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<b>Morenci Safe Production Standard</b>	<b>Standard # 5.1.4</b>	
	OHSAS 18001:2007	4.4.6
<b>Respiratory Protection Program</b>	Revision #	04
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	Document Owner	Industrial Hygiene
<b>Approvals:</b>		
<i>Health &amp; Safety Manager: N/A</i>	<i>General Manager, Administration: 12/10/2012</i>	

**1.0 PURPOSE:**

The purpose of the Respiratory Protection Program is to control occupational diseases caused by inhaling air containing harmful contaminants, the primary objective of the program will be to prevent atmospheric contamination. This will be accomplished using feasible engineering control methods which include, but are not limited to: enclosure or confinement of the operation; general and local exhaust ventilation; or the substitution of less toxic materials. When effective engineering controls are not feasible, or while they are being instituted, appropriate administrative control methods (e.g., rotation of personnel doing the work etc.), or PPE shall be used as stated in this program.

**2.0 SCOPE:**

The policies and procedures outlined in this program apply to all Freeport-McMoRan (FMI) Morenci Operations employees and contractor personnel who may come in contact with airborne contaminants during normal work activities, including operations, maintenance and administration.

**3.0 TERMS, DEFINITIONS AND ABBREVIATIONS**

**3.1 Definitions**

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

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

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

**Controlled Negative Pressure (CNP)** The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator face piece to generate and then maintain a constant negative pressure inside the face piece.

**Demand respirator** means an atmosphere-supplying respirator that admits breathing air to the face piece only when a negative pressure is created inside the face piece by inhalation.

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

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

**End-of-service-life indicator (ESLI)** means a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.

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

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

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

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

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

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

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

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

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

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

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

**Optional respirator user** is an employee that uses a respirator in their work area for protection against nuisance levels of air concentrations.

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

**Oxygen enriched atmosphere** means an atmosphere with oxygen content more than 23 % by volume.

**Permissible exposure Limit (PEL)** An exposure limit that is published and enforced that allows an employee to be exposed to maximum allowable limit per shift without causing adverse effects.

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

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

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

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

**Required respirator user** is an employee that due to the exposure potential of their work area must wear a respirator to minimize that exposure.

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

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

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

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

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

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

**Threshold Limit Value (TLV)** The level where the first effects occur, therefore, the must not be exceeded with proper controls.

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

**Time Weighted Average (TWA)** Average concentration for a conventional 8-hour workday and a 40-hour workweek of airborne toxic materials without adverse effect.

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

### 3.2 Abbreviations

**CNP**-Controlled Negative Pressure

**ESLI**-End-of Service-Life Indicator

**HEPA**-High-Efficiency Particulate Air (filter)

**IDLH**-Immediately Dangerous to Life or Health

**PAPR**-Powered Air-Purifying Respirator

**PEL**-Permissible Exposure Level

**PLHCP**-Physician or other Licensed Health Care Professional

**QLFT**-Qualitative Fit Test

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**QNFT**-Quantitative Fit Test

**SAR**-Supplied Air Respirator

**SCBA**-Self-Contained Breathing Apparatus

**TLV**-Threshold Limit Value

**TWA**-Time-Weighted Average

#### 4.0 RESPONSIBILITIES:

**4.1 Management and Supervision** will ensure compliance with all provisions of this program including:

- Personnel are properly trained in the use, maintenance and storage of respirators (see appendices A, B, D, and F);
- All employees who have been issued respirators have been successfully fit tested (see appendices A, D, and G).
- Employees must not have facial hair that interferes with the face to face piece seal and proper function of the respirator (see appendix D). Unacceptable facial hair includes but is not limited to 5 o'clock shadow, beards, handlebar mustaches, and goatees. Facial hair other than a short, well-kept mustache that is above the corners of the mouth is not permitted for those employees included in the respiratory protection program. Employees must meet acceptable standards before they are allowed to begin work in respirator required areas.
- All employees receive medical evaluations and certification before they are fit tested and issued respirators (see appendix C);
- Respirators are properly and consistently worn (see appendix A, B, D, E, and F); and
- Informing the Divisional Health and Safety Specialist and/or Industrial Hygiene Department of any changes in workplace or employees conditions that may affect respirator effectiveness.

**4.2 Health and Safety Department** will have the following responsibilities:

- Hazard Evaluation: Potential employee exposure to air contaminants will be determined through the use of Material Safety Data Sheets (MSDS), processes safety analysis and validated monitoring procedures. Appropriate respiratory protection will be based on these hazard evaluations. The Industrial Hygiene Department will conduct employee exposure monitoring and document all determinations. It is to be noted that there are sub-categories of certain similar exposure groups where a respirator is not required to perform

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certain tasks within that exposure group. An exemption for these groups and/or employees can be made on a case by case basis after an evaluation has been performed by the Industrial Hygiene Department(see appendix H).

- **Respirator Selection:** Only NIOSH-approved respirators will be selected and worn in accordance with ANSI Z-88.2-1992 and 30 CFR 72.710.
- **Employee Training:** Training will be conducted as needed for required respirator users. Topics will include workplace hazards, respirator use, and fit, limitations of respirator, inspection, maintenance, and storage. The training shall be conducted by qualified personnel. The Divisional Health and Safety Specialist or Industrial Hygienist will appoint the individual who will be documenting all training (see appendices D and E).
- **Program Evaluation:** Annual evaluation of program compliance and effectiveness will be conducted by the Industrial Hygiene Team (see appendix F).
- **Records:** The Industrial Hygiene Department will maintain records relating to the respiratory protection program. Occupational Medicine, located at the Gila Health Resources, will maintain medical records associated with respirator use.

