

8.0 HYDROGEN SULFIDE (H₂S) GUIDELINES

8.1. Purpose

Due to the significant health and safety hazards associated with handling petroleum products containing Hydrogen Sulfide (H₂S), it is Buckeye Partners, L.P.'s ("Buckeye") standard policy at most Buckeye owned or operated terminals (Terminal(s)) to not accept products containing elevated levels of H₂S ("High H₂S Product" defined below). However, on a case by case basis, Buckeye Terminals that are properly equipped and configured may be able to receive High H₂S Product provided the High H₂S Product is properly treated with an approved H₂S Scavenger Additive ("Additive") upon discharge into isolated storage tanks at the Terminal. In addition, on a case by case basis along with an approved work plan, Buckeye may accept and store High H₂S Product without treatment with approval from the Terminal's Operations Director. These guidelines may be subject to more stringent or lenient requirements based on agreed contractual obligations with Buckeye Partners and Customers or enforced by local governmental agencies. The purpose of these H₂S Guidelines is to communicate Buckeye's expectations and requirements to our customers, third party inspectors, additive vendors and any other third parties involved in the receipt of H₂S Product via marine vessels, rail car, pipeline or truck at any Buckeye Terminal and to assure the safety of anyone involved in the handling of H₂S Product.

8.2. Guidelines

A. Nomination and Scheduling

1. Customers are required to notify their respective Buckeye Scheduler of any scheduled deliveries into a Buckeye Terminal or Pipeline of a product that may contain H₂S. These products include, but are not limited to, crude oil, asphalt, residual fuel oils, or any other products suspected of containing H₂S.

2. Prior to its arrival at the Buckeye Terminal or the Notice of Readiness (NOR) being accepted for marine vessels, Customers must provide the Buckeye Scheduler and Terminal Operations with the ASTM D5705 Can Test or Modified Can Test results for the product being delivered in accordance with Buckeye's Marine Acceptance Protocol. If the test results are not available or samples cannot be obtained and tested prior to the marine vessel arriving at the Buckeye Terminal, then Buckeye at its sole discretion may permit the Customer to sample the marine vessel for testing upon mooring at the Buckeye Terminal contingent on berth availability and following the requirements set forth in these guidelines. Any expenses incurred by Buckeye as a result of any sampling and testing being performed at the Buckeye Terminal dock will be reimbursed to Buckeye by the Customer. If necessary, Buckeye reserves the right to have the marine

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vessel vacate the Terminal berth while waiting for H₂S test results. Deliveries that could contain high H₂S via pipeline, truck, or rail must be tested and accepted prior to shipping.

3. Buckeye may arrange and pay to take Gas Meter, Draeger Tube or Chip H₂S readings on truck, railcar, or vessel compartments immediately prior to discharge if the ASTM D5705 Can Test or Modified Can Test results provided by Customer prior to arrival at the Terminal reported H₂S levels at concentrations above zero, but less than those defined in Section C below (High H₂S Product). If the Gas Meter, Draeger Tube or Chip H₂S results indicate an H₂S level greater than 10 ppm in any compartment being discharged, then the Customer may be required to treat such compartment upon discharge in accordance with these guidelines.

B. Acceptable Test Methods and Results

1. Buckeye WILL ONLY accept ASTM D5705 Can Test or Modified Can Test results from a Buckeye approved lab for products potentially containing H₂S to be delivered to Buckeye Terminals.

2. An ASTM D5705 Can Test or Modified Can Test must be completed on each marine vessel, truck or rail car compartment to be discharged that potentially contains H₂S or representative sampling acceptable to Buckeye must be performed when the delivery is by pipeline.

3. For fungible product storage at Buckeye Domestic U.S. marine terminals, only compartment samples taken in U.S waters and tested in a Buckeye approved lab are acceptable. International facilities will only accept test results from local laboratories.

4. For segregated product storage at Buckeye Domestic U.S. marine terminals, compartment samples taken at the load port and tested by a Buckeye approved lab are acceptable.

