Document Revision Change Table

Revision Number	Revision Description	Revised By	Revision Date
Rev 04	*Considered as starting document for revision change table*		
Rev 05	Updated Breathing air cylinder checks Attachment E	S.Simoneaux	11-29-11
Rev 06	Updated Breathing air cylinder checks Attachment E	G. Dawson	01-28-15
Review	Procedure Reviewed	G. Dawson	11/10/17
Review	Procedure Reviewed (slight change for corporate procedure nomenclature update)	G. Dawson	04/10/18
Review	Procedure Reviewed – No changes	G. Dawson	12/03/19
Review	Procedure Reviewed – No changes	G. Dawson	11/17/20
	Updated Attachment B (Cartridge Change Out Schedule)	G. Dawson	03/30/21

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1. PURPOSE

To establish procedures for the use of respiratory protection at the Beaumont Site.

2. DEFINITIONS

2.1. Air Purifying Respirator (APR)

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

2.2. Assigned Protection Factor (APF)

Means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program.

2.3. Atmosphere Supplying (Supplied Air) Respirator

A respirator that supplies user with breathing air from a source independent of the ambient atmosphere. Includes supplied air respirators (SAR) and self contained breathing apparatus (SCBA) units.

2.4. Canister or Cartridge

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

2.5. Emergency Situation

Any occurrence, such as, but not limited to, equipment failure, rupture of containers or failure of control equipment that results in or may result in uncontrolled significant release of an airborne contaminant.

2.6. Employee Exposure

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

2.7. Exposure Limits

The highest concentration of an airborne contaminant to which an employee may be exposed. These include Permissible Exposure Limits (PEL's) published by OSHA, Threshold Limit Values (TLV's) published by ACGIH, AIHA Workplace Environmental Exposure Levels (WEEL's), BASF Corporation internal limits and supplier internal limits.

2.8. Filtering Facepiece (Dust Mask)

A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

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2. DEFINITIONS cont'd

2.9. Fit Factor
A quantitative estimate of the fit of a particular respirator to an individual; typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

2.10. Fit Test
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.)

2.11. Immediately Dangerous to Life or Health (IDLH)
An atmosphere that poses an immediate threat to life which would cause irreversible adverse health effects or would impair an individual's ability to escape from a dangerous atmosphere. Published NIOSH IDLH values may be used to determine IDLH conditions. An oxygen deficient atmosphere is considered IDLH.

2.12. Loose-Fitting Face Piece
Respiratory inlet covering designed to form a partial seal with the face.

2.13. Maximum Use Concentration
The highest atmospheric concentration of a substance for which a given respirator may be used.

2.14. Negative Pressure Respirator
A respirator in which the air pressure inside the face piece is negative during inhalation with respect to the air pressure outside the respirator.

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

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

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

2.18. Qualitative Fit Test (QLFT)
A pass/fail test to assess the adequacy of respirator fit that relies on the wearer's response to the test agent. May be used where a fit factor of 100 or less is required.

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2. DEFINITIONS cont'd

2.19. Quantitative Fit Test (QNFT)
Assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

2.20. Respiratory Inlet Covering
Portion of a respirator that forms the protective barrier between the user's respiratory tract and the air purifying or breathing air source. It may be a face piece, helmet, hood, suit or mouthpiece respirator with nose clamp.

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

2.22. Service Life
Period of time that a respirator, filter or sorbent provides adequate protection to the wearer.

2.23. Supplied Air Respirator (SAR) or Airline Respirator
Atmosphere-supplying respirator for which the source of breathing air is not carried by the user.

2.24. Tight-Fitting Face Piece
Respiratory inlet covering that forms a complete seal with the face.

2.25. User Seal Check
Action conducted by the respirator user to determine if the respirator is properly seated to the face.

3. SCOPE
This procedure applies to all employees performing work requiring the use of respiratory protection.

4. PROCEDURE

4.1. Program Administrator
The EHS OSIH Team member will act as the Respiratory Protection Program Administrator for the Beaumont Site.

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4. PROCEDURE cont'd

4.2. Medical Evaluation

All employees enrolled in the respirator protection program due to job requirements must undergo medical evaluation for respirator use (*see* ***BC009.011/BC009.012, Respiratory Clearance Procedures*** and 29 CFR 1910.134).

4.3. Respirator Selection

4.3.1. General Requirements

A. Only NIOSH-certified respirators may be used at the Beaumont Site. The respirator must be used only within the conditions of certification.

B. Employees shall consult the personal protective equipment (PPE) grids found on the Beaumont Site web page to determine the required respiratory protection for a specific task.

C. The respiratory protection specified in the PPE grid resulted from a hazard evaluation that was conducted to identify respiratory hazards at the Beaumont Site and to determine the appropriate respiratory protection. This evaluation included:

- A review of the hazardous substances used and produced at the Beaumont Site;
- Review of work processes to determine where potential exposures to these hazardous substances may occur.
- Employee exposure monitoring to quantify potential hazardous exposures and/or chemical manufacturers recommendations.
- The limitations and characteristics of the available respirators,
- User factors such as the period of time that a respirator must be worn, the location of the potential hazard, the need to communicate, mobility, temperature and humidity.
- Assigned Protection Factors (APF) defined in Section 4.3.4.

