

Preliminary Air Sampling and Analysis Plan

Glycidyl Methacrylate Release

Toledo, OH

Prepared for: SRS Republic

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Version Control

Version	Date	Author	Reviewer	Summary of Changes
1.0	10/21/2026	Elizabeth Martin, PhD	Joe Lucas, PhD	Original

Air Monitoring and Sampling Strategy

Onterris is focusing on the mixtures, chemicals, and indicators of flammability chosen below because they are among surrogates and potential reaction byproducts that can be measured following a Glycidyl Methacrylate (GMA) release. The possible hazards may vary by the source and type of the product as well as with the combustion and environmental conditions associated with the incident. Monitoring and sampling for some chemicals associated with the event may be added, conducted less frequently, or discontinued as site-specific information becomes available or as monitoring and sampling results indicate that these chemicals and indicators do not pose a health concern.

The strategy is to utilize three broadly defined monitoring plans, namely **1) Community Monitoring**, **2) Work Area Monitoring** and **3) Site Assessment**. Community Monitoring will occur in publicly accessible community areas, including residential and/or commercial locations surrounding the incident site, at a height representative of the human breathing zone. Community Monitoring may also include Fenceline Monitoring, which may occur at the perimeter or outer fenceline of the incident site or work area, at a height representative of the human breathing zone. If conducted, detections observed during Fenceline Monitoring are intended to be a first-line indicator of potential issues at the site and are not necessarily indicative of exposure to downwind receptors. Work Area Monitoring will generally take place in the presence of workers performing/supporting remediation operations without interfering with or obstructing their remediation tasks, at a height representative of the human breathing zone. Unlike the previous monitoring plans, Site Assessment may involve a variety of different monitoring tasks intended to provide information that may help to delineate the nature and extent of the release (e.g., worst case determination, container headspace, ground level) and is not necessarily representative of ambient air monitoring near breathing zone level.

Free-roaming handheld real-time air monitoring may be conducted in a variety of areas based on levels of activity, proximity to the release, and site conditions. The presence or absence of odors, including odor characteristics and description if an odor is detected, will be documented with every handheld real-time air monitoring reading.

Radio-telemetry real-time air monitoring units may be deployed at discrete (stationary) locations to allow for continuous air monitoring in multiple areas. Readings collected using stationary real-time air monitoring instruments will be received and monitored in a centralized location by field personnel to allow for recognition, communication, and rapid response to changing conditions.

Air samples may be collected and sent to an off-site laboratory for chemical analysis. These analytical air sampling techniques may be used to provide air quality data beyond the scope of real-time instruments. When necessary, air samples may be collected on individual workers (personal sampling) to provide exposure data over the course of a work shift for more direct comparison to occupational exposure values.

Site-Specific Action Levels

Onterris site-specific action levels are employed to provide information for corrective action to limit potential exposures. These values do not replace occupational or community exposure standards or guidelines but, rather, are intended to represent a concentration limit that triggers a course of action to better address worker and public safety. In this case, action levels may be determined based on toxicity reference values used for glycidyl acrylate when data for GMA does not exist. Action level exceedances will be communicated to Site Management, the Safety Officer, and the Onterris Project Manager (PM) and/or Project Technical Director (PTD). Work practices will be assessed and adjusted as necessary. Site-specific action levels are not utilized for Site Assessment monitoring.

Plan 1: Community Monitoring

Objective: Inform IC of changing conditions as they arise

Analyte	Action Level ¹	Action to be Taken	Basis	Instrument	Detection Limit	Notes	Correction Factor
Total volatile organic compounds (VOCs) ²	Detection, confirmed by two instruments	Document odors and potential sources of VOCs; Report reading to PM/PTD	Inform PM/PTD of potential off-site impact	MultiRAE PID	0.1 ppm	Range: 0 – 5,000 ppm	Variable ³
				AreaRAE PID (10.6 eV lamp)			
				UltraRAE PID (10.6 eV lamp)	0.01 ppm	Range: 0 – 10,000 ppm	Variable ³
Oxygen (O ₂)	< 19.5 % Instant	Exit area; Report reading to PM/PTD	Low O ₂ atmosphere, as defined by 29 CFR 1910.134	MultiRAE Sensor	0.1 %	Range: 0 – 30 %	NA
Carbon monoxide (CO)	Detection	Report reading to PM/PTD	Inform PM/PTD of potential off-site impact	MultiRAE Sensor	1 ppm	Range: 1 – 500 ppm	NA
				Gastec tube #1LC	0.01 ppm	Range: 0.05 – 10 ppm Volume: Pull 8 100-mL pump strokes	1 ³

¹ Community action levels are set as “detection” to inform the PM/PTD of any potential off-site issues.

² Readings collected using the MultiRAE, AreaRAE, or UltraRAE PID are recorded as uncorrected (raw) concentrations.

