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## 1.0 Purpose

The purpose of this Plan is to establish minimum procedures for evaluating and controlling routine and/or intermittent employee and contractor exposures to hydrogen sulfide (H<sub>2</sub>S).

## 2.0 Scope

This procedure applies to all employees, contractors, and visitors on site.

This procedure is subject to GBR PR-10 Life Critical Safety Procedures & Accountability **if** one or more of the following has taken place:

- 2.1 Not wearing an assigned H<sub>2</sub>S Monitor in the breathing zone with the monitor turned on (applies when not wearing appropriate respiratory protection).
- 2.2 Not reporting of an H<sub>2</sub>S alarm (applies to all alarms even when appropriate respiratory protection is worn).
- 2.3 H<sub>2</sub>S Monitor calibration / bump test past due where H<sub>2</sub>S monitors are required per GBR PPE-1 Personal Protective Equipment prior to process unit entry.
- 2.4 Any tampering with or disabling of the H<sub>2</sub>S Monitor to circumvent its use.
- 2.5 Not evacuating to a safe location when an H<sub>2</sub>S Alarm has occurred (applies when not wearing appropriate respiratory protection).

## 3.0 Procedure

### 3.1 Roles and Responsibilities

#### 3.1.1 GBR Leadership Team

Responsible for the following:

- 3.1.1.1 Ensuring that adequate resources (personnel, financial, equipment, etc.) are allocated to prevent H<sub>2</sub>S exposures

#### 3.1.2 Industrial Hygiene

Responsible for the following:

- 3.1.2.1 Administering the H<sub>2</sub>S Exposure Control program
- 3.1.2.2 Managing the H<sub>2</sub>S replacement program for damaged, lost, or malfunctioning monitors
- 3.1.2.3 Ensuring that H<sub>2</sub>S exposures / alarm events are **thoroughly** investigated
- 3.1.2.4 Ensuring that H<sub>2</sub>S exposures / alarm events are tracked and that trends are identified and reported
- 3.1.2.5 Ensuring that personal H<sub>2</sub>S monitors are audited for compliance with regards to bump checks and calibrations

#### 3.1.3 Safety Department

Responsible for the following:

- 3.1.3.1 Maintaining this H<sub>2</sub>S Exposure Control program
- 3.1.3.2 Providing field support (PPE selection, engineering support, exposure mitigation, etc.) to all MPC employees and contractors regarding this procedure

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### 3.1.3.3 Communicating H<sub>2</sub>S concerns to the Industrial Hygiene Team

### 3.1.4 MPC Employees

Responsible for the following:

3.1.4.1 All MPC employees with a need to access areas of the refinery, where H<sub>2</sub>S may be present, shall obtain a H<sub>2</sub>S monitor from Safety Repair.

3.1.4.2 Complying with established work practices and procedures designed to prevent overexposures to H<sub>2</sub>S, keeping up with H<sub>2</sub>S training, wearing the assigned personal H<sub>2</sub>S monitor, reporting H<sub>2</sub>S alarm events, bumping / calibrating the assigned personal H<sub>2</sub>S monitor, and participating in the identification / prevention of H<sub>2</sub>S exposures

3.1.4.3 Reporting any H<sub>2</sub>S exposure immediately to MPC supervision

3.1.4.4 Air Purifying Respirator (APR) cartridges must be changed out monthly at a minimum or after any alarm event or a change in breathing resistance is detected.

### 3.1.5 MPC Supervision

Responsible for the following:

3.1.5.1 Ensuring that H<sub>2</sub>S exposures are identified and mitigated in their respective areas

3.1.5.2 Ensuring that a list of tasks requiring the use of supplied-air respirators for protection against H<sub>2</sub>S is maintained and communicated to unit employees and applicable contractors

3.1.5.3 Reviewing H<sub>2</sub>S exposure reports periodically, but at least yearly, to ensure H<sub>2</sub>S exposures are properly mitigated

3.1.5.4 Ensuring that H<sub>2</sub>S hazards are being effectively communicated to contractors through the safe work permit process

3.1.5.5 Ensuring that exclusion zones are established, and that air monitoring is performed around and downwind of any release involving H<sub>2</sub>S

3.1.5.6 Ensure employees are keeping up with their H<sub>2</sub>S training, preventing H<sub>2</sub>S exposures, wearing their personal H<sub>2</sub>S monitors, reporting H<sub>2</sub>S alarm events, bumping / calibrating their personal H<sub>2</sub>S monitors, and participating in the identification / prevention of H<sub>2</sub>S exposure

3.1.5.7 Ensuring that for all H<sub>2</sub>S alarm events, contact onsite medical at 409-945-1161 to determine exposure amount and duration if verification is needed. If exposure is 100 ppm or greater the supervisor shall bring his employee to GBR Medical for evaluation

3.1.5.8 Ensuring that all H<sub>2</sub>S exposures are reported to Intelix by the end of the shift.

### 3.1.6 Contractor Companies and Employees

Responsible for the following:

3.1.6.1 Maintaining and managing a H<sub>2</sub>S Exposure control program that meets or exceeds this procedures requirement.

