

CONOCO CHEMICALS ABERDEEN PLANT

SAFETY AND HEALTH MANUAL

SUBJECT:

**RESPIRATORY PROTECTION
PROGRAM**

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SUPERSEDES: N/A

PAGE: 1 OF 26

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TITLE: Plant Manager

References: 1. "Respiratory Protection Program," dated April 1, 1976
2. OSHA "Industrial Hygiene Manual"

I. PURPOSE:

To insure that all employees receive adequate respiratory protection when exposed to harmful amounts of airborne materials.

II. SELECTION AND APPROVAL

Selection of respirators is to be based on the hazards to which the employees are exposed. The devices so selected must be approved for the use intended by appropriate authority (MESA, NIOSH, Bureau of Mines, and/or as prescribed by regulation), unless no such approved device is available.

Each device must be used as intended; i.e.: unauthorized intermixing of components or failure to use all components as designed and approved is strictly forbidden.

A list of respirators approved for plant use appears in Table I (Attached).

III. STORAGE AND CLEANING

Respirators must be stored in a convenient location for the user and kept in a clean, sanitary condition prior to use.

Routinely used respirators must be cleaned and disinfected to insure safe use by the wearer. Respirators issued to more than one employee must be cleaned and disinfected between each issue.

III. STORAGE AND CLEANING (Cont.)

A. Central Cleaning

Respirator cleaning is to be done by a Building Attendant that has been assigned that task. In this capacity, his job duties are:

1. Daily retrieval of dirty respirators from the respirator distribution points, which are:
 - a. Compound Supervisor's office area
 - b. Q. C. Laboratory
 - c. Plasticizer office area
 - d. Yard office
 - e. Maintenance shop
 - f. Area north of V-11 Reactor Building
 - g. Guard House
 - h. N.W. Corner of New Reactor Area.
2. Cleaning and disinfecting of all dirty respirators.
 - a. Routinely Used Respirators - After each use.
 - b. Emergency Respirators - After each use and monthly.
3. Routine inspection for obvious defects and replacement of damaged components that he has been authorized to replace by the Safety Inspector. No other repairs or replacements are to be attempted by him.
4. Placing clean respirators in plastic bags for re-issue.
5. Distribution of clean, packaged respirators to the distribution points, in the types and amounts specified by the Safety Inspector.
6. Maintaining the respirator cleaning area in a clean, orderly condition.

B. Distribution Point Storage

Departments having respirator distribution points are required to maintain and use storage compartments or other facilities that will protect the equipment from dust, sunlight, damaging chemicals, and excesses of heat, cold and moisture.

C. User Temporary Storage

Employees are expected to use respirators only one shift before returning them to the distribution points for cleaning. During their shift, they are also expected to take reasonable care to minimize damage to the respirator and to prevent unnecessary contamination of facepieces and air hoses.

IV. WEARING AND FITTING

Employees provided with respirators selected for specific hazards are required to wear such devices at all times when they are in danger of overexposure because of those hazards. The devices must be worn as originally intended and approved; no modifications, mixing of components, or alterations are permitted.

Employees are required to check facepiece fit each time a respirator is donned. The respirator is not to be worn when conditions prevent a good face seal.

See Appendices for detailed respirator fitting instructions.

V. INSPECTION

A. Routinely Used Respirators

Respirators used on a routine basis are to be inspected by three (3) people:

1. User - Inspects for cleanliness and obvious defects before each use.
2. Respirator Cleaner - See III-A-3 above.
3. Safety Inspector - Conducts monthly inspection of all routinely used respirators for cleanliness and serviceability, including the tightness and condition of all components.

B. Respirators for Emergency Use

1. Self-Contained Breathing Units (Scott Air Paks)

These units are to be inspected after each use, weekly, and monthly by the Safety Inspector.

a. Weekly

- (1) Cylinder pressure
- (2) Regulator setting
- (3) Cleanliness of respirator and case
- (4) Serviceability of breathing tube, facepiece and straps

b. Monthly/After Each Use - Same as weekly, plus:

- (1) Cylinder condition
- (2) Regulator serviceability & function
- (3) Warning alarm serviceability & function

2. Cannister Gas Masks

Cannister gas masks for emergency use will be inspected after each use, and monthly by the Safety Inspector. Both inspections will include checking of:

- a. Condition and cleanliness of respirator and case.
- b. Serviceability of facepiece, harnesses, valves and canister case seal.

C. Records

The Safety Inspector will make and retain records of the following respirator inspections:

1. Scott Air Paks
 - a. After each use
 - b. Weekly
 - c. Monthly
2. Emergency Cannister Gas Masks
 - a. After each use
 - b. Monthly
3. Routinely Used Respirators - Monthly

VI. BREATHING AIR QUALITY

- A. Breathing air supplied from cylinders or by breathing air compressors must be grade "D" per "Compressed Gas Association Commodity Specification G-7.1, 1966," as follows:

Oxygen Content	19-23%, by Vol.
Hydrocarbons (Condensed)	5 Mg/M ³ , Max.
Carbon Monoxide	20 ppm, Max.
Carbon Dioxide	1,000 ppm, Max.

