shall be labeled and color-coded with the NIOSH approval label. The label must not be removed and remain legible. A change out schedule for filters and canisters has been developed to ensure these elements of the respirators remain effective.

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Respirator Filter & Canister Replacement

An important part of the Respiratory Protection Program includes identifying the useful life of canisters and filters used on air-purifying respirators. Each filter and canister shall be equipped with an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant. If there is no ESLI appropriate for conditions, a change schedule for canisters and cartridges, based on objective information or data, that will ensure that canisters and cartridges are changed before the end of their service life must be in place.

Filter & Cartridge Change Schedule

A stock of spare filters and cartridges shall be maintained to allow immediate change when required or desired by the employee.

Cartridges Shall Be Changed Based on the Most Limiting Factor below

- Prior to expiration date
- Manufacturer's recommendations for the specific use and environment
- After each use
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- Cartridges shall remain in their original sealed packages until needed for immediate use

Filters Shall Be Changed on the Most Limiting Factor below

- Prior to expiration date
- Manufacturer's recommendations for the specific use and environment
- When requested by employee
- When contaminate odor is detected
- When restriction to air flow has occurred as evidenced by increase effort by user to breathe normally
- When discoloring of the filter media is evident
- Filters shall remain in their original sealed package until needed for immediate use.

Respiratory Protection Schedule by Job and Working Condition

Each Company project maintains a respiratory protection schedule by job and working conditions. This schedule is provided to each authorized and trained Employee. The schedule provides the following information:

- Job/Working Conditions
- Work Location
- Hazards Present
- Type of Respirator or SCBA Required
- Type of Filter/Canister Required
- Location of Respirator or SCBA
- Filter/Cartridge change out schedule

The schedule will be reviewed and updated at least annually and whenever any changes are made in the work environments, machinery, equipment or processes, or if different respirator models are introduced or existing models are removed.

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Permanent Respirator Schedule Assignments

Each person who engages in welding will have his/her own company provided dust-mist-fume filter APR. This respirator will be worn during all welding operations taking place in enclosed areas and anytime toxic fumes could be released during the welding operation.

Physical and Medical Qualifications

Records of medical evaluations must be retained and made available in accordance with 29 CFR 1910.1020.

Medical Evaluation Required

Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. We provide a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace.

Medical Evaluation Procedures

The employee will be provided a medical questionnaire by the Corporate Clinic. Records of the questionnaire shall be maintained in each employee's file and the Corporate Clinic.

Follow-Up Medical Examination

The Company shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any question among questions in Part B of the questionnaire or whose initial medical examination demonstrates the need for a follow-up medical examination. The follow-up medical examination shall include any medical tests, consultations, or diagnostic procedures that the physician deems necessary to make a final determination.

Administration of the Medical Questionnaire and Examinations

The medical questionnaire and examination shall be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The medical questionnaire shall be administered in a manner that ensures that the employee understands its content. The company shall provide the employee with an opportunity to discuss the questionnaire and examination results with the physician.

Supplemental Information for the Physician

The following information must be provided to the physician before the physician makes a recommendation concerning an employee's ability to use a respirator:

- The type and weight of the respirator to be used by the employee
- The duration and frequency of respirator use (including use for rescue and escape)
- The expected physical work effort
- Additional protective clothing and equipment to be worn
- Temperature and humidity extremes that may be encountered
- Any supplemental information provided previously to the physician regarding an employee need not be provided for a subsequent medical evaluation if the information and the physician remain the same

The Company Physician has been provided a copy of the written respiratory protection program and a copy of the OSHA Standard 1910.134.

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Medical Determination

In determining the employee's ability to use a respirator, the Company shall obtain a written recommendation regarding the employee's ability to use the respirator from the physician. The recommendation shall provide only the following information:

- Any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator
- The need, if any, for follow-up medical evaluations
- A statement that the physician has provided the employee with a copy of the physician's written recommendation
- If the respirator is a negative pressure respirator and the physician finds a medical condition that may place the employee's health at increased risk if the respirator is used, the Company shall provide an APR if the physician's medical evaluation finds that the employee can use such a respirator. If a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the company is no longer required to provide an APR.

Additional Medical Evaluations

As a minimum, the Company shall provide additional medical evaluations that comply with the requirements of this section if:

- An employee reports medical signs or symptoms that are related to ability to use a respirator
- A physician, supervisor, or the respirator program administrator informs the Company that an employee needs to be reevaluated
- Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation
- A change occurs in workplace conditions (e.g., physical work effort, protective clothing, and temperature) that may result in a substantial increase in the physiological burden placed on an employee.

