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1.0 INTRODUCTION

1.1 Purpose

The purpose of this procedure is to outline the site's Respiratory Protection Program and to provide guidance on the proper selection and use of respiratory protection equipment.

1.2 Scope

This procedure applies to Marathon Anacortes Refinery employees and contractors who are included in the Respiratory Protection Program. Should any additional information be needed regarding recommendations for respiratory protective devices for a particular problem, the availability of approved respirators, or items not specifically covered in this procedure, contact the Health & Safety Department or your Supervisor.

2.0 REFERENCES

2.1 Marathon Standards, Policies & Procedures

- HLT-2027, Community Exposure Guidelines and Occupational Exposure Limits
- HLT-2003, Management of Employee Exposure and Medical Records
- HLT-2025, Employee Health Monitoring Examination Protocols Standard
- RSP-1716-000, Personal Protective Equipment
- HLT-2005, Respiratory Protection Program

2.2 Government Regulations

- WAC 296-842, Respirators
- 29 CFR OSHA 1910.134, Respiratory Protection
- 29 CFR OSHA 1910.1000, (Subpart Z – Toxic & Hazardous Substances) Air Contaminants

2.3 Industry Standards

- NIOSH 2005-149

3.0 DEFINITIONS

The following definitions are applicable to this procedure.

Table 1 Definitions

Term	Description
Airline respirator	A respirator connected to a stationary source of compressed breathing air by a hose. Breathing air is delivered continuously in sufficient volume to meet the wearer's breathing requirements. The air supply hose length cannot exceed 300 feet. The airline is attached to the wearer by belt and can be detached rapidly in an emergency. A flow control valve or orifice is provided to govern the rate of airflow to the wearer. Exhaled air passes to the ambient atmosphere through a valve(s) in a face piece, hood, or suit.
Airline with Escape Bottle	Airline respirator equipped with an auxiliary bottle of fresh air
Air-purifying respirator (APR)	A respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants as ambient air passes through the air-purifying element.
Air-supplying respirator	A respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere, or with breathing air from a compressor. This type of respirator includes air-line respirators, supplied-air respirators and self-contained breathing apparatus units.
Assigned Protection Factor (APF)	The level of respiratory protection that a respirator or class of respirators is designated by OSHA to provide to employees when properly worn. The actual protection factor measured by quantitative fit testing is called a fit factor and is expected to be higher than the assigned protection factor.
Canister or Cartridge	Container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
Dust Filter	Filter for removing particulate
Exposure Assessment	A qualitative or quantitative process for determining the degree and extent of employee exposure to a potentially harmful agent, especially an airborne agent for purposes of this guidance document.
Full-Face	Respirator face piece covering the full face, used with supplied air, air-purifying filters or chemical cartridges
Fit Test	The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.
Fit Factor	A quantitative estimate of the fit of a particular respirator to a specific individual. Typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
Grade D Breathing Air	Compressed or supplied air that meets specifications detailed in Compressed Gas Association Commodity Specification for Air, G-7.1-2004, which include: Oxygen: 19.5-23.5% Carbon Monoxide: No more than 10 ppm Carbon Dioxide: No more than 1000 ppm Oil (Condensed Hydrocarbons): No more than 5 mg/m3 Odor: No noticeable odor
Half-Mask	Respirator face piece covering nose and mouth and extending over the chin, used with air-purifying filters or chemical cartridges

Table 1 Definitions

Term	Description
HEPA Filter	High efficiency particulate filter - A filter that is at least 99.97% efficient in removing mono-dispersed particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR Part 84 particulate filters are the N100, R100, and P100 filters
IDLH (Immediately Dangerous to Life and Health)	The current NIOSH definition is "the lowest concentration that poses a threat of exposure to airborne contaminants likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment".
Maximum use concentration (MUC)	The maximum use concentration is calculated for a type of respirator by multiplying the contaminant 8-hour PEL times the respirator's assigned protection factor. If the IDLH concentration for the contaminant is lower than the calculated maximum use concentration, only an SCBA or an air-line respirator with 5-minute escape bottle can be used to enter or work in that concentration.
Mercury Cartridge	Cartridge for removing mercury vapor
Organic Vapor Cartridge	Cartridge for removing organic vapors
Oxygen Deficient Atmosphere	An atmosphere with oxygen content below 19.5% by volume.
Permissible Exposure Limit or PEL	An exposure limit that is published and enforced by OSHA as a legal standard. PELs may be either an 8-hour time-weighted-average exposure limit, a 15-minute short term exposure limit (STEL), or a ceiling limit. The PELs are found in Tables Z-1, Z-2, or Z-3 of OSHA 1910.1000.
PAPR	Powered air-purifying respirator - An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
Pressure-Demand Respirator	A supplied air respirator which provides air pressure inside the face piece that is greater than air pressure outside the face piece during both inhalation and exhalation. Only pressure-demand supplied air respirators should currently be in use. Demand supplied air respirators should be considered obsolete.
Self-contained breathing apparatus (SCBA)	Positive pressure, air-supplying respirator with the breathing air source supplied from a compressed gas cylinder carried by the user. Units are equipped with a full-face piece.
Supplied-air respirator (SAR)	Positive pressure, air-supplying respirator that provides breathing air to the respirator wearer through an airline (hose) from breathing air cylinders, from a breathing air compressor, or from an attached breathing air cylinder.