**4.3 Departmental Crews** will, under the direction of management and supervision, comply with all provisions of this program including:

- Qualified personnel will conduct annual training for workplace hazards, respirator use, fit, limitations, inspection, maintenance, and storage. All training will be documented (see appendix F);
- Ensure the designated respiratory protection is used in accordance with instructions provided during training and fit testing (see appendices D and F);
- Ensure no facial hair exists that could interfere with the respirator face to face piece seal of the respirator, and they are in compliance the policies set forth in this program and during training (see appendices D and F);
- Perform a positive and negative pressure fit check before each use (see appendix A);
- Adhere to the training instructions on proper storage, cleaning, disinfecting and/or replacement (see appendices B and D);
- Daily inspection and maintenance to ensure the respirator functions properly.

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- Notify supervision of conditions that may affect respirator fit; and
- Notify supervision of negative symptoms that may be associated with respirator use.

**4.4 Occupational Medicine (Gila Health Resources)** under the direction of an Occupational Medicine Physician shall comply with the provisions of this program including:

- Perform medical evaluations to determine the employee's ability for respirator use.
- Document and maintain the evaluations and certification as a part of the employee's occupational medical record (see appendix C); and
- Written notification to the FMI Morenci Operations HR Employment Department regarding the employee's clearance to wear a respirator.

**4.5 Contractors** will ensure compliance with all provisions of the program including:

- Ensure their employees are provided with appropriate respirators, required training, medical qualifications, and fit testing prior to respirator use on FMI Morenci Operations property.
- Conduct hazard evaluations to determine appropriate respiratory protection. In the event that the area is deemed respirator required, the contractor can contact the Divisional Health and Safety Specialist or Industrial Hygienist for the proper requirements.
- Ensure all respiratory protection activities are in accordance with regulatory requirements and FMI Morenci Operation's policies.

## **5.0 STANDARDS OF PERFORMANCE**

### **5.1 Fit Testing**

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The individual who uses a tight-fitting respirator will perform a seal check to ensure that an adequate seal is achieved **each time** the respirator is placed on the face. Both the positive and negative pressure checks listed in Appendix A of this program or the respirator manufacturer's recommended user seal check method will be used. User seal checks are not to be substitutes for qualitative or quantitative fit tests.

Those individuals enrolled in this program will receive fit testing annually by a qualified person using either quantitative or qualitative methods, accepted methods for fit testing are outlined in Appendix G of this program. All other employees wearing respirators will receive fit testing as needed by a qualified person using either quantitative or qualitative methods.

All employees required to use any respirator with a negative or positive-pressure tight-fitting face piece, will be fit tested with the same make, model, style, and size of respirator that will be used prior to initial use and during future fit tests thereafter.

Additional fit tests will be conducted whenever the employee reports, or the PLHCP, supervisor, or Industrial Hygiene Department 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.

Employees with facial hair that may interfere with the face to face piece seal or are not in compliance with the program policies will not be fit-tested until the facial hair has been removed.

Employees using a tight-fitting face piece respirator must pass a quantitative or qualitative fit test performed by Gila Health Resources or the FMI Industrial Hygiene Department.

## 5.2 Respiratory Hazard Evaluation

Prior to respirator selection, and periodically during respirator use, air monitoring will be conducted, as necessary, to ensure that proper controls and protection are provided. Personal and area monitoring, as well as direct-reading methodology may be utilized in these evaluations. Additional resources used to determine the nature and potential exposure concentration of the chemical contaminant includes:

- Material Safety Data Sheets (MSDS);
- Standard Operating Procedures (SOP) or Job Safety Analysis (JSA)
- Any other pertinent sources of information (Supervisors and Health and Safety Specialists) including professional judgment.



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Some considerations for respirator selection include:

- Type of hazard:
  - a) Oxygen deficient atmospheres;
  - b) Toxic or corrosive substances;
  - c) Gases and vapors; and
  - b) Dusts, mists, or fumes.
- Physical and chemical properties;
- Physiological effects on the body;
- Actual concentration of toxic material
- Established permissible time-weighted average/or peak concentration of a toxic material; and
- Whether the hazardous material can reach a concentration that is immediately dangerous to life or health (IDLH).

### 5.3 Respirator Selection

Respirators are only appropriate under specific conditions and limitations; therefore, proper selection and use of respirators is essential for adequate personnel protection. Information gathered during Hazard Evaluation will be used in accordance with applicable regulatory exposure standards to determine specific respirator selection. Whenever conditions arise in which respiratory protection is anticipated and a determination has not been made, the Industrial Hygiene Department will be consulted immediately. Only respirators approved by NIOSH and the Morenci Health and Safety Department will be used in areas where respiratory protection is required. Any modification to a respirator that is not authorized by the approval agency voids the approval and prohibits its use.

The use of a paper dust masks are prohibited at the Freeport-McMoRan Copper & Gold Morenci Operations in any area that requires a respirator for protection.

If a respiratory hazard is not present, employees may be provided respirators at their request if the Industrial Hygiene Department determines that such respirator use will not in itself create a hazard. Employees which request to be issued a respirator and are not required to wear that respirator based on potential exposure must be medically qualified, have initial training, and have an initial fit test before use of the respirator.

Non-required respirator users do not need be tested annually provided there has been no change in the overall fit of the mask, no change in body weight, no change in facial structure, etc.

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### Immediately Dangerous to Life and Health (IDLH) Conditions

The following respirators will be provided for employee use in IDLH Atmospheres:

- 1. A full-face piece, pressure-demand SCBA certified by NIOSH for a minimum service life of thirty minutes; or**
- 2. 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 will be NIOSH-certified for escape from the atmosphere in which they will be used. All oxygen deficient or oxygen enriched atmospheres will be considered IDLH.

Respirators for atmospheres that are not IDLH

Appendix B lists the recommended respiratory protection for the location and specific job categories or tasks. These recommendations are based on air-sampling data or the professional judgment of the Industrial Hygiene Department.

For protection against gases and vapors, employees will be provided with:

1. An atmosphere-supplying respirator, or
2. An air-purifying respirator (change schedules for cartridges can be found in Appendix B).