3.1.6.2 Reporting any H<sub>2</sub>S exposure to the owning group supervision immediately.

3.1.6.3 Reporting any H<sub>2</sub>S exposure to the MPC Maintenance Coordinator

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immediately.

3.1.6.4 Ensuring that all H<sub>2</sub>S exposures are reported to Intelix by the end of shift.

### 3.1.7 Learning and Development Organization

Responsible for the following:

3.1.7.1 Ensuring that H<sub>2</sub>S training information is developed and disseminated to all employees who are assigned a personal H<sub>2</sub>S monitor and/or who otherwise may be exposed to H<sub>2</sub>S

3.1.7.2 Generating a report of individuals who are out of compliance with their training obligations

### 3.1.8 Safety Repair

Responsible for the following:

3.1.8.1 Issuing Personal H<sub>2</sub>S monitors to MPC employees and select directly supervised contractors

3.1.8.2 Maintaining an adequate inventory of Personal H<sub>2</sub>S monitors

3.1.8.3 Managing H<sub>2</sub>S monitor replacement program for damaged, lost, or malfunctioning monitors

3.1.8.4 Maintaining bump stations

### 3.1.9 Medical

3.1.9.1 Performing a medical evaluation for MPC or contractor employees with exposures **100 ppm or greater**.

### 3.1.10 Engineering Department

Responsible for the following:

3.1.10.1 Designing or coordinating the design of engineering solutions to prevent / control H<sub>2</sub>S exposures as needed

### 3.1.11 Security

Responsible for the following:

3.1.11.1 Provides Safety Repair access to supervision exchange Personal H<sub>2</sub>S monitors on nights and weekends, as needed, and ensures loaner forms are completed.

## 3.2 General Requirements

3.2.1 Exposures to H<sub>2</sub>S shall be maintained below the MPC Short-Term Exposure Limit (STEL) 15 ppm and the MPC Time-Weighted Average (TWA) exposure limit 10 ppm (see definitions).

3.2.2 Whenever there is a potential for H<sub>2</sub>S exposures to exceed 10 ppm or to cause odor complaints within or from outside the refinery, feasible engineering controls shall be implemented to prevent the exposure. Engineering controls may include, but are not limited to:

- Equipment / process re-design such as relocation of control valves remote from draining sites, low point drains lines on pumps / lines, and venting to a flare instead of the atmosphere
- Closed loop sampling stations

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- Sewer enclosure
- Air cleaning devices such as carbon canisters on vacuum trucks or thermal oxidizer units on tank emissions
- Visual indicators to show that equipment has been fully drained before line / equipment opening
- Local exhaust ventilation such as laboratory hoods and portable air horns

3.2.3 For purposes of this policy, exposure to H<sub>2</sub>S **more than** 10 ppm shall be considered possible anytime equipment holding or potentially holding process liquids or gases containing 0.1% or greater H<sub>2</sub>S is to be opened to the atmosphere. In addition, H<sub>2</sub>S can be encountered in any enclosed space where decaying organic matter is present, or released from wastewater, or released when other sulfur compounds in petroleum streams are converted by chemical reaction to H<sub>2</sub>S.

3.2.4 Whenever engineering controls are not available or feasible or while waiting for their implementation, suitable administrative controls and/or supplied-air respirators (airline or designated non-emergency SCBA) must be used to prevent exposures. Administrative controls may include equipment-specific line / equipment clearing procedures, demarcated exclusion zones and removal of non-essential personnel, and personnel training.

3.2.5 Air Purifying Respirators (APR's) for H<sub>2</sub>S are permitted for the specific task of known H<sub>2</sub>S concentrations if approved by the Industrial Hygiene Supervisor and the ES&S Manager. See Attachment C for request form. A personal H<sub>2</sub>S detector set to alarm at 50 ppm or lower must be worn within the breathing zone. If an H<sub>2</sub>S alarm occurs while wearing an APR, evacuate the area and contact the operator/shift foreman. The incident shall be entered into the Incident Tracking Database noting the employee was wearing an APR. A list of approved APR tasks is listed in Attachment D. APRs cannot be used for H<sub>2</sub>S concentrations above 100 ppm.