4.0 ROLES AND RESPONSIBILITIES

4.1 Respiratory Program Administrator

The Respiratory Program Administrator is responsible for overseeing the respiratory protection program and conducting the required evaluations of program effectiveness (periodic Tier I program audits), thereby ensuring that all the requirements of the program are fully implemented as necessary. The Industrial Hygienist is the designated

Respiratory Program Administrator for Marathon Anacortes Refinery. Duties of the Respiratory Program Administrator include:

- Identifying work areas, processes or tasks that require workers to wear respirators, and evaluating hazards.
- Selection of respiratory options.
- Monitoring respirator use to ensure that respirators are used in accordance with their certifications.
- Arranging for and/or conducting training.
- Ensuring proper storage and maintenance of respiratory protection equipment.
- Arranging for and/or conducting quantitative fit testing.
- Maintaining records required by the program.
- Evaluating the program.
- Updating the written program, as necessary, to reflect workplace changes that affect respirator use.

4.2 Superintendents & Supervisors

Superintendents and Supervisors are responsible for ensuring that this Respiratory Protection Program is implemented in their particular areas. In addition to being knowledgeable about the program requirements for their own protection, Superintendents and Supervisors must also ensure that the program is understood and followed by all employees under their supervision. Duties of the Superintendent and Supervisor include:

- Ensuring that employees under their supervision (i.e. including new hires) have received appropriate training, fit testing and annual medical evaluation.
- Ensuring the availability of appropriate respirators and accessories.
- Being aware of tasks requiring the use of respiratory protection.
- Enforcing the proper use of respiratory protection when necessary.
- Ensuring that respirators are properly cleaned, maintained, and stored according to the Respiratory Protection Program.
- Ensuring that respirators fit well and do not cause discomfort.
- Monitoring work areas and operations continually to identify respiratory hazards.
- Coordinating with the Respiratory Program Administrator on how to address respiratory hazards or other concerns regarding the program.

4.3 Employees

Each employee has the responsibility to wear their respirator when and where required, and in the manner in which they were trained. Employees must also:

- Care for and maintain their respirators as instructed and store them in a clean and sanitary location.
- Inform their Supervisor if the respirator no longer fits well.

- Inform their Supervisor or the Respiratory Program Administrator of any respiratory hazards that they feel are not adequately addressed in the workplace, and of any other concerns that they have regarding the program.
- Notify their Supervisor or the Respiratory Program Administrator of any other problems associated with using their respirator.
- Maintaining facial hair that does not interfere with the face-to-face piece seal or interfere with valve function per this procedure.

4.4 Safety Equipment Room

The Safety Equipment Room is responsible for the inspection, maintenance, and sanitation of respiratory equipment. The Safety Equipment Room also:

- Maintains an inventory of respirators and cartridges.
- Notifies the Respiratory Program Administrator of pending supplier changes and any problems with respiratory equipment reported.

4.5 Health & Safety Department

The Health & Safety Department is responsible for auditing the use of respiratory equipment and:

- Providing training, fitting, and testing instructions so employees can use the equipment safely.
- Monitoring factors in the work area that could increase the degree of employee exposure or stress related to respirator use. These factors include increased exposure levels and introduction of new substances/chemicals.

5.0 RESPIRATORY PROTECTION REQUIREMENTS

Supplied air shall be used until the airborne hazards have been identified. Once identified, respiratory protection shall be set based on the permissible exposure limit (PEL) of the particular airborne hazard.

Respirators will be used for operations where engineering controls, such as ventilation or closed systems, do not reduce atmospheric contamination to acceptable levels. Entry into atmospheres containing less than 19.5% oxygen or that are immediately hazardous to life or health, is not allowed without a safety permit requiring the appropriate respiratory protection and stand-by personnel.

Personnel will not be assigned to tasks requiring the use of respirators unless they are physically able to perform the work while using the respirator. Workers assigned to tasks requiring the use of respirators will not be permitted to wear spectacles, which have temple bars, or straps, which pass between the sealing surface of a respirator and the wearer's face. Personnel requiring corrective lenses may obtain special spectacle kits for prescription lenses from Health Services.

Facial hair (ex: stubble, mustache, sideburns, low hairline, and bangs) must be kept trimmed in such a manner to assure no hair passes between the face and the sealing surface of the face piece of the respirator or interferes with the function of a respirator's valves.

Attachment 1 contains tables on the selection of respirators. Attachment 2 contains Respiratory Equipment Operating Instructions covering the selection and use of respirators, and details on the facial hair requirements.

If a work activity requires personnel to utilize a fall restraint device and supplied air for respiratory protection simultaneously, then the Marathon Health & Safety Department must be notified, and a hazard assessment performed. Hazard mitigation and engineering controls should provide personnel the opportunity to safely evacuate the area, if needed.

6.0 SELECTION OF RESPIRATORY PROTECTION

Respirators are selected according to the type of air contaminant and the degree of anticipated hazard. Attachment 1 contains the Respirator Selection Table. This table gives the appropriate respirator for use in situations which have been anticipated to occur in the Marathon Anacortes Refinery. The Respirator Filters & Cartridges Table within Attachment 1 gives manufacturer codes in order to select the proper cartridges for the respirators designated in the Respirator Selection Table. For any respirator use not shown in the Respirator Selection Table, contact the Health & Safety Department, Respiratory Program Administrator or your Supervisor for a respirator recommendation. A table containing locations of respiratory equipment is also available within Attachment 1.