D. For additional information on respirator selection refer to attachment C.

4. PROCEDURE cont'd

4.3. Respirator Selection cont'd

4.3.2. Assigned Protection Factors

The following table reflects the APF's that will be used in accordance with OSHA 1910.134 except where a determination of APF has been made for a substance specific standard; e.g. respirators used for abrasive blasting. The following table describes the type of respirator, the APF and the maximum use concentration (MUC) for which the respirator may be used. For MUC determination, if both a PEL and TLV has been published, the lower of the two shall be used.

Respirator Type	APF	MUC
Single use, disposable dust, mist, fume masks	10	10 X Exposure Limit
Half face air purifying respirator with appropriate cartridge	10	10 X Exposure Limit
Full face air purifying respirator with appropriate cartridge	50	50 X Exposure Limit
Full face positive pressure supplied air	1000	1000 X Exposure Limit
Full face positive pressure supplied air with auxiliary escape SCBA	10,000	10,000 X Exposure Limit
Full face positive pressure self contained breathing apparatus	10,000	10,000 X Exposure Limit

4.3.3. Other Tasks

For tasks and/or situations not specified in the in this procedure, or in the PPE grids, the following selection criteria will be used to determine the appropriate respiratory protection. The OSIH (Respiratory/PPE Administrator) representative may be consulted for additional information.

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4. PROCEDURE cont'd

4.3. Respirator Selection cont'd

4.3.3. Other Tasks cont'd

A. IDLH Atmospheres

The following respirators will be used in IDLH atmospheres**:**

Note: Where employee exposure cannot be identified or reasonably estimated, the atmosphere must be considered IDLH.

- A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of thirty minutes, or
- A combination full facepiece 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.

B. Atmospheres Other than IDLH

To determine the type of respiratory protection that may be worn in atmospheres other than IDLH, the following factors must be considered:

- Physical properties of the contaminant such as physical state and vapor pressure;
- Chemical properties of the contaminant such as solubility in water, reactivity and hazardous decomposition products;
- Physiological effects such as eye irritation, skin absorption, and olfactory fatigue;
- Results of ambient air monitoring;
- Contaminant exposure limits;
- Nature of the process involved (temperature/pressure);
- Time protection is required;
- The work activity including the practicality of a respirator for the task;
- Respiratory characteristics such as half-mask vs. full face.

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4. PROCEDURE cont'd

4.3. Respirator Selection cont'd

4.3.4. Use of Respiratory Protection

These procedures apply to all respirators used at the BASF Beaumont Site.

A. A user seal check will be performed using the procedure listed in Attachment A (User Seal Check Procedure (Mandatory)) of this standard, before entering an area or beginning a task requiring a respirator.

B. Employees may not use tight-fitting respirators if any of the following conditions exist:

- Facial hair comes between the sealing surface of the respirator and the face or interferes with valve function.
- Use of glasses, goggles or other personal protective equipment That interferes with the face to facepiece seal (spectacle kits will be provided).
- Any other item or condition interfering with the face to facepiece seal.

C. Employees must leave the hazard area and replace the respirator prior to returning to work any time they experience vapor or gas odors or irritation, changes in breathing resistance, or leakage of the facepiece.

D. Employees must leave the hazard area prior to removing a respirator.

4.3.5. Requirements for Air Purifying Respirator (APR) Use

A. Prohibitions

Air purifying respirators may not be used under the following conditions:

- IDLH atmosphere
- Canister/cartridge shelf life is expired
- The canister/cartridge has no 'end-of-service indicator' or a canister/cartridge change-out schedule has not been established for the contaminant
- Fire fighting
- For protection against contaminants with poor warning properties such as hydrogen sulfide and carbon monoxide.

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4. PROCEDURE cont'd

4.3. Respirator Selection cont'd

4.3.5. Requirements for Air Purifying Respirator (APR) Use cont'd

B. Cartridge/Canister Identification

All filters, cartridges, and canisters used on site must be labeled and color-coded with a legible NIOSH approval label indicating the contaminants for which the cartridges were intended.

C. Cartridge/Canister Change-out Schedule

Development of the cartridge/canister change-out schedule includes the following considerations:

- Potential employee exposures to the contaminant
- Time the employee is required to wear the APR
- Worker exertion level
- Temperature
- Humidity
- Potential for other contaminants

The change-out schedule can be found in Attachment B.

4.4. Repairs to Respiratory Protection

4.4.1. Respirators that fail an inspection or are otherwise found to be defective will be removed from service, discarded or repaired as appropriate.

4.4.2. Repairs or adjustments to respirators shall be made only by persons appropriately trained to perform such operations using only the respirator manufacturer's NIOSH approved parts.