For protection against particulate, employees will be provided with:

1. An atmosphere-supplying respirator; or
2. An air-purifying respirator equipped with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator equipped with a filter certified for particulate by NIOSH under 42 CFR part 84; or
3. For contaminants consisting primarily of particles of mass median aerodynamic diameters (MMAD) of at least two (2) micrometers, an air-purifying respirator equipped with any filter certified for particulates by NIOSH

### 5.4 Medical Evaluation

A Physician or a Licensed Health Care Professional (PLHCP) will conduct all medical evaluations. FMI Morenci Operations has contracted with Gila Health Resources Occupational Medicine to conduct these medical evaluations to qualify employees for respirator use.

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Medical evaluations include a medical questionnaire administered confidentially and completed during the employee's post-acceptance physical examination. The questionnaire is found in this program in Appendix C and will become part of the employee's permanent medical file located at the Gila Health Resources Clinic. If the employee has a medical evaluation at another location, the questionnaire will be sent to Gila Health Resources for review and any necessary follow-up activities.

Follow-up medical examination is provided for an employee that the PLHCP deems necessary to make a final determination of medical suitability to wear a respirator. The examination will include any medical tests, consultations, or diagnostic procedures.

When the supervisor submits a request to Human Resources for a position that will require an employee to wear a respirator, the information should be provided to Human Resources in the detailed job description. Human Resources should provide this information to the employee during the selection process.

A written recommendation regarding the employee's ability to use the respirator will be provided by the PLHCP. The recommendation will be stored in the medical records at Gila Health Resources. Recommendations may include the following:

1. 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;
2. The need, if any, for follow-up medical evaluations:
  - a) This will include any medical tests, consultations, or diagnostic procedures; and
  - b) If the follow-up medical examination finds the employee is now medically able to use a respirator, the respirator will be provided.
3. A statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendation.
4. If there are limitations in the medical determination, the PLHCP will notify the Industrial Hygiene Department to determine if a subsequent medical evaluation should be administered, employee reclassification is necessary, or if job-displacement is required.

The medical questionnaire is administered in a manner that ensures that the employee understands its content. In the event that the employee does not understand the questionnaire a Nurse or Physician should assist him/her in completing the questionnaire through verbal communication.

## 5.5 Respirator Issuance

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Only employees who have completed the confidential medical questionnaire cleared by PLHCP and issued a respirator clearance card can be properly fit tested. They will then be authorized to purchase a respirator and allowed to wear a respirator.

To be properly fit tested for a respirator, the employee must have been fit tested by a qualified person, have been trained on the proper use, maintenance, storage, and inspection of the respirator. To be properly fit tested the employee must not have any facial hair that interferes with the face to face piece seal of the respirator and must pass the quantitative/qualitative fit test protocol.

All respirator users will be required to pass a medical evaluation by the PLHCP, trained and fit tested by a qualified person, and pass a quantitative or qualitative fit test.

## 5.6 Respirator Use

Employees that have the following will not be permitted to wear tight fitting respirators if:

- a) Facial hair comes between the sealing surface of the face piece and the face or hair that interferes with valve function. Also any type of facial hair other than a short, well- trimmed mustache above the corners of the mouth is not permitted as outlined in Appendix D.
- b) Any medical condition that interferes with the face to face piece seal or valve function.
- c) Employees required to use tight-fitting respirators will be trained and instructed to perform a user seal check each time they put on the respirator using the procedures described in Appendix A.

If any type of process change occurs in engineering, administration, or personal protective equipment that affects the use of a respirator the area will be reevaluated to determine the conditions, degree of employee exposure, or stress that may affect respirator effectiveness. The front line supervisor should contact the Safety Professional and/or the Industrial Hygiene Department immediately so that a process can be reviewed.

At times during the respiratory use period an employee may need to leave the area for the following reasons:

- a) To wash their faces and respirator face pieces, as necessary, to prevent eye or skin irritation associated with respirator use;
- b) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece;
- c) To replace the respirator or the filter, or cartridge; or
- d) The employee is feeling any abnormal effects (dizziness, nausea, or irritation) while wearing the respirator you should remove them from the area and report them immediately to the supervisor.

Half faced air-purifying respirators are not used for IDLH atmospheres. If an IDLH atmosphere is suspected contact your Health and Safety Professional for confined space monitoring procedures and SCBA requirements.

## 5.7 Storage, Maintenance and Inspection

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### Cleaning and Disinfecting

Employees will be provided respirators that are clean, sanitary, and in good working order. Respirators issued for the exclusive use of an employee will be cleaned as often as necessary to maintain the respirator in a sanitary condition. Respirators for emergency use will be cleaned and disinfected after each use. Respirators used in fit testing and training will be cleaned and disinfected after each use.

Procedures for cleaning respirators and inspection:

- a) After being fit tested and authorized to wear a respirator, the user may choose to clean their personal respirator with the same hand soap they use when washing. This will reduce the potential for dermatitis to occur.
- b) Respirator cleaning should include maintenance on all types of respirators issued by FMI Morenci Operations, diaphragms, inhalation and exhalation valves, harness straps, washing, and disinfecting.

### Storage

All air purifying respirators will be stored in zip lock bags to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. The storage location will prevent deformation of the face piece and exhalation valve.

In locations where emergency respirators are stored, the Health and Safety Specialist and/or supervisor is responsible for identifying and training their team members on respirator locations, markings and conditions for use.

### Inspection

All respirators used in routine situations will be inspected before each use and during cleaning. All respirators maintained for use in emergency situations (including all SCBAs) will be inspected monthly by a qualified person in accordance with the manufacturer's recommendations, and checked for proper function before and after each use. Emergency escape-only respirators will be inspected before being carried into the workplace for use.

Respirator inspections will include the following:

1. Check of respirator function, tightness of connections, and the condition of the various parts including the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
2. A check of elastic parts for pliability and signs of deterioration.

Air and oxygen cylinders for SCBAs will be maintained in a fully charged state and will be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The regulator and warning devices will be checked for proper function.

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Respirators maintained for emergency use will be certified 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. Certification information will be provided on a tag or label that is attached to the storage compartment for the respirator, kept with the respirator, and included in inspection reports stored as paper or electronic files. This information will be maintained until replaced following the renewal of a subsequent certification.