5. If a marine vessel will be discharging at multiple Buckeye Terminals, then the vessel compartment testing does not need to be repeated at each Terminal as long as the vessel compartment(s) being discharged were previously tested and reported and as long as no product was subsequently loaded into those compartments.

6. Gas Meters, Draeger Tubes or Chips may only be used to test H₂S levels when confirming Terminal Tank(s) and Vessel Compartment(s) H₂S acceptability levels.

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C. High H₂S Level Definition

1. Unless otherwise specifically defined in a Storage or Throughput Agreement between Buckeye and a Customer, Buckeye defines High H₂S Product as one or more of the following:

- a) > 10 ppm at 1" above the hatch in the vapor space, or
- b) > 100 ppm per the ASTM 5705 Can Test or ASTM 5705 Modified Can Test

D. High H₂S Product Treatment Arrangements

1. If the ASTM D5705 Can Test or Modified Can Test results indicate that any or all of the samples contain High H₂S Product, then Customer may request that Buckeye accept the High H₂S Product if Customer arranges to have the High H₂S Product properly treated with Additive upon discharge by a 3rd Party Additive Vendor or by Buckeye if the terminal is properly equipped and trained in the injection of H₂S scavenger. However, not all Buckeye Terminals may be equipped nor have the capability to safely handle the receipt of High H₂S Product. Customers must inquire with their respective Buckeye Terminal Scheduler whether or not the specific Buckeye Terminal is able to handle receipts of High H₂S Product.

2. If the Customer agrees to make the necessary arrangements and pay for a 3rd Party Additive Vendor to treat the High H₂S Product and the specific Buckeye Terminal is capable of handling the High H₂S Product and agrees to receive the High H₂S Product, then the following Additive treatment guidelines will apply:

- a) Customers, delivering by vessel, MUST have all compartments being simultaneously discharged containing an average H₂S level greater than 100 PPM or any one (1) compartment containing an H₂S level greater than 150 PPM using ASTM D5705 Can Test or Modified Can Test be treated to a level of zero (0) PPM H₂S upon discharge into the Buckeye Terminal. If High H₂S Product is needed to perform a line displacement, then the High H₂S Product must be properly treated during the line displacement. If the line displacement product cannot be treated for some reason, the Independent Inspector will be required to wear SCBA's (Self Contained Breathing Apparatus) or SAR's (Supplied Air Respirators) when obtaining physical gauge numbers of the tank receiving the line displacement. SCBA's or SAR's will not be required if tank side gauges are used for line displacement tank volumes.

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b) It is the responsibility of the Customer to ensure that the contracted 3rd Party Additive Vendor understands and complies with all requirements set forth in these Guidelines.

c) Buckeye shall not allow and shall cease High H₂S Product treatment operations if the 3rd Party Additive Vendor cannot or will not follow Buckeye requirements as set forth in these Guidelines. A marine vessel may be required to vacate the dock.

E. Operations

1. Marine vessels containing High H₂S Product shall stop venting two (2) hours prior to docking at the Buckeye Terminal. Venting of vessels while docked at a Buckeye Terminal is prohibited without prior written approval of Buckeye. Railcars containing High H₂S Products are restricted from manually venting under any circumstances.

2. Only Buckeye Terminal personnel or 3rd Party contractors fit tested and fully trained in the use of SCBA's (Self Contained Breathing Apparatus) or SAR's (Supplied Air Respirators) may work in the vicinity of manifolds, hatches, or vents associated with a delivery via pipeline, truck, rail car or marine vessel carrying High H₂S Product where direct exposure exists. However, because handling High H₂S Product is not a routine operation for Buckeye Terminal personnel, Buckeye does not typically train and certify Terminal personnel in the use of SCBA's or SAR's. If properly trained Buckeye Terminal personnel are not available, Buckeye will attempt to make arrangements for a properly trained and certified 3rd Party contractor to perform certain operational tasks where Terminal personnel may be exposed to elevated H₂S levels. Any costs associated with hiring a 3rd Party contractor to perform these tasks shall be at Customer's expense. Customers should contact their respective Buckeye Scheduler to determine if the specific Terminal has SCBA or SAR certified personnel. Terminal workers, truck drivers or marine vessel personnel may have to complete the pre-discharge conference and the safety checklist in an area designated to be clear of any potential H₂S exposure.