4.4.3. Repairs shall be made according to the manufacturer's recommendations and specifications for the type and extent of repairs to be performed; and

4.4.4. Reducing and admission valves, regulators, and alarms shall be adjusted or repaired only by the manufacturer or a technician trained by the manufacturer.

4.5. Specific Information for Approved Respiratory Protection

Specific selection, use, inspection and maintenance procedures for respiratory protection used at the BASF Beaumont Facility can be found in Attachment C. Procedures for cleaning and disinfecting face pieces are found in Attachment F.

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4. PROCEDURE cont'd

4.6. Additional Procedures for IDLH Atmospheres and Interior Structural Firefighting

4.6.1. At least two employees shall enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

4.6.2. At least two standby employees who are trained and equipped to provide effective emergency rescue must be located outside the IDLH area. The standby employees must be equipped with SCBA's or an airline respirator with an escape bottle.

4.6.3. Communication must be maintained with the respirator user(s) located inside the IDLH area with those outside the IDLH atmosphere; this could include visual, voice, or signal line communication.

4.6.4. If employees located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue, the Incident Commander shall be notified before rescue operations take place.

4.7. Voluntary Use of Respirators

Voluntary use of filtering facepiece respirators will be allowed when the affected employee has read and signed a copy of the Voluntary Respirator Use Form found in Appendix D of OSHA, 29CFR1910.134 Respiratory Protection, and has returned it to the Respiratory/PPE Administrator. See attachment H

4.8. Fit Testing

4.8.1. Frequency

All personnel with tight fitting respirators will be fit-tested at least annually using the Portacount procedure located in Attachment D - Portacount Fit Test Requirements (Appendix A to 1910.134: Fit Testing Procedures).

4.8.2. Contents

- All fit tests must be with the same type, model, style, and size respirator that the employee will use, and
- atmosphere-supplying respirators must be in the negative pressure mode when tested.

4.8.3. Clean Shaven Requirement

Employees will not be fit tested if facial hair, including stubble, is present on the employee's face at points which may interfere with the seal of the respirator.

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4. PROCEDURE cont'd

4.8 Fit Testing cont'd

4.8.4. Fit Factor

A fit factor of

- equal to or greater than 100 for tight-fitting half-mask respirators, or
- equal to or greater than 500 for tight-fitting full facepieces is considered passing or acceptable.

4.8.5. Records

Fit test records will include:

- the name of individual being tested,
- the type of fit-test performed,
- the specific make, model, style and size of respirator tested,
- the date of test,
- and fit factor.

This documentation must be retained until the next fit test is given.

4.9. Breathing Air Systems

4.9.1. General Air Quality Requirements

A. Breathing air shall meet at least Grade D breathing air requirements established by ANSI/CGA G-7.1-1989 and those referenced in 29CFR1910.134.

B. Synthetic breathing air cylinders shall not be used.

C. Breathing air fittings shall NOT be compatible with outlets for other gas or liquid systems. They shall have protective coverings when not in use to prevent contamination or corrosion.

D. Air-line respirators may have a maximum hose length of 300 feet and the air pressure at the point of attachment of the hose to the air supply system shall not exceed 125 psig. Hose sections should be in 25 feet lengths or greater. For continuous flow air-line respirators, at least 4 cfm of air must be supplied to tight fitting face pieces and 6 cfm of air to loose-fitting helmet hoods or suits when using continuous flow air-line respirators. The air supply must be verified on a routine schedule.

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4. PROCEDURE cont'd

4.9 Breathing Air Systems cont'd

4.9.1. General Air Quality Requirements cont'd

Constituent	Requirement
Oxygen content	19.5-23.5%
Water	Variable from very dry to Saturated; No liquid water
Oil	(condensed) 5 mg/m3
Carbon Monoxide	<10 ppm
Carbon Dioxide	<1000 ppm
Odor	No pronounced odor

4.9.2. Breathing Air Cylinders

A. Cylinders of purchased breathing air must have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air. Certificates of current air cylinders will be kept by the Respiratory/PPE Administrator.

B. Cylinders containing breathing air shall be inspected and maintained according to the manufacturer's specifications. They must meet DOT requirements stated in the OSHA regulation and be marked in accordance with NIOSH respirator certification standard, 42CFR part 84.

C. The cylinders, must be permanently and legibly marked to identify the contents; e.g, compressed breathing air, compressed breathing oxygen, liquefied breathing air, or liquefied breathing oxygen.

D. Empty cylinders shall be tagged with an 'empty- do not use tag.

E. The moisture content in the cylinder cannot exceed a dew point of minus 50 degrees F at 1 atm.

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4. PROCEDURE cont'd

4.9. Breathing Air Systems cont'd

4.9.3. Breathing Air Cylinder Testing

The following procedures must be followed for all purchased breathing air cylinders.

A. Breathing air cylinders must be checked for oxygen content upon arrival on the site or prior to first use utilizing the procedure found in Attachment E.