- B. Breathing air compressors must meet the following criteria:

1. Compressor must be a breathing air type.
2. Construction must be such as to avoid entry of contaminated air into the system.
3. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of compressor failure shall be installed in the system.
4. Alarms to indicate compressor failure must be installed in the system.
5. Breathing air line couplings and connections must be incompatible with couplings and connections for all other piping.

VII. TRAINING

All employees whose job duties require the use of respirators will be instructed in the selection, use, and care of respiratory equipment. This training will be done annually by the Safety Department. New employees will receive the training during initial indoctrination.

TABLE I
APPROVED RESPIRATORY EQUIPMENT

<u>EQUIPMENT</u>	<u>DESCRIPTION/USE</u>
1. Scott Pressure Pak II, Part No. 9001401 Referred to as "Scott Air Pak."	A pressure-demand, self-contained breathing apparatus. Used where self-contained air supply is mandatory. In VCM environments, it is to be used in concentrations above 1,000 ppm or unknown.
2. Mine Safety Appliance Co. Constant Flow Airline Respirator, Part No. 460865. Referred to as "Air Line Respirator."	A constant flow, air-line-supplied respirator. Used in VCM atmospheres from 10 ppm to 1,000 ppm, VCM.
3. Scott VCM Canister Gas Mask Part No. 682-2. (Complete Unit), 084-VC-L (Replacement Canister)	An air-purifying device using a canister filter. To be used in VCM atmospheres of up to 10 ppm, VCM.
4. Scott Chlorine Canister Gas Mask. Part No. 685-2 (Complete), 084-CL-L (Replacement Canister).	An air-purifying device using a canister filter. To be used in atmospheres containing up to 2% chlorine.
5. Mine Safety Appliance Co. Rocket Propellant Gas Mask 92372 (Replacement Canister) Referred as "NO Mask."	An air-purifying device using a canister filter. It is for use in atmospheres containing not more than 2% NO _x .
6. Mine Safety Appliance Co. Paint Spray Respirator Part No. 448849 (Complete) 465667 (Prefilters), 464031 (GMA Cartridges)	An air-purifying device using cartridge type filters and particulate prefilters. For use during spray painting.
7. Mine Safety Appliance Co. Dustfoe 66 Respirator Part No. 46183 (Complete), Nos. 457486 and 457485 (Filters)	An air-purifying device using particulate filters. For use in color weigh room.
8. 3M Dust and Mist Respirator, Part No. 9910	A disposable dust respirator for general purpose use, including lead dusts.

APPENDIX IRESPIRATOR USE INSTRUCTIONS-SCOTT PRESSURE PAK II-WARNING

IMPROPER USE OF THIS APPARATUS IN A HAZARDOUS ATMOSPHERE MAY RESULT IN INJURY OR DEATH. PERSONNEL WOULD RECEIVE ADEQUATE TRAINING PRIOR TO USE.

The Scott Pressure Pak II self-contained breathing apparatus is designed to provide maximum mobility and approximately 30 minutes of breathable air to personnel. The apparatus provides using personnel with maximum respiratory protection while performing work in objectionable and unbreathable toxic atmospheres regardless of concentration or oxygen deficiency. The breathing regulator is equipped with a Pak-Alarm which will warn the user of diminishing air supply by ringing and vibrating, thus allowing sufficient time for egress from the hazardous area. The apparatus is National Institute of Occupational Safety and Health (NIOSH) and Mining Enforcement and Safety Administration (MESA) approved for use in temperatures ranging to 25°F. below zero with the addition of a nose cup assembly in the facepiece.

WARNING

IN ADDITION TO THIS APPARATUS, CERTAIN GASES SUCH AS HYDROGEN CYANIDE, WHICH POISONS THROUGH THE SKIN, OR AMMONIA WHICH IRRITATES THE SKIN, REQUIRE PROTECTIVE CLOTHING TO PROVIDE COMPLETE PROTECTION TO THE USER.

SERVICE LIFE

This apparatus is approved by NIOSH/MESA as a "1/2-hour duration" unit, based on the fact that the apparatus was found to last 30 minutes or more when worn by men performing a variety of moderate-to-heavy work tests.

The user should not expect to obtain exactly 30 minutes service life from this apparatus on each use. The work being performed may be more or less strenuous than that used in the NIOSH/MESA tests. Where work is more strenuous, the duration may be shorter, possibly as short as 15 minutes.

The duration of the apparatus will depend on such factors as:

1. the degree of physical activity of the user;
2. the physical condition of the user;
3. the degree to which the user's breathing is affected by excitement, fear or other emotional factors;
4. the degree of training or experience which the user has had with this or similar equipment;

APPENDIX I (Cont.)

5. whether or not the cylinder is fully charged at the start of the work period;
6. the possible presence, in the compressed air, of carbon dioxide concentrations greater than .04% normally found in atmospheric air;
7. the atmospheric pressure; if used in a pressurized tunnel or caisson at 2 atmospheres (15 psi gauge) the duration will be one-half as long as when used at 1 atmosphere; and at 3 atmospheres will be one-third as long;
8. the condition of the apparatus.