#### Repairs

Respirators that fail an inspection or are otherwise found to be defective will be repaired using specific manufactures parts if possible or removed from service and discarded.

#### Identification of filters, cartridges, and canisters

Filters, cartridges and canisters used in the workplace will be labeled and color-coded with the NIOSH approval label and the labels will remain on the cartridge and will be legible.

### 5.8 Recordkeeping

Records of medical evaluations will be retained at Gila Health Resources Occupational Medicine. Records of fit tests will be maintained by the Industrial Hygiene and Gila Health Resources Occupational Medicine and contain:

1. The name and payroll number of the employee tested;
2. Type of fit test performed;
3. Specific make, model, and size of respirator tested;
4. Date of test;
5. Pass/fail results for QNFTs of the fit factor.

Fit test records will be retained for respirator users until the next fit test is administered. A written copy of the current respirator program will be retained by the Industrial Hygiene Department.

### 5.9 Program Evaluation

Program evaluation will be conducted on an annual basis to determine if the program is still adequate. This is done to ensure that the written respiratory protection program is being effectively implemented and that it continues to be effective.

Employees required to use respirators will be audited to ensure that they are using the respirators properly, views on the program's effectiveness and to identify problems. A copy of the respirator use audit is found in Appendix F and will include the following items in the assessment:

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

**5.10 Emergency Respirator Equipment**

Each division and department will conduct hazard specific training annually to all employees on the location of emergency respirators, their proper use, and the qualified persons that use them.

Each division and department is responsible for ensuring storage, maintenance and inspections are in accordance with the manufacturer recommendations.

Each division and department is responsible to do qualitative and quantitative assessments for the need of respirators and turn in the emergency respirator equipment to the Branch Health and Safety Team if it is no longer required due to process change or lack of qualified personnel to maintain the equipment.

**6.0 REFERENCE DOCUMENTS**

- 6.1 Mine Health and Safety Administration (MSHA)
- 6.2 Morenci Occupational Health Procedure
- 6.3 National Institute for Occupational Safety and Health (NIOSH)

**7.0 RECORDS**

Name of the Document	Responsible for Control	Records Retention
Approved copy of this Standard	Health & Safety	Permanent
Air Quality Surveys	Industrial Hygiene	Permanent
Air Quality Sampling	Industrial Hygiene	Permanent
Employee Exposure Notifications	Industrial Hygiene	Permanent

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Sampling Report	Industrial Hygiene	Permanent
Training	Industrial Hygiene	Permanent
Calibration of air monitoring equipment	Industrial Hygiene	Permanent
Program Audits	Industrial Hygiene	Audit + 10 Years

**8.0 APPENDICES**

- 8.1 APPENDIX A – Respirator User Seal Check Procedure
- 8.2 APPENDIX B – Respirator Required Areas and Change Out Schedule
- 8.3 APPENDIX C – Respirator Medical Evaluation Questionnaire
- 8.4 APPENDIX D – Respirator Training Sheet
- 8.5 APPENDIX E – Respirator Training Quiz
- 8.6 APPENDIX F – Respirator Use Audit
- 8.7 APPENDIX G – Accepted Fit Test Procedures
- 8.8 APPENDIX H – Respiratory Protection Program Exemption Form HS-SPS-5.14-001

**9.0 REVIEW AND CHANGE**

**All changes, modifications and/or revisions must be documented on the table below:**

<i>Description of Changes to this Document</i>
<b>1.0 Purpose: changed Phelps Dodge Morenci, Inc. to Freeport-McMoRan Copper &amp; Gold Morenci Operations</b>
<b>2.0 Scope: changed the word plan to program; added operations, maintenance and administration; Changed Industrial Hygiene “Team” to Industrial Hygiene “Department”; all pages</b>
<b>4.0 Responsibilities: Combined responsibilities of Departmental Crews and Employee Responsibilities, now all is under 4.3 Departmental Crews;</b>
<b>4.3 Departmental Crews: added “inspection” to the sixth bullet</b>
<b>3.1 Definitions: Revised Physician or other Licensed Health Care Professional-‘by paragraph (e) of this section’ to ‘by regulatory agencies.’</b>



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<b>3.2 Abbreviations: Added abbreviations, description and records not previously found in current program;</b>
<b>5.2 Respirator Hazard Evaluation: added the Morenci Health and Safety Department respirator approval; changed policy of dust masks to reflect only Morenci Operations;</b>
<b>Appendix B: revised the Respirator / Cartridge Required Areas and Change Out Schedule;</b>
<b>Appendix D: added the cartridge section on the training sheet</b>
<b>Appendix E: combined question 10 and 11 to reflect changes in the Change Out Schedule and Service Life Policy; Refresher checklist was changed to reflect the Change Out and Service Life Policy</b>
<b>Appendix F: added this appendix, new form</b>
<b>Appendix G: specified protocol for both the Port-a-Count and OHD 3000 methods for fit testing;</b>
<b>All other changes throughout the document involved spacing, bulleting, indenting and numbering to increase flow and cleanliness of the document.</b>
<b>10-24-2012 Corrected document number error to match share-point – S. Elias</b>
<b>12/5/2012 Added Appendix H and updated appendicies references – W. Payne</b>
<b>06/28/2013 Updated Records Table – S. Elias Rev. 04</b>

## APPENDIX A

### Respirator User Seal Check Procedure

#### Positive and Negative Pressure Checks

##### Positive pressure check

Cover the exhalation valve with the palm of one hand and exhale gently into the face piece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the face piece without any 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.

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**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 seal(s), inhale gently so that the face piece collapses slightly, and hold your 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.



