

Site Safety and Air Monitoring Work Plan

**Marathon Pipeline LLC
Edwardsville Response**

Edwardsville, IL

Prepared By:

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1.0 INTRODUCTION AND PURPOSE

The purpose of this work plan is to protect the public's and employee's health by addressing personal and area air monitoring/ sampling at the Marathon Pipeline LLC (MPL) Crude release on the WoodPat 22" Pipeline near Edwardsville, IL on March 11, 2022. Response operations began immediately to isolate the affected area and to delineate the extent of the release. MPL's Emergency Response Team was mobilized on March 11, 2022. Area monitors were deployed to monitor for volatile organic compounds (VOCs), benzene, hydrogen sulfide (H₂S), and lower explosive limits (LEL) throughout the response. The purpose of this monitoring and sampling includes the following:

- Monitor air at the perimeters of the release and boom sites to protect the community and emergency response workers in close proximity.
- Monitor air at the release site to protect the workers and other personnel located within the incident site.
- Monitor air within the potentially impacted communities to assess potential off-site impact or recognized odor from airborne contaminants originating from the release sites.

Fixed real time monitoring locations for the Response and analytical sampling data will be summarized as soon as available and presented for review onsite.

2.0 PROJECT ORGANIZATION

MPL will be responsible for the following:

- Air monitoring
- Toxicology support
- Quality Assurance/Quality Control
- Data evaluation
- Reporting

MPL site management:

- See event Incident Command charts

Team Organization (as applicable):

- Odor response team/ IH Strike Team - Personnel available to respond if odor complaints arise.
- Community – Teams performing community monitoring with fixed and periodic monitoring.
- IH Sampling Team – Teams available to respond to specific concerns and monitor working areas.

3.0 EXPOSURE GUIDELINES AND LIMITS

Environmental Protection Agency Acute Exposure Guidelines**

| Hydrogen Sulfide 7783-06-4 | | | | | |
|----------------------------|--------|--------|--------|------|------|
| | 10 min | 30 min | 60 min | 4 hr | 8 hr |
| ppm | | | | | |
| AEGL 1 | 0.75 | 0.60 | 0.51 | 0.36 | 0.33 |
| AEGL 2 | 41 | 32 | 27 | 20 | 17 |
| AEGL 3 | 76 | 59 | 50 | 37 | 31 |

**[Click Here](#) for a complete list of the EPA's AEGLs.

Additionally, the Interim AEGL for benzene may also be used if elevated levels are present.

| Benzene 71-43-2 (Interim) | | | | | |
|---------------------------|-----------|-----------|---------|---------|---------|
| | 10 min | 30 min | 60 min | 4 hr | 8 hr |
| AEGL 1 | 130 ppm | 73 ppm | 52 ppm | 18 ppm | 9.0 ppm |
| AEGL 2 | 2,000 ppm | 1,100 ppm | 800 ppm | 400 ppm | 200 ppm |

Occupation Exposure Limits

MPL Exposure Limits to Common Industry Agents

| Agent | Odor Threshold (ppm) | Skin Notation | MPC Exposure Limit | ACGIH Threshold Limit Value | OSHA Permissible Exposure Limit |
|------------------------------------|----------------------|---------------|-----------------------------|-----------------------------|---------------------------------|
| H2S | | | TWA 10 ppm STEL 15 ppm | TWA 1 ppm STEL 5 ppm | No Established PEL |
| Total Volatile Organic Hydrocarbon | | | TWA 100 ppm STEL 150 ppm | No Established TLV | No Established PEL |
| Benzene | | X | TWA 1 ppm STEL 5 ppm | TWA 0.5 ppm STEL 2.5 ppm | TWA 1 ppm STEL 5 ppm |

4.0 SAMPLING, MONITORING LOCATIONS AND TARGET ANALYTES

Definitions:

Direct Reading Hydrocarbon Monitoring – conducted to measure VOCs in the atmosphere using direct reading photoionization detectors. Combustible gas and Oxygen monitors used to determine %LEL and O2 levels, such as BZ1s and UltraRAE.

Area samples – conducted near sensitive areas, such as areas with significant response work or locations with potential community exposure using continuous monitoring equipment, such as BZ1's, Summa Canister and / or UltraRAE direct reading instruments and analytical media such as Passive Organic Vapor Monitors.

