



*Center for Toxicology and Environmental Health, L.L.C.*

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# **MC 252 Oil Spill Community Air Sampling and Analysis Plan**

**May 7, 2010**

***Prepared For:***

Unified Command

***Prepared By:***

Center for Toxicology and Environmental Health, L.L.C.

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## 1.0 Introduction and Purpose

Center for Toxicology and Environmental Health, L.L.C. (CTEH) was requested to respond in support of site operations for the MC 252 fire and oil release on Sunday, April 25, 2010. CTEH® is providing air monitoring, air sampling, and toxicology support along the Gulf coast from Panama City, Florida to Venice, Louisiana to address public health and worker health and safety concerns resulting from the crude oil spill. The incident site is located approximately 50 miles Southeast of Venice, Louisiana and has the potential to impact the shore line with an oil sheen. A map showing the location of the incident is shown in Figure 1 below (courtesy of THE TIMES-PICAYUNE).



FIGURE 1 SITE LOCATION

This work plan addresses air monitoring and sampling during the mitigation operations of the impacted areas. Thus, the purpose of this sampling includes the following:

- Monitor in the community prior to oil sheen reaching the shore to determine background air concentrations,
- Monitor the air around the mitigation activities and in the community to protect the general public,
- Monitor specific activities as needed to support safe operations.

CTEH will continue community exposures monitoring until the mitigation process is complete. Air monitoring and sampling data will be summarized and reported to Unified Command on a daily basis.

## **2.0 Air Sampling and Monitoring Locations and Target Analytes**

Integrated air sampling will be conducted in representative locations around the perimeter of the spill area. Sampling will be conducted using EPA Method TO-15 for volatile organic compounds (VOC), tentatively identified compounds (TICS), and total hydrocarbons as gasoline, NIOSH Method 5506 for polycyclic aromatic hydrocarbons (PAH), and a passive dosimeter method (Radiello) for hydrogen sulfide (H<sub>2</sub>S). The air samples will be sent to Pace Analytical Services, Inc., Galson Laboratories, and Air Toxics Ltd. respectively, which are AIHA accredited laboratories, for analysis. The air monitoring locations will be updated regularly based on site activities, public concern, or other factors.

In addition to air sampling, air monitoring is being conducted by roaming vehicles throughout the community along the Gulf Coast region. The roaming vehicles have real-time air monitoring equipment for VOCs, benzene, sulfur dioxide (SO<sub>2</sub>), particulate matter, and H<sub>2</sub>S. The roaming vehicles in the community operate 24 hours each day. Additionally, real-time air monitoring is being conducted on the water in the area of the mitigation activities to help ensure the health and safety of oil-spill response personnel. Air monitoring will be conducted at selected locations that will address potential off-site receptors, accounting for possible changes in wind-direction. In addition, air monitoring will be conducted as needed to respond to potential concerns raised by Unified Command or the public

## **3.0 Real-Time Monitoring**

Real-time air monitoring for volatile organic compounds (VOCs) will be performed during oil cleanup activities. Real-time air monitoring will be performed using the MultiRAE Plus, UltraRAE, and Gastec colorimetric detector tubes. The MultiRAE Plus will be set up to monitor for volatile organic compounds (VOCs) using a photo-ionization detector (PID) and hydrogen sulfide using an electrochemical sensor. Real-time air monitoring may also be performed for benzene using the UltraRAE benzene specific PID. Benzene is not anticipated as a significant constituent. However; concerns have been raised and periodic monitoring is being conducted to address this concern. The PIDs will be used to detect volatile components emitted from the crude oil. Detector tubes and the UltraRAE will be used for periodic chemical specific analysis, and in the event that elevated VOCs are detected using a PID. In addition to chemical monitoring, real-time particulate matter (PM<sub>10</sub>) monitoring will be conducted during in situ burning and at other times, if warranted, using the TSI AM510. The air monitoring equipment being used is listed in Table 3.1.