Morenci Operations

## Respiratory Protection Program

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### APPENDIX B

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**Respirator / Cartridge Required Areas and Change Out Schedule**

Division	Department	Agent	Position	Time Exposure	Mask	Manufacturer	Model	Cartridge Type	Change Out	
Mine Operations	Drilling	Respirable Dust with Silica	Driller I	Daily (9-12 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
					Air	NORTH	7700			
					Purifying	MSA	420			
Mine Maintenance	Drill / Shovel / Haulage / Electrical Maintenance	Welding Fumes	Boilermaker/Welder	Daily (6-8 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
					Air	NORTH	7700			
	Fab Shop	Welding Fumes	Boilermaker/Welder	Daily (6-8 hours/shift)	Purifying	MSA	420	Particulates P100	10 days or more dependent upon how often the respirator is used	
					PAPR	3M	Versaflo			
Concentrator	Operations	Respirable Dust with Silica	Operator	Daily (8-10 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
			Trainee				NORTH			7700
			Laborer				MSA			420
	Maintenance	Respirable Dust with Silica	Mechanics	Daily (8-10 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
			Electrician				NORTH			7700
			Helper				MSA			420
Apprentice	Respirable Dust with Silica	Metallurgist	Daily (4-6 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used		
		Engineering Tech				MSA			420	
Crush & Convey	Operations	Respirable Dust with Silica	Operator	Daily (9-11 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
			Trainee				NORTH			7700
			Laborer	MSA			420			
			Metallurgist	Daily (4-6 hours/shift)			1/2 Mask			3M
	Engineer									
	Maintenance	Respirable Dust with Silica	Mechanic	Daily (8-10 hours/shift)	1/2 Mask	3M	7500	Particulates P100	10 days or more dependent upon how often the respirator is used	
Electrician			NORTH				7700			
Helper			MSA				420			
Apprentice										

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Morenci Operations

## Respiratory Protection Program

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Maintenance Services	Boiler Shop	Welding Fumes	Boilermaker/Welder	Daily (6-8 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used
	Reliability Centered Maintenance	Variable	Vibration Tech	Variable	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Variable	7 days or more dependent upon how often the respirator is used
			Tribology Tech						
Infrared Tech									
NDT Tech									
Mechanical Field Services	Welding Fumes	Boilermaker/Welder	Daily (6-8 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used	
Hydromet	SX Operations	Organic Vapors	Operator	Weekly (4-8 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Organic Vapor	7 days or more dependent upon how often the respirator is used
			Cleaner						
	EW Operations	Acid Mist	Crane Operator	Daily (9-11 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used
		Lead	Cleaner						
Maintenance	Welding Fume	Lead	Mechanic	Daily (6-8 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used
			Electrician						
			Helper						
Apprentice									
Tech Services	Acid Mist	Metallurgist	Transient/Weekly (2-4 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used	
Utility	Utility Crew	Respirable Dust with Silica	Laborer	Daily (8-10 hours/shift)	1/2 Mask Air Purifying	3M NORTH MSA	7500 7700 420	Particulates P100	10 days or more dependent upon how often the respirator is used

**Cartridge change-out is determined by how often the respirator is used, stored, and maintained.**

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**APPENDIX C**

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### **Respirator Medical Evaluation Questionnaire**



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## Respirator Medical Evaluation Questionnaire

*To the Employee:*

*Every employee who has been selected to use any type of respirator must provide the following information. Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.*

For Office Use Only:

Initial

Annual

### Part A

#### Section 1 (Mandatory)

Please Print

1. Today's date:	2. Name (Last, First, MI):
3. Payroll Number:	4. Social Security Number:
5 Division:	6. Date of Birth:
7. Department:	8. Gender:
9. Job Title:	10. Age (yrs):
11. Height (ft & in):	12. Weight (lbs):
13. Phone Number where you can be reached by the health care professional who reviews this questionnaire (include area code):	
Day:	Night:
14. Has your employer told you how to contact the health care professional who will review this questionnaire?	
YES      NO	
15. Check the type of respirator you will use (may select more than one):	16. Have you ever worn a respirator?
<input type="checkbox"/> half-face air purifying	YES      NO
<input type="checkbox"/> full-face air purifying	
<input type="checkbox"/> supplied air	If yes, what type:
<input type="checkbox"/> self-contained breathing apparatus	
<input type="checkbox"/> powered-air purifying	

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<b>Section 2 (mandatory)</b>		
Every employee who has been selected to use any type of respirator must answer questions 1 through 14. If you have filled this questionnaire out before only mark new conditions.		
Please check yes or no for the following questions:	Yes	No
1. Have you ever had seizures?		
a) If yes, when did your last seizure occur?		
b) How long have you had the disorder?		
2. Have you ever had Diabetes?		
a) If yes, have you ever been in a diabetic coma?		
b) If yes, describe the method you use for insulin.		
c) Have you ever been hospitalized for hypo or hyperglycemia?		
3. Do you experience shotness of breath because of smoking?		
4. Do you have allergic reactions that interfere with your breathing?		
a) If yes, does this interfere with wearing a respirator?		
5. Do you have claustrophobia (fear of enclosed spaces)?		
6. Do you have trouble smelling odors?		
7. Have you had any of the following pulmonary or lung problems?		
a) Asbestosis		
b) Asthma		
c) Chronic Bronchitis		
d) Emphysema		
e) Silicosis		
f) Broken ribs		
g) Tuberculosis		
h) Pneumothorax (collapsed lung)		
If yes, give date:		
i) Lung Cancer		
j) Pneumonia		
k) Any chest injuries or surgeries		
Please explain any other lung conditions:		

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8. Do you currently have any of the following symptoms of pullmonary or lung illness?		
a) Shortness of Breath		
b) Shortness of breath when walking fast on level ground, slight hill or		
c) Do you have to stop for breath when walking at your own pace on		
d) Shortness of breath that interferes with you job		
e) Coughing that produces phlegm (thick sputum)		
f) Coughing that wakes you early in the morning		
g) Coughing that occurs mostly when you are lying down		
h) Coughing up blood in the last month		
i) Wheezing		
j) Chest pain when you breathe deeply		
k) Are any of these symptoms (that you answered yes to) new?		
l) Are you out of shape or over weight?		
m) Do you have any other symptoms that you think may be related to a lung problem?		
If yes, please explain:		
9. Have you ever had any of the following cardiovascular or heart problems?		
a) Heart Attack		
b) Stroke		
c) Angina (chest pain)		
d) Heart Failure		
e) Swelling in your legs or feet (not caused by walking)		
f) Heart Arrhythmia (irregular heart beat)		
If yes, how often:		
g) High Blood Pressure		
h) Any other heart problem		
If yes, please explain:		
10. Have you ever had any of the following cardiovascular or heart		
a) Frequent pain or tightness in you chest		
b) Pain or tightness in your chest during physical activity		
c) Pain or tightness in you chest that interferes with your job		