Documentation – all data from this event will be reviewed and formatted into a final report, in addition personnel sampling will be recorded in AIMS (Industrial Hygiene Database).

5.0 REAL-TIME MONITORING

Real-time air monitoring will be performed during MPL's air monitoring activities.

The term "real-time" refers to direct reading instruments that allow nearly instantaneous determinations of a chemical concentration in air. Real-time measurements provide immediate information for worker and community exposure scenarios and, with the use of appropriate site safety measures, help prevent overexposures. Direct reading instruments perform sampling and analyses within the instrument and concentration readings can usually be obtained immediately. These instruments have fast response times and can follow rapid changes in concentration.

MPL will monitor at locations in response to release site changes and/or community concerns or requests. Real-time air monitoring instruments will be used to determine air quality at the incident site or within the community. Real-time monitoring will be conducted using the Industrial Scientific Ventis MX4s, Tango TX1, UltraRAE 3000 and Area monitors with photo ionization detectors.

Real time air monitoring and analytical air sampling may be performed at the following locations:

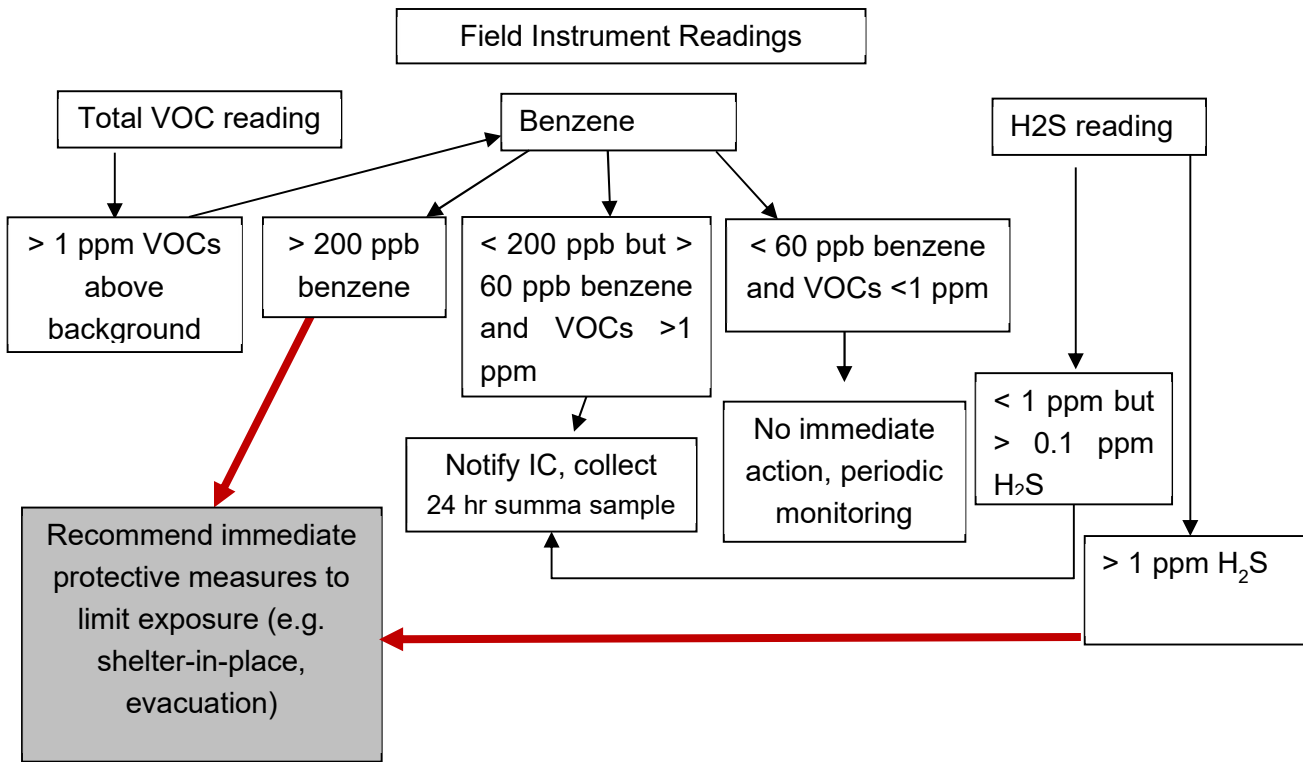
- The release site' work area
- Divisions I, II, III, IV boom locations
- Locations throughout adjacent communities and/or residential areas,
- At selected locations that will address potential off-site receptors, accounting for possible changes in wind-direction, and
- At selected locations that will address potential on-site receptors in regards to workers.