3.2.6 APR's (half-face or full-face) may be worn to prevent H<sub>2</sub>S exposure in situations where breathing air is not normally required but H<sub>2</sub>S is identified as a potential hazard (i.e., RAM Level 2 or 3). While being used in this manner, a personal H<sub>2</sub>S detector set to alarm at 50 ppm or lower must be worn within the breathing zone. If a H<sub>2</sub>S alarm occurs, treat the alarm as a normal H<sub>2</sub>S exposure. Evacuate the area and contact the operator/shift foreman. The incident shall be entered into the Incident Tracking Database noting the employee was wearing an APR.

### 3.3 H<sub>2</sub>S Hazard Assessment

#### 3.3.1 H<sub>2</sub>S Area / Task Identification

3.3.1.1 The site has established the locations where H<sub>2</sub>S may be present and has identified the tasks that may lead to exposure to H<sub>2</sub>S using the following sources of information:

3.3.1.1.1 Process Safety Management (PSM) / Process Hazard Analysis (PHA)

3.3.1.1.2 Safety Data Sheets for the refinery's intermediate streams

3.3.1.1.3 Area and personal H<sub>2</sub>S monitoring results

3.3.1.1.4 Historical injury / illness data on H<sub>2</sub>S in the plant

3.3.1.2 GBR is a highly integrated refinery and, as a result, H<sub>2</sub>S can be present somewhere within nearly every unit and exposure can result from a broad range of tasks. Recognizing this and in accordance with the site's **RGD-ES-**

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000001-GB GBR Process Safety Overview (PSO) Policy, each unit maintains a Process Safety Overview bulletin board (poster) that depicts areas within the unit where H<sub>2</sub>S may be present at concentrations sufficient to result in exposure. These areas are also physically demarcated with appropriate warning signs.

3.3.1.3 Performing hot work activities, such as but not limited to welding, cutting, and grinding on process equipment that has previously been in H<sub>2</sub>S or sour service may cause personnel H<sub>2</sub>S exposures. This is a result from small quantities of H<sub>2</sub>S becoming embedded in the metal of process equipment. Consider personal protective equipment such as respiratory protection, engineering controls, and/or administrative controls prior to performing hot work in this scenario.

3.3.1.4 H<sub>2</sub>S Warning Signs used to demarcate areas where exposure to H<sub>2</sub>S more than 10 ppm is possible must read as follows (or equivalent):

**DANGER**  
Hydrogen Sulfide (H<sub>2</sub>S)  
Fatal if Inhaled  
Extremely Flammable Gas

3.3.1.5 Tasks that require supplied-air respirators for protection against H<sub>2</sub>S are listed on the PPE-1 Attachment G PPE Hazard Assessment matrices. This list shall be evaluated at a minimum of once a year to determine if engineering controls, procedures, PPE, or alternative safety controls can be implemented to mitigate the potential for exposure.

### 3.3.2 Industrial Hygiene Monitoring

3.3.2.1 GBR conducts air monitoring in compliance with OSHA Standards and the MPC Measurement Procedures Manual. All air monitoring is done in accordance with GBR's Comprehensive Industrial Hygiene Program.

### 3.3.3 H<sub>2</sub>S Job Planning

3.3.3.1 When planning a job for protection against H<sub>2</sub>S, consideration must be given to duration of the task to ensure adequate supply of supplied air, or an APR (as applicable) is provided.

## 3.4 Personal H<sub>2</sub>S monitor Instrument Requirements

3.4.1 Personal H<sub>2</sub>S monitors are warning devices and shall not be used for locating leaks or permit testing.

3.4.2 MPC personal H<sub>2</sub>S monitors must alarm at 20 parts per million (ppm) and must employ multiple alarming mechanisms (i.e., visual and audible, audible and vibrate, etc.) MPC personnel will utilize Industrial Scientific Tango TX1 monitors.

3.4.3 MPC personal H<sub>2</sub>S monitors must have a STEL (15-minute) alarm function set at 10 ppm.

3.4.4 Contractor personal H<sub>2</sub>S monitors should have the initial alarm set at 10 ppm and shall have the capability to capture a peak H<sub>2</sub>S reading so it can be identified and recorded following an exposure alarm incident.

3.4.5 Contractor personal H<sub>2</sub>S detector alarms below 20 ppm do not require investigation.

3.4.5.1 Once determined that an APR is acceptable for use, employees wearing an APR are no longer authorized to wear a Tango TX1. For all approved APR tasks, an alternate personal monitor will be used (e.g., Ventis). The settings



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for this monitor shall be 50 ppm H<sub>2</sub>S.