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d) Heartburn or indigestion not related to eating		
e) In the past two years, have you notices your heart skipping or missing beats?		
If yes, does this happen frequently or rarely?		
f) Any other symptoms that you think may be related to heart or cardiovascular problems?		
11. Do you currently take medications for any of the following problems?		
a) Breathing or lung problems		
b) Heart trouble		
c) Blood pressure		
d) Seizures		
12. If you've used a respirator, have you ever had any of the following problems? (If you have never used a respirator go to question 13)		
a) Eye irritaion		
b) Skin allergies or rashes		
c) Anxiety		
d) General weakness or fatigue		
e) Any other problem that interferes with your use of a respirator?		
If yes, please explain:		
13. Do you take any prescription medications?		
If yes, please list:		
14. Would you like to talk to the health care professional that will review this questionnaire about your answers to this questionnaire?		

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<b>Part B</b>		
To be completed if requested by the health care provider		
Please check yes or no for the following questions:	YES	NO
1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal levels of oxygen?		
If yes, do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions?		
2. At work or at home, have you ever been exposed to hazardous airborne chemicals such as solvents, vapors, dusts or fumes?		
If yes, to the best of your knowledge please list the chemicals:		
3. Have you ever worked with any of the materials or conditions listed below?		
a) Asbestos		
b) Silica		
c) Tungsten/Cobalt (when grinding or welding this material)		
d) Beryllium		
e) Alluminum		
f) Coal mining		
g) Iron		
h) Tin		
i) Dusty environments		
j) Any other potentially hazardous exposures?		
If yes, please list:		
4. Have you ever been in the military?		
If yes, were you exposed to biological or chemical agents during combat or training?		
5. Have you ever worked on a Hazardous Material (HAZMAT) team?		
6. Other than medications for breathing or lung problems, heart trouble, blood pressure and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications)?		
If yes, please list:		

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7. Will you be using any of the following items with your respirator?		
a) HEPA filter		
b) Cartridge		
8. How often are you expected to use the respirator (select all that apply)?		
a) Emergency rescue		
b) Less than 5 hours per week		
c) Less than 2 hours per day		
d) 2 to 4 hours per day		
e) Over 4 hours per day		
9. During the period you are or will be using the respirator, is your work effort:		
a) Emergency rescue only?		
b) Emergency escape only?		
c) Light work (writing, typing, drafting, light assembly work, standing while operating equipment or controlling machines)?		
d) Moderate work (sitting while nailing or filing, driving a truck or bust, standing while drilling, nailing, performing assembly work, transferring a moderate load(35 lbs) at truck level, walking on a level surface, or pushing a wheelbarrow with heavy load)?		
e) Heavy work (lifting a heavy load (about 50 lbs), working on a loading dock, shoveling, walking up an incline or stairs)?		
10. Will you be wearing protective clothing and/or equipment while wearing your respirator?		
If yes, please list the protective equipment and/or clothing:		
11. Will you be working under hot conditions (temperatures greater than 77°F)?		
12. Will you be working under humid conditions?		
13. Describe the work you'll be doing while you're using your respirator:		
14. Describe any special or hazardous conditions you might encounter when you're using your respirator (for example: confined space, life-threatening conditions):		

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15. Describe any special responsibilities you will have while using your respirator that may affect the safety and well-being of others (for example: rescue, security):

16. List any second jobs or side businesses you have:

17. List your previous occupations:

18. List your current and previous hobbies:



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<b>Part C</b>			
Every employee who has been selected to use either a full-face piece respirator or a self-contained breathing apparatus (SCBA) must answer questions 1 through 6. For employees who have been selected to use other types of respirators, answering the following questions is voluntary.			
Please check yes or no for the following questions:		YES	NO
1. Have you ever lost vision in either eye (temporarily or permanently)?			
2. Do you currently have any of the following vision problems?			
a) Wear contact lenses			
b) Wear prescription glasses			
c) Color blind			
d) Any other eye or vision problem?			
If yes, please explain:			
3. Have you ever had an injury to your ears, including a ruptured eardrum?			
4. Do you currently have any of the following vision problems?			
a) Difficulty hearing			
b) Wear a hearing aid			
c) Any other hearing or ear problem?			
If yes, please explain:			
5. Have you ever had a back injury?			
6. Do you currently have any of the following musculoskeletal problems?			
a) Weakness in your arms, hands, legs or feet			
b) Back pain			
c) Difficulty with full movement of arms and legs			
d) Pain or stiffness when you lean forward or backward at the waist			
e) Difficulty fully moving your head up and down			
f) Difficulty fully moving you head side to side			
g) Difficulty bending at your knees			
h) Difficulty squatting to the ground			
i) Climbing stairs or ladder carrying more than 25 lbs			
j) Any other muscle or skeletal problems that interferes with using a respirator?			
If yes, please explain:			

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**APPENDIX D  
Respirator Training Sheet**

**RESPIRATOR TRAINING/REFRESHER CHECKLIST**

Date of Training/Refresher \_\_\_\_\_

**Air Purifying Respirators**

- Limitations — not to be used for oxygen deficient atmospheres, fire, or untested confined space.
- Perform positive and negative pressure tests before every use



Positive Pressure  
Test (try to blow  
air out)



Negative Pressure  
Test (try to suck  
air in)

**Cleaning**

- Take respirator completely apart (including valves).
- Can be cleaned with warm water, hand soap and air dried or alcohol wipes whenever needed to maintain a sanitary condition.