³ For reference, correction factors are found in the Honeywell TN-106

Abbreviations: VOCs = volatile organic compounds; ppm = parts per million; PM = Onterris Project Manager; PTD = Onterris Project Technical Director; mg/m³ = milligrams per cubic meter; PID = photoionization detector; eV = electron volt; NA = not applicable; GMA = Glycidyl Methacrylate

Plan 1: Community Monitoring – Flammability

Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit	Notes	Correction Factor
% LEL	1 %	Report reading to PM/PTD	Detection of % LEL	MultiRAE Sensor	1 %	Range: 0 – 100 %	Variable ¹

¹ Readings collected using the % LEL sensor are recorded as uncorrected (raw) values.

Abbreviations: % LEL = atmospheric flammability measured as a percentage of the lower explosive limit; ppm = parts per million; PM = Onterris Project Manager; PTD = Onterris Project Technical Director

Plan 2: Work Area Monitoring

Objective: To report air levels to inform exposure controls

Analyte	Action Level	Action to be Taken	Basis ¹	Instrument	Detection Limit	Notes	Correction Factor
Total volatile organic compounds (VOCs) ²	Detection 5 minutes	Document odors and potential sources of VOCs; Report reading to PM/PTD; Exit Area or don full-face APR	ACGIH TLV TWA for GMA is 0.01 ppm; correction factor of 1.2 applied = 0.008 ppm	UltraRAE PID (10.6 eV lamp)	0.01 ppm	Range: 0 – 10,000 ppm	Variable ²
	0.42 ppm Instant	Document odors and potential sources of VOCs; Report reading to PM/PTD; Exit area; Upgrade respiratory protection to supplied air in a continuous-flow mode or SCBA	Maximum Use Concentration for full-face-APR: ACGIH TLV TWA for GMA is 0.01 ppm X assigned protection factor (APF) of 50 = 0.5 ppm; correction factor of 1.2 applied = 0.42 ppm	MultiRAE PID (10.6 eV lamp) AreaRAE PID (10.6 eV lamp)	0.1 ppm	Range: 0 – 5,000 ppm	Variable
Carbon Monoxide (CO)	25 ppm 5 min	Confirm reading with secondary instrument; Exit area or don air purifying respirator; Report reading to PM/PTD	ACGIH TLV-TWA	MultiRAE Sensor	1 ppm	Range: 1 – 500 ppm	NA
				Gastec tube #1LC	0.01 ppm	Range: 0.05 – 10 ppm Volume: Pull 8 100-mL pump strokes	1 ³
	400 ppm 1 min	Confirm reading with secondary instrument; Exit area or don air purifying respirator; Report reading to PM/PTD	ACGIH TLV-STEL	Same as Above			
Oxygen (O ₂)	< 19.5 % 5 minutes	Exit area; Report reading to PM/PTD	Low O ₂ atmosphere, as defined by 29 CFR 1910.134	MultiRAE Sensor	0.1 %	Range: 0 – 30 %	NA
				AreaRAE Sensor	0.1 %	Range: 0 – 30 %	NA

¹ Threshold Limit Values (TLV) are health-protective guideline values established by the American Conference of Governmental Industrial Hygienists (ACGIH). Time-Weighted Average TLVs (TLV-TWA) describe the airborne concentration of a substance to which it is believed that nearly all workers may be repeatedly exposed for a conventional 8-hour workday and a 40-hour workweek, day after day, for a working lifetime without adverse effect. Short-Term Exposure Limits (TLV-STEL) describe the airborne concentration of a substance that should not be exceeded during any 15-minute TWA interval during a workday. For substances without a TLV-STEL, ACGIH recommends using peak exposure limits in the following manner: "Transient increases in workers' exposure levels may exceed 3 times the value of the TLV-TWA level for no more than 15 minutes at a time, on no more than 4 occasions spaced 1 hour apart during a workday, and under no circumstances should they exceed 5 times the value of the TLV-TWA level when measured as a 15-min TWA." The Occupational Safety and Health Administration (OSHA) Action Level for oxygen is defined in the OSHA benzene standard (29 CFR 1910.134).

² For reference, correction factors are found in the Honeywell TN-106

³ Readings collected using Gastec tubes are recorded as uncorrected concentrations. The correction factors for Gastec tubes are dependent on volume of air used (i.e., number of pump strokes).
Abbreviations: VOCs = volatile organic compounds; ppm = parts per million; PM = Onterris Project Manager; PTD = Onterris Project Technical Director; mg/m³ = milligrams per cubic meter; PID = photoionization detector; eV = electron volt; NA = not applicable; GMA = Glycidyl Methacrylate

Plan 2: Work Area Monitoring – Flammability¹

Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit	Notes	Correction Factor
% Lower Explosive Limit (LEL)	1%	Report reading to PM/PTD	Detection of % LEL	MultiRAE Sensor AreaRAE Sensor	1 %	Range: 0 – 100 %	1.0 ¹
	10%	Report reading to PM/PTD	Elevated % LEL	MultiRAE Sensor AreaRAE Sensor	1 %	Range: 0 – 100 %	1.0 ¹

¹ Readings collected using the % LEL sensor are recorded as uncorrected (raw) concentrations.