3. 3rd Party contractors must be trained on the potential health hazards of H₂S and provide the necessary documentation showing they have been trained and have proof of Fit Testing and certification in SCBA or SAR equipment use and operation.

F. Additive Treatment Operations

1. Customer is responsible to select and hire the 3rd Party Additive Vendor to perform the Additive treatment. The 3rd Party Additive Vendor must sign a Terminal Access Agreement with Buckeye prior to gaining access and performing work at Buckeye Terminals.

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2. Additive treatments, approved to be performed at the Buckeye facility, shall be performed as close to the unloading point as safely possible, subject to the location of an additive injection point along the product receipt piping. Injection must also be conducted ratable throughout the entire discharge or load to ensure product remaining in line fill is treated. In the case of pipeline, truck or rail deliveries, the product should be treated in the storage tank, truck or rail car, if feasible, before unloading.

3. Calculations to determine the quantity and duration of additive to be injected into the High H₂S Product upon discharge shall be based on achieving a final H₂S reading of zero (0) ppm in the Terminal tank and piping throughout the duration of the load.

G. Equipment and PPE Requirements

1. All personnel performing the treatment of or performing custody transfer of High H₂S Product, including 3rd Party Additive Vendors, 3rd Party Independent Inspectors, and any other 3rd Parties involved in the handling of or exposure to High H₂S Product, must be properly trained and certified to wear the necessary SCBA or SAR equipment during discharge operations.

2. Gas multi-meters capable of analyzing H₂S levels or Draeger Tubes or Chips shall be used to measure atmospheric levels of H₂S inside a tank or in the breathing space for respiratory protection purposes. These H₂S measurement devices must be supplied by vendor and in good working order, properly calibrated, not past expiration date, and ranges must be appropriate for use.

3. If H₂S goes above 100 ppm in the breathing zone, a detailed IDLH Work Plan is required. A thorough review of the task to be accomplished will be conducted that may include:

a) Number of personnel to complete the task

b) Buddy System or Standby Plan – This is for the purpose of determining how many people will be staged in a safe area as a backup for the personnel in the IDLH atmosphere. The standby person must be fully trained and certified in the use of and must wear SCBA or SAR equipment. The standby person will be required until the H₂S levels have fallen to 100 ppm or less. Once the H₂S level has fallen to 100 ppm or less, a standby person is no longer needed, however the 3rd Party Inspector must still wear SCBA or SAR equipment until the H₂S level has reached 10 ppm or less in the work area. Once H₂S levels in the work area have been confirmed to be 10 ppm or less, then only a personal H₂S monitor is required however SCBA and SAR equipment must remain on site and available for use.

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c) Air Monitoring Plan – the number, type, and frequency of atmospheric readings to determine air quality. We want to know if air quality is getting better or worse.

d) PPE and Equipment Required – Additional PPE to be considered including respiratory protection equipment.

e) Communications Plan – Defines how to communicate with personnel in and out of the IDLH atmosphere.

f) Rescue Plan – Defines how to react to a situation where a person/people in the IDLH are accidentally exposed to a high hydrogen sulfide atmosphere, they become physically injured, or experience a medical emergency will be considered with a rescue plan.

4. Personnel must be equipped with required Personal Protective Equipment (PPE) in accordance with the Buckeye PPE requirements. This includes, but are not limited to; hard hats, safety glasses with side shields meeting the ANSI Z87.1 standard and steel-toed shoes meeting the ANSI Z41.1 standard.

5. 3rd Party Independent Inspectors gauging and sampling tanks which have received or are receiving High H₂S Product must wear H₂S personal monitors and SCBA or SAR equipment until H₂S levels taken one inch above the tank hatch have been confirmed to be 10 ppm or less. Once H₂S levels taken one inch above the tank hatch have been confirmed to be 10 ppm or less, the 3rd Party Independent Inspector will only be required to wear an H₂S monitor.