**Storage**

- Keep in bag it comes in or a zip lock bag to keep it clean.
- Do not leave in a toolbox, locker or desk with stuff piled on top leading to deformation.

**Problems**

- If experiencing shortness of breath or dizziness with respirator on, report to supervisor, safety specialist or industrial hygiene as soon as you notice the problem.
- Refit for gain or loss of twenty pounds or more.
- Refit for lack of comfort.
- If your respirator breaks/tears, get a new one (don't try to fix it).

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**Branch Policies**

- No sharing of respirators — issues of personal hygiene and proper fit.
- Must be clean shaven for an effective seal.

**Cartridges**

- Can't mix different brands of cartridges and respirators.
- Each cartridge has a service life meaning that the cartridge should only be used for a certain period of time and maximum volume of air.
- The change out schedule in the Respiratory Protection Program gives the service life for each brand of cartridge.
- A secondary ways to determine when a cartridge should be changed out are resistance in breathing, smell or taste the vapor or gas.
- If the substance is hazardous and has no smell or taste, a supplied air respirator must be used.
- Change cartridges if they become wet.

**Discussion of Airborne Hazards**

- Dust & silica linked to silicosis and lung cancer.
- Acid mist is a strong irritant and linked to laryngeal cancer.
- Solvents are CNS depressant and possible irritants.
- Welding Fume can cause siderosis (iron), metal fume fever (zinc, manganese), nervous system damage (manganese) or lung cancer (nickel, chromium).

**Employee Responsibilities**

- You are responsible for wearing your respirator in required areas. If you do not, you may receive disciplinary action.
- If you notice fellow employees not wearing their respirators inform them of the consequences and notify supervision if they do not begin to wear their respirator.

I received the above respirator training/retraining today.

Employee Name (Print) \_\_\_\_\_

People Soft Number \_\_\_\_\_

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## APPENDIX E Respirator Training Quiz

### Respirator Refresher Quiz

Name: \_\_\_\_\_ Date \_\_\_\_\_ PS# \_\_\_\_\_

1. Air purifying respirators can be used for untested confined spaces or in fires.  
True or False
2. You should clean your respirator
  - a) Twice a month
  - b) Every two hours
  - c) As soon as necessary to maintain it in a sanitary condition
  - d) Never
3. If you have a problem with your respirator who do you take it to get it repaired?
  - a) The clinic
  - b) Hagemeyer Safety Supply
  - c) Your Safety Pro, Industrial Hygienist, or Supervisor
  - d) Your Superintendent
  - e) No one, get a new one
4. What do you clean your respirator with?
  - a) Bleach
  - b) Dishwashing detergent
  - c) Warm soapy water or alcohol wipes
  - d) Washing powder
5. How do you store your respirator after cleaning and inspection?
  - a) In a box in your locker
  - b) Lay it on a shelf with other belongings
  - c) In a zip lock bag to keep it clean
  - d) In your glove box

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6. When should you contact your safety specialist or supervisor if you experience a problem with your respirator or unusual symptoms with your breathing?
  - a) After you have worn it to do the job
  - b) Before using it for a job requiring a respirator
  - c) As soon as you experience the problem
  - d) After you wake up from passing out
  
7. Company policy allows sharing of respirators.  
True or False
  
8. A man can have a beard or facial hair and still effectively use a respirator.  
True or False
  
9. Can you use any brand of cartridges on any respirator?
  - a) Yes, they all work on each kind.
  - b) They are universal.
  - c) They cannot be mixed. Different cartridges work on different respirators.
  
10. When is it best to change dust cartridges?
  - a) When you are choking, coughing or dizzy
  - b) When you can't get air flow anymore
  - c) When your supervisor or Industrial Hygienist tells you to
  - d) When the service life of the cartridge is expired or when you have resistance in breathing or can taste or smell the vapor or gas
  
11. A supplied air respirator is used if a substance is hazardous and has no smell or taste.  
True or False
  
12. You can still use a cartridge if it becomes wet.  
True or False
  
13. Four airborne hazards are:
  - a) Dust, Acid Mist, Solvents, Welding Fumes
  - b) Salt, Flour, Chalk, Sand
  - c) Flower pollen, Weeds, Grass, Ragweed
  - d) Bees, Birds of Prey, Fireworks, Bullets
  
14. The disease you can get from inhaling silica dust is silicosis.  
True or False
  
15. What kind of health hazards can happen if you don't use your respirator?
  - a) Ear ache
  - b) Hair loss
  - c) Nervousness

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d) Cancer, Nervous system damage, Silicosis

16. To perform a positive fit test you cover both cartridges and try to suck air in.

True or False

17. Before using a respirator you should perform both a positive and negative fit

True or False

18. Do you have any concerns regarding your training, use and respirator fit test?

19. Are there any issues that you have seen in the administration of the FMI Respiratory protection Program?

20. Have you found any problems with your respirator including fit, selection, use or maintenance?

#### **APPENDIX F Respirator Use Audit**

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Employee Name:	Date:
Peoplesoft:	Job Title:
Department:	Supervisor:
Auditor:	Auditor's Title:

Respirator:	Cartridge type:
Appropriate respirator for workplace?	YES NO
Is the respirator effective in the workplace?	YES NO
Correct cartridge used?	YES NO
How often do you change your filter?	
Is employee clean shaven?	YES NO
Is respirator stored properly?	YES NO
Have you been trained on the use of a respirator and the workplace hazards it is intended to protect you from?	YES NO
When was the last time you were fit tested?	
Employee Use: Instruct employee to put respirator on and evaluate technique. Observe and instruct as needed. Comments:	
How do you clean your respirator? How often?	
Visually inspect respirator. Instruct employee as needed with the inspection and maintenance of their respirator. Comments:	
Employee questions/concerns/comments:	

Employee's Signature	Date
Auditor's Signature	Date



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## **APPENDIX G Accepted Fit Test Protocols**

### **I. Fit test methods**

Fit testing will be conducted using the following procedures.