Additional Real time air monitoring and analytical air sampling expectations:

- MPL will conduct air monitoring to address community concerns of odors or the presence of chemicals associated with the release site.
- MPL will immediately notify IC of the following:
 - Any detection of 1% LEL
 - Any detection of H₂S away from work zone
- Total VOC / Benzene monitoring (reference 5.1 flow chart):
 - Monitor for total VOCs
 - Ensure air sampling location is defined and have fix point locations as a part of a repeating monitoring circuit.
 - If VOCs are sustained at 1 ppm over a 60 second draw, collect Benzene reading.
 - Benzene Monitoring
 - Collect Benzene reading - If the monitor has a positive detection for benzene during the 60 second (or length of pull) draw, confirm with second benzene tube.

- If second benzene tube reading has a detection above, it's a 'confirmed' detection. Collect a third reading 60 minute from "confirmed" reading. If this benzene reading is a detect, it assumed is 'confirmed', then a 24 hour summa sample should be collected.

5.1 Decision tree for VOCs, Benzene, and Hydrogen Sulfide readings



- 200 ppb is based on the MIOSHA level (500 ppb) with added protection factors for non-workers, including children.
- 60 ppb is based on a 10-fold adjustment of the ATSDR intermediate MRL (6 ppb). The basis for this adjustment is the consideration of the uncertainty factors incorporated into this MRL (e.g. LOAEL from animal study). As a result, the 60 ppb value is considered to be protective of exposure to benzene under this response.

Table 5.2 Summary of Real-time Instrument Detection Limits

| Instrument | Analyte | Energy Lamp (eV) | Detection Limit |
|-------------------|------------------|------------------|-----------------|
| BZ1 with PID | VOCs, Benzene | 10.6 | 0.1 ppm |
| UltraRAE 3000 PID | VOCs, Benzene | 9.8 | 0.05 ppm |
| Ventis MX4- 4 gas | O2, H2S, LEL, CO | n/a | 0.1 ppm |
| Tango TX1 | H2S | n/a | 0.1 ppm |

PHOTO IONIZATION DETECTORS (PID)

PIDs are used to measure airborne concentrations of volatile organic compounds (VOCs). Photo ionization is a nondestructive technique that is somewhat specific through selection of ultra-violet (UV) lamps of varying energies. PIDs use high energy UV light from a lamp housed within the detector to provide energy needed for ionizing VOCs. Ions are collected in an ionization chamber with accelerating and collecting electrodes designed to measure current. Current produced during VOC ionization is proportional to VOC concentrations.

PIDs are not specific for any chemical. The presence of atmospheric humidity and other VOCs may be problematic while using the detectors. PIDs often need to account for background readings and need to be coupled with other real-time instruments.

REAL-TIME AREA MONITORING LOCATIONS

Area monitors will be utilized as semi-fixed positions monitors. Area monitors may be positioned throughout the work site to monitor areas of interest regarding worker density and/or operation sensitivity. During hot zone operations, Area monitors may be positioned at locations proximal to the work as a means of early detection.

In addition to fixed sampling stations, the Area monitors will also be utilized as mobile air monitoring units, as required. The mobile units will monitor air along navigable roadways throughout adjacent community and among the release site roads.

6.0 ANALYTICAL AIR SAMPLING

Analytical air sampling will be conducted for the purpose of collecting data that represents TWA concentrations of contaminants throughout the day. When applicable, sampling will be conducted and analyzed for VOCs, specifically, ethylbenzene, hydrogen sulfide, benzene, toluene, xylene and total VOCs reported as n-hexane, and additional VOCs if necessary. All samples will be submitted to an accredited lab for analysis.

Personal samples may be collected, in accordance with the OSHA substance specific standard 29 CFR 1910.1028, if benzene is determined to be present in the work area at sustained concentrations exceeding the OSHA action level of 0.5 ppm. This determination will be made based upon results from site assessments conducted using real-time direct-read instruments.