PREPARATION FOR USE

The following procedure should be followed prior to donning the apparatus:

1. Check cylinder pressure gauge for "FULL" indication. If indicated cylinder pressure is below "FULL", recharge cylinder or replace with a fully charged cylinder.

WARNING

CYLINDERS WHICH SHOW EVIDENCE OF EXPOSURE TO HIGH HEAT OR FLAME, SUCH AS PAINT TURNED BROWN OR BLACK, DECALS CHARRED OR MISSING, GAUGE LENS MELTED OR ELASTOMERIC BUMPER DISTORTED, SHALL BE REMOVED FROM SERVICE AND RETESTED PRIOR TO RECHARGING..

2. Check that regulator by-pass valve (red knob) is closed (full clockwise), regulator shut-off valve (yellow knob) is open (full counterclockwise) and control lever is in "OFF" position.

CAUTION

DO NOT USE TOOLS TO OPEN OR CLOSE THE BY-PASS AND SHUT-OFF VALVES. CLOSE OR OPEN FINGER TIGHT ONLY.

3. Open cylinder valve knob 1-1/2 turns. The cylinder gauge and the regulator gauge should indicate the same pressure.
4. Connect quick connect coupling to the regulator and breathe from the facepiece to ensure proper operation.
5. Check for positive pressure operation by placing the control lever in the "ON" position. A positive pressure should be sensed in the facepiece.
6. Return control lever to "OFF" position.
7. Disconnect quick connect coupling from the regulator.
8. Push in and rotate the cylinder valve knob clockwise to close the valve. Release residual air pressure by gradually opening the by-pass valve (red knob); Pak-Alarm will ring momentarily. After residual air is purged, close by-pass valve.

NOTE

If the Pak-Alarm does not ring, remove the equipment from service and tag for repair.

APPENDIX I (Cont.)NORMAL OPERATION

1. Open the carrying case lid, remove the facepiece and place on corner of the open lid, exercising care not to scratch lens.
2. Check cylinder gauge for "FULL" indication. Stand to the right of the opened case, lean forward and grasp both edges of the backplate just above waist belt area.
3. Swing the apparatus straight up and over the head, keeping your elbows close to your body. Rest the apparatus on your back while still slightly bent over. The shoulder straps will slide along arms and fall into place on shoulders. Connect the chest buckle; then while straightening up, pull down on the side straps to adjust the harness to body fit.
4. Connect and adjust the waist belt.
5. Check that control lever is in "OFF" position.
6. Open the cylinder valve knob 1-1/2 turns and don the facepiece as follows:
 - a. Adjust the head straps to a full outward position.
 - b. Hold the head harness out of the way with one hand or back over the lens.
 - c. Place the facepiece on the face with chin properly located in the chin pocket.
 - d. Pull the head harness over the head and tighten the neck straps by pulling on the two appropriate tabs.
 - e. Stroke the head harness down to the back, using one or both hands.
 - f. Tighten the two temple straps.
 - g. Retighten neck straps if required.
 - h. In most cases, the top head strap will be tight on the "FULL OUT" position.
 - i. Check the seal by closing off the breathing tube with your hand and slowly inhale. No leakage should be detected and the facepiece should be drawn onto the face.

WARNING

RESPIRATORS SHOULD NOT BE WORN WHEN CONDITIONS, SUCH AS A GROWTH OF BEARD, SIDE-BURNS, A SKULL CAP THAT PROJECTS UNDER THE FACEPIECE, OR TEMPLE PIECES ON GLASSES, PREVENT A GOOD FACE SEAL.

7. Connect the breathing tube on the regulator at the quick connect coupling when ready to enter the contaminated area; tighten finger tight. Place regulator control lever in the "ON" position for positive pressure operation.

NOTE

"OFF" position of regulator control level shall only be used for donning or doffing the apparatus.

APPENDIX I (Cont.)

8. Check the regulator pressure gauge occasionally for remaining air supply, to allow sufficient time for egress from the contaminated area.

WARNING

WHEN THE PAK-ALARM STARTS TO RING, IT WARNS THE USER THAT APPROXIMATELY 20-25% OF THE AIR REMAINS IN THE CYLINDER. IN HIGH NOISE AREAS OR WHERE MORE THAN ONE APPARATUS COULD BE RINGING, TOUCH THE PAK-ALARM ASSEMBLY WITH YOUR HAND TO SENSE VIBRATION. LEAVE THE CONTAMINATED AREA AT ONCE.

9. After use and when in a safe area, place control lever in "OFF" position, uncouple the facepiece at the regulator quick connect coupling, remove the facepiece, push in and rotate the cylinder valve knob clockwise to close the valve. Bleed the residual system pressure by momentarily opening the by-pass valve (red knob).

EMERGENCY OPERATION

Should the regulator become damaged or inoperative during use, proceed as follows:

1. Open the by-pass valve (red knob) to allow an acceptable flow.
2. Depress the locking tab under the regulator shut-off valve (yellow knob) and turn the valve off (full clockwise).

WARNING

THIS PROCEDURE IS FOR EMERGENCY USAGE ONLY: CONSEQUENTLY, THE DURATION OF THE AIR SUPPLY IS GREATLY REDUCED WHEN THE UNIT IS OPERATING THROUGH THE BY-PASS VALVE. ONLY USE THIS OPERATING MODE TO ESCAPE FROM THE CONTAMINATED AREA.

3. Adjust the by-pass valve to suit the requirements of the user.
4. Tag and remove the apparatus for repair.

CYLINDER REPLACEMENT PROCEDURE

1. Place the control lever in the "OFF" position, then push in and rotate the cylinder valve knob clockwise to close the valve.
2. Bleed residual system pressure by momentarily opening by-pass valve (red knob).
3. Uncouple regulator hose coupling from the cylinder valve.
4. Pull the cylinder clamping lever down to release the cylinder and valve assembly from the backplate.

APPENDIX I (Cont.)CYLINDER REPLACEMENT PROCEDURE (Cont.)

5. Lift the cylinder and valve assembly out of the backplate and replace with a fully charged cylinder and valve assembly. Start at the top of the backplate and lower until properly positioned.
6. Raise and push cylinder clamping lever up to secure the cylinder and valve assembly.
7. Attach and tighten the regulator hose coupling to the cylinder valve; open the cylinder valve.
8. The apparatus is ready for reuse.

APPENDIX IIRESPIRATOR USE INSTRUCTIONS-MSA CONSTANT FLOW AIR LINE RESPIRATOR-

Approved for respiratory protection in any atmosphere not immediately dangerous to life or health and from which the wearer can escape without the aid of the respirator. This approval applies only when the respirator is supplied with respirable air through 25 to 300 feet of hose within the pressure range of 35 to 40 pounds per square inch as specified by the manufacturer.

CAUTION

This respirator must not be worn in any atmosphere immediately dangerous to life or health. Follow the manufacturer's instructions for providing a supply of respirable air.

In making renewals or repairs, parts identical with those furnished by the manufacturer under the pertinent approval shall be maintained. This respirator shall be selected, fitted, used and maintained in accordance with the Mining Enforcement and Safety Administration, the Occupational Safety and Health Administration, and other applicable regulations.

WARNING

1. This device may not provide a satisfactory face seal with certain physical characteristics (such as beards or gross sideburns), as outlined in ANSI Z88.2-1969, resulting in leakage in connection with the facepiece, which voids or limits the protection. If such a condition exists, the user assumes all risks of death or serious bodily injury which may possibly result.
2. Under no circumstances should the apparatus be used as an underwater device.

BEFORE USE:

1. Thoroughly check out the apparatus on receipt prior to use.
2. For use only by qualified trained personnel.
3. CAUTION: Do not use when concentrations of contaminants are unknown or immediately dangerous to life or health or from which the wearer cannot escape without respiratory equipment (Air-Line respirators provide no protection if air supply fails).

INSTRUCTIONS FOR USE AND CAREAir Supply

1. Air Hose - Any one or combination of the following air supply hoses which does not exceed 300 feet in length may be used:

Part No. 455021 - 25 foot air hose

Part No. 455022 - 50 foot air hose

See air hose connection instruction sheet Part No. 995602 for airline connections.

APPENDIX II (Cont.)

2. Pressure - Air must be supplied to the inlet end of the air hose at a pressure between 35 PSIG and 40 PSIG. If the pressure at any point in the supply system exceeds 125 PSIG, the user must provide a pressure-release mechanism that will prevent the pressure at the hose connection from exceeding 125 PSIG under any conditions.
3. Air Source - The most desirable air source is a compressor having no internal lubrication. If an internally lubricated air source is used, an air line filter such as the MSA Air Line Filter should be used. Since this filter does not remove carbon monoxide which may occur, a carbon monoxide alarm such as the MSA Carbon Monoxide Alarm and Accessory Kit should also be used.
4. The purity of the air supply is the responsibility of the user, but it must be at least Grade D, Compressed Gas Association Commodity Specification for Air G-7.1.

Permissible Usage

1. Do not use when concentrations of contaminants are unknown or immediately dangerous to life or health or from which the wearer cannot escape without respiratory equipment (Air-line respirators provide no protection if air supply fails).
2. Adequate respiratory protection must include hazard assessment, selection and proper usage instruction and training, maintenance, inspection and replacement, and approval agency identification.

Fitting the Ultravue Facepiece

Pull out Headband Straps, especially the front of forehead straps, so that their ends are at the buckles. Then grip the Facepiece between the thumb and fingers and insert the chin well into the lower part pulling the Headharness back over the head. To obtain a firm and comfortable fit against the face at all points, adjust the Headbands as follows:

- a. See that the straps lie flat against the head.
- b. Tighten lower or "NECK" straps.
- c. Tighten "SIDE" straps. (Don't touch forehead or "FRONT" strap.)
- d. Place both hands on Headband Pad and push it towards the neck.
- e. Repeat operations (b) and (c).
- f. Tighten forehead or "FRONT" strap a few notches, if necessary.
- g. Attach Flow Control Valve over Belt on left hip.
- h. Adjust air flow for maximum comfort within approved pressure range.

APPENDIX II (Cont.)

Fitting the COMFO CUSTOM Facepiece

The COMFO CUSTOM Facepiece is easily adjusted to fit the wearer. For best results, place the chin cup of the Facepiece on the chin. Swing the nose section into position along the bridge of the nose, form Metal Yoke around the nose for the most comfortable fit. Place Headbands in the most comfortable position over head and back of neck, and adjust for proper tightness of the Facepiece by moving the adjusting slides in either direction. Attach Flow Control Valve over Belt on left hip.

Test for Tightness

Test the Respirator Facepiece for tightness by squeezing the corrugated breathing tube tightly. Inhale gently so that the Facepiece collapses slightly and hold breath for ten seconds. The facepiece will remain collapsed while breath is held, providing the assembly is gas tight. If any leakage is detected around the facial seal, readjust the headharness straps. If other than facial seal leakage is detected, investigate the condition and correct. The Facepiece should be subjected to a tightness test before each use.

Storage

The Respirator should be stored in a clean, dry place to prevent dust from settling in the interior of the Facepiece and being stirred up and breathed during the next use of the device. The place of storage should be away from direct sunlight and moderately cool, since heat and sunlight will shorten the life of the rubber parts.

APPENDIX IIIRESPIRATOR USE INSTRUCTIONS-SCOTT VCM CANISTER GAS MASK-Gas Mask Limitations and Canister Life Replacement

1. Approved for respiratory protection against not more than 10 parts per million VINYL CHLORIDE for not more than four hours or until the end of the work shift in which it is first used, whichever occurs first.
2. This canister Gas Mask SHALL NOT be used in atmospheres containing LESS than 19.5% (by volume) oxygen.
3. Be familiar with your Gas Mask and know its limitations and use. Always read the CANISTER LABEL prior to donning the equipment.
4. The canister shall be discarded immediately after use and shall not be reused or regenerated for further use. The canister shall be disposed of in accordance with applicable Occupational Safety and Health Administration regulations.

Important

1. Inspect mask assembly and components to be sure they all are in good working condition PRIOR to donning, replace any damaged or broken parts.
2. BE SURE the CANISTER is the CORRECT TYPE, as indicated on the label, for the toxic gases or vapors that are present.
3. BE SURE corrugated hose is SECURELY attached to both the canister and the facepiece.
4. Remove canister seals (both top and bottom) prior to donning.
5. DO NOT USE if any component is damaged or broken.
6. Read ALL instructions and labels carefully prior to donning equipment..

Donning Procedure (Canister, Harness and Hose)

1. Securely fasten canister in harness, remove top canister seal.
2. Attach breathing hose to canister TIGHTEN SECURELY.
3. Place neck strap over the head and adjust the canister height to allow a decided buckle in the corrugated hose. Adjust body strap around the waist in order that the canister is held securely in position.
4. MAKE SURE THE BOTTOM SEAL OF THE CANISTER IS REMOVED PRIOR TO DONNING THE FACEPIECE.

APPENDIX III (Cont.)Facepiece

1. Make sure all five headstraps are adjusted to a full outward position.
2. Using both hands, grasp one temple strap and one cheek strap together in each hand.
3. Place chin into position in chin pocket of facepiece.
4. Draw headstraps over head; be sure they all lay flat against head and simultaneously tighten CHEEK straps by pulling on the two appropriate tabs.
5. Simultaneously tighten both TEMPLE (middle) straps.
6. Place palm of either hand on junction point where straps join at rear of head and stroke head harness DOWN toward back of neck. This exerts a pull on the TOP straps lifting facepiece into proper position.
7. Repeat CHEEK and TEMPLE tightening, taking up any slack or looseness.
8. Adjust top strap only if necessary to securely hold facepiece comfortable and safely in position.

Test for Leaks

WARNING: Respirators should not be worn when conditions such as a growth of beard, sideburns, a skull cap that projects under the facepiece or temple pieces on glasses prevent a good face seal. Always test mask for leaks prior to entering a contaminated area.

1. After mask has been carefully adjusted, close off incoming air with your hand. (On canister mask, place hand over bottom hole of canister after it is connected to the facepiece).
2. Inhale slowly and hold breath for approximately ten (10) seconds. Negative pressure created in facepiece should not change during ten second holding. PROVIDING NO LEAKS are present, and facepiece should be drawn onto face.
3. Should any leakage be noted, correct immediately by:
 - a) Retightening headstraps.
 - b) Check condition of exhalation valve and seat.
 - c) Check gasket condition between facepiece and canister or hose.
4. THERE SHALL BE NO LEAKAGE IN THE SYSTEM PRIOR TO ENTERING THE CONTAMINATED AREA.

Storage

Mask equipment should be kept in the container provided, and in a cool, dry location. Avoid widely varying temperature changes.

APPENDIX IVRESPIRATOR USE INSTRUCTIONS-SCOTT CHLORINE CANNISTER GAS MASK-Canister - Life/Replacement

Replace canister when any part of the indicating window is no longer BLUE color.

The life of a canister depends on depth and rate of breathing, concentration of gases or vapors, storage conditions, and the age of the canister. Therefore, no definite life can be stated to satisfy the variety of unknown conditions.