Respirator Fit Testing

Before an employee is required to use any respirator with a negative or positive pressure tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. We shall ensure that an employee using a tight-fitting face piece respirator is fit tested prior to initial use of the respirator, whenever a different respirator face piece (size, style, model or make) is used, and at least annually thereafter. The company has established a record of the qualitative and quantitative fit tests administered to employees including:

- The name or identification of the employee tested
- Type of fit test performed
- Specific make, model, style, and size of respirator tested
- Date of test
- The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs

Additional fit tests will be conducted whenever the employee reports, or the company, physician, supervisor, or program administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

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If after passing a QLFT or QNFT, the employee notifies the company, program administrator, supervisor, or physician that the fit of the respirator is unacceptable, the employee shall be given a reasonable opportunity to select a different respirator face piece and to be retested.

Types of Fit Tests

The fit test shall be administered using an OSHA-accepted QLFT or QNFT protocol. The OSHA-accepted QLFT and QNFT protocols and procedures are contained in Appendix A of OSHA Standard 1910.134.

- QLFT may only be used to fit test negative pressure air-purifying respirators that must achieve a fit factor of 100 or less.
- If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than 100 for tight-fitting half face pieces, or equal to or greater than 500 for tight-fitting full face pieces, the QNFT has been passed with that respirator.
- Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators shall be accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.
- Qualitative fit testing of these respirators shall be accomplished by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.
- Quantitative fit testing of these respirators shall be accomplished by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. This requirement shall be accomplished by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a means of sampling air from inside the face piece.
- Any modifications to the respirator face piece for fit testing shall be completely removed, and the face piece restored to NIOSH approved configuration, before that face piece can be used in the workplace.

Fit test records shall be retained for respirator users until the next fit test is administered. Written materials required to be retained shall be made available upon request to affected employees.

Respirator Operation and Use

Respirators will only be used following the respiratory protection safety procedures established in this program. The Operations and Use Manuals for each type of respirator will be maintained by the Program Administrator and be available to all qualified users. Surveillance by the direct supervisor shall be maintained of work area conditions and degree of employee exposure or stress. When there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness, we shall reevaluate the continued effectiveness of the respirator.

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For Continued Protection of Respirator Users

The following general use rules apply:

- Users shall not remove respirators while in a hazardous environments
- Respirators are to be stored in sealed containers out of harmful atmospheres
- Store respirators away from heat and moisture
- Store respirators such that the sealing area does not become distorted or warped
- Store respirators such that the face pieces are protected

Face Piece Seal Protection

The company does not permit respirators with tight-fitting face pieces to be worn by employees who have:

- Facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function; or
- Any condition that interferes with the face-to-face piece seal or valve function such as dentures or facial deformities.

If an employee wears corrective glasses, goggles or other personal protective equipment, we shall ensure that such equipment is worn in a manner that does not interfere with the seal of the face piece to the face of the user.

Continuing Effectiveness of Respirators

The company shall ensure the following conditions under which employees must leave the respirator use area:

- To wash their faces and respirator face pieces 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 face piece
- To replace the respirator or the filter, cartridge, or canister elements.

If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the Company will replace or repair the respirator before allowing the employee to return to the work area.

Procedures for IDLH Atmospheres

For all IDLH atmospheres, the Company shall ensure that:

- One employee or, when needed, more than one employee, is located outside the IDLH atmosphere
- Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere
- The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue
- The Company is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue

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Employee(s) Located outside the IDLH Atmospheres

Employees will be equipped with:

- Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:
 - Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
 - Equivalent means for rescue where retrieval equipment is not required.

Cleaning and Disinfecting

The Company shall provide each respirator user with a respirator that is clean, sanitary, and in good working order.

- Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition
- Respirators issued to more than one employee shall be cleaned and disinfected before being worn by different individuals
- Respirators maintained 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.

Cleaning and storage of respirators assigned to specific employees is the responsibility of that employee.

Respirator Inspection

All respirators/SCBAs, both available for "General Use" and those on "Permanent Check-out", will be inspected after each use and at least monthly. Should any defects be noted, the respirator/SCBA will be taken to the Program Administrator. Damaged respirators will be either repaired or replaced. The inspection of respirators loaned on "Permanent Check-out" is the responsibility of that trained employee.

Respirators shall be inspected as follows:

- All respirators used in routine situations shall be inspected before each use and during cleaning
- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use

Respirator inspections include the following:

- A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters.
- Check of elastomeric parts for pliability and signs of deterioration.
- Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The Program Administrator shall determine that the regulator and warning devices function properly.