Plan 3: Site Assessment

Objective: Characterize nature and extent of potential release

Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit	Notes	Correction Factor
Total volatile organic compounds (VOCs) ¹	NA	Investigate the identity of specific VOCs; Document odors and potential sources of VOCs; Report reading to PM/PTD	NA	MultiRAE PID	0.1 ppm	Range: 0 – 5,000 ppm	Variable
				UltraRAE PID (10.6 eV lamp)	0.01 ppm	Range: 0 – 10,000 ppm	Variable
Carbon monoxide (CO)	NA	Report reading to PM/PTD	NA	MultiRAE Sensor	1 ppm	Range: 1 – 500 ppm	NA
Oxygen (O ₂)	NA	Exit area; Report reading to PM/PTD	NA	MultiRAE Sensor	0.1 %	Range: 0 – 30 %	NA

¹ Readings collected using the MultiRAE PID, AreaRAE PID, and UltraRAE PID are recorded as uncorrected (raw) concentrations.

Abbreviations: VOCs = volatile organic compounds; ppm = parts per million; PM = Onterris Project Manager; PTD = Onterris Project Technical Director; mg/m³ = milligrams per cubic meter; PID = photoionization detector; eV = electron volt; NA = not applicable; GMA = Glycidyl Methacrylate; GA = Glycidyl Acrylate

Plan 3: Site Assessment – Flammability¹

Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit	Notes	Correction Factor
% LEL	NA	NA	Report reading to PM/PTD	NA	MultiRAE Sensor	1 %	Variable ¹

¹ Readings collected using the % LEL sensor are recorded as uncorrected (raw) concentrations.

Abbreviations: % LEL = atmospheric flammability measured as a percentage of the lower explosive limit; PM = Onterris Project Manager; PTD = Onterris Project Technical Director

Air Sampling Methods

Analyte	Media/Can	Method	Notes
Glycidyl methacrylate	226-01 525 Badges	Bureau Veritas SOP-5	U

General Information on Procedures (Assessment Techniques) Used

Procedure	Description
Handheld Real-Time Air Monitoring Survey	Onterris personnel may utilize handheld real-time air monitoring instruments (e.g., MultiRAE, UltraRAE, Gastec colorimetric detector tubes) to measure airborne chemical concentrations in real time. Onterris personnel will use these handheld instruments primarily to monitor the ambient air quality at breathing zone level. Additionally, measurements may be made at grade level, as well as in elevated workspaces, as indicated by chemical properties or site conditions. Onterris personnel may also use these techniques to verify detections observed by the AreaRAE network.
Analytical Air Sampling	Analytical air sampling may be used to validate the fixed and handheld real-time air monitoring data, or to provide data beyond the scope of real-time instruments. Analytical air samples may be collected as whole air samples in evacuated canisters or on specific collection media and sent to an off-site laboratory for further chemical analysis.
Particulate Monitoring Network	A network of data-logging particulate monitors may be set up and positioned in various locations.

Not all procedures listed in this table may be utilized.

Quality Assurance/Quality Control Procedures

Method	Procedure
Real-Time Air Monitoring	All real-time air monitoring instruments will be calibrated per the manufacturer's recommendations, whenever indicated by site conditions or instrument readings, and/or at the start of every 12-hour shift. Serial numbers for all equipment used will be recorded. If Gastec tubes are used, the tube expiration date, lot number, and air volume (number of pump strokes) will be recorded.
Analytical Air Sampling	Chain-of-custody documentation will be completed for each air sample. Serial numbers for all analytical equipment used will be recorded. Co-located air samples may be conducted to assess field accuracy and precision (at least one co-located air sample per day or per 10 air samples). Level II data validation may be performed on all air samples. Level IV data validation may be performed on the first and last sample delivery groups (SDGs) and on at least 10% of all air samples. Level IV data validation may be performed on 10% of all samples.
Reporting	Daily data summaries may be provided for informational purposes using data that have not undergone complete quality assurance and quality control (QA/QC) procedures. Comprehensive reports of real-time and/or analytical data may be generated following QA/QC and may be delivered 60 days following receipt of validated results, if applicable.

Glossary

Term	Definition
Sustained	Instrument reading above the action level continuously for the listed time period.
Breathing Zone	The area within an approximate 10-inch radius of an individual's nose and mouth.
Ambient Air	That portion of the atmosphere (indoor or outdoor) to which workers and the general public have access.