



GoM Drilling, Completions and Interventions - MC252

Mississippi Canyon 252 On-Shore/Near Shore IH Monitoring Strategy MC 252 Well Incident

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Mississippi Canyon 252 Incident

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Mississippi Canyon 252
On-Shore/Near Shore IH Monitoring Strategy
MC 252 Well Incident

Prepared For:

MC 252 Incident Command - Safety Officer

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CTEH

BP

May 23, 2010

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1 Introduction and Purpose

On April 20, 2010, the Transocean Limited Platform, located approximately 55 miles offshore from Houma, LA, experienced a significant explosion and fire. The fire was proven inextinguishable and burned until the platform submerged into the Gulf of Mexico on April 23, 2010. As a result of the MC 252 incident, a supply of crude oil has continued to vent from the damaged well. Mitigation and remediation efforts have been organized in anticipation of crude oil impact to shoreline throughout the Gulf Coast.

This work plan specifically addresses on-shore and near-shore industrial hygiene monitoring. The on-shore monitoring will be conducted in addition to the existing on-shore community monitoring that is currently taking place. (Community monitoring example is found in Attachment 1.) These activities include;

- Real-time monitoring (and communication of results), and representative personal exposure monitoring during decontamination activities (including beach clean up, commercial/private vessel decontamination, and wildlife decontamination)
- Real-time monitoring (and communication of results) and representative personal exposure monitoring on near-shore vessels including Vessels of Opportunity (VOOs) skimming operations and boom placement/maintenance.
- Real-time monitoring (and communication of results) in response to community odor complaints
- Toxicology and other industrial hygiene support related to shoreline clean-up work activities.

2 General Monitoring Strategy

Four “tactical IH strike teams,” one assigned to each state (Alabama, Florida, Mississippi, and Louisiana), will be positioned near the beach, staged and ready to go wherever oil makes landfall within the state they are assigned. Each team will be composed of 1 CIH and 3-5 technicians, and will be equipped to perform representative personal monitoring and real-time monitoring with direct reading instruments during various decontamination activities (e.g. beach clean-up including tar ball retrieval, vessel decontamination, booming decontamination, wildlife decontamination, boom repair and configuration) and community odor response monitoring. Sampling scope may grow as new activities are identified.

Beginning May 21, additional IH monitoring support was provided for Louisiana to supplement the existing monitoring personnel, as area crew numbers have increased significantly as beach remediation efforts have intensified in response to additional oil coming onshore. The additional personnel were pulled from the existing strike teams in FL and AL, and will be back-filled with additional personnel as needed.

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Regarding monitoring equipment, each team will be equipped with the capability to conduct personal monitoring for benzene, toluene, xylenes, and total hydrocarbons (e.g. 3M 3500 OVM's), and area monitoring for VOCs, benzene, CO, and LEL (e.g. 4 PID's capable of simultaneously monitoring for VOCs, CO and LEL, plