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1.0 INTRODUCTION

1.1 Purpose

The purpose of this procedure is to ensure all Marathon Anacortes Refinery employees and contractors are familiar with facility PPE requirements.

1.2 Scope

This procedure applies to Marathon Anacortes Refinery employees and contractors. All personnel working on Marathon Anacortes Refinery property must comply with this procedure.

1.3 Overview

In compliance with Washington Administrative Code (WAC) 296-800-16005, continuous assessments are made of potential hazards at Marathon Anacortes Refinery, which may require the use of personal protective equipment (PPE). These assessments are available for review by contacting the Health & Safety Department.

This procedure lists requirements for PPE use at Marathon Anacortes Refinery, but it is important to remember that controlling the hazard is the best protection. PPE devices alone should not be relied on to provide protection against all hazards, but should be used in conjunction with guards, engineering controls, and sound safe work practices

2.0 REFERENCES

2.1 Marathon Standards, Policies & Procedures

- RSP-1716-00, Personal Protective Equipment

2.2 Government Regulations

- WAC 296-800-16005, Do a Hazard Assessment for PPE
- WAC 296-817, Hearing Loss Prevention (Noise)
- WAC 296-818, Abrasive Blasting

2.3 Industry Standards

- ASTM F-2413-05, Standard Specification for Performance Requirements for Foot Protection
- ANSI Z41 PT99, Protective Footwear
- ANSI Z89.1, Industrial Head Protection

3.0 DEFINITIONS

The following definitions are applicable to this procedure.

Table 1 Definitions

Term	Description
Abrasive Blasting Hood (Clemco Red)	This hood is designed, to be used with the Clemco Fresh Air Helmet and provides protection for the head, neck and shoulders. It does not provide protection from hydrocarbons or chemicals. It should only be used for abrasive blasting activities.
Abrasive Blasting Respirator	A supplied air or a continuous flow respirator constructed to cover and protect the Operator's head, neck and shoulders from rebounding abrasive material.
Approved Chemical Gear	Chemical protective garment designed to protect the wearer from exposure to acids, caustics, and hydrocarbons. Approved chemical gear is evaluated and approved by the Health & Safety Department. Approval is based on technical data validating the garment for specific chemicals in which it is intended for use.
Boots, Neoprene	Chemical resistant boots; protecting the feet from contact with acids and caustics (liquids or solids).
Corrosive	A substance that, upon contact, causes destruction of living tissue by chemical action, including acids with a pH of 2.5 or below or caustics with a pH of 11.0 or above.
Disposable Coveralls	Disposable coveralls used when working around dust or chemical particulates. Limitations: Flame Resistant Clothing (FRC) is required to be worn by employees under disposable coveralls.
Face Shield, Clear	Face shields are clear plastic shields designed to protect the face from liquid splashes and impact, such as flying debris from grinding operations. Note: Two different styles of face shields are available.
Face Shield, Welder	Opaque face shields with tinted vision port designed to protect the face from welding splatter and the eyes from ultraviolet light.
Flame Resistant Clothing	Long-sleeved coveralls or shirt & pants required reducing the risk from exposure to flash fires and electric arc. Allowable fabrics are Nomex, Banwear, Proban and Indura. Limitations: Flame Resistant Clothing is not turnout gear. It is intended only to reduce injury from accidental exposure to flash fire or electric arc.
Gloves, Cut Resistant	Gloves that have been tested for cut resistance per ISEA Standards.
Gloves, Leather	Gloves designed to protect the hands from mechanical injury resulting from such activities as heavy lifting, fitting pipe, or opening and closing valves. Leather gloves are available from the safety equipment room. Limitations: Will not protect from exposure to liquids.
Gloves, Neoprene	Chemical resistant gloves protecting the hands from contact with acids and caustics (liquids or solids) Limitations: With acid concentrations greater than 70% the glove material will begin to degrade within a few minutes. When working with these high concentrations, the glove should be considered to provide protection from incidental contact only. The concentrated acid should be rinsed off the glove within a few minutes of contact.

Table 1 Definitions

Term	Description
Gloves, Nitrile	Chemical resistant gloves protecting the hands from contact with hydrocarbons (liquids or solids). Limitations: With highly concentrated aromatics (Ex: toluene or xylene at greater than 50%) the glove material will begin to degrade within a few minutes. These high concentrations are found only in the lab and some paint thinners, not in refinery process streams. When working with these high concentrations, the glove should be considered to provide protection from incidental contact only. The concentrated solvent should be rinsed off the glove within a few minutes of contact.
Gloves, Nitrile (Insulator)	Chemical resistant gloves protecting the hands from contact with hydrocarbons, liquids and solids. These gloves are a Nitrile impregnated fabric glove. These gloves are for use by insulators to provide better dexterity. Limitations: Because the gloves are a thin wall; blue Nitrile gloves should not be used for continuous contact with hydrocarbons. They protect well from incidental contact with hydrocarbons.
Goggles, Chemical Splash	Chemical splash goggles are designed to protect the eyes from liquid (i.e., chemical/hydrocarbon) splashes and sharp impacts. This goggle has protected ventilation ports that prevent liquids from entering.
Goggles, Dust	Dust goggles are designed to provide eye protection against dusts and larger debris, such as wood chips. They do not provide protection against chemical splash or exposure.
Goggles, Welders Helper/Flash	These types of goggles are designed to provide eye protection against ultraviolet radiation, such as during welding and cutting work activities. They do not provide any chemical splash protection.
Protective Footwear	Includes shoes with a substantial sole and ankle support made of a liquid resistant material, such as leather, rubber, or other equally firm material. Open toed or ventilated shoes, sandals, cloth, vinyl or canvas top shoes are not considered safe footwear. Shoes must be in good condition; exposed steel toes, open holes, and duct taped or silicone sealed holes in soles are not considered safe. Shoes must be repaired to near original condition or replaced.
Rain Gear, PVC	PVC garment designed to protect the wearer from rain. Limitations: Provides protection only from environmental factors and rain. Not suitable for use when hydrocarbons, and other chemicals are present
Tychem F	Chemical protective garment designed to protect the wearer from exposure to hydrocarbons, acids, caustics, and other chemical/liquid hazards. This garment is designated for Industrial Response in accordance with NFPA Hazardous Materials Standards.

4.0 ROLES AND RESPONSIBILITIES

4.1 Safety Superintendent

The Safety Superintendent is responsible for ensuring personal protective equipment (PPE) is evaluated for hazard mitigation and is made available in the Safety Equipment Room.

4.2 Supervisor

The Supervisor is responsible for ensuring all employees and contractors working within their areas of responsibility have evaluated the hazards, selected adequate PPE based on the hazards, and enforce the use of PPE.

4.3 Employees & Contractors

All employees and contractors are required to comply with this procedure.

5.0 ESSENTIAL PPE REQUIREMENTS

5.1 General Requirements

Marathon Anacortes has a Facial Hair Policy for anyone who is required to be in a Respiratory Protection Program (refer to the Training Department to see if you are required to be in the Respiratory Protection Program):

All personnel within the Respiratory Protection Program are required to be clean shaven at the start of the shift. Refer to R-14-008 for additional details.

At a minimum, all employees, contractors, vendors, and visitors shall wear:

- FRC, safety glasses, protective footwear, personnel H_2S monitor, and hard hats (with goggles attached) in the following work areas:
  - Process areas of refineries
  - Pipelines: During performance of maintenance, inspection, or operation tasks
  - Loading racks: Non-Marathon Anacortes Refinery drivers exempt from FRC, H_2S monitor requirement
  - Tank Farms
  - Docks and Wharfs: Ship personnel exempt
- Hearing protection shall be worn in operating units, and in high noise areas.
- Appropriate hand protection (Ex: leather or work gloves) shall be immediately available for use when present at any areas listed above.

  Note: Employees that have personal 4-gas monitors (i.e., MX4) do not need a separate H_2S monitor.
- FRC, protective footwear, and safety glasses in the following areas or under the following conditions:
  - Weld Shops
  - Maintenance Shops: Except in designated walkways
  - Any area, as determined by a hazard assessment, where the release of flammable or combustible liquids, vapors or gases may occur
  - Any area with an electrical classification of Class 1, Division 1
  - Any area with an electrical classification of Class 1, Division 2

  Note: FRC must have a minimum rating of 4.1 ATPV, HRC 1

- FRC and safety glasses in the following work area:
  - Quality Control laboratories: FRC lab coats acceptable

    Note: Personnel are allowed to roll up sleeves while working on rotating equipment (i.e., where sleeves can become entangled). When the task is complete, personnel must unroll sleeves

6.0 HARD HATS

Hard hats shall be worn by personnel in any occupation in which there is a potential for injury to the head through falling, rolling, or moving objects; or from burning, scalding, cutting, penetration or any like hazard while working within the facility. Hard hats shall meet or exceed ANSI Z89.1 standards. They can be obtained from an individual's Supervisor. The hard hat shall be replaced whenever cracks or dents appear, and on a 10 year cycle. Hard hats shall not be painted, which may mask or cover a crack. There shall be no holes in the shell except those for mounting suspensions or accessories. The suspensions shall be replaced whenever straps become frayed, brittle or weakened.

The suspension must not be altered or turned around, as this negates the design and protection factors of the hard hat and it would not provide proper protection during off-center or top impacts. Hard hats shall be worn with the brim facing in the forward position to afford maximum facial protection. If the brim interferes with the task being performed, the hard hat may be turned around for these activities but must be worn with the brim facing forward as soon as the task is completed.

6.1 Hard Hat Program

Marathon Anacortes Refinery has a program of using different color hard hats for the different departments.

The following is the color key:

Table 2 Hard Hat Colors

Color	Department
Blue	Operations
Green	Maintenance
Red	Safety Specialists
White	Administration, Laboratory
White	Visitors (visitors decal)
Yellow	Instrument/Electrical
Black	Stores
Tan	New employees with less than 2 years
Purple	PSM Department

Note: All Marathon Anacortes Refinery hard hats shall display the Marathon treasure burst emblem.

6.2 Tan Hat Program

This awareness program provides a means of identifying new Marathon Anacortes Refinery employees so that more experienced employees can assist the new employee in understanding the risks inherent to working in a refining environment, as well as the specific facility safety requirements. All new employees with less than 2 years of refinery experience in the applicable discipline/assignment will be issued a tan hard hat to be worn during their initial orientation and continuing through their first two years of employment. Department Managers will bring exceptions to the Management Team for approval. The tan hat will have a band on the hat designating the department to which the employee is assigned.

Table 3 Hard Hat Band Colors

Band Color	Department
Blue	Operations
Green	Maintenance
Red	Fire and Safety
White	Administration
Yellow	Instrument/Electrical
Black	Stores

7.0 GLOVES

7.1 General Duty Gloves

MPC employees and contractors performing work that has the potential for lacerations, abrasions, punctures, and/or impact shall always have general duty work gloves with them and wear them when performing this work.

MPC employees shall select a general duty glove provided by the Safety Equipment Room (and on the Glove Matrix from RSP-1703-000 Appendix A).

Contract employees may utilize any general duty work glove which meets the minimum characteristics described in section 7.2 below.

Note: Refer to RSP-1703-000 for additional information on Gloves including a recommended Glove Matrix.

7.2 When to Wear Gloves

Impact and/or cut resistant gloves shall be worn during activities where there is potential for injuries due to impact or laceration/cut hazards. For example:

A. Routine work and general duty tasks performed by all personnel working in Unit Battery Limits, Shops, and Warehouses,

Note: Since MPC has experienced hand injuries while walking up and down process unit stairs and climbing ladders/scaffolds, R-11-023 considers this activity as routine work and General Duty gloves are required.

B. Hands on maintenance activities,

C. Hands on construction activities,

D. Hands on/field process unit activities,

E. Product Control activities (e.g., rail car loading and unloading, tank truck loading and unloading, etc.), and

F. Laboratory activities that involve

- Working with glass or similar materials under stress (e.g., D86 analysis),
- Handling broken glass or similar materials, and
- Breaking ampules.

Note: Appropriate chemical resistant gloves (not covered by this Standard Practice) shall be worn for tasks where chemical or hydrocarbon contact (including extremely oil/greasy conditions) is the primary hazard.

7.3 Acceptable Gloves

7.3.1 General Duty gloves having the following minimum characteristics are required:

A. ANSI/ISEA Level A3 Cut protection (Note: ANSI/ISEA 105 – 2016 Level A3 cut protection meets 1000 grams of cut resistance.) at least in the palm, fingers and thumb of the glove for general operations and maintenance work, and

B. Adequate grip and dexterity.

7.3.2 Depending on the task, additional glove characteristics may be required. For instance:

A. Impact protection to the back of the hand and full length of the fingers for high impact potential tasks (e.g., work with hammers, picking up blinds & valves, hand wrenching flange bolts, impact gun tasks and other tasks where hands and fingers can be pinched between the tool and a fixed object),

B. Enhanced cut protection (**ANSI/ISEA 105 – 2016 Cut Level A4 to Cut Level A9**) in the entire glove for certain high cut potential tasks (e.g., when using a cutting tool such as a utility knife and for insulation and sheet metal work),

C. Hot/Cold weather environmental protection (if applicable), and

D. High Visibility to the dorsal areas of the hands to enhance awareness of hand placement and line of fire.

7.4 Glove Selection

Jobs/Tasks shall be evaluated to determine what specific hand protection/type of glove would provide the best protection. Appropriate gloves (e.g., cut resistant, impact resistant, etc.) for the specific job/task shall be worn until that task is complete.

7.5 Usage and Maintenance of Gloves

Gloves shall be used and discarded based on each Glove Manufacturer's recommendations.

8.0 EYE AND FACE PROTECTION

Note: This section replaces pre-existing SR-42.

Eye protection is an important part of the facility PPE requirements.

- Employees must use appropriate eye and face protection when exposed to eye or face hazards from flying particles, dust particulates, chemical dust, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
- Acids/Caustics should never come into contact with eyes or skin. Full face respirators should be used when respiratory protection is needed and acids/caustics are present.
- Face shields are required for use when using grinders or other equipment that could impact the face.

8.1 Safety Glasses (including sunglasses)

- Must comply with ANSI Z87.
- For safety glasses to be stocked in the Safety Equipment Room, they must be approved through the Safety Department.
- Side Shields must comply with ANSI Z87. Disposable, slip-on side shields are not approved for use.
- Employees who wear prescriptive eye glasses and who routinely wear fresh air or full face respirators will be provided a pair of prescription lenses and frames that are customized to the respirator. Issuance of these glasses will be tracked with the Prescription Eye Wear database.
- Pipefitters who wear prescription eye glasses are also provided with glasses with UV-C ratings during welding type work.
- Dark Tinted glasses are not to be worn indoors or at night, unless needed for welding, burning, cutting, brazing or if other medical needs deemed necessary by the Refinery Medical Officer. Operators working both outside and inside pump houses are permitted to wear transition lenses or lightly tinted glasses. Yellow tinted glasses are permitted to be worn indoors.

8.2 Sealed Eye Protection (Dust Glasses (Spoggles) or Dust Goggles)

- Required for work environments where dust or particulate hazards exist. Also required on windy days (approximately 20 mph with dry conditions or otherwise mandated by Operations, Maintenance & or Safety), or work areas affected by mechanical ventilation where dust and dirt can cause a hazardous environment for the eyes. Shift Supervisors and Safety will evaluate conditions and regulate the need for Refinery wide sealed eye protection. The Alert-Us reader boards will be activated by the Zone C Boardman when Refinery wide sealed eye protection is required.

- Sealed Eye Protection must be worn beneath the face shield during grinding, sanding (abrasive wheel), chipping/breaking materials (concrete, coke build up, catalyst, etc.), or other dusty activities.

  Note: Metal objects need only 15-30 minutes to form a rust ring in the eye, which results in drilling out the rust ring.

8.3 Chemical Goggles

- Splash or chemical goggles are required for handling acids, caustics or other corrosive materials. Employees are required to review the SDS to ensure adequate PPE is worn.
- Dust goggles cannot be used for chemical protection.

8.4 Face Shields

Face Shields are considered secondary eye protection and must always be used in conjunction with safety glasses or goggles. There are many types of Face Shields for certain types of Hazards. Face Shields are typically required for, but not limited to the following hazards:

- Impact, Chemical, Dust Particulate hazards.
- Arc Flash - These face shields are used for protection against an arc flash. The requirements for arc flash protection are provided by National Fire Protection Association (NFPA) in the NFPA's 70E standard.
- Heat and Radiation - There are face shields that will provide protection against heat and radiation. These face shields prevent burns by filtering out intense ultraviolet and infrared radiation.
- Welding - Shaded welding face shields provide protection from UV and Infra-red radiation generated when working with molten metal.

Face Shields may be required for, but not limited to the following tasks:

- Chipping concrete.
- When an unexpected release of pressure may occur.
- When collecting samples from pressurized systems (combined with chemical goggles) for protection from splashing liquids.
- For making hose connections on acid or caustic loading or unloading.
- For protection from flying particles while grinding, machining or drilling.
- A face shield is not to be used as a substitute for eye protection such as chemical goggles, dust goggles or safety glasses.
- A full face piece respirator can be worn in lieu of a face shield when the possibility of inhalation exposure also exists.

8.5 Eyewash Facilities

- Operations is responsible for ensuring that individuals performing the work have been instructed as to the locations of nearby eyewash or showers. This activity can be documented on the work permit.
- Portable eyewash/shower stations are required for jobs that involve acids or caustics where a permanent eyewash/shower station is not available.

9.0 SAFE FOOTWEAR

Substantial footwear shall be worn by personnel in any occupation in which there is a potential of injury to the feet through falling, rolling, or moving objects; or from burning, scalding, cutting, penetration or like hazard. Open toed or ventilated shoes, sandals, cloth, vinyl or canvas top shoes are not permitted to be worn within the facility, unless the path of business is limited to office areas.

Sturdy work-type steel/hard-toe boots/shoes are required in the process and maintenance areas. Low cut boots/shoes with ankle support are acceptable. The safety footwear shall meet the requirements of ASTM F-2413-11.

Slip on steel-toed industrial grade boots/shoes are allowed as long as they meet ANSI or ASTM requirements, and are splash resistant. Due to the change-over from ANSI Standards to ASTM Standards, footwear bearing the ANSI Z41 PT99 standard is also acceptable. Boots/shoes meeting this requirement must have the following marking and identification.