- 3.4.6 Must have a means of communicating monitor failure.
- 3.4.7 Must have an acceptable means of attachment such as an alligator clip.
- 3.4.8 Must have a means of displaying the life remaining on the monitor if disposable.
- 3.4.9 Must be maintained in good condition.
  - 3.4.9.1 Sensor filter must be free of dirt and debris
  - 3.4.9.2 LCD Screen must be clear and readable
  - 3.4.9.3 Must be free of any apparent physical damage to the instrument housing (including rubber over-mold).
  - 3.4.9.4 Instruments may not be modified in any way except as allowed by the instrument manufacture as described in the manufacture's instrument manual.
- 3.4.10 Must be periodically tested per manufacturer recommendations. MPC personnel will check their Tango to confirm "OK" check mark daily before use and dock their instrument every 30 days maximum.
  - 3.4.10.1 MPC personnel will perform a monthly bump test by utilizing bump test stations (ISC iNet DS Tango Docking Station) located throughout the Refinery.
    - 3.4.10.1.1 The Safety Repair will order, maintain, and manage MPC bump test stations located throughout the site.
  - 3.4.10.2 Alternate personal monitors (e.g., Ventis) for use when performing APR approved tasks will be available at Safety Repair. The Safety Supervisor for Industrial Hygiene will provide authorization to Safety Repair to issue alternate monitors and docking stations to specific units / areas.
  - 3.4.10.3 Contract companies are responsible for maintaining on-site docking stations for downloading alarm events from their employees' personal H<sub>2</sub>S monitors and providing alarm data to GBR upon request by the end of the shift. Alternately:
    - 3.4.10.3.1 Contract companies may dock their instruments on an on-site MPC or third-party docking station.
    - 3.4.10.3.2 Contract companies utilizing Industrial Scientific Tango TX1 monitors may dock their instruments on MPC GBR docking stations.
  - 3.4.10.4 MPC reserves the right to audit contractor compliance with applicable bump testing requirements. Contractors must provide a report of calibrations and peak exposures by employee upon request.
- 3.5 Use of Personal H<sub>2</sub>S Monitors
  - 3.5.1 Personal H<sub>2</sub>S monitors are required when entering refinery production areas must wear a personal H<sub>2</sub>S monitor in accordance with GBR PPE-1 Personal Protective Equipment.
  - 3.5.2 H<sub>2</sub>S monitors must be worn in the breathing zone (an area approximately 10 inches from the mouth and nose) with the sensor "exposed." Suggested locations include the shirt/FRC closure area (near the collar), on the collar, outside chest pocket, or front/side of hard hat. Personal monitors may not be worn on the belt or inside a shirt/coat or back of the hard hat. Noise amplifier covers should be worn over H<sub>2</sub>S monitors.
  - 3.5.3 MPC employees and select directly supervised contractors can obtain personal H<sub>2</sub>S

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monitors from safety repair. All other contractors shall provide their own personal H<sub>2</sub>S monitors to their employees.