7.0 MEDICAL EVALUATION

Personnel assigned to tasks where respirators are utilized must be physically able to perform the work while using the respirator. Accordingly, Marathon Anacortes Refinery has the responsibility of ensuring that employees are medically fit and able to tolerate the physical and psychological stress imposed by use of respirators. Employees will not be allowed to wear respirators until a physician or other licensed health care professional has determined that they are medically able to do so. Employees assigned to tasks requiring the use of respirators will be required to complete the "Respirator Medical Evaluation Questionnaire". This questionnaire stays on file with the plant Physician's Assistant. Contractors are required to maintain compliance with the OSHA Respirator Standard. Contractors are subject to Marathon Anacortes Refinery directed audits to ensure compliance. See R-11-009 for additional details concerning contractor safety requirements.

In addition to passing a physical exam, all employees and contractors must be fit tested for specific make, model and size of respirators. Fit testing ensures that the respirator fits that face of the user and must be performed annually. If an individual loses or gains weight or experiences other physical changes to the head/face, additional fit testing should be performed since this can affect the fit of a respirator.

8.0 MAINTENANCE AND REPAIR

- Full-face masks, air-supplied respirators, and self-contained breathing apparatus (SCBA) units will be inspected monthly by the Safety Equipment Room per Manufacturers' recommendations to insure satisfactory working conditions.
- Self-contained breathing air cylinders shall be charged, and the regulator and warning devices shall be checked monthly by the Safety Equipment Room.
- Full-face mask checks shall include tightness of connections, condition of face piece, headbands, valves, connecting tubes, and canisters. Rubber parts shall be checked for pliability and signs of deterioration. Stretching will keep rubber parts pliable and flexible and prevent them from setting during storage.
- Monthly inspection records shall be maintained and filed in the Safety Equipment Room.
- All respirators for emergency use shall be cleaned and sanitized after each use.

- Routinely used respirators shall be collected, cleaned, and sanitized as necessary. Cartridge changing is the responsibility of the user.
- Any maintenance, other than sanitizing and filter or cartridge changing, will be done by the Safety Equipment Room.

9.0 CLEANING AND SANITATION

All masks must be sanitized after each use before returning them to the cabinets.

9.1 Operations

Operational personnel are to sanitize the face pieces of Scott self-contained breathing apparatus (SCBA) with antiseptic wipes and water, and store in plastic bag after each use.

9.2 Maintenance

All respirators, except those permanently assigned to individuals, shall be returned to the Safety Equipment Room to be cleaned and disinfected at job completion or at the end of the work shift, whichever occurs first. Individuals who have respirators permanently assigned to them shall keep them clean and in proper operating condition. When not in use, respirators must be stored in a plastic bag.

Dirty or contaminated equipment will be cleaned and sanitized at the Safety Equipment Room in the following manner:

- Remove filters or cartridges.
- The face piece, head harness and breathing tube are loaded into a Georgia Steel (GS) Series Respirator washing machine. The GS Series Respirator washing machine utilizes pre-heated water to wash respirators. Detergents, germicides, and rinse agents are GS products. Pre-programmed wash and rinse cycles are normally utilized with set cycles.
- When the wash cycle is complete the face piece, head harness and breathing tubes are loaded into a GS 3000 respirator dryer for 30 to 60 minutes.
- Inspect the mask and replace any damaged or defective parts.
- Store the mask in a plastic bag.
- Date and sign inspection tag.

10.0 SUPPLIED AIR USING PORTABLE AIR COMPRESSORS

Air supplied by portable air compressors may contain undesirable contaminants. Water, organic materials, or high carbon monoxide (CO) levels can make it unsuitable for use as air supplied to respirators. If a portable air compressor is being used to supply air to respirators, it MUST be used in conjunction with a compressed air filter and regulator panel with a carbon monoxide monitor/alarm (also known as a breather box). The portable Grade-D filtration system's function is to filter this air for particulates and oil mists, monitor its CO content and give warning should the CO content raise above 10 ppm, thus making it safe to use as an air supply for respirators.

11.0 SPEEDGLAS WITH ADFLO WELDING HELMET

The Speedglas with Adflo welding helmet consists of a Speedglas 9000 auto-darkening welding lens with a Hornell Welding respirator (HWR) 9000 helmet assembly and an Adflo unit. The Adflo unit consists of a belt mounted Turbo (i.e., a Hornell constant flow blower) with a spark arrester, pre-filter, and high efficiency particle filter all housed in a filter cover.

The Adflo unit draws ambient air through its filter cartridge and supplies filtered air to the HWR 9000 helmet assembly via a breathing tube. The Adflo unit's battery pack provides 5.5 to 13 hours of operation per charge, depending on particle filter loading and filter configuration.

The Adflo unit is equipped with automatic flow control. The motor power is automatically regulated during operation to compensate for the state of the battery and level of airflow resistance caused by the high efficiency filter and pre-filter being loaded with particles. This automatic control ensures a constant airflow to the welder. Should the airflow fall below the manufacturer's minimum design flow rate for any reason, an audible alarm will sound and the red LED on the on/off switch will flash to warn the user to immediately leave the contaminated environment.

The following limitations apply to the Speedglas with Adflo welding helmet:

- Not for use in atmospheres immediately dangerous to life or health (IDLH).
- Not for use in atmospheres containing less than 19.5% oxygen
- Not rated for use in hazardous classified areas for electrical devices (Class 1 Div 1 or Class 1 Div 2). This unit is not intrinsically safe and therefore cannot be used where flammable material may be present or venting and draining of flammable material occurs.
- Not to be used without the Adflo unit turned on since there is a risk of high concentration of CO2 and an oxygen deficient atmosphere.
- Not to be used if the Adflo unit does not supply enough airflow (i.e., low flow alarm).
- Not to be considered supplied air respiratory protection.
- Not to be used if either the contaminant or concentration level of contaminant is unknown.
- Not to be used for impact hazards. Impact resistant eye protection, safety glasses or goggles must be worn at all times when using this helmet.
- Only personnel properly trained in the use, care and limitations of the Speedglas with Adflo welding helmet are authorized to use it.
- Proper shade number lens for the Speedglas lens model must match the application.