B. Once the breathing air is verified as containing 20.9% oxygen, auxiliary bottles from the verified source do not need additional testing.

C. Breathing air cylinders that have been oxygen content verified shall be labeled with the following information:

- Date (mm/dd/yy) test was conducted
- Name (printed and legible) of person conducting the test
- Methodology
- Results

D. The labels shall be removed prior to sending out to be re-filled.

E. If tests indicate oxygen levels to be less than 20.9%, a 'danger – do not use' tag shall be placed on the cylinder and the cylinder returned to the supplier.

4.9.4. Breathing Air Compressors

A. Compressors used for supplying breathing air shall be constructed and placed to avoid entry of contaminated air into the system.

B. Suitable in-line air purifying sorbent beds and filters shall be installed to provide safe breathing air. A replacement schedule according to the manufacturer's recommendations shall be established as part of the unit/area preventive maintenance program to ensure proper air quality.

C. Each compressor used for breathing air must be affixed with a tag that contains the date that the sorbent bed/filter was changed and the signature of the person performing the maintenance.

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4. PROCEDURE cont'd

4.9. Breathing Air Systems cont'd

4.9.4. Breathing Air Compressors cont'd

D. Alarms must be installed to alert personnel of compressor failure or over-heating. Oil-lubricated compressors must have high temperature and carbon monoxide alarms because of the potential for contamination. Carbon monoxide levels in non-oil lubricated compressors must be maintained below 10 ppm.

E. The moisture content must be minimized so that the dew point at 1 atmosphere is 10 degrees F below the ambient temperature.

F. The compressor-supplied air must be monitored at some frequency to ensure that Grade D breathing air quality is maintained. In the absence of manufacturer recommendations, the air must be tested at least quarterly.

4.10. Training

4.10.1. Frequency

- Effective respiratory protection training requirements outlined in 1910.134 (k) must be conducted before an employee uses a respirator or is fit-tested.
- This training must be repeated at least annually for employees using respirators or more often if necessary.

4.10.2. Content

Training must include information on:

- Why respirators are used;
- How poor fit, improper use or poor maintenance of a respirator can compromise its effectiveness;
- The capabilities and limitations of the respirators;
- Situations where the respirator malfunctions;
- How to inspect, put on, remove, use and check the seal of the respirator;
- Procedures for maintaining and storing the respirator;
- How to recognize medical signs and symptoms that may prevent or limit effective use of respirator;
- The general requirements of the OSHA Standard 1910.134 Respiratory Protection.

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4. PROCEDURE cont'd

4.10. Training cont'd

4.10.3. Records

The Training Department will retain all training records. Training records must include:

- the name of the employee,
- date employee trained,
- the training instructor, and
- contents of training.

4.10.4. Re-training

Re-training is required

- if changes in the workplace occur which render the previous training obsolete,
- when inadequacies in the employee's knowledge of use of respirators are detected, or in other situations that arise which indicate the need for retraining.

4.11. Procedure Evaluation

The effectiveness of this procedure will be evaluated

- Through discussions with employees during annual respiratory training and fit testing;
- By evaluating accidents/incident reports where the use of respiratory protection is involved;
- Through periodic audits conducted and documented by the EHS Manager.

5. RESPONSIBILITIES

5.1. Beaumont Site Leadership Team

Has primary responsibility for implementation of this procedure.

5.2. Environmental, Health and Safety Leader

Has primary responsibility for the initiation, re-issuance, administration, and/or interpretation of this procedure.

5.3. Beaumont Site Employees

Have primary responsibility for adherence to procedure including identifying deficiencies in the procedure, and identifying, reporting and correcting activities not in compliance with the procedure.

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6. RELATED DOCUMENTS

N-ID-OSA-007 Personal Protective Equipment
BMEHS-002-022 Personal Protective Equipment
29 CFR 1910.134 Respiratory Protection
ANSI/CGA G-7.1-1989 Grade D Breathing Air Requirements
42 CFR Part 84 – NIOSH Respirator Certification Standard
Attachment A User Seal Check Procedure (Mandatory)
Attachment B Air Purifying Respirator Cartridge/Canister Change-out Schedule
Attachment C Equipment Specific Selection, Use, Inspection and Maintenance Procedures
Attachment D Portacount Fit Test Requirements
Attachment E Breathing Air Cylinder Testing Procedure
Attachment F Respirator Cleaning and Disinfecting Procedures
Attachment G Respiratory Program Employee Evaluation
Attachment H Appendix D of OSHA, 29CFR1910.134 Respiratory Protection

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USER SEAL CHECK PROCEDURES (MANDANTORY)

(Appendix B-1 to 29 CFR 1910.134)
The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal check is achieved each time the respirator is put on. Either the positive and negative pressure check listed in this appendix, or the respirator manufacturer's recommended user seal check method will be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks.