9.1 ASTM Standard

- Line 1 - ASTME F2413 11
- Line 2 - Must show gender of user (M or F) and must meet these standards:
  - Impact - 75 (I/75)
  - Compression – 75 (C/75)
- Lines 3 and 4 may show additional markings offering protection from specific types of hazards:
  - CD - Conductive Hazards
  - EH - Electrical Insulation Properties
  - SD - Reduces Accumulation of Static Electricity
  - PR - Puncture Resistant
  - Mt - Impact Resistant to the Top of the Foot
  - DI - Dielectric Insulation

9.2 ANSI Standard

- ANSI Z41 PT99
- Impact – I/75
- Compression – C75

- Additional markings offering protection from specific types of hazards may also be noted:
  - CD - Conductive Hazards
  - EH - Electrical Insulation Properties
  - SD - Reduces Accumulation of Static Electricity
  - PR - Puncture Resistant
  - MT - Impact Resistant to the Top of the Foot

Shops 1 and 2 work areas are not considered office areas. Exposed steel toes, open holes duct taped or silicone sealed holes in shoes are not permitted in the facility, and shoes must be repaired to near original condition or replaced.

Minimum requirements are splash resistant uppers with a non-slip, oil resistant sole. The footwear must have either a heel not to exceed 1 ½" in height, or have a graduated sole thickness increasing from toe to heel, (i.e., orthopedic design) for proper support and to minimize the potential for slipping on ladders, stairs or uneven surfaces.

In some rare circumstances, an individual may need special footwear, which may not be provided by Marathon Anacortes Refinery's preferred vendors. In this case, the Health & Safety Department (when dictated by special medical or physical needs) may grant a variance from this procedure. A Physician's note must accompany medical variances to that effect and be on file in the Medical Department.

Marathon Anacortes Refinery will provide up to a $155.00 allowance per year per employee for the purchase of employee safety boots/shoes, and boot saver toe guards. In no case will the Marathon Anacortes Refinery contribution exceed the total cost of the safety shoes. This program may be subject to change.

10.0 HEARING PROTECTION

Hearing protection devices are available to all employees and are required to be used in all process areas. Other areas evaluated by the Health & Safety Department require hearing protection as dictated by safety signs.

Procedure R-14-007 outlines the Marathon Anacortes Refinery requirements on the Hearing Protection Program.

Hearing protection devices are required in all process units (i.e., regardless of if an individual is included in the Hearing Conservation Program). Other areas of the facility may also require hearing protection, as identified by the Health & Safety Department and labeled with adequate signage.

Hearing protection may also be required when heavy or loud equipment is brought into the facility. The Health & Safety Department must be notified when this happens to ensure they conduct adequate noise monitoring and assign appropriate hearing protection.

11.0 FLAME RESISTANT CLOTHING

The revised Flame Resistant Clothing (FRC) requirements per RSP-1716-000 are effective January 1, 2022. FRC is required to be worn by all personnel working in areas identified as having a potential for hydrocarbon, electrical, or dust flash fires.

All personnel working within the Marathon Anacortes Refinery shall be required to wear FRC, with the following exceptions:

- Personnel working in the Central Control Room: Field Operations Control Rooms are not included in this exception.
- Personnel working/visiting in offices.
- Personnel walking directly to/from their work place.
- Personnel who remain inside vehicles while on facility roads.
- Ship personnel who are transported directly between the vessel and the Main Gate.
- While maintaining lawns and gardens.
- Within an area re-classified as a temporary non-FRC area and approved by the Area Superintendent and Area Safety Specialist. Personnel are required to wear at a minimum long pants and sleeved shirts.

FRC shall generally be worn as the outermost layer of clothing, with the following exceptions:

- When responding to an emergency (fire or release), personnel will wear bunker gear, or chemical gear.
- When the work activity, safety work permit, or work authorization requires additional chemical protective clothing to be worn over FRCs.
- When welding or burning, flame resistant cotton may be worn. Welding leathers may be worn over FRC.
- Personnel assigned as hot work, confined space, or fresh-air bottle stand-by watch duties shall wear orange vests that are FRC rated.

All jackets, vests, and other articles of clothing (i.e., including hoods) that are not FRC rated must be worn under the FRC outer layer.

Marathon Anacortes Refinery employees will be provided personalized, flame resistant clothing, and jackets. They will be identified with the Marathon patch and the employee's name. Personnel visiting the facility will be provided FR Clothing from available stock.

Marathon employees performing welding or grinding related tasks may wear shirt/pant style FRC that has been specifically designed for burn, weld, and grind activities (that meet the minimum standard set forth below).

All FR clothing base garments (shirt/pant combo and/or coveralls) shall either be inherently FR material (e.g., Nomex, PBI) or FR treated cotton and cotton blends that are certified by an independent testing agency as meeting NFPA 2112. Seasonal accessories (e.g., UV face masks, cold weather beanies, or hard hat liners) shall also be meet NFPA 2112.

Outer FR garments (e.g., coats, bibs, and sweatshirts with or without hoods, etc.) shall be made of FR fabric and adhere to NFPA 2112 requirements that are certified by an independent testing agency. NFPA 2112 daily FR work wear garments shall be worn at all times under all outer FR garments.

Contractors or other Non-Marathon Anacortes Refinery personnel may select the style of FRC (i.e., coveralls, pants, shirts), as long as all FRC meets the minimum requirements listed above.

FR shirts (not including coats and sweatshirts) shall be tucked in, buttoned up, and sleeves rolled down when in FR required areas to comply with NFPA 2113. All employees who work at Marathon Anacortes Refinery are responsible for ensuring compliance with this section.

Garments worn underneath base layers for warmth/cooling shall be made of natural fibers such as cotton, wool, or silk.

Hole watch/Fire watch/Bottle watch vests shall comply with ASTM D6413 Flame Resistant requirements.

FR Garments for Rain Wear: All rain wear shall comply with ASTM D6413 Flame Resistant requirements. Rain wear must comply with NFPA 70E / ASTM F1891 when the risk potential of an arc flash hazard exists.