12.0 TRAINING

Employees will be trained in the need, use, sanitary care, and limitations of respiratory equipment they use.

Initial and annual training requirements include the following:

- Reasons for wearing respirators
- The respirator's capabilities and limitations
- Proper selection
- Proper use

- Proper maintenance, including sanitizing procedure
- Hands-on training
- How to use the respirator effectively in emergency situations
- Medical signs and symptoms that may limit or prevent the effective use of respirators, such as shortness of breath or dizziness
- Fitting and testing

Conditions that prevent a good face seal (i.e., beard, sideburns, glasses, missing dentures).

13.0 REVIEW AND REVISION HISTORY

Revision #	Preparer	Date	Description
0	Mark Willand	12/16/2021	Reformatted and Numbered per Document Control Policy, R-63-001.
1	Michael Fazio	6/20/2022	Attachment #3 updates to correspond with updated Washington regulations on Wildfire smoke. Changed Content Custodian from Kelly Codlin to Michael Fazio.
2	Michael Fazio	2/3/2023	Updated Hydrogen Sulfide levels on page 11.
3	Michael Fazio	10/3/2024	Updated Approver, added Facial Hair Attachment 4

14.0 ATTACHMENT 1 – SELECTION OF RESPIRATORY PROTECTION

Respirator Selection

Type of Hazard	**Degree of Anticipated Hazard or Situation of Use**	**Respirator to be Used** (terms defined at end of table)
Ammonia	Sampling, blinding	Full-face with lime green or olive drab cartridges
Asbestos	All work involving removal of thermal system insulation or Transite	Half-mask, full-face, or PAPR with HEPA(P-100) filters
Benzene, or Hydrocarbon Streams with > 0.1% Benzene	Minor leak of benzene-containing hydrocarbon, or air concentration of 1-10 ppm	Half-mask or full-face with organic vapor cartridge
	Blinding and draining systems with benzene-containing hydrocarbon, or air concentration of 10-50 ppm	Full-face with organic vapor cartridge
	Air concentration >50 ppm benzene	Airline or SCBA with escape bottle
	Tank or vessel entry before it has been cleaned of benzene-containing hydrocarbons, or air concentration greater than 50 ppm benzene	SCBA or airline with escape bottle
Crystalline Silica	Hand or power tool removal of refractory which contains silica, mixing refractory in mix tents.	Full-face, or PAPR with HEPA(P-100) filters unless IH samples determine otherwise
Firefighting	Structural and offensive actions in the Hot Zone	SCBA
Hydrocarbons (< 0.1% Benzene)	Moderate leak of volatile hydrocarbon, or air concentration of <1000 ppm	Half-mask or full-face with organic vapor cartridge
	Air concentration <5000 ppm	Full-face with organic vapor cartridge, or Airline
	Tank or vessel entry before it has been cleaned of hydrocarbons, or air concentration greater than 5000 ppm	SCBA or Airline with escape bottle
Hydrogen Sulfide	Air concentration from 0-9 ppm	None
	Air concentration from 10-49 ppm	Supplied Air, APR if approved
	Air concentration from >50 ppm	Supplied Air

Type of Hazard	Degree of Anticipated Hazard or Situation of Use	Respirator to be Used (terms defined at end of table)
Lead Dust	Small scale, short term (i.e., < 30 min) removal of lead-containing paint using power grinder or brush	Half-mask, full-face, or PAPR with HEPA(P-100) filters
	Welding or torch cutting inside a tank which has contained leaded gasoline at any time in the past	Half-mask, full-face, or PAPR with HEPA (P-100) filters for lead dust protection. Hexavalent chromium respiratory protection requirements are within r-14-001 Attachment 1 Respiratory Protection & Ventilation for Welding & Torch Cutting. The highest level of respiratory protection must be selected for the job task(s).
	Large scale (i.e., > 30 minutes) removal of lead-containing paint using power grinder or brush	Airline
	Abrasive blasting of lead-containing paint	Bullard Model 78 or 88 type CE abrasive blasting hood
Oxygen Deficiency	Tank or vessel entry before cleaning	SCBA or airline with escape bottle
Unknown Atmosphere	Entry into confined space or other anticipated hazardous atmosphere where hazard level is unknown	SCBA or airline with escape bottle
Welding Fume	Welding &/or torch cutting	Refer to R-14-001 Attachment 1 Respiratory Protection & Ventilation for Welding & Torch Cutting. **Note**: Control of welding gases (Ex: carbon monoxide, nitrogen oxides and ozone) may require ventilation and/or airline respirators (see R-14-001).