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and the carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedure for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

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Attachment B

Air Purifying Respirator Cartridge/Canister Change-out Schedule

CHEMICAL	CHANGE OUT SCHEDULE
1. Chlorine	• **End of work task or 30 minutes whichever comes first.**
2. Chloroacetyl Chloride (CATL)	• **End of work task or 30 minutes whichever comes first.**
3. DCP	• **End of work task or 30 minutes whichever comes first.**
4. HCl	• **End of work task or 30 minutes whichever comes first.**
5. Heptane	• **End of work task or 30 minutes whichever comes first.**
6. NaOH	• **End of work task or 30 minutes whichever comes first.**
7. TCB	• **End of work task or 30 minutes whichever comes first.**
8. Xylene	• **End of work task or 30 minutes whichever comes first.**
9. C-4	• **End of work task or 30 minutes whichever comes first.**
10. C-5	• **End of work task or 30 minutes whichever comes first.**
11. HMP	• **End of work task or 30 minutes whichever comes first.**
12. MOIPA	• **End of work task or 30 minutes whichever comes first.**
13. Sodium Hydrosulfide	• **End of work task or 30 minutes whichever comes first.**
14. Thionic Liquid	• **End of work task or 30 minutes whichever comes first.**
15. DLVF	• **End of work task or 30 minutes whichever comes first.**

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures
Scott Air-Pak 2.2 (Self-Contained Breathing Apparatus)

Description — The Scott Air-Pak is a self-contained breathing apparatus (SCBA). The unit utilizes a first stage pressure reducer, a second stage EZ Flo Regulator, AV300 facepiece, harness and frame assembly and an air cylinder. The cylinder is limited to a 30-min. air supply and is equipped with an audible alarm that sounds when pressure of the cylinder drops to 25% of rated pressure.

Application/ Limitations — The self-contained breathing apparatus (SCBA) is required for emergency situations where any of the following conditions may exist:

- IDLH Atmosphere
- Oxygen deficient atmosphere
- Emergency Rescue
- Entry in areas where concentrations of contaminants are unknown
- Spill cleanup

Inspection — SCBAs must be inspected before and after each use and at least on a monthly basis to ensure the unit is operational.

NOTE: IF ANY DEFICIENCIES ARE NOTED DURING THE INSPECTION, THE SCBA WILL BE TAGGED WITH A 'DO NOT OPERATE' TAG DENOTING THE DEFECTIVE PART AND REMOVED FROM SERVICE. ONLY QUALIFIED INDIVIDUALS WILL MAKE REPAIRS.

Each month, the following inspections must be performed:

1. Remove the facemask from the sealed bag.
2. Check that the purge valve (red knob on the regulator) is closed
3. Fully depress the center of the donning switch. Crack open and then close the cylinder valve.
4. Slowly turn the RED purge valve counterclockwise to bleed the air down. The low-pressure alarm should sound at 25% as indicated on the remote gauge.
5. Verify that the facepiece is in good condition, checking all connections for signs of deterioration.
6. Check the cylinder pressure gauge for "FULL" indication. If the cylinder is less than "FULL", replace the cylinder immediately.
7. Place the facemask in a new sterile bag and seal using a dated tag. Cleaning is not required if the mask has not been used.

The results of these inspections are documented on the SCBA Checklist.

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Air-Pak 2.2 (Self-Contained Breathing Apparatus) (cont'd)

Donning

WARNING -- DON IN FRESH AIR ONLY!

1. Check the cylinder for "FULL" indication (2200 psig)
2. Ensure that the cylinder is firmly locked in position by the cylinder band and toggle strap.
3. Spread the shoulder straps and fold open winged waist support.
4. Place arms through the shoulder straps and free the SCBA from the wall bracket.
5. Connect the waist belt buckle and adjust by pulling forward on the two side-mounted belt ends.
6. Readjust the shoulder straps to ensure the weight is carried on the hips.
7. Fully depress the center of the donning switch on top of the regulator and release.
8. Slowly open the cylinder valve fully. The user will both hear and feel the low pressure alarm in the facemask start and stop. There will be no free flow of air from the facemask at this time.
9. Don the facemask and adjust the head straps for a tight seal; lower straps first, then the top straps.
10. When the facepiece is sealed to the face, inhale sharply to actuate the respirator. Air will then be supplied during inhalation.
11. Ensure that the purge valve knob (RED) is rotated to the fully closed position (pointer on the knob upward). Fully depress and hold the center of the donning switch on the top of the regulator. Inhale slowly and hold your breath for ten seconds. No leakage of air should be detected and the facepiece should be drawn slightly to the face.
12. Remove finger from donning switch and inhale sharply. The respirator will function normally and supply air during the user's inhalation.
13. If the air is partially or completely cut off, fully open the purge valve (RED knob on regulator).

IMMEDIATELY RETURN TO FRESH AIR AND INVESTIGATE THE MALFUNCTION!!