- 3.5.4 Any person who is issued a loaner personal H<sub>2</sub>S monitor (e.g., truck drivers) is required to review and sign Attachment 1 – Incidental (Loaned) Use of Personal H<sub>2</sub>S Monitors.
- 3.5.5 Personnel who are entering the area or performing work where the concentration of H<sub>2</sub>S is known to be 10 ppm or greater AND are wearing a pressure-demand airline respirator or designated non-emergency SCBA are NOT to wear their personal H<sub>2</sub>S detector.
- 3.5.6 Personnel should remove their H<sub>2</sub>S monitor and leave it in the area where they don/doff their supplied air. This is to verify it is safe to remove the supplied air once the work is complete. All other personnel in the surrounding area OR stand-by/rescue personnel that have NOT yet donned their airline respirator or designated non-emergency SCBA are required to wear their personal H<sub>2</sub>S monitor.
- 3.5.7 Alternatively, or in addition to 3.5.5 and 3.5.6, a multi-gas instrument capable of measuring H<sub>2</sub>S may be provided to personnel to ensure the area in which they don/doff supplied air is safe to do so..
- 3.6 Obtaining new and/or replacement monitors
  - 3.6.1 Safety Repair will order, maintain, and manage personal H<sub>2</sub>S monitors issued to MPC personnel and visitors. To obtain new/replacement monitors, MPC personnel and visitors must utilize the monitor request form. If new/Replacement monitors are needed outside Safety Repair's hours of operation, employees should contact their supervisors. Supervision must request afterhours entry to security by calling the SOC.
  - 3.6.2 MPC Security ESB Visitor Center, Gate 22 and Gate 26 will maintain, issue, and manage a loaner pool of personal monitors to accommodate the following limited situations.
    - 3.6.2.1 Infrequent visitors with business that requires them to sign in a unit sign-in log
    - 3.6.2.2 Truck/delivery drivers with non-routine business that requires them to sign in a unit sign-in log
  - 3.6.3 Contract employers must provide their employees who work in designated personal H<sub>2</sub>S monitor required areas with a personal H<sub>2</sub>S monitor that meets specifications outlined in section 3.3.3 .
- 3.7 Loss, Stolen, or Missing H<sub>2</sub>S Monitor Replacement Monitors
  - 3.7.1 If an MPC employees monitor is lost, stolen, or missing they will need to complete the H<sub>2</sub>S Detector Assignment form (Attachment B)
  - 3.7.2 The employee's supervisor is required to sign the form and email the form to GBR Safety Repair at G GBR ES&S Safety Repair ([gbrsafetyrepair@marathonpetroleum.com](mailto:gbrsafetyrepair@marathonpetroleum.com)). The form must come from the supervisor, for a new monitor to be issued.
- 3.8 H<sub>2</sub>S Monitor Alarm Response / Reporting
  - 3.8.1 Initial Response
    - 3.8.1.1 If an MPC employee or contractor employee personal H<sub>2</sub>S monitor alarms, or a fixed H<sub>2</sub>S monitor alarms, all personnel in the immediate area **MUST** evacuate the area to a safe location, contact operations for that unit, and notify their supervisor. Contractors must also notify their MPC representative.
    - 3.8.1.2 MPC employees and contractors whose personal monitors alarmed **must** place their personal monitors in the docking station after an alarm occurs before returning to work, no later than the end of shift.



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- 3.8.1.3 If an MPC employee or contractor is experiencing symptoms of H<sub>2</sub>S exposure, that individual must report to GBR Medical.
- 3.8.1.4 MPC Employees and contractors must report to GBR Medical prior to returning to work for an alarm at 100 ppm or greater
- 3.8.1.5 If an MPC employee's alternate personal monitor alarms during an APR approved task, the employee shall evacuate the immediate area and dock their monitor.
  - 3.8.1.5.1 If the alarm is less than 100 ppm, the employee shall notify their supervisor, don a supplied air respirator, and complete the task.
  - 3.8.1.5.2 If the alarm is greater than 100 ppm, the employee shall notify an MPC supervisor and Operations, report to Medical for evaluation, and shall be protected from further exposure per section 3.8.7 .

### 3.8.2 Reporting and Investigation

- 3.8.2.1 Every occurrence of an alarm on a personal and fixed H<sub>2</sub>S monitor (regardless of respiratory protection) must be documented through the incident reporting process along with the concentration and source(s) of H<sub>2</sub>S.
  - 3.8.2.1.1 For personal monitors, the supervisor of the employee whose monitor alarmed is responsible to ensure the alarm documented through the incident reporting process.
  - 3.8.2.1.2 For fixed monitors, the supervisor of the area where the alarm occurred is responsible to ensure that the alarm documented through the incident reporting process.
  - 3.8.2.1.3 For Contractors, the MPC representative is responsible to ensure that the alarm documented through the incident reporting process.
  - 3.8.2.1.4 Actions taken to ensure that personnel who were exposed to 50 ppm H<sub>2</sub>S or greater without respiratory protection are protected from future exposures shall also be documented through the incident reporting process. See section 3.8.7 and 3.8.8 .

**Note:** Every personal monitor alarm or exposure regardless of respiratory protection must be reported using the incident reporting process to ensure that all alarms are accounted for in the iNet system, and to document that all personnel were adequately protected, or proper precautions were taken to prevent future exposure.
- 3.8.2.2 In the event a personal H<sub>2</sub>S detector alarms with the use of proper respiratory protection, or if a personal H<sub>2</sub>S detector alarms due to a known interference or cross-sensitivity issue, it must be entered as a Category 0 (document and close) incident.
- 3.8.2.3 Every H<sub>2</sub>S alarm event without the use of respiratory protection must be investigated in accordance with RGD-PS-000003-GB Incident Investigation & Reporting Site Plan PS 11.0.