Respirator Filters & Cartridges

Hazard	Color	Scott	3M	Uses
Dusts, Fumes, Mists & Asbestos Dusts & Mists	Magenta	7422-FP	P-100 7093-B	HEPA(P-100) filter for most welding fumes (see R-14-001), asbestos, and silica
Organic Vapors Chlorine Formaldehyde Sulfur Dioxide Hydrogen Chloride Ammonia Methylamine	Lime-Green (MSA) Olive drab (3M)	7422-SC	6006	Combination cartridge for organic vapor (Ex: benzene & other hydrocarbons), in addition to the other listed gases ammonia vapor cartridge (i.e., less than 300 ppm)
Mercury Vapor & Chlorine	Orange	Mersorb* 7422-ZA	6009	Mercury cartridge (i.e., less 0.5 mg/m^3)
Organic Vapors Chlorine Sulfur Dioxide Hydrogen Chloride Asbestos	Lime-Green + Magenta (Scott) Olive drab + Magenta (3M)	7422-SD	60926	Combination cartridge for organic vapor (Ex: benzene & other hydrocarbons), in addition to the other listed gases, dusts & mists

* Mersorb cartridges have an end-of-service-life-indicator. The user must visually monitor the indicator dot (i.e., in the center) or stripe (i.e., on the edge) of the cartridge. Once the dot or stripe turns brown the cartridge must be replaced. This requires that two or more personnel work together so that the indicator may be observed.

Locations of Respiratory Equipment

Types	Locations
Air Line Masks	Carts with 2 cylinders, and 15-pack skids are available at the Safety Equipment Room, Shop II.
Half-Face Masks	(Cartridge Type Respirators) - Stored in plastic bags in the Safety Equipment Room, Shop II.
Full-Face Masks	(Cartridge Type Respirators) - Stored in plastic bags in the Safety Equipment Room, Shop II.
PAPR	PAPR units are stored in Safety Equipment Room.
SCBA	Units are available at the following locations: Operations Areas, Central Control Room, Operator Shelters, certain vehicles, Fire Hall, Fire Trucks, SCBA Trailer, Safety Equipment Room and Ambulance. Spent cylinders on SCBA's shall be replaced with full cylinders. Notify the Safety Equipment Room so that the cylinders will be refilled.
5-Minute Escape Pack	Unit in each of the Tadanos and Grove Cranes
Abrasive Blasting Hood	Available at the Paint Shop and at the Safety Equipment Room, Shop II. Abrasive blasting hood and airline hood must be used with charcoal filter/pressure regulator and CO monitors (breather box) if used with air supplied by a compressor.

15.0 ATTACHMENT 2 – RESPIRATORY EQUIPMENT OPERATING INSTRUCTIONS

15.1 General

All Marathon Anacortes Refinery employees and contractors must understand how to use each piece of respiratory equipment and know its limitations before they will be allowed to use the respirator in the plant. If additional instructions are needed, contact the Health & Safety Department or your Supervisor.

Inspect each piece of respiratory equipment before each use. Be sure that all connections and fittings on air-supplied equipment are secure and not leaking.

Don, adjust, and test respiratory equipment in fresh air.

Certain physical characteristics, including beards and sideburns, may interfere with obtaining a satisfactory face seal with masks. A satisfactory face seal cannot be achieved while wearing conventional eyeglasses.

Return to fresh air immediately if:

- Leakage is detected
- High breathing resistance occurs
- Inhaled air becomes extremely hot
- Any feeling of nausea, dizziness, or ill being develops

Respiratory equipment does not protect the wearer from gases or vapors that can be absorbed by the skin.

Never alter or modify any respiratory protection device or associated equipment.

Do not use a respirator if you have a medical condition that prevents you from doing the job safely.

15.2 Donning and Testing

The proper procedures for donning and testing all half-face and full-face masks used with respiratory equipment in the Marathon Anacortes Refinery are described below.

15.2.1 Half-Mace Masks (Scott & 3M)

- Place the respirator over the mouth and nose, then pull the head harness over the crown of the head. Position the face-piece low on the nose.
- Take the bottom straps in both hands and place them in back of the neck and hook together.
- Position headbands with top headband on top back of head and the bottom headband around neck just below the ears.
- Pull the ends of the head harness and bottom straps to adjust the tightness. Do not pull too tight.

Testing: Test respirator for leakage, using positive and negative pressure methods.

- Place a hand over the exhalation valve cover and exhale gently. A positive pressure should be felt inside the face piece. If leakage is detected, reposition the face piece and/or readjust the tension of the straps. Repeat this procedure until a good seal is obtained.
- Place hands or pieces of cardboard over both inhalation ports, inhale gently and hold your breath for five to ten seconds. The face piece should collapse slightly. If air leakage is detected, reposition the face piece and/or readjust the tension of the straps. Repeat the procedure until a good seal is obtained.

15.2.2 Full-Face Masks (i.e., Air Line Masks, Pressure Demand Self Contained Breathing Apparatus, AV 3000 & PAPR)

Pull out head net straps, so that the ends are at the buckle. Then, grip face piece between thumb and fingers. Insert chin well into lower part of face piece and pull head net back overhead. Do not pull the head net over the face piece as this will scratch the face-shield. To obtain a firm and comfortable fit against the face at all points, adjust headbands as follows:

- See that straps lie flat against head.
- Tighten lower or neck straps. Pull straight back not to the side.
- Tighten the side straps.
- Place both hands on head net and push it towards the neck.
- Repeat tightening operations.

Testing: Test respirator for leakage, using positive and negative pressure methods.

- Place a hand over the regulator hole in the mask. Inhale gently so that the face piece collapses slightly and hold the breath for five to ten seconds. The face piece will remain collapsed while the breath is held providing the assembly is airtight. If any leakage is detected around the facial seal, readjust the head harness and repeat the test until there is no leakage. If other than facial seal leakage is detected, it must be found and corrected before another test is made.