FR Disposable Coveralls:

A. Disposable coveralls shall be made of FR fabric and are not required to meet NFPA 2112 requirements.

B. Disposable coveralls shall comply with ASTM D6413.

C. Disposable coveralls shall comply with NFPA 2113 as it pertains to the care and maintenance during use.

MPC employees receive an annual stipend for required FRC gear replacement. It is very important that FRC with tears, holes, rips or other signs of damage be replaced. As a general practice, and in line with the manufacturer's recommendations, FRC should be replaced every 3-5 years. This is dependent upon the wash, and wear cycle.

Contaminated PPE should never be taken home. Laundering of contaminated facility furnished FRC shall be provided by Marathon Anacortes Refinery. Laundering shall not be at home. Contamination means the FRC is visually contaminated with insulation, catalyst dust, hydrocarbon or chemical splashes.

In the event circumstances arise that are not covered in this procedure, the Safety Department shall provide additional guidance.

12.0 DECONTAMINATION OF PPE

Every effort must be made to reduce exposures to hazardous materials when handling used personal protective equipment (PPE), tools, and equipment. Field personnel must perform gross decontamination of PPE, tools, and or equipment after exposure to hazardous chemicals. This would normally involve rinsing off tools and equipment with utility water to remove visible contamination at the job.

Disposable PPE can be removed immediately and discarded into a designated hazardous waste container. The individuals wearing contaminated PPE are responsible for removing any contaminated PPE (i.e., placing into plastic bags and removing from process units), such that they are disposed of properly. For questions regarding hazardous material disposal, contact a member of the Marathon Environmental Department.

PPE, tools, and equipment should be returned in person.

If tools or equipment that have been contaminated with corrosives are returned during off-hours, a "Mr. Yuk Tag" is required per R-11-014, to inform personnel of:

- Who returned the equipment, tools or PPE
- Location of use
- Corrosive involved

If contaminated PPE is returned during off hours, it shall be bagged, and a similar tag affixed.

At no time shall chemical protective clothing be worn outside of the designated work area. This protects other personnel from contamination.

Decontamination of PPE must be done to prevent chemicals or other materials from exposing personnel to a hazard when reusing PPE. A complete decontamination of PPE and/or removal is necessary for prevention of adverse health effects. Personnel whose non-impermeable clothing is contaminated, shall remove the clothing and shower immediately.

The reuse of PPE without complete decontamination is prohibited. Contaminated PPE shall be placed in the appropriate area or container and labeled for storage, washing, decontamination or disposal.

A single decontamination procedure will not work for all chemicals and substances. Proper methods of decontamination can be found in Safety Data Sheets (SDS). The information contained in the SDS should be used for decontamination. Proper decontamination procedures must be understood before entry and work in areas that may have potential exposures to chemicals and hazardous substances.

13.0 FALL PROTECTION

Fall protection is an important part of the Marathon Anacortes Refinery PPE requirements. For detailed information on fall protection devices and procedures, refer to R-11-033.

Notes:

- Double leg lanyards are required for 100% tie off.
- Trauma straps are required for all Marathon Anacortes Refinery employees.

14.0 ABRASIVE BLASTING

In accordance with WAC 296-818, all abrasive blasting operators must wear an abrasive blasting respirator while working in the following situations:

- Inside blast cleaning rooms.
- Where silica sand is used in manual blasting operations.
- Where concentration of toxic dust exceeds the permissible exposure limits.

Exemption: An abrasive blasting respirator does not need to be worn if the operator is physically separated from the nozzle and blast by an exhaust ventilated enclosure.

Note: If the respirator is equipped with a secondary neck strap, be sure to wear the strap around the back of the neck. Do not let the strap hang down in front of the individual.

14.1 Additional PPE Requirements for Abrasive Blasting

Gloves and aprons made of heavy canvas or heavy leather are required while Operators are exposed to impact of rebounding abrasive material.

Note: Rebounding impact consists of being hit with abrasive material off of a secondary source. The primary source is the nozzle, and the secondary source is the object being abrasive blasted.

15.0 PPE FOR OPERATIONS FIRST RESPONDERS

15.1 Chemical Release

Operations First Responders trained to NFPA 472 Operations Level are required to use the Approved Chemical Gear. This gear has been made available for use, and is stored in several different locations. For emergency use, Operations First Responders may retrieve the necessary equipment (i.e. including suits, gloves, boots, tape and hoods) from designated PPE boxes throughout the process units. Each box will be sealed with a yellow seal indicating that the contents have not been tampered with. In the event that the yellow seal is broken or removed, Operations has the responsibility to re-stock the contents with the materials listed below. The following items must be included in each box:

- Total of 4 Tychem F Suits per box: recommend 2XL sizes, but not required.
- Total of 4 chemical boots: recommend variety of sizes.
- Two rolls of chemical tape
- 4 pairs of chemical gloves: recommend large sizes.
- 2 Acid Hoods: optional as the Tychem F Suits come with hoods.

Operations First Responders will only respond in Level B Suits. NFPA Level B Suits include the following:

- Chemical Protective Suit
- Self-Contained Supplied Air Respirator
- Chemical Boots, Gloves and Tape

Members of the HazMat Emergency Response Team that are 40-Hour HazWoper, are trained to wear Level A Suits which are totally encapsulating.

15.2 Fire or Potential for Fire

All Marathon Operators are trained to the HAZWOPER Operations level, and NFPA 1081 Incipient Level. All responders are required to respond in the appropriate PPE for the hazards they potentially could face. For a flammability potential all responders should be wearing full bunker gear to include Coat, Pants, Boots, Gloves, Hood, and Helmet. Responders are trained in SCBA's and should be wearing them when they respond to an incident.

Bunker gear can be found in all Zones, and in the Fire Hall Conex. SCBA's can be found throughout all Refinery Zones, outside Field Operations Shelters, and in the Fire Hall.

16.0 CHEMICAL PROTECTIVE EQUIPMENT AND HAZARDS

The tables within Attachment 1 provide specific PPE recommendations for chemical, biological and physical hazards. The majority of the tables address potential hazards from chemicals used

within the Marathon Anacortes Refinery. However, the tables address additional physical and biological hazards that may be controlled with appropriate PPE: confined space welding, steam lance, and legionella.

The tables are organized by hazard with the column on the left listing a specific task that may be done with that chemical, and the other columns show the PPE appropriate for the task. If an individual is not familiar with the PPE named in the table, a more complete description can be found within procedure Section 5.0.