**Table 3.1  
Real-Time Air Monitoring Equipment**

<b>Instrument</b>	<b>Chemical</b>	<b>Detection Limit</b>
MultiRAE	VOCs	0.1 ppm
MultiRAE	H2S	1 ppm
UltraRAE	Benzene	0.1 ppm (0.05 ppm with correction factor)
Gastec	Hydrogen sulfide	0.1 ppm
Gastec	Sulfur dioxide	0.01 ppm
Gastec	Benzene	0.05 ppm
TSI AM510	Particulate Matter (PM10)	0.001 mg/m <sup>3</sup>

#### 4.0 Integrated Sampling

Integrated air sampling will be performed using Minicans™ for EPA TO-15 analysis with a request to the accredited lab to also look for tentatively identified compounds (TICs) and to quantify total hydrocarbons as gasoline. Short-term “grab” samples may also be obtained on an as-needed basis for EPA TO-15 analysis. Additionally, NIOSH Method 5506 will be used for sampling PAH. Sampling for VOCs and PAH will continue to be performed approximately 24 hours a day at each of the integrated sample locations. VOC and PAH were selected for the integrated sample based on the chemistry and toxicology of crude oil and combustion products from *in situ* burning of crude oil. Hydrogen sulfide will be sampled using Radiello passive dosimeters (approximate 24 hour sample period) and analyzed using ATL Application #59. Table 4.1 summarizes the integrated air sampling methods for VOCs and PAH.

**Table 4.1  
Summary of 24-Hour Integrated Air Sampling Methods**

<b>Analyte</b>	<b>Method</b>	<b>Sample Media</b>	<b>Flow Rate</b>
VOCs & TICs	EPA TO-15	MiniCan™	Flow guage set to collect sample over an approximate 24 hour period
PAH	NIOSH 5506	FILTER + SORBENT TUBE (37-mm, 2-µm, PTFE + washed XAD-2, 100 mg/50 mg)	2 LPM
Hydrogen sulfide	ATL Application #59	Radiello Passive Diffusion Badge 170	Passive Diffusion

## 5.0 Sample Station Locations

Real-time and integrated sampling locations will be selected to protect the community. Mobile real-time air monitoring will be established along the Gulf Coast region to address potential exposures to the public. Sample locations will be identified using GPS coordinates and/or location descriptions.

## 6.0 Data Quality and Management

- Integrated air samples will be sent to Pace Analytical Services, Inc., Galson Laboratories, and Air Toxics Ltd which are all AIHA Accredited Laboratory located in Minneapolis, MN, Syracuse, N.Y, and Folsom, CA, respectively.
- All real-time instruments will be calibrated according to the manufacturer recommendations.
- Real-time readings will be documented by handwritten notes, on hand-held PDAs, or by the use of data logging capabilities of the instrument, if available.
- Data quality will be evaluated by an independent outside data validation organization.

The following table summarizes the QA/QC samples that will be collected during this monitoring.

Analyte	Field Blanks	Co-Located Samples
VOC	N/A	1 per 10 samples or 1 per day, if fewer than 10 samples
PAH	3 – 10 per day	1 per 10 samples or 1 per day, if fewer than 10 samples
H2S	1 per 10 samples or 1 per day, if fewer than 10 samples	1 per 10 samples or 1 per day, if fewer than 10 samples

N/A- not applicable

## 7.0 Project Organization

CTEH will be responsible for the following:

- Toxicological support
- Air monitoring
- Air sampling
- Air data quality assurance/quality control
- Data evaluation and reporting

Dr. Glenn Millner (toxicologist) will serve as Project Director and Justin Rhodes, Environmental Scientist Project Manager will serve as Project Manager.

## **8.0 Equipment Decontamination**

None required under foreseeable conditions.

## **9.0 Field Documentation**

During the project, the team members will maintain various field books, reports, electronic data collection devices, and/or logs.

## **10.0 Calibration and Maintenance of Field Instruments**

The calibration and maintenance of field equipment and instrumentation will be in accordance with each manufacturer's specifications or applicable test/method specifications, and will be recorded in CTEH calibration logs.

## **11.0 Chain of Custody (COC)**

Each sample will be identified on a chain of custody record. The integrated sample numbering system will include site name, date, analyte, and identification code unique to each sample.

## **12.0 Sample Labels**

All sample labels used on sample containers will include, at a minimum, a sample identification code, the date of the sample, and the analyte.

## **13.0 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.