Other indications for return to fresh air are

- Actuation of low pressure alarm
- Inhaled air becomes hot
- Resistance to breathing develops
- Nausea, dizziness or feeling of ill-being develops
- Leakage is detected by smell, taste or eye, nose or throat irritation

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Air-Pak 2.2 (Self-Contained Breathing Apparatus)(cont'd)

Doffing	The Scott Air-Pak will be maintained so that it is ready to use at all times. After use, the bottle must be filled with air, the mask cleaned and in a sealed bag with a tag that has been dated and signed stating who cleaned and sealed the mask. The straps must be extended to full length. The unit must be placed in the rack or case at it's designated storage location. Each time the unit is used, it is the responsibility of the USER to refill the bottle, install a clean mask in a sealed bag, and return the unit to the designated location.
Cleaning	The facepiece must be cleaned and disinfected after each use. The facepiece shall be stored in a sealed and dated plastic bag. Cleaning and disinfecting must follow the OSHA protocol, located in Attachment F of this procedure.
Storage	The facepiece must be stored in a sealed, dated plastic bag to prevent contamination.
Fit Testing	A quantitative fit test must be administered before initial use, when respiratory protection changes, if employee physical condition changes which could affect fit and at least annually. Refer to Attachment D for specific fit testing procedures.

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Full Face Pressure Demand Airline Respirator

Description — This assembly includes a wide vision, AV3000 face peice, chin mounted stainless steel regulator and hose assembly. The hose is fitted with a Hansen quick connect fitting. The breathing regulator automatically matches the air supply to the wearer's need with flow on demand while inhaling. These masks are used when attached to a source of grade D breathing air.

Application/ Limitation — This respirator provides respiratory protection for extended work periods in areas NOT immediately dangerous to life (IDLH) from which the wearer can readily emerge. If an IDLH situation exists, a SKA-PAK must be used in conjunction with the fresh air mask.
This respirator must NOT be used when any one of the following conditions exists:

- IDLH atmosphere
- Oxygen deficient atmosphere
- Emergency rescue
- Entry in areas where concentrations of contaminants are unknown
- Spill cleanup

Inspection — The airline mask must be checked before each use. The following should be inspected:

- Sealed bag intact and facepiece in good condition
- Date on inspection tag not more than one month old
- Ensure that the facepiece does not have any worn, cracked, or aging rubber parts

Donning — DON IN FRESH AIR ONLY!
The airline mask is donned as follows:

1. Don mask and adjust head straps for a tight seal; lower straps first, then the top straps
2. Test the facepiece seal as described in the SCBA section.
3. Connect the hose to a breathing air supply

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Full Face Pressure Demand Airline Respirator (cont'd)

Specific Indications to exit the immediate area:

- Actuation of low pressure alarm
- Inhaled air becomes hot
- Resistance to breathing develops
- Nausea, dizziness or feeling of ill-being develops
- Leakage is detected by smell, taste, eye, nose or throat irritation

Cleaning	The facepiece must be cleaned as described in the SCBA section of this attachment.
Storage	The facepiece and regulator must be stored in a sealed, dated bag to prevent contamination.
Fit Testing	A quantitative fit test must be administered as described in the SCBA section.

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Ska-Pak Emergency Escape Unit (Egress Bottle)

Description — The Scott Ska-Pak is a 5-minute breathing air unit. This unit is designed to be used attached to a primary source of grade D breathing air (either bottled air or air from a breathing air compressor). It is used in conjunction with an AV3000 facepeice. This unit is never used disconnected from the main air supply except for escaping an area or after the failure of the primary air supply.

Application/ Limitation — The Scott Ska-Pak is designed to be used with a supply of grade D breathing air (bottles or plant breathing air). This unit provides the wearer with sufficient air to escape a contaminated area when the primary air supply fails. There is NO ALARM on the bottle for low pressure.
The unit must be attached to the air supply in an uncontaminated area.

THIS UNIT DOES NOT PROVIDE SUFFICIENT AIR TO ENTER A CONTAMINATED AREA WHEN NOT ATTACHED TO A PRIMARY AIR SUPPLY SOURCE.

Applications for the Scott Ska-Pak when attached to a primary air supply include:

- Confined Space Entry
- Spill cleanup
- Emergency gas release protection for board operators
- Equipment preparation
- Line breaking for lethal service chemicals
- Oxygen deficient atmosphere
- IDLH atmosphere (Immediately dangerous to Life and Health)

Inspection — Ska-Paks must be checked before each use to ensure the unit is operational. Ska-Paks must also be inspected on a monthly basis. During the monthly inspections the following will be checked. The inspection is documented on the Ska-Pak checklist.

1. Visually inspection the unit for worn or aging rubber parts, worn or Frayed harness webbing or damaged components.
2. The latest cylinder hydrostatic test date. Aluminum cylinders must be tested every five years.
3. The cylinder for dents or gouges.
4. The cylinder gauge for "full" indication. Refill the cylinder if the cylinder is not full.