Approved chemical suits are evaluated for permeation and degradation for a wide variety of chemicals. For a chemical suit to be considered "approved" it must meet specific ASTM Standards. Permeation and degradation rates must be available for each intended chemical use.

Completed Job Hazard Assessments will determine the need for chemical protective equipment. Attachment 1 contains a list of job tasks for specific chemicals.

Whenever chemical suits are required, cuffs (i.e., both sleeves and legs) shall be taped (i.e., with approved chemical tape) to gloves and boots in a manner where no liquids can penetrate.

When work activities involve hydrocarbons and the potential for fire or ignition sources, then chemical protective garments with NFPA flammability ratings must be used. These activities are not considered normal and would require a Health & Safety Department review.

Approved chemical gear includes hoods. Additional acid hoods are not required. Face shields are designed to minimize the exposure from splash, as they are not designed to protect the individual completely. If chemical exposure is anticipated, then full face respirators and hoods should be used.

Goggles should always be used under a face shield when splash is anticipated with acids or caustics.

Please note that neoprene boots are available in the Safety Equipment Room and should always be taped to the chemical protective gear.

Note: Where supplied air is required as the minimum for respiratory protection in Attachment 1 tables, the supplied air may be waived when atmospheric testing or product sampling verifies the equipment or lines have been successfully cleaned and isolated before opening.

17.0 TRAINING

Each Refinery shall train personnel at a minimum frequency of every five years on the proper care and use of PPE - Examples may include:

Cleaning of PPE; Average life expectance of FR clothing; Hazards of synthetic materials under base layer garments; and H2S meter calibration.

18.0 REVIEW AND REVISION HISTORY

Revision #	Preparer	Date	Description
0	Mark Willand	1/2/2022	Reformatted and Numbered per Document Control Policy, R-63-001.
1	Kirk Rowan	7/7/2022	Changed reference from TSHS-09 to RSP 1716-00 Removed bullet point on raingear in section 11 Added language from RSP-1706-00 on Raingear flame resistant requirements. Updated Content Custodian from Darick Brewer to Kirk Rowan
2	Michael Fazio	1/25/2023	Added section 19.23 on Gases (see page 29). Changed Content Custodian to Michael Fazio.

19.0 ATTACHMENT 1 – PPE RECOMMENDATIONS

19.1 Chemical: Acid

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds	Neoprene Boots	Approved Chemical Gear	Acid Hood	Neoprene Gloves (3) (taped)	Supplied Air	Water hose running nearby
Sampling	Safe Footwear	FRC	Goggles	Neoprene Gloves	N/A	
Loading/Unloading T/Truck	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves (3)	N/A	
Removing/Replacing Instrumentation	Neoprene Boots	Approved Chemical Gear SL	Acid Hood	Neoprene Gloves (3)	Supplied Air	
Performing PH Analysis	Safe Footwear	FRC	Goggles	Neoprene Gloves (3)	N/A	
Removing equipment after blinding or placing equipment back into service (drained & de-pressured)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves (3)	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Goggles	Neoprene Gloves (3)	N/A	
Equipment Entry [decontaminated (neutral pH, hydrocarbon free) but not dry]	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves (3)	N/A	
Minor Leaks (including packings, bleeders, DP cells)	Neoprene Boots	Approved Chemical Gear	Acid Hood	Neoprene Gloves (3)	Supplied Air	

Footnotes:

1. Approved chemical suits have built in hoods and boots. If the user may choose to use the built in boot or the neoprene boots in the Safety Equipment Room.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.

19.2 Chemical: Caustic

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	Water hose running nearby
Loading/Unloading T/Truck	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	
Sampling	Safe Footwear	FRC	Goggles	Neoprene Gloves	N/A	
Performing lab Analysis	Safe Footwear	FRC	Goggles	Neoprene Gloves	N/A	
Removing equipment after blinding (drained & de-pressured)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Goggles	Neoprene Gloves	N/A	
Equipment Entry [decontaminated (neutral pH, hydrocarbon free) but not dry]	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	
Minor Leaks (including packings, bleeders, DP cells)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	

Footnotes:
1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.3 Chemical: MDEA

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds (lean)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	Water hose running nearby
Changing blinds (fat)	Neoprene Boots	Tychem	N/A	Neoprene Gloves	Supplied-Air	Water hose running nearby
Sampling (lean or fat)	Safe Footwear	FRC	Goggles	Neoprene Gloves	N/A	
Removing equipment after blinding (drained & de-pressured)	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Safety Glasses	Neoprene Gloves	N/A	
Equipment Entry (clean and dry)	Neoprene Boots	FRC	Goggles	Neoprene Gloves	N/A	
Changing Filters	Neoprene Boots	Approved Chemical Gear	Goggles	Neoprene Gloves	N/A	
Minor Leaks (including packings, bleeders, DP cells) LEAN	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Neoprene Gloves	Supplied Air	
Minor Leaks (including packings, bleeders, DP cells) FAT	Neoprene Boots	Approved Chemical Gear	Acid Hood	Neoprene Gloves	Supplied-Air	

Footnotes:
1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.4 Chemical: Ammonia

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing Blinds	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	½ Mask Respirator	Water hose running nearby
Sampling	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	
Removing equipment after blinding (drained & de-pressured)	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Safety Glasses	Nitrile Gloves	N/A	
Changing Cylinders	Safe Footwear	Approved Chemical Gear	Goggles	Nitrile Gloves	½ Mask Respirator	
Minor Leaks (including packings, bleeders, DP cells)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	½ Mask Respirator	

Footnotes:
1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.5 Chemical: Liquid Hydrocarbons (or areas with high potential for large amounts of vapors)

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other (3)
Changing blinds	Safe Footwear	Approved Chemical Gear	Goggles	Nitrile Gloves	N/A	
Sampling	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	
Performing Lab Analysis	Safe Footwear	FRC	Safety Glasses	Nitrile Gloves	N/A	
Removing equipment after blinding (drained & de-pressured)	Safe Footwear	Approved Chemical Gear	Goggles	Nitrile Gloves	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Safety Glasses	Leather Gloves	N/A	
Equipment Entry (clean and dry)	Safe Footwear	Tyvec	Goggles	Leather Gloves	N/A	
Equipment Entry (not decontaminated)	Neoprene Boots	Approved Chemical Gear	Goggles	Nitrile Gloves	N/A	
Hydro-blasting bundles	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	N/A	
Minor Leaks (including packings, bleeders, DP cells)	Neoprene Boots	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. *This is not intended for small leaks found with FE leak detection equipment, or the minimal repairs of an FE (such as tightening of packing gland nuts). Essential PPE with goggles is sufficient for most of these tasks. Operations is to determine PPE requirements).

19.6 Chemical: Hydrocarbons with Benzene

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds (no liquid present)	Safe Footwear	FRC	Goggles	Nitrile Gloves	½ Mask Respirator	
Changing blinds (liquid is present)	Neoprene Boots	Approved Chemical Gear	Goggles	Nitrile Gloves	½ Mask Respirator	
Removing equipment after blinding (washed)	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	
Shop Activities (after washing)	Safe Footwear	FRC	Safety Glasses	Leather Gloves	N/A	
Equipment Entry 0 to 1 ppm 1 to 10 ppm 10 to 50 ppm above 50 ppm	 Safe Footwear Safe Footwear Neoprene Boots Neoprene Boots	 Tychem Tychem Approved Chemical Gear Approved Chemical Gear	 Goggles Goggles N/A N/A	 Nitrile Gloves Nitrile Gloves Nitrile Gloves Nitrile Gloves	 NA ½ Mask Respirator Full Face Respirator Supplied-Air	
Performing lab analysis	Safe Footwear	FRC	Safety Glasses	Nitrile Gloves	N/A	
Sampling	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	
Minor Leaks (including packings, bleeders, DP cells)	Safe Footwear	Approved Chemical Gear	Goggles	Nitrile Gloves	½ Mask Respirator	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. When opening and blinding process equipment outside in ventilated areas, a ½ mask respirator, in most cases will provide adequate protection. If undecided between two levels of respiratory protection, choose the higher level of protection or do air sampling to determine proper respiratory protection requirements. For more information on respiratory protection and cartridge selection, see R-14-008.

19.7 Chemical: Vanadium

Activity	Feet	Skin	Eye (1)	Hand	Respiratory (2)	Other
Enter to work or inspect oil-fired boiler/furnace.	Neoprene Boots	Paper coveralls with hood	Goggles	Nitrile Gloves	½ Mask Respirator	

Footnotes:

1. Cartridge shall be magenta. Should extreme amounts of dust be present, supplied-air respiratory protection shall be required.
2. Vanadium occurs in the stacks of boilers and furnaces that burn fuel oil. The symptoms of vanadium poisoning include a greenish/black discoloration of the tongue and teeth and a metallic taste in the mouth. Throat, stomach and skin irritation may also occur. This is commonly referred to as "Black Tongue". Symptoms usually clear up within 48 hours of removal from the contaminants, but discoloration of the teeth and tongue may persist for four or five days.
3. If the work requires welding or cutting, consult with a Senior Safety Specialist for additional requirements.

19.8 Chemical: Mercury

Activity	Feet	Skin	Eye (1)	Hand	Respiratory (2)	Other
0 to 0.05 mg/m3 mercury present	Safe Footwear	FRC	N/A	N/A	N/A	
0.05 to 0.5 mg/m3 mercury present	Neoprene Boots	Approved Chemical Gear	Goggles	Nitrile Gloves	½ Mask Respirator	
Greater than 0.5 mg/m3 mercury present	Neoprene Boots	Approved Chemical Gear	N/A	Nitrile Gloves	Supplied-Air Respirator	

Footnotes:

1. Cartridge shall be orange Mersorb (3M) and Yellow (SCOTT) and must be visually checked every thirty minutes to see if center disc or side strip has changed color. If respiratory protection is required, two persons must be involved to check service life indicators on the cartridges.

   Before any work is performed in an area where Mercury may be present the area shall be evaluated for the presence of Mercury. A visual check and/or a portable analyzer (JEROME – found in the Health & Safety Department) accomplish this.
2. At shift end or when the work task is complete, contaminated disposable work clothing and gloves shall be placed in clear plastic bag, tagged, and placed in a container marked for mercury-contaminated material. The respirator and boots shall be placed in separate plastic bag, tagged and returned to the Safety Equipment room for cleaning.
3. If the work requires welding or cutting, the equipment shall be abrasive blasted in the area of the hot work.
4. For more information on Mercury, see SR-23 Mercury.

19.9 Chemical: Sour Water

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	Supplied Air	Respiratory protection shall be determined by H_2S sampling
Sampling	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	Using educated sample station

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. Air sampling may be required to determine proper respiratory protection requirements. For more information on respiratory protection and cartridge selection, see R-14-008.

19.10 Chemical: Flare Gases (H_2S)

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Changing blinds (flare line entry)	Neoprene Boots	Approved Chemical Gear	N/A	Neoprene Gloves	Supplied-Air	
Changing blinds (flare line entry corrosive service)	Neoprene Boots	Approved Chemical Gear	Acid Hood	Neoprene Gloves	Supplied-Air	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. Air sampling may be required to determine proper.

19.11 Chemical: Lime

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Adding lime to the neut. pit.	Safe Footwear	FRC	Goggles	Neoprene Gloves	½ Mask Respirator	
Adding lime to conveyer at the Effluent.	Safe Footwear	Paper Coveralls	Goggles	Neoprene Gloves	½ Mask Respirator	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. HEPA (magenta) cartridges shall be used. For more information on respiratory protection and cartridge selection, see R-14-008.

19.12 Chemical: Perchloroethylene

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Unloading T/Truck	Safe Footwear	Approved Chemical Gear	Goggles & Face shield	Nitrile Gloves	N/A	Gloves good for incidental contact only (3). Truck must be grounded.

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. Air sampling may be required to determine proper respiratory protection requirements. For more information on respiratory protection and cartridge selection, see R-14-008.
3. Incidental contact only means that the glove will protect from incidental splashes only. If the solvent stays in contact with the glove for more than a few minutes the glove will be damaged and no longer provide protection.

19.13 Chemical: Laboratory Solvents

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Acetic acid	Safe Footwear	Lab coat	Safety Glasses	Neoprene Gloves	N/A	
Acetone	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	Incidental contact only (3)
Bromine solution	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	
Chlorobenzene	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	Incidental contact only (3)
Chloroform	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	Incidental contact only (3)
Hydrocarbons pure aromatics (toluene, xylene)	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	Incidental contact only (3)
All other hydrocarbon mixtures	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	
Isopropanol	Safe Footwear	Lab coat	Safety Glasses	Nitrile Gloves	N/A	
Tetraethyl lead	Safe Footwear	Lab coat	Safety Glasses	Neoprene Gloves	N/A	Incidental contact only (3)

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. Cartridge shall be olive drab or lime green. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. Incidental contact only means that the glove will protect from incidental splashes only. If the solvent stays in contact with the glove for more than a few minutes the glove will be damaged and no longer provide protection.

19.14 Chemical: Petrolite Additives

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine Activities (adjusting flow rates)	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.15 Chemical: Soaps

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine clean-up Activities	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	
Large clean-up using water hose or steam lance	Neoprene Boots	Approved Chemical Gear	Goggles	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.16 Chemical: Methanol

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine Activities (adjusting flow rates)	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	Incidental contact only (3)
Changing drums	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	Incidental contact only (3)

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. Incidental contact only means that the glove will protect from incidental splashes only. If the solvent stays in contact with the glove for more than a few minutes the glove will be damaged and no longer provide protection.

19.17 Chemical: Blending Components (Fuel Additives & Dyes)

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine Activities with potential for splash or skin contact	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.18 Chemical: Ethylene Glycol (Antifreeze)

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine Activities with potential for splash or skin contact	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.19 Chemical: Dimethyl Disulfide (Dmds)

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Minor Leak (packing, flange, etc.)	Safe Footwear	FRC	Goggles	Neoprene Gloves	½ Mask Respirator	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.20 Chemical: Effluent Polymer and Antifoam

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Routine Activities with the potential for skin contact	Safe Footwear	FRC	Goggles	Nitrile Gloves	N/A	

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.

19.21 Chemical: Paints and Thinners

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Painting Spray painting	Safe Footwear	Disposable FR coveralls	Chemical Goggles	Nitrile Gloves	½ Mask Respirator	In open well ventilated areas (4)
Brush painting	Safe Footwear	Disposable FR coveralls	Chemical Goggles	Nitrile Gloves	N/A	
Clean-up with thinners	Safe Footwear	Disposable FR coveralls	Chemical Goggles	Nitrile Gloves	½ Mask Respirator	Incidental contact only (3)

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. Cartridge shall be black with pre-filter. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. Incidental contact only means that the glove will protect from incidental splashes only. If the solvent stays in contact with the glove for more than a few minutes the glove will be damaged and no longer provide protection.
4. For painting in enclosed or confined spaces, consult a Senior Safety Specialist.

19.22 Welding Fumes in Confined Space

Refer to R-14-001 Attachment 2 Respiratory Protection & Ventilation for Welding & Torch Cutting. **Note**: Welding on or in any equipment that has an overlay weld or any type of lining will require drilling holes to determine if any trapped hydrocarbons exist. If hydrocarbons are found, the hole will be tapped and a nitrogen purge installed. Consult with a Senior Safety Specialist. For more information on respiratory protection and cartridge selection, see R-14-008 .

19.23 Carbon Monoxide, Hydrogen Sulfide, and Sulfur Dioxide

Gas	PPM	Respirator
Carbon Monoxide	0-24	None
	≥25	Supplied Air
Hydrogen Sulfide	0-9	None
	10-49	Supplied Air, APR if approved
	>50	Supplied Air
Sulfur Dioxide	0-0.4	None
	0.5-5	Half mask
	>5-25	Full Face mask
	>25	Supplied Air

19.24 Steam Lance

Activity	Feet	Skin (1)	Eye	Hand	Respiratory	Other
Small clean-up activities or minor leaks or incipient fires	Safe Footwear	FRC	Goggles	Safe Work Gloves or PVC or Nitrile Gloves	See requirements for material being cleaned up (2)	Evaluate and determine that leak can be addressed through incipient response
Large clean-up using water hose or steam lance	Neoprene Boots	Approved Chemical Gear	Goggles and Face Shield	PVC or Nitrile Gloves	See requirements for material being cleaned up (2)	
Steam Lance Use for Emergency Release	Fire Fighter's Boots	Bunker Gear	SCBA	Fire Fighter's Gloves	SCBA (3)	Follow the ERP and only perform those emergency response tasks trained to perform

Footnotes:

1. Where the potential of exposure from splash or overhead work exists, additional skin and head protection may be required.
2. For more information on respiratory protection and cartridge selection, see R-14-008. Air sampling may be required to determine proper respiratory protection requirements.
3. SCBA use is required inside the hot zone until directed otherwise by the Incident commander.

19.25 Legionella

Activity	Feet	Skin (1)	Eye	Hand	Respiratory (2)	Other
Climbing any Cooling Water Towers with fans running.	Safe Footwear	N/A	Safety Glasses	Safe Work Gloves	½ Mask Respirator HEPA Cartridges	
Working inside Cooling Water Tower (see R-11-017 Confined Space Entry) and/or while disturbing materials of construction such as wood.	Safe Footwear	Approved Chemical Gear	Goggles	Leather, Rubber, or Nitrile.	½ Mask Respirator HEPA Cartridges	
Working outside and off of Cooling Water Tower (see Footnote 2 if in the plume)	Safe Footwear	N/A	Safety Glasses	Safe Work Gloves	N/A	

Footnotes:

1. Legionella transmission is via aerosols — the inhalation of mist droplets containing the Legionella bacteria. Common sources include cooling water towers, domestic hot-water systems, fountains, and similar disseminators that tap into a public water supply.
2. Walking beside or downwind from a cooling tower does not require respiratory protection unless the cooling tower water is not being maintained to prevent microbial growth. Marathon Anacortes Refinery Cooling Tower Water is treated. Respirators with HEPA filters are available for personnel who have concerns.

Note: This does not include work on the fans or motors such as changing oil, etc. For that type of work PPE requirements are the same as for access to the CWT, plus any task required PPE.