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### 3.8.3 H<sub>2</sub>S Event Air Monitoring

- 3.8.3.1 Air monitoring for H<sub>2</sub>S shall be conducted whenever a personal H<sub>2</sub>S monitor or fixed H<sub>2</sub>S detector has alarmed.
- 3.8.3.2 A trained employee(s) wearing proper PPE shall conduct initial air monitoring immediately after the alarm to determine: (1) airborne concentrations of H<sub>2</sub>S, (2) the source of the H<sub>2</sub>S, (3) the level of PPE that must be worn by employees when responding to a possible incident, (4) perimeter establishment to regulate access to personnel, (5) clearance monitoring to determine when the event is over or a false alarm has been determined due to cross interference, etc.
- 3.8.3.3 Continuous air monitoring shall be conducted during the response activities to assess changing conditions as well as employee exposure.
- 3.8.3.4 Small incidental releases where the source of the H<sub>2</sub>S is readily apparent (e.g., sample station, opening a bleeder) may not require all of the steps in section 3.8.3.2.
  - 3.8.3.4.1 In the event a small incidental release results in an alarm personnel are to secure the source and follow the steps outlined in section 3.8.1.
- 3.8.3.5 Employee(s) must wear a Self-Contained Breathing Apparatus (SCBA) or Supplied Air Respirators (SAR) when responding to an event that the concentration of H<sub>2</sub>S is unknown, conditions could change rapidly, or engineering and/or work practice controls do not reduce airborne concentration to less than 10 ppm. Per PPE-5 Respiratory Protection procedure, a back-up person(s) is required when responding to an alarm in an IDLH atmosphere.

**Note:** Small incidental releases where the source of the H<sub>2</sub>S is readily apparent (e.g., sample station, opening a bleeder or in the laboratory) may not require all the above shown actions (e.g., PPE level, establishment of exclusion zones and clearance monitoring)

- 3.8.4 For re-entry after an alarm, the area atmospheric conditions must be verified by Operations wearing proper PPE and approved for re-entry before personnel can return to the area where the alarm occurred.
- 3.8.5 Employees and Contractors who experience an alarm less than 50 ppm H<sub>2</sub>S must take additional precautions to prevent further exposure to H<sub>2</sub>S for the remainder of the shift.
- 3.8.6 Employees and Contractors who experience an alarm of 50 ppm H<sub>2</sub>S or greater without respiratory protection during any work shift or ≥ 100 ppm with an APR while performing an APR approved task must be protected from further exposure to H<sub>2</sub>S for the rest of the shift by using one and/or an equivalent of the following measures:
  - 3.8.6.1 Modification of work assignments for the remainder of the shift so that there are no additional exposures to H<sub>2</sub>S; and/or
  - 3.8.6.2 Replacement by another qualified worker; and/or
  - 3.8.6.3 Continuation of normal duties with the requirement that any job that has the potential for H<sub>2</sub>S exposure must be done in a pressure-demand airline respirator or designated non-emergency SCBA.
- 3.8.7 The owning department must determine the most appropriate method(s) to ensure that personnel who were exposed to 50 ppm H<sub>2</sub>S or greater **without proper respiratory protection** are protected from future exposures.

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3.8.8 Precautions must be taken to prevent any replacement qualified worker(s) from being exposed to H<sub>2</sub>S.

### 3.9 Competencies and Training

#### 3.9.1 MPC Employees

3.9.1.1 Training is conducted according to the HESS Training Matrix.

3.9.1.2 Training records are maintained by the Learning and Development Services.

3.9.1.3 Training includes the basic Hazard Communication training as defined in the site's Hazard Communication policy (ADM-3).

#### 3.9.2 Contractor Employees

3.9.2.1 H<sub>2</sub>S hazards are communicated to contractors and visitors through safety orientation, contractor safety training, process safety overviews, safety data sheets, signs and labels, and the safe work permitting process.

3.9.2.2 Only those contractor employees who have completed the GBR site-specific contractor safety training program at the safety council, which includes information about the hazards of H<sub>2</sub>S, are able to gain access to areas of the plant where exposure to H<sub>2</sub>S can occur.

### 3.10 Assurance

3.10.1 As a minimum to assure the effectiveness of this exposure control program, the following shall be verified through an annual self-assessment:

3.10.1.1 Employees are receiving the required H<sub>2</sub>S training.

3.10.1.2 Employees and contractors are wearing, as required, an acceptable personal H<sub>2</sub>S monitor and that assigned monitors are being bumped / calibrated as required by the manufacturer.

3.10.1.3 H<sub>2</sub>S alarm events are being reported and investigated as required.

3.10.1.4 Employees are aware of the tasks in their work areas that require the use of respiratory protection to prevent H<sub>2</sub>S exposures.