With the facepiece properly adjusted and no leaks present, any indication of odor, taste, eye, nose, or throat irritation is evidence that the canister is EXHAUSTED. The wearer should RETURN TO FRESH AIR and replace the canister with a new one.

It is suggested that a complete record be kept of the following in order to determine when the canister should be replaced.

- a. Date canister put into service.
- b. Dates mask used.
- c. Length of time mask used.

Canisters which have been connected to the facepiece should be replaced at the end of 1 YEAR - even though they may NOT be completely exhausted.

Caution - Oxygen Deficiency

Do not use ANY filter type (canister) gas mask in confined areas where an oxygen deficiency may exist.

A minimum of 19.5% oxygen must be present in the air to insure wearer's SAFETY.

Check the Following

1. Canister - Make sure the canister is the CORRECT TYPE, as indicated on the label, for the toxic gases or vapors that are present.
2. Observe indicator window color to insure protection against chlorine. Read instructions on canister label carefully.
3. Be sure corrugated hose is securely attached to both canister and facepiece.
4. Remove bottom canister seal before putting on facepiece.
5. Head harness - Do not use if straps are broken.

APPENDIX IV (Cont.)Putting on the Gas Mask

1. Place neck strap over the head and adjust the canister height to allow a decided buckle in the corrugated hose. Adjust body strap around the waist in order that the canister is held securely in position.
2. Make sure all headstraps are fully extended.
3. Using both hands - Grasp together one temple strap and one cheek strap in each hand.
4. Place the chin into position in the facepiece.
5. Draw the headstraps over the head to be sure they all lay flat against the head.
6. Simultaneously draw-up and back - both CHEEK (bottom) straps.
7. Simultaneously draw-up and back - both TEMPLE (middle) straps.
8. Place palm of either hand on the junction point where the straps join, push DOWN toward the back of the neck. This exerts a pull on the TOP strap or straps lifting the facepiece into proper position.
9. Repeat steps 6 and 7, taking up any slack or looseness.
10. Adjust TOP strap or straps ONLY if necessary to securely hold the facepiece comfortably and safely in position.

Testing for Leaks

Always test the mask for leaks each time before entering a contaminated area.

- STEP 1. After the facepiece has been carefully adjusted, close off the incoming air by TIGHTLY KINKING the CORRUGATED HOSE with either hand.
- STEP 2. Inhale deeply and hold the breath for approximately ten seconds. The negative pressure created in the facepiece should NOT change during the ten seconds holding, PROVIDING NO LEAKS are present.
- STEP 3. Release hold on corrugated hose, place palm of either hand over the bottom hole of the canister - repeat Step 2 above.

Should any leakage be noted; CORRECT IMMEDIATELY by:

- (a) Re-tightening headstraps.
- (b) Check hose connections between the canister and facepiece.
- (c) Check condition of the exhalation valve and seat of the facepiece.

APPENDIX IV (Cont.)Storage

Mask equipment should be kept in the container provided, and in a cool dry location. Avoid widely varying temperature changes.

APPENDIX VRESPIRATOR USE INSTRUCTION-MSA ROCKET PROPELLANT GAS MASK-CAUTION

Do not enter any atmosphere with this mask unless you KNOW that:

- (a) Canister is the proper kind for the contaminant or contaminants present.
- (b) Concentration of the contaminants does not exceed 2% by volume.
- (c) Amount of oxygen is sufficient to support life (that is, at least 16 percent oxygen).
- (d) Mask does not leak (see test for tightness).
- (e) Canister does not need replacing.

Discard used or exhausted canisters.

Service Life Indicator (GMN-SSW Canister Only)

The window in front of the GMN-SSW Canister is designed to indicate the service life of the canister. When the indicating gel, which is yellow-orange in color, changes to shades of greenish-blue or black, the canister should be replaced and discarded.

Preparations for Use

Remove the top and bottom seals from the canister and assemble the mask.

Examine mask parts, connections and fittings for leakage and wear. Replace exhausted canisters, and worn and damaged parts immediately.

Fitting the Mask

Don harness (or carrier) and adjust body straps for snug, comfortable fit.

Pull out headband straps, especially the "FRONT" or forehead strap, so that their ends are at the buckles; then grip facepiece between thumb and fingers, insert chin well into lower part of facepiece and pull headband back over head. To obtain a firm and comfortable fit against the face at all points, adjust headband as follows:

- (a) See that straps lie flat against head.
- (b) Tighten lower or "NECK" straps.
- (c) Tighten the "SIDE" straps. (Do not touch forehead or "FRONT" strap).
- (d) Place both hands on headband pad and push it towards the neck.

APPENDIX V (Cont.)Fitting the Mask (Cont.)

- (e) Repeat operations (b) and (c).
- (f) Tighten forehead or "FRONT" strap a few notches.

Testing for Tightness

Test the mask for tightness by squeezing or pinching off the corrugated breathing tube, or by holding the hand tightly over the bottom opening of the canister. Facepiece should then collapse upon inhalation. The facepiece will remain collapsed while the breath is held providing the assembly is gastight. If any leakage is detected around facial seal, readjust head harness straps. If other than facial seal leakage is detected, investigate the condition and correct. The facepiece must be subjected to a tightness test before each use.