15.3 Instructions & Limitations

15.3.1 Half-Mask and Full-Face Cartridge Type Respirators

Instructions: Install proper chemical cartridges making sure that the gasket areas are in proper position at the cartridge receptacles. Hand-tighten the cartridge with caution to prevent damage, and to insure a good seal against the gasket area. Fit and test the mask as described in the section on donning and testing. If the wearer notices chemical odors, tastes, or nose or throat irritations while wearing a properly sealed mask, it is evidence that the cartridges need to be replaced. Service time of the cartridges will vary according to the conditions of use. Cartridges, even though sealed in plastic, must not be stored where they may be exposed to contaminants, as this will render them useless. Cartridges must be replaced at the end of the work shift.

After use, sanitize the mask, insert in a plastic bag, and return mask to storage cabinet or return to the Safety Equipment Room for cleaning and disinfecting.

Limitations: Do not use in an oxygen-deficient atmosphere. Do not use in an atmosphere immediately hazardous to life or health. Do not use in an atmosphere that may contain vapors that are irritating to the eyes. Do not use as protection against chemicals having poor odor-warning properties. Do not use as protection against H2S.

15.3.2 PAPR (Powered Air-Purifying Respirator)

An approved air-purifying device designed for use in atmospheres not immediately dangerous to life or health.

Instructions: The PAPR can be used with the AV3000 full-face piece. The motor-blower, battery pack and filters are worn as an assembly on the support belt. The breathing tube connects the belt-mounted assembly to the face piece. PAPR can be used in lieu of a half-mask respirator for dusts and limited asbestos work.

Limitations: The PAPR is certified for wearer protection against dusts, fumes and mists. PAPR filters do not remove poisonous gases or vapors from the air supply. This respirator does not supply oxygen. Do not use in oxygen deficient atmospheres.

15.3.3 Air-Line Mask

Two persons must be completely equipped, and a third person must stand by the air cylinder cart. Active radio communications for the stand-by person is required when opening flanges in an operating unit.

Exception: When the airline hose cart equipment is utilized for insulation work, the air cylinder cart stand-by person is required, but persons working in mask equipment may number from one to whatever number is needed to accomplish the job. Confined space work, or if material is at IDLH level, would still require at least two persons in masks.

Tag use for returning fresh air equipment: Red tagging of fresh-air carts is required prior to bringing them to the shop to be worked on. The tag should have the following information:

- Where it was used
- What is was used in
- Who used it (i.e. person not company)
- Did it work properly

Limitations: Breathable air supply lines restrict mobility. Failure of the breathable air system requires immediate exit from a hazardous area. Service life of the escape cylinder is approximately five minutes.

There are no check valves in the air line connected to the bottle cart. Care must be taken to properly plan the work, to ensure that there is enough air to complete the work task and secure flanges. In the event that a separate bottle cart must be hooked up to supply additional air, see the section below titled hooking up an additional bottle cart.

15.3.4 Instructions & Equipment List

- A two-wheeled cart with two compressed breathing air cylinders, 233 cubic feet of lines, and 15 pack skids are also available.
- Cart-mounted four-hose manifold with pigtail (i.e., high-pressure hose)
- Equipment box cart mounted:
  - Regulator: Reduces air cylinder pressure to 65-85 psi.
  - Low-pressure alarm: Sounds between 540-570 psi
  - Wrench
  - Red/black barricade tape
  - Orange stand-by vest
  - Emergency whistle attached to top of cart lid
  - Red tags
- 2- 5 Minute egress packs (i.e., 1 each in yellow bag). Must be assembled at job site.
- Breathing air hoses: Each lay of hose may be up to a maximum length of 300 feet. Must be assembled at job site.
- Separate SCBA for the stand-by personnel. The SCBA does not need to be worn but must be located at the job site with the stand-by person.

15.3.5 Set up at Job Site

- Cart to be placed near and upwind of job site. Place on level terrain, outside of barricaded area such that you can see the workers and manifold gauges.
- Remove protective covers and plugs from hoses, bottle cart regulator, and cart cylinders. Place protective covers and plugs in bottle cart tool box to keep them free of contamination. Check markings on cylinder to insure O2 content has been tested. If it has not been tested, then do not use. Crack cylinder valves and close to clean cylinder fittings.
- Connect pigtail assembly, low-pressure alarm, pressure regulator and manifold assembly to cart cylinders and air supply manifold. Snug fittings with wrench. Do not over tighten.
- Attach airline hoses (i.e., each lay of hose is 300' maximum length) to cart manifold. Be sure quick-connect fittings are locked and leak free. Check for leaks by opening bottle valve (i.e., with terminal hose ends in hand) until system is pressured, and then block valve back in. If a pressure drop is noted, check plug in connectors at manifold for proper seat and all hose connections for leaks. If a leak is still detected, return to Safety Equipment Room for service.

  Note: When opening bottle valve, the bell alarm should sound between 540-570 psi if it is functioning properly.
- Lay out hoses to job site, being sure hoses are protected from heat, acid, sharp edges, and other hazards.

- Remove egress units from the yellow bags.
  - Check egress air cylinder for pressure of 3000 pounds or in full range indicator. If pressure is found to be more than 3100 psig or less than 2900 psig, return to Safety Equipment Room for service. Do not use.
  - The egress air cylinder valve should not be opened unless used for emergency egress.
- Put on egress unit: Put left arm and head through the unit's sling strap. The pad is to rest on the right shoulder and the cylinder is to rest on left hip. The high-pressure hose is to wrap around your back and waist with the regulator on your left hip. Adjust the shoulder strap for fit. Then fasten the waist belt snugly.