3.10.1.5 Employees are participating in the identification / prevention of H<sub>2</sub>S exposures and appropriate management support is given to the use of engineering solutions / controls for mitigating H<sub>2</sub>S exposures.

## 4.0 **Definitions**

4.1 **Breathing Zone:** The volume surrounding a worker's nose and mouth from which the worker draws breathing air over the course of a work period. This zone can be pictured by inscribing a sphere with a radius of about 10 inches centered at the worker's nose. **Note:** Because of this 10-inch distance, it is acceptable for a personal H<sub>2</sub>S detector to be worn on the side of a safety hat, but not at the back of a safety hat.

4.2 **Immediately Dangerous to Life or Health (IDLH):** Any atmosphere that poses an immediate hazard to life or produces immediate, irreversible, or debilitating effects on health. IDLH values are established by the National Institute for Occupational Safety and Health (NIOSH). IDLH level for H<sub>2</sub>S is 100 ppm.

4.3 **OSHA Ceiling Limit:** Federal OSHA has established an acceptable ceiling concentration of 20 parts per million (ppm) in 29 CFR 1910.1000 Table Z-2.

4.4 **OSHA Peak Limit:** Federal OSHA has established an acceptable maximum peak concentration above the acceptable ceiling concentration for an 8-hour shift of 50 ppm in 29CFR1910.1000 Table Z-2. 29CFR1910.1000(b) states an employee's exposure to a substance listed in Table Z-2

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shall not exceed at any time during an 8 hour shift the acceptable ceiling concentration limit, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed under “acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift”. The allowable time period for hydrogen sulfide above the ceiling (20 ppm) but below the maximum peak (50 ppm) is 10 minutes once, only if no other measurable exposure occurs for that shift.

- 4.5 **SCBA:** Self-Contained Breathing Apparatus operating in a pressure-demand mode.
- 4.6 **Short-Term Exposure Limit (STEL):** 15 ppm, as measured over a 15-minute period, per compliance with MPC Occupational Exposure Limit (OEL).
- 4.7 **Time-Weighted Average (TWA):** An eight-hour time weighted average of 10 ppm, per compliance with MPC OEL.

## 5.0 References

- 5.1 OSHA 29 CFR 1910.1000 Table Z-2
- 5.2 Marathon Petroleum Corporation – Corporate HES&S Standard HLT-2002 “*Hydrogen Sulfide Exposure Control Program*”
- 5.3 Marathon Petroleum Corporation – Refining Standard Practice RSP-1701-000 “*H<sub>2</sub>S Exposure Control Program Minimum Requirements*”
- 5.4 GBR PR-10 Life Critical Safety Procedures & Accountability
- 5.5 GBR PPE-1 Personal Protective Equipment
- 5.6 RGD-ES-000001-GB GBR Process Safety Overview (PSO) Policy

## 6.0 Attachments

- 6.1 Attachment A: Incidental (Loaned) Use of Personal H<sub>2</sub>S Monitors
- 6.2 Attachment B: Galveston Bay Refinery H<sub>2</sub>S Detector Assignment Form Marathon Personnel
- 6.3 Attachment C: APR Use Request Form
- 6.4 Attachment D – List of Approved Tasks for APR Use

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## 7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original Issue. Consolidated site procedures that replaced GBR-HESS-SM-05 and RSW-0011-TC under MOC 64941.	L. E. McCleave	V. J. Meeks	9/5/2019	9/30/2019
1	Adds considerations when performing hot work on piping previously in sour service to address lessons learned.	S. Lambert	E. R. Kaysen	5/19/2021	5/26/2021
2	Updated to address medical staff reduction under MOC 85443.	R. Lu	E. R. Kaysen	2/23/2021	5/27/2021
3	Updated to further align with medical staff reduction MOC and reflect current practice.	J. Soape	H. F. Shear	4/21/2022	5/2/2022
4	Updated to include APR's usage for incidental exposure.	J. Soape	H. F. Sheard	11/11/2022	1/3/2023
5	Updated low alarm will activate at 20ppm. STEL alarm will activate at 10ppm. Medical evaluation will be required at 100ppm. Contractor alarms < 20ppm will not need an investigation. Added APR change out schedule. Revised under MOC 131385.	J. Soape	H. F. Sheard	12/19/2023	1/15/2024

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## Attachment A – Incidental (Loaned) Use of Personal H<sub>2</sub>S Monitors

1. A personal H<sub>2</sub>S Monitor can save your life →
2. The instrument provides an immediate audible alarm and flashing lights) whenever potentially hazardous levels of hydrogen sulfide (H<sub>2</sub>S) gas is present.
3. H<sub>2</sub>S, in high concentrations, can be deadly. It can also quickly paralyze your sense of smell leading you to believe the danger has gone away.
4. You are being issued a monitor that has already been turned on and has been bump tested and calibrated for you. The instrument is ready to use.
5. **Always wear the monitor** while on site, even when in the cab of your truck. Failure to do so will result in your removal from the site and possibly your privileges to return.
6. The monitor must be clipped in your breathing zone and must not be covered up by outer clothing. Breathing zone is defined as 10 inches from your nose. Wearing on the side of a safety hat is acceptable but required to be shoulders forward.
7. If the monitor alarms, immediately shut-down any material transfer (loading / unloading) operations but leave equipment in place then return to the control room and report the alarm to operations. Your permit to work is no longer valid and a new permit must be obtained to return to the area.
8. You may be asked to provide a statement to be included in an incident report. In addition, if your exposure exceeded the levels permitted by the U.S. Occupational Safety and Health Administration (OSHA), you will be asked to report to first aid to be examined by an EMT.
9. Please sign below acknowledging your receipt and understanding of this information.



**DON'T FORGET TO RETURN YOUR MONITOR  
BEFORE YOU LEAVE THE SITE!**

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



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## Attachment B – Galveston Bay Refinery H2S Detector Assignment Form Marathon Personnel



### Galveston Bay Refinery H<sub>2</sub>S Detector Assignment Form Marathon Personnel

*\*\* Please direct any questions or concerns to GBR Safety Repair Department ext. 2-1530.*

- L&D will authorize for new employees after they have completed the required training.
- Replacement of lost detectors will require the employee's supervisor authorization.
- Replacements for broken or expired detectors **do not** require supervisor authorization.

Request Type (*Circle One*):

**Initial Assignment**                      **Replacement Monitor**                      **Loaner**                      **Return**

Requested By: \_\_\_\_\_ Date: \_\_\_\_\_

MO#: \_\_\_\_\_ Employee Number: \_\_\_\_\_

Supervisor: \_\_\_\_\_ Location/Unit: \_\_\_\_\_

Reason for request: (for replacement requests, describe what happened to previous monitor).

\_\_\_\_\_

\_\_\_\_\_

If Monitor is Being **Replaced**- Serial Number of OLD Monitor: \_\_\_\_\_

**\*NEW**

Serial Number of Monitor Assigned: \_\_\_\_\_

Employee Signature: \_\_\_\_\_

Supervisor Signature (*Loaners/Lost Detectors*): \_\_\_\_\_

L&D Authorization (*Initial Assignment*): \_\_\_\_\_

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### Attachment C – APR Use Request Form

Requestor: \_\_\_\_\_

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

Job Title Affected: \_\_\_\_\_

Task: \_\_\_\_\_

Task Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### Industrial Hygiene Sampling Data:

Sample Number	Result

Sample Number	Result

#### Statistical Analysis for OEL with the Proposed Respiratory Protection Factor:

Exceedance Fraction: \_\_\_\_\_

95% Upper Confidence Limit: \_\_\_\_\_

Interpretation of Results: \_\_\_\_\_

\_\_\_\_\_

Corporate Refining Approval Process Complete (check when complete) ☐ Date: \_\_\_\_\_

\_\_\_\_\_  
Safety Supervisor Date

\_\_\_\_\_  
Area Supervisor Date

\_\_\_\_\_  
IH/Safety Professional Date

Date of Approval: \_\_\_\_\_

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### Attachment D – List of Approved Tasks for APR Use

Equipment	Specific Approved Task	Respirator	Cartridge	Unit/Area
West Plant Process Header	Product Sample Collection at Sample Station	3M 6000 Series Part # 6300/07026	Half-face Multi AG/OV/P100 Part #60923	Env Facility
Central Plant Process Header				
East Plant Process Header				
J18 Pump Skid				
F630/F631/APR				
Slop Tank				
SDU Sludge Tank				
SDU Sludge Pumps J602A/B, J603A/B, J605A/B	Venting & Priming	3M 6000 Series Part # 6300/07026	Half-face Multi AG/OV/P100 Part #60923	Env Facility
DAF Bottoms (J203A/B Pumps)				
Storm Tank	Screen Trash Cleaning	3M 6000 Series Part # 6300/07026	Half-face Multi AG/OV/P100 Part #60923	Env Facility
DAF Skimming Tank (J202A/B Pumps)				