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Equipment Specific Selection, Use, Inspection and Maintenance Procedures (cont'd)

Scott Ska-Pak Emergency Escape Unit (Egress Bottle) (cont'd)

Donning	Donning is the same as for the Scott Full Face Pressure Demand Airline Respirator. For Escape: ♦ Open valve on the top of the bottle ♦ Disconnect the breathing air hose ♦ Immediately leave contaminated area
Cleaning	Cleaning is the same as for the SCBA.
Storage	The Ska-Paks are stored in the control room. The facepieces must be in a sealed, dated plastic bag to prevent contamination.
Fit Testing	A quantitative fit test must be administered as described in the SCBA section.

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Attachment D

PORTACOUNT FIT TEST REQUIREMENTS
(Appendix A to 29 CFR 1910.134)

1. Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test per manufacturer's Instruction.

2. Instruct the person to be tested to don the respirator for five minutes 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.

3. Check the following conditions for the adequacy of the respirator fit:
- Chin properly placed;
- Adequate strap tension,
- not overly tightened;
- Fit across nose bridge;
- Respirator of proper size to span distance from nose to chin;
- Tendency of the respirator to slip;
- Self-observation in a mirror to evaluate fit; and
- Respirator position.

4. Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

5. The test subject will be instructed to perform the exercises in section I. A. 14. of 29 CFR 1910.134 Appendix A.

6. 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.

7. THE TEST WILL BE CONSIDERED A PASS IF THE MINIMUM PROGRAMMED REQUIREMENTS FOR FIT TESTING ARE A FIT FACTOR OF 100 FOR A HALF MASK RESPIRATOR AND A FIT FACTOR OF 500 FOR A FULL FACE RESPIRATOR.

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Attachment E

Breathing Air Cylinder Checks

The following will be guidelines for using multi cylinder packs of breathing air at the Beaumont Site.

- All breathing air used at the Beaumont Site will be checked will be checked individually for O2 concentration by the on-site Hagemeyer technician.
- Once O2 concentration has been verified the cylinder pack will tagged with a blue and white notice tag as acceptable for use. The date and pressure will be noted on the tag at this time.
- The Hagemeyer technician will the place a valve handle lock out device on one of the air cylinders and secure it with an easy remove zip tie.
- When the bottles are used for breathing air jobs all of the cylinders but the one with the lock out device shall be opened .
- Before use on breathing air jobs the breathing air regulator low pressure alarm needs to be tested prior to use.
- When the pressure on the cylinder pack reaches the regulator alarm point (500 psi) the lockout device from the remaining bottle shall be removed and opened.
- When this bottle is opened up this will be the indicator to have all individuals using breathing air stop working and remove them selves from the hazardous area.
- Once all work has stopped the cylinder pack can then be changed out.
- The empty cylinder pack needs to be marked as EMPTY on the blue Notice tag
- The empty cylinder pack needs to be retuned to the storage area.
- If a cylinder pack is not empty once work is complete the pressure needs to be documented on the a blue and white notice tag before the regulator is removed.
- The individual documenting the pressure on the notice tag needs to put his name as well as the date on the tag
- The cylinder pack then needs to be brought back to the storage area and placed with the full packs
- The cylinder pack pressure needs to be documented after each use until the pack is considered empty
- If a cylinder pack does not have the lock out device on one of the cylinders and is not marked as empty, that pack will not be used until verification can be made of the remaining pressure.
- When the lockout device is removed it needs to be returned to Hagemeyer for future use.

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Respirator Cleaning and Disinfecting Procedures

All respirator facepieces that are used by more than one person must use the follow procedure after each use. Respirators that are assigned to an individual used routinely should be cleaned at least once a month. If the respirator manufacturer recommends alternate methods for cleaning/disinfecting their respirator, or if alternate methods for cleaning are selected by the unit, they must be at least as effective as these described.

1. Remove filters, cartridges or canisters, as applicable. Disassemble facepiece, as necessary, by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses or any other components recommended by the manufacturer. Discard and replace or repair any defective parts.

2. Wash components in warm (110^{o}F maximum) water with mild detergent or respirator cleaner recommended by the manufacturer. If a commercially available cleaner/disinfecting solution is used, follow the instructions on the container. A stiff brush (not wire) may be used to assist with removal of dirt as needed.

3. Rinse components thoroughly in clean, warm, running water. Drain.

4. Disinfecting:
   If the cleaner does not contain a disinfecting agent, respirator pieces should be immersed for two minutes in one of the following solutions:
   a) Hypochlorite solution (50 ppm chlorine). Add ~1 ml of laundry bleach to one liter of warm water
   b) Commercially available cleansers of equivalent disinfectant quality if use is recommended or approved by respirator manufacturer.

5. Rinse all respirator pieces thoroughly in clean, warm, running water. Drain.

NOTE:
The importance of thorough rinsing is very important. Detergent or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

6. Dry all components with a clean lint-free cloth or air dry. Components may be dried in a clean drying oven if the temperature is not allowed to exceed 110^{o}F.