  Note: Certain entries into confined spaces will require the wearer to use a safety harness with a lifeline attached.

15.3.6 Go to Job Site

- Don the facemask and make seal. Must be done in fresh air area.
- Hold the quick connect fitting of the cart airline hose in hand to ensure check valve is not leaking, and signal the stand-by person at the cart to pressure up system (i.e. open valve on one of the two cart cylinders). Use cylinder with lowest pressure indication.
- Attach the airline hose to the egress unit regulator and the air will start, then attach the regulator to the mask.
- Emergency egress from a hazardous area can be accomplished using either the breathable air system (i.e., cart with hose) or the portable egress unit cylinder. To use the portable cylinder:
  - Open the egress unit cylinders main block valve.
  - Leave the area immediately with cart airline hose connected or disconnect, whichever is appropriate for area egress.
  - The egress unit portable air cylinder contains approximately 5 minutes of breathable air.
  - If the breathable air system low-pressure alarm sounds (i.e., 540-570 psi on cylinder being used), the stand-by person is to close the cylinder valve of the cylinder being used, and immediately crack open the other cylinder valves so air flow to persons working in masks is not interrupted.
  - Should the low-pressure alarm sound on the second air cylinder, the stand-by person must open cylinder valves of both cylinders on cart and alert persons working in masks they should then return to fresh air immediately. 15 pack cylinder skids allow more cylinders to be opened after the first one is used up.

15.3.7 Utilizing a Second Bottle Cart

- Cart to be placed near and upwind of job site. Place on level terrain, outside of barricaded area such that you can see the workers and manifold gauges.

- Remove protective covers and plugs from hoses, bottle cart regulator, and cart cylinders. Place protective covers and plugs in bottle cart toolbox to keep them free of contamination. Check markings on cylinder to insure O_2 content has been tested. If it has not been tested, then do not use. Crack cylinder valves and close to clean cylinder fittings.
- Connect pigtail assembly, low-pressure alarm, pressure regulator and manifold assembly to cart cylinders and air supply manifold. Snug fittings with wrench. Do not over tighten.
- Utilize the jumper connection air line between the RIT (Rapid Intervention Team) fitting on the cart in use and RIT fitting on new cart. Note that the RIT fitting is of a different type than the airline fitting.
- Close cylinder air on the cart that is in use.
- Disconnect the pigtail from the regulator of the cart in use.
- Turn on cylinder air from new cart.

15.3.8 Securing the Equipment

- Push the air saver button on the MMR (Mask Mount Regulator) and disconnect MMR from mask. Return the MMR to the holder (i.e., hockey puck) in the belt.
- Disconnect airline hose from regulator and replace hose plugs
- Depressurize airline hose at cart manifold and disconnect pig tail and pressure regulator assembly from manifold and cart cylinders.
- Store all equipment properly and return cart to Safety Equipment Room to be serviced, which is located at the SE end of Shop II.
- When this system is used, all personnel must have been trained in its proper use.

15.4 Pressure Demand (Self-Contained Breathing-Apparatus)

Instructions: Check cylinder pressure. Pressure should be 4500 psi or in full range on indicator. If less pressure, service life will be reduced accordingly. Put on the apparatus by one of the following methods:

- Open the case and extend the shoulder straps full length. Lean forward, grasp the cylinder and back plate firmly, with both hands (i.e., thumbs toward the cylinder valve). Lift the apparatus up over the head and rest it on the back. The shoulder straps will fall into place over the shoulders. Adjust the straps before straightening up. Fasten the waist belt snugly.
- Extend the shoulder straps. Don the apparatus like a vest. Lean forward while adjusting the shoulder straps. Fasten the waist belt securely.
- Press the breath saver switch on the top of the MMR then open the cylinder valve at least 3 full turns. Check all the fittings for leaks
- Don the mask, Connect the MMR to the mask and take a deep breath in to activate normal breathing.

There are multiple SCBAs located in the fire hall equipped with a RIT (Rapid Intervention Team) fitting. This fitting is only on the Fire Brigade packs and are used in emergency

situations only. The Brigade has a RIT-PAK which is used to supply emergency air to a downed or trapped Team Member.

Fit and test the mask as described in the section on fitting and testing. Breathe normally as the apparatus automatically satisfies breathing requirements. If any leaks are found, correct them before using the apparatus.

The pressure demand (i.e., SCBA) is approved as a 45-minute duration unit. However, service life will be affected by several factors including type of physical activity, excitement, training, and experience of the user. When the air in the cylinder has been used down to the remaining 20 to 25% of the cylinder's capacity (i.e. approximately 5 minutes), an alarm warns the wearer. The cylinder pressure gauge will read between 1035-1215 lbs. At the time of the alarm or visual observation of this pressure reading, return to fresh air and replace the cylinder.

During normal use, the purge (i.e., red) valve is closed. It provides a continuous flow of air to the face piece. The purge (i.e., red) valve is adjusted to provide the desired flow. If the purge (i.e., red) valve must be used, your air supply time will be reduced.