Replacing Canisters

The length of time the chemicals in the canister will give protection depends both on the concentration of the gas or vapor and the rate of breathing.

The canister must be replaced when the wearer experiences discomfort due to odor, taste, or irritation of the eyes, nose or throat, providing the facepiece and the breathing tube assemblies are leaktight.

The GMN-SSW WINDOW-CATOR CANISTER must be replaced when the color of the indicating gel in the center of the window is no longer Yellow-Orange.

When either of the above conditions is noted the wearer should return immediately with minimum exertion to fresh air and attach a suitable new canister.

Special care should be used when any mask is worn in gases or vapors that have no warning properties. The mask should be adjusted very carefully and a record kept of the period of use and approximate concentration of the gas or vapor.

When the seals on a canister are broken the date must be recorded on the label and the canister discarded at the expiration of ONE YEAR if not completely used up before.

CAUTION - THE BOTTOM SEAL ON THE CANISTER SHOULD BE REPLACED AFTER EACH USE.

APPENDIX VIRESPIRATOR USE INSTRUCTIONS-MSA PAINT SPRAY RESPIRATOR -Limitations

Approved for respiratory protection against (1) mists of paints, lacquers, and enamels; (2) not more than 1,000 parts per million organic; or (3) any combination thereof.

Not for use in atmospheres containing less than 19.5 percent oxygen. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with sorbent material in the cartridge. Maximum use concentrations will be lower than 1,000 parts per million where that concentration of organic vapors produces atmospheres immediately dangerous to life or health.

CAUTION

Follow the preceding instructions carefully. They were prepared for your protection.

Do not enter into any atmosphere with this mark unless you KNOW that:

- (a) Cartridges are the proper type for the contaminants present.
- (b) Amount of oxygen is sufficient to support life (that is, at least 19.5 percent oxygen by volume at sea level). If oxygen concentration sufficient to support life is questionable, use Self-Contained Breathing Apparatus only.
- (c) Mask does not leak (see test for tightness).
- (d) Cartridges do not need replacing.
Discard used or exhausted cartridges.

WARNING

- 1. This device does NOT supply oxygen.
- 2. Use only in adequately ventilated areas containing at least 19.5 percent oxygen.
- 3. Do not use when concentrations of contaminants are unknown or immediately dangerous to life or health.
- 4. Leave area immediately if:
 - a. breathing becomes difficult.
 - b. dizziness or other distress occurs.
 - c. you taste or smell contaminant.

APPENDIX VI (Cont.)

5. Use strictly in accordance with instruction, labels and limitations pertaining to this device.
6. This device may not provide a satisfactory face seal with certain physical characteristics (such as beards or gross sideburns) as outlined in ANSI Z88.2 1969, resulting in leakage in connection with the facepiece, which voids or limits the protection. If such a condition exists, the user assumes all risks of death or serious bodily injury which may possibly result.
7. Never alter or modify this device.

Instructions For Use and Care by Properly Trained and Qualified PersonnelPreparations for Use

- A. Remove appropriate cartridges from storage bags and insert into threaded cartridge receptacles, making sure that the gaskets are in their proper position in the cartridge receptacles. Hand tighten the cartridge with CAUTION to prevent damage to threads and to insure a good seal against the gaskets.
- B. For Type F filters, insert a filter pad into each filter cover. Never "load" filters into the receptacles. Snap filter cover onto receptacles on both sides of facepiece with caution to prevent damage to filters.

Fitting the Mask

Mount cartridge assembly on belt so that breathing tube goes over left shoulder (for belt-mounted respirator only).

Fit facepiece on nose bridge, making sure that you are able to breathe through nose. Then swing bottom of facepiece into contact with the chin. Position headbands with longest straps above the ears and the shortest strap below the ears then adjust for comfortable fit by moving adjustment slides either way.

Test for Tightness

THE FACEPIECE MUST BE SUBJECTED TO THE FOLLOWING TIGHTNESS TEST BEFORE EACH USE:

Test respirator for leakage, using a positive pressure method. Remove exhalation valve cover and hold rubber valve against seat. Create a slight positive pressure inside face cushion by exhaling. If any leakage is detected around the facial seal, readjust head harness straps and repeat test until there is no leakage. If other than facial seal leakage is detected, the condition must be investigated and corrected before another test is made. The facepiece must pass the tightness test before the user should attempt to enter any toxic atmosphere. The mask will not furnish protection unless all inhaled air is drawn through suitable cartridges. Replace valve cover after completion of test.

APPENDIX VI (Cont.)Replacing Cartridges

When odors of vapors or gases become noticeable or when breathing resistance becomes excessive, it is a sign that the cartridges have served their useful life and should be replaced.

To replace cartridges proceed as follows:

- a. Remove the expended cartridges and discard.
- b. Remove the placement cartridges from storage bags and insert into the threaded receptacles, making sure gaskets are in place in the cartridge holders.
- c. Hand tighten the cartridges with CAUTION to prevent damage to threads and to insure a good seal against the gaskets.

To replace type "F" filters proceed as follows:

- a. Remove the snap-type filter covers and discard filters.
- b. Replace a new filter into each filter cover. Never "load" filters into the receptacles.
- c. Replace filter covers with CAUTION so as to prevent damage to the filters.

The Complete Comfo II Paint Spray Respirator Assembly consists of the following:

<u>Item</u>	<u>Description</u>	<u>MSA Pt. No.</u>	<u>Required</u>
1	Comfo II		1
2	GMA Cartridge (10/Pkg.)	464031	2
3	Pre-Filter (10/Pkg.)	448845	2
4	Filter Cover	448844	2

APPENDIX VIIRESPIRATOR USE INSTRUCTIONS-MSA DUSTFOE 66 RESPIRATOR-

The Dustfoe 66 Respirator has been approved by the Mining Enforcement and Safety Administration (MESA), and by National Institute of Occupational Safety and Health (NIOSH) under Approval TC-21C-156 for protection against dusts and mists having a Time Weighted Average not less than 0.05 mg per cubic meter; or 2 million particles per cubic foot. Not for use in atmospheres containing less than 19.5 percent oxygen or in atmospheres containing toxic gases or vapors.

CAUTION

This respirator removes only dispersoids from the air. It gives no protection against gases, vapors or oxygen deficiency.

INSTRUCTIONS

Your Dustfoe 66 Respirator as packaged is completely assembled for your convenience. To fit respirator on face, remove from case and proceed as follows:

1. Pull head bands free from inside body of respirator.
2. Fit respirator on face and adjust headband tension to assure a comfortable facial seal by shortening or lengthening elastic webbing through slides provided on the headbands.
3. Adjust seal on face, if necessary, by bending the metal prongs in the nose portion of the rubber face cushion to suit the contours around the nose bridge.

If the respirator is fitted properly, the wearer should not experience any blow-by of air around the entire periphery of the face cushion during exhalation.

INSTRUCTIONS FOR REPLACING FILTERS

When resistance to breathing becomes uncomfortable, it is a sign that the filter has served its useful life and should be renewed. To replace filter, proceed as follows:

- (a) Disengage the spring closure clip and remove filter fork.
- (b) Remove and discard the used filter.
- (c) Fold a new filter evenly over fork.
- (d) Insert the fork and filter into filter holder and re-engage spring closure clip.
- (e) Observe exposed edges for adequate seal. FILTER EDGES MUST OVERLAP FILTER HOLDER FOR PROPER SEAL.

APPENDIX VII (Cont.)

The filter holder can be easily removed from the respirator body with a twist-pull action.

The body grommet which holds the filter holder to the body can also be removed by simply unsnapping it out of the body.

Re-assembly of these two components is simply a reverse action of the dis-assembly procedure.

INSTRUCTIONS FOR REPLACING FILTERS

1. Hold respirator in palm of hand and rubber face cushion in other hand.
2. Lay the rubber face cushion loosely across the open end of the respirator body with the shaped surface towards your face.
3. Insert the two prongs of facepiece into the molded grooves under the nose pads of the rubber face cushion.
4. Fit the rubber face cushion over the exposed edge of the facepiece.
5. Make sure the respirator body seats on the rubber flange of the cushion and hooks under the bottom flange and into the groove provided for adequate seal and comfort.

APPENDIX VIIIRESPIRATOR USE INSTRUCTIONS-3M DUST AND MIST RESPIRATOR, #9910-

The #9910 Dust/Mist Respirator exceeds the NIOSH/MESA testing requirements assuring OSHA compliance against the following contaminants:

1. Dusts- Having an air contamination level not less than 0.05 milligrams per cubic meter of air, including but not limited to coal, arsenic, cadmium, chromium, lead, and manganese; or dusts having air contamination level not less than 2 million particles per cubic foot of air, including but not limited to aluminum, flour, iron ore, and free silica, resulting principally from the disintegration of a solid, e.g., dust clouds produced in mining, quarrying, and tunneling, and in dust produced during industrial operations, such as grinding, crushing, and the general processing of minerals and other materials.
2. Mists - Materials of mists having an air contamination level not less than 0.05 milligram per cubic meter or 2 million particles per cubic foot, e.g. mist produced by spray coating with vitreous enamels, chromic acid mist produced during chromium plating and other mists of materials whose liquid vehicle does not produce harmful gases or vapors.
3. Asbestos containing dust and mists.

#9910 RESPIRATOR FITTING INSTRUCTIONS

1. Cup respirator in right hand with nosepiece at fingertips. Hold top strap between thumb and index finger of left hand.
2. Cup respirator under chin with nosepiece up.
3. Pull top strap over head and position at top back of head. Pull bottom strap over head and position around neck below ears.
4. To tighten straps, grasp buckle with left hand. Hold away from hair. Pull strap through buckle with right hand.
5. To loosen straps without removing mask, grasp buckle with left hand. Pull out on teeth of buckle. Pull strap through buckle with right hand.
6. Using both hands, mold metal nosepiece to shape of nose.