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For emergency use respirators, these additional requirements apply:

- Certify the respirator by documenting the date the inspection was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- Ensure that this information is provided on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.

Respirator Storage

Respirators are to be stored as follows:

- All 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 face piece and exhalation valve.

Emergency Respirators

These respirators shall be:

- Kept accessible to the work area;
- Stored in compartments or in covers that are clearly marked as containing emergency respirators
- Stored in accordance with any applicable manufacturer instructions.

Repair of Respirators

Respirators that fail an inspection or are otherwise found to be defective will be removed from service to be discarded, repaired or adjusted in accordance with the following procedures:

- Repairs or adjustments to respirators are to be made only by persons appropriately trained to perform such operations and shall use only the respirator manufacturer's NIOSH-approved parts designed for the respirator;
- Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and
- Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

Breathing Air Quality and Use

The Company shall ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration accords with the following specifications:

- Compressed and liquid oxygen shall meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
- Compressed breathing air shall meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
 - Oxygen content (v/v) of 19.5-23.5%;
 - Hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less;
 - Carbon monoxide (CO) content of 10 PPM or less;
 - Carbon dioxide content of 1,000 PPM or less; and
 - Lack of noticeable odor.

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- Compressed oxygen will not be used in atmosphere-supplying respirators that have previously used compressed air
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution
- Cylinders used to supply breathing air to respirators meet the following requirements
- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178)
- Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air
- Moisture content in breathing air cylinders does not exceed a dew point of -50°F or (-45.6°C) at 1 atmosphere pressure
- Breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing airlines.
- Breathing gas containers shall be marked in accordance with the NIOSH respirator certification standard, 42 CFR Part 84.

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THE FOLLOWING CHARTS ARE FOR EMPLOYEE USE IN THE SELECTION OF RESPIRATORS

Class	Type	Used for....
Air Purifying * Users must be fit-tested for this class of respirators * The cartridges must be selected based on the contaminant in the air.	Half-mask particulate	Nuisance dust, mists, paint spray, and metal fumes.
	Half-mask dual cartridge	Dust, fumes, mists, paint spray, organic vapors, acid gases, pesticides
	Full face dual cartridge	Dust, fumes, mists, paint spray, organic vapors, acid gases, and pesticides
Air Supplied	Egress Unit	Emergency escape only (available with 5 or 10 minute air cylinder)
	Self-contained Breathing Apparatus (SCBA)	Emergency response (available with a 30 minute or one hour capacity cylinder) NOTE: It is not intended for long continuous use.
	Airline Unit	Long continuous periods, but may not be used in atmospheres considered immediately dangerous to life and health (IDLH)
	Airline respirator with auxiliary self-contained air supply	Long continuous period, and can be used in atmospheres considered immediately dangerous to life or health (IDLH)

Atmospheric contaminants to be protected against	Colors assigned
Acid gases	White
Hydrocyanic acid gas	White with ½-inch green stripe completely around the canister near the bottom
Chlorine gas	White with ½-inch yellow stripe completely around the canister near the bottom
Organic vapors	Black
Ammonia gas	Green
Acid gases and ammonia gas	Green with ½-inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue
Acid gases and organic vapors	Yellow
Hydrocyanic acid gas and chloropicrin vapor	Yellow with ½-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases	Brown
Radioactive materials, excepting tritium and noble gases	Purple (Magenta)
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors	Canister color for contaminant, as designated above, with ½-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with ½-inch gray stripe completely around the canister near the top.

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Mask Type	PF
Quarter-Mask, air purifying	5
Half-Mask, air purifying	10
Full-Face, air purifying	100
Powered air-purifying: dust, fume, mist filter	100
Powered air purifying; high efficiency filter	3000(HEPA)
Powered air purifying; chemical cartridge (3000 or maximum use limit of cartridge)	3000
Airline, demand, full-face piece	100
Airline, positive pressure without escape provision(may be used in any concentration below IDLH)	+10,000
Airline, positive pressure without escape provision (approved for IDLH)	100
SCBA, demand, full face piece	100
SCBA, positive pressure(approved for IDLH)	+10,000

Hazardous Atmospheres

The following is a list of hazardous atmospheres that will require the use of respiratory protection:

- Flammable gases above 10% of the lower flammable limit, vapors or mists.
- Airborne combustible dusts at a concentration that meets or exceeds its lower flammable limit;
- Atmospheric oxygen concentrations below 19.5% and above 23.5%;
- Atmospheric concentrations containing a toxic substance above the OSHA or ACGIH recommended exposure levels, whichever is most stringent;
- Any other atmospheric condition that is immediately dangerous to life and health (IDLH).