- A. The test administrator will 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.
- B. Prior to the selection process, the test subject will be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror will be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, it is only a review.
- C. The test subject will be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
- D. The more acceptable face pieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and if the test subject is not familiar with using a particular respirator, the test subject will be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
- E. Assessment of comfort will include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
  1. Position of the mask on the nose;
  2. Room for eye protection;
  3. Room to talk; and
  4. Position of mask on face and cheeks.
- F. The following criteria will be used to help determine the adequacy of the respirator fit:
  1. Chin properly placed;
  2. Adequate strap tension, not overly tightened;
  3. Fit across nose bridge;
  4. Respirator of proper size to span distance from nose to chin;
  5. Tendency of respirator to slip;
  6. Self-observation in mirror to evaluate fit and respirator position.

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- G. The test subject will conduct a user seal check, either the negative or positive pressure seal checks described in Appendix A of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix A. Before conducting the negative and positive pressure checks, the subject will be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another face piece will be selected and retested if the test subject fails the user seal check tests.
- H. The test will not be conducted if there is any hair growth between the skin and the face piece sealing surface, such as stubble beard growth, beard, or goatee. Any type of apparel that interferes with a satisfactory fit will be altered or removed.
- I. If a test subject exhibits difficulty in breathing during the tests, he or she will be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
- J. If the employee finds the fit of the respirator unacceptable, the test subject will be given a different respirator and to be allowed retest.
- K. Exercise regimen. Prior to the commencement of the fit test, the test subject will be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process will include a description of the test exercises that the subject will be performing.
- L. Test Exercise

The following test exercises are example of the fit testing methods using a Port-a-count or OHD 3000. Any MSHA or OSHA approved fit testing method is acceptable. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject will perform exercises, in the test environment, in the following manner:

1. Normal breathing. In a normal standing position, without talking, the subject will breathe normally.
2. Deep breathing. In a normal standing position, the subject will breathe slowly and deeply, taking caution so as not to hyperventilate.
3. Turning head side to side. Standing in place, the subject will slowly turn his/her head from side to side between the extreme positions on each side. The head will be held at each extreme momentarily so the subject can inhale at each side.
4. Moving head up and down. Standing in place, the subject will slowly move his/her head up and down. The subject will be instructed to inhale in the up position (i.e., when looking toward the ceiling).
5. Talking. The subject will talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage

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

6. Walking. The test subject will walk in place.
7. Normal breathing. Same as exercise (1).

Each test exercise will be performed for one minute. The test subject will be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator will be tried.

## II. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Port-a-count TM) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full face piece negative pressure respirator. The entire screening and testing procedure will be explained to the test subject prior to the screening test.

### A. Port-a-count Fit Test Requirements:

1. Check the respirator to make sure the sampling probe and line are properly attached to the face piece. The respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.
2. Instruct the person to be tested to don the respirator for 1 minute before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual will already have been trained on how to wear the respirator properly.

### B. Check the following conditions for the adequacy of the respirator fit:

1. Chin properly placed;
2. Adequate strap tension;
3. Not overly tightened;
4. Fit across Nose Bridge;
5. Respirator of proper size to span distance from nose to chin; and
6. Tendency of the respirator to slip.

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- C. Have the person wearing the respirator determine if they can feel any leaking air escaping from the respirator. If leakage is detected, determine the cause. If leakage is from a poorly fitting face piece, try another size of the same model respirator or another model of respirator.
- D. Follow the manufacturer's instructions for operating the Port-a-count and proceed with the test.
- E. The test subject will be instructed to perform the exercises in section N. 1-7. of this Appendix.
- F. After the test exercises, the test subject will be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator will be tried.

### III. Port-a-count Test Instrument.

- A. The Port-a-count will automatically stop and calculate the overall fit factor for the entire set of exercises.
- B. Since the pass or fail criterion of the Port-a-count is user programmable, the test operator will ensure that the pass or fail criterion meets the requirements for minimum respirator performance in this Appendix.
- C. A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, size, and date tested.

### IV. Controlled Negative Pressure Quantitative Fit Testing Protocol.

- A. The face piece fit is expressed as the leak rate through the face piece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately eight seconds.
- B. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality.
- C. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full face piece respirator.
- D. The entire screening and testing procedure will be explained to the test subject prior screening test.

#### B. CNP Test Exercises.

1. Facing Forward – Stand and breathe normally. Hold breath for duration of the measurement.
2. Bending Over – Bend at the waist, as if touching the toes. Hold breath for duration of the measurement.
3. Head Shaking – For about three seconds, shake head back and forth vigorously several times while shouting. Hold breath for duration of the measurement.

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4. REDON 1 – Remove the respirator mask; loosen all face piece straps and then redon the respirator mask. Hold breath for duration of the measurement.
5. REDON 2 – Remove the respirator mask; loosen all face piece straps and then redon the respirator mask. Hold breath for duration of the measurement.

C. CNP Records

1. A record of the test will be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

**Appendix H  
Respiratory Program Exemption Form**

Name:

Date: \_\_\_\_\_

Employee ID:

\_\_\_\_\_ has been identified as a participant in the FMMO Respiratory Protection Program.

For compliance purposes, please fill out the below form in order to be identified as a person of exception to this program due to the type of work performed and the environment in which it is performed.

---

**Is there need for a respirator to be used at any time in your current position?**

Yes    No    (Circle One)

\*\*\*\*\*If the above answer is a NO, you will be taken out of the Respiratory Protection Program. If a respirator is needed at a later date it is the responsibility of both the employee and the supervisor to advise the Industrial Hygiene Department of the change, so as to be enrolled back into the program.\*\*\*\*\*

**By signing the below you the employee have read and understand the above question.**

Printed Name \_\_\_\_\_

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Signature \_\_\_\_\_

Date \_\_\_\_\_

**Supervisor Approval**

Printed Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

**Industrial Hygiene Approval**

Printed Name \_\_\_\_\_

Signature \_\_\_\_\_

Date \_\_\_\_\_

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