7. Reassemble facepieces, replacing filters, cartridges and all other applicable parts.

8. Test the respirator to ensure that all components work properly.

9. Wearer must perform seal check prior to using respirator in a contaminated atmosphere.

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Attachment G

Respiratory Protection Program Evaluation

1. How would you rate the fit of your respirator	**Good Fair Poor**
2. How would you rate the ability to use the respirator without interfering with effective workplace performance with effective workplace performance.	**Good Fair Poor**
3. Do you feel that the respirator being worn is the appropriate selection for the hazards for which you are exposed	**Yes No**
4. Do you understand the proper respirator use under the workplace conditions for which you encounter	**Yes No**
5. Have you had training on and do you understand proper respirator maintenance.	**Yes No**
6. Do you feel the respiratory protection program here at the BASF Beaumont Site is effective	**Yes No**

Additional Comments:

_____ _____

Name Date

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Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

_____ _____

Name Date

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Requirements for Selecting Respiratory Protection

Revision 4; November 20, 2007

TASK OR POTENTIAL HAZARD	Minimum Respiratory Protection Requirements[1],[2]
1. Oxygen deficient atmosphere	A full-face pressure demand or positive-pressure SCBA certified by NIOSH for a minimum service life of thirty minutes, or A combination full-face pressure demand supplied air respirator with mandatory auxiliary self-contained air supply.
2. NIOSH IDLH atmosphere	A full-face pressure demand or positive-pressure SCBA certified by NIOSH for a minimum service life of thirty minutes, or A combination full-face pressure demand supplied air respirator with mandatory auxiliary self-contained air escape respirator supply with a minimum service life of five minutes.
3. Fire-fighting (where applicable)	A full-face pressure demand or positive-pressure SCBA certified by NIOSH for a minimum service life of thirty minutes.
4. Metal welding, cutting, and grinding operations	Consult the Texas EHS Hub "Minimum Respiratory Protection Requirements for Metal Cutting, Welding, and Grinding Operations."
5. An atmosphere that contains toxic contaminants (gas, vapor, solid, etc.) **and the concentration is unknown and cannot be reasonably estimated** (Ref: 1910.134(d)(1)(iii))	A full-face pressure demand or positive-pressure SCBA certified by NIOSH for a minimum service life of thirty minutes, or A combination full-face pressure demand supplied air respirator with mandatory auxiliary self-contained air supply escape respirator with a minimum service life of five minutes.
6a. An atmosphere that contains a **single** gas, vapor, or particulate **and the concentration can be reasonably estimated** based on: • Personal or area industrial hygiene monitoring date (Medgate) • Direct reading instrumentation (portable PIDs, etc.) • Colorimetric detector tubes (Draeger, etc.) • Experience and data from similar work areas or conditions • Manufacturer's data • Modeling calculations	Select either an air-supplied or air-purifying respirator according to the guidelines in the most recent NIOSH *Pocket Guide to Chemical Hazards* (http://www.cdc.gov/niosh/npg/).[3] If an air-purifying respirator is selected, then cartridges with end of service life indicators (ESLI's) must be used or a cartridge change schedule must be established. Respirator manufacturers can assist with calculating cartridge service life or contact Texas Hub IH.
6b. Same as 6a., except the NIOSH *Pocket Guide to Chemical Hazards* does not provide a respirator recommendation or does not list the gas, vapor, or particulate.	Contact Texas Hub IH.[4]
6c. Same as 6a., except two or more gases, vapors, or particulates are present.	Contact Texas Hub IH.
7. No contaminants are present above current occupational exposure limits (OELs), and the atmosphere is not oxygen deficient.	The voluntary use of a filtering facepiece (dust mask) is allowed.

See Footnotes on Next Page

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Footnotes:

1. This is only a summary of the requirements for proper selection of respirators. Refer to the site written Respiratory Protection Program and/or Personal Protective Equipment Program for additional information.

2. These requirements may need to be modified based on the following additional considerations:

   - The conditions of exposure; e.g., workload, temperature, humidity, communication requirements during the job tasks, etc.
   - The period of time for which respiratory protection must be worn
   - Identification of facilities that are needed for the care and maintenance of the respirator
   - The location of the hazardous work area in relation to the nearest area with respirable-quality air

3. There may be additional respirator selection requirements for chemicals regulated by 1910.1001 through 1910.1052 (e.g., benzene, formaldehyde, etc.).

4. The appropriate respirator will be determined, as follows:

   a. Calculate the maximum use concentration (MUC) for the available types of respirators based on their assigned protection factors (APFs).

      MUC = (APF) x (occupational exposure limit (OEL) of the contaminant)

      OEL is determined by using the BASF "OEL Reference Value Determination Flowchart."

      

      APF is determined, as follows:

Respiratory Type	APF
1/2-face air-purifying	10
Full-facepiece air-purifying	50
Full-facepiece air-supplied	1,000
Full-facepiece SCBA	10,000

   b. Select a respirator whose MUC is less than the expected concentration of the gas, vapor, or particulate.

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