All samples will be held according to method/laboratory requirements and will be shipped to an AIHA accredited laboratory for subsequent analysis. Analytical air sampling methods are summarized in Table 5.1.

Table 6.1 Summary of Analytical Air Sampling Methods

| <i>Analyte</i> | Analytical Method | Sample Media | Flow Rate (mL/min) | Max Volume |
|-------------------------------------|----------------------------|------------------------|-------------------------------|-----------------------|
| 50 volatile and semi-volatile, TICs | EPA TO15+TICs | Summa Canisters | - | 6L |
| BTEX, C6BTX (total hydrocarbon) | NIOSH 1500/1501, TO17+TCIs | Passive personal badge | - | - |

* including ethylbenzene and hydrogen sulfide

7.0 PERSONAL EXPOSURE SAMPLING

Job Task Analysis

Similar Exposure Groups (SEGs)

SEGs will be identified and vary based on the complexity of the response scenario. Dependent on conditions and agents of concern during a response, members of identified SEGs could be entered into a Medical Surveillance program, determined by air monitoring results, and MPL's Medical Director, and HES Professionals.

The 3M 3500 or 3520 organic vapor monitor (OVM) badge will be used to measure the time-weighted average concentration for gasoline, benzene, and other contaminants detectable by the NIOSH 1500/1501 method.

8.0 PERSONAL PROTECTIVE EQUIPMENT

A PPE assessment will be conducted based on exposure risk to include, respiratory, hearing, skin, thermal stress, and eye protection. The level of PPE chosen will error on the side of caution until air / water / soil concentrations indicate it is safe to lower the level of protection. PPE can include, but is not limited to the following:

- Respiratory Protection
 - Supplied Air
 - Air Purifying Respirator
- Hearing Protection
 - Ear plugs / muffs
- Dermal
 - Coveralls (e.g. Tyvek)
 - Gloves (Chemical resistant, General work)
 - FR Clothing
- Heat / Cold
- Personal Floatation Device

9.0 EQUIPMENT DECONTAMINATION

If required, equipment will be decontaminated by the decontamination group where all entries and exits occur. Follow Manufacturers decontamination procedures.

10.0 FIELD DOCUMENTATION

During the project, the team members will maintain various field books, reports, electronic database, and logs. All records will be submitted to PDU

11.0 SAMPLE LABELS AND CHAIN OF CUSTODY (COC)

Samples will be identified on a chain of custody record with a unique identification number, agent of concern, sample duration (volume if applicable), and date.

12.0 PACKAGING AND SHIPPING

Packaging and shipping of samples will vary depending upon sample media, contaminant concentration, preservation technique, and sample container. The person packaging the samples is responsible to ensure that the sample packaging is in suitable condition for shipping.

13.0 DATA MANAGEMENT

- All analytical air samples will be sent to an AIHA Accredited Laboratory
- A request for complete data packages will be made to the laboratory for all samples analyzed.
- The data packets will be reviewed and the data will undergo a data validation process.
- All real-time instruments will be calibrated according to the manufacturer recommendations or as determined necessary by MPL personnel.
- Calibration logs will be completed daily.
- Real-time readings will be documented by handwritten notes, handheld device, or by the use of data logging capabilities of the instrument, if available.
- Real-time data will be documented onsite and reported to the command center.

14.0 CONTRACTED RESPONSE PERSONNEL TRAINING

Personnel Training is integral to a successful response. A minimum training level is required dependent on the type of response actions the personnel are expected to perform. Training needs identified include, but are not limited to:

14.1 HAZWOPER

14.1.1 First Responder Awareness Level: Personnel only expected to notify emergency response team and evacuate the area.

14.1.2 First Responder Operations Level: Personnel expected to protect nearby persons, property, or environment from the effects of the release. In addition, their function is to respond in a defensive fashion without actually stopping the release.

14.1.3 HAZMAT Technician Level: Personnel expected to approach the point of release for the purpose of stopping the release.

14.1.4 HAZMAT Specialist Level: Personnel expected to be the subject matter expert with specific knowledge of the potential hazardous substance(s) and assist the HAZMAT Technician, and act as the liaison with government authorities in regard to site activities.

REFERENCES:

- [EPA Reference Guide to Odor Thresholds for Hazardous Air Pollutants](#)
- [EPA Acute Exposure Guideline Levels](#)
- [MPL Health Standards](#)