15.4.1 Securing the SCBA:

- Unit to be used again immediately: With your right hand on the MMR, click the air saver-switch on with your index finger. With you thumb release the MMR lock to the face piece, give the MMR ¼ turn and remove from face piece. Place MMR into holder (i.e., hockey puck) on the waist belt.
- Unit not to be used again immediately: With your right hand on the MMR, click the air saver-switch on with your index finger. With your thumb, release the MMR lock to the face piece, give the MMR ¼ turn and remove from face piece. Place MMR into holder (i.e., hockey puck) on the waist belt. Remove SCBA and lengthen all straps.
- Close the cylinder by pushing in on the valve handle and turning clockwise.
- Release the pressure on the high-pressure hose by opening the purge (i.e., red) valve.
- Disconnect the hand tight coupling nut at the cylinder valve.
- Release the cylinder draw strap clamp push down on the black release handle for the cylinder and remove the used cylinder from the back plate.
- Replace the cylinder with a fully charged one, tighten the draw strap clamp, and hand tighten the coupling nut at the cylinder valve.
- Sanitize the face piece.
- Place apparatus in carrying case and return case to storage cabinet.
- Notify the Safety Equipment Room for cylinder replacement.

15.4.2 Limitations

- Service life is limited to the amount of air in the apparatus. When entry into an atmosphere which is or may be immediately dangerous to life or health is required, this unit must have a minimum of 4000 psi cylinder pressure.
- The bulk and weight restrict activity and movement.

15.5 Abrasive Blasting Hood

15.5.1 Instructions

- Connect the hood to the breathable air system or to breathable air cylinders with an airline hose (i.e., 250 feet maximum length). Be sure quick-connect fittings are locked and leak free. Air is supplied through a charcoal filter/pressure regulator and CO monitor from a compressor with breather box or air cylinders filled with Grade D breathing air.
- Adjust the headband and the tie lace for comfort and best vision.
- Fold back cape and stretch open the collar.
- Place helmet on the head and adjust the collar. Connect and tighten the cape straps under the arms.
- Adjust the constant flow control valve to the desired air flow.
- Get to fresh air immediately if the breathable air system low-pressure alarm sounds, the pressure in the breathable air cylinder drops below 500 psi, or if the CO alarm horn sounds.
- After use, sanitize the inside of the hood and return to storage.

15.5.2 Limitations

Do not use in an atmosphere immediately dangerous/hazardous to life or health (IDLH). Abrasive blasting hoods provide no protection if the air supply fails. Wearer must return to a respirable atmosphere by retracing entry route. Wearer must wear hearing protection when abrasive blasting.

16.0 ATTACHMENT 3 – L&I'S WILDFIRE SMOKE EMERGENCY RULE

The Washington State Department of Labor & Industries (L&I) recently filed an emergency rule to provide increased protection for hazards associated with wildfire smoke.

L&I recognizes the hazard of wildfire smoke exposure can present health risks to all workers, especially those working outside. A major component of wildfire smoke is particulate matter with an aerodynamic diameter less than 2.5 micrometers ($PM_{2.5}$) which can cause cardiovascular health effects.

People with preexisting health conditions and those who are sensitive to air pollution are among those most likely to experience health problems from exposure to wildfire smoke. Examples of sensitive groups include:

- People with lung diseases such as asthma or chronic obstructive pulmonary disease (COPD), including bronchitis and emphysema, and those who smoke.
- People with respiratory infections, such as pneumonia, acute bronchitis, bronchiolitis, colds, flu, or those with, or recovering from COVID-19.
- People with existing heart or circulatory problems, such as irregular heartbeat, congestive heart failure, coronary artery disease, angina, and those who have had a heart attack or stroke.
- Children under eighteen years old, and adults over age sixty-five.
- Pregnant women.
- People with diabetes.
- People with other medical or health conditions which can be exacerbated by exposure to wildfire smoke as determined by a physician.

This rule requires:

- Industrial Hygienist (IH) to determine $PM_{2.5}$ levels at the refinery daily and more often as needed by checking one of the listed web-based sources:

  U.S. EPA AirNow website: https://www.airnow.gov

  U.S. Forest Service AirFire website: http://tools.airfire.org

- Notifying employees/contractors when at least two consecutive current PM2.5 readings are 20.5 $\mu g/m^3$ (AQI 69) or more, when the current PM2.5 is 35.5 $\mu g/m^3$ (AQI 101) or more, and when the current PM2.5 is 555 $\mu g/m^3$ or more, and what protective measures are available to employees.
- Notifying employees of wildfire air quality via plantwide emailed 'points of interests' (POI). Employees will be encouraged to discuss conditions and any symptoms due to the air quality, with supervisors or Safety and Health.
- Training employees who may be exposed to $PM_{2.5}$ levels of AQI 69 or above on the hazards of wildfire smoke and the site procedures (R-14-008 Respiratory Protection Program includes information on wildfire smoke precautions) for ensuring workers are protected from wildfire smoke.
- Ensuring that all employees/contractors who display symptoms of illness related to wildfire smoke (asthma attacks, difficulty breathing, or chest pain) have access to our on-site medical provider.

- Making respiratory protection (N-95 or KN-95) available and encouraged for employees for use on a voluntary basis whenever $PM_{2.5}$ reaches 35.5 µg/m^3 (AQI 101).
- Requiring use of respiratory protection (beyond N-95 and K-95) and administrative controls when $PM_{2.5}$ reaches 555 µg/m^3.

For more information on L&I's Wildfire Smoke Emergency Rule, please copy and paste link below. Appendix B includes protection from wildfire smoke information to be provided to employees.

https://www.lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/_WildFire/WildfireSmokeRuleDraftStakeholderMeeting6-18-21.pdf

17.0 ATTACHMENT 4 – FACIAL HAIRSTYLES AND RESPIRATORS

HLT-2005 Respiratory Protection – Appendix B: Facial Hair Graphic

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