H. Tank Sparging, Mixing or Heating

1. If requested by Customer, tank sparging, tank mixing, or tank heating will be permitted on tanks receiving or having received High H₂S Product only if all of the below requirements are met:

a) The Buckeye Terminal is properly equipped, configured and permitted to safely perform tank sparging, tank mixing and/or tank heating.

b) High H₂S Product has been properly treated with the necessary amount of Additive to achieve an H₂S level of 0 ppm upon receipt into the tank.

c) H₂S level before Additive treatment does not exceed 500 ppm per ASTM D5705 Can Test or Modified Can Test.

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d) One hour has elapsed from the start of the discharge (one hour discharge time does not include time spent on line displacements).

2. Tank sparging, tank mixing, or tank heating may be stopped at any time at the discretion of Buckeye Terminal personnel if it is determined that the High H₂S Product has not been properly treated, H₂S monitors alarm to indicate high H₂S levels, or any other condition which may deem the operation unsafe.

3. Tank transfers or any other outbound movements will not be permitted out of tanks that received High H₂S Product until the tank(s) H₂S levels taken one inch above the tank hatch have been confirmed to be less than 10 ppm or less. See Section I.5 and I.6 below.

I. Tank H₂S Level Confirmation

1. ASTM D5705 Can Tests or Modified Can Tests are normally not required to confirm post treatment H₂S levels. However, this is dependent on the nature of the operations, product type, and configuration of the tankage at the facility (i.e. Internal Floating Roof tanks).

2. Buckeye requires that 3rd Party Independent Inspectors take initial H₂S readings for all tanks that received High H₂S Product treated with Additive. 3rd Party Independent Inspectors shall wear SCBA's or SAR's and personal H₂S monitors while conducting the tests until results taken one inch above the tank hatch are verified to be 10 ppm or less. All readings shall be documented and provided to the Buckeye Terminal personnel.

3. If the initial H₂S reading taken one inch above the tank hatch on a tank is 10 ppm or less, then Buckeye Terminal personnel will accompany the 3rd Party Independent Inspector and confirm all H₂S tank readings via the Buckeye Terminal gas meter. Buckeye Terminal personnel and the 3rd Party Independent Inspector are required to wear H₂S monitors when confirming the H₂S readings.

4. When testing tanks, Buckeye Terminal personnel and 3rd Party Independent Inspectors shall:

a) Stay upwind of the open hatch while inspecting/sampling the storage tank;

b) Not break the plane of the hatch opening when inspecting/sampling the storage tank (maintain at least 3 feet from the opening), and

c) Wear personal H₂S monitors during the entire testing process.

5. If the H₂S level at one inch above the tank hatch exceeds 10 ppm following the Additive treatment, then the Customer must coordinate with Buckeye Terminal personnel to develop an acceptable retreatment plan to achieve acceptable H₂S levels.

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6. If the High H₂S Product cannot be properly treated in tank to a level of 10 ppm or less in the tank, then the Customer may be required to load the High H₂S Product back on to the Marine Vessel and then repeat the High H₂S Product receipt process with additional Additive. In the circumstance of pipeline, rail, or truck deliveries, an alternate treatment process may need to be considered if back loading is not practical.

J. Vessel Loadings

The following applies for any vessel loading that will require the use of vapor control:

1. If the vessel contains or is suspected of containing H₂S, H₂S results must be reported for each compartment being loaded. Terminal Operations will determine if the product(s) and/or vapor meet Buckeye and/or regulatory specifications and is approved for arrival and loading.

a) If utilizing Vapor Combustion technology the use of inline H₂S injection may be permitted. Terminal Operations will determine if approved for loading.

b) If utilizing Vapor Recovery technology the use of inline H₂S injection will not be permitted. All storage tanks must be verified to Buckeye and/or regulatory specifications prior to loading. Terminal Operations will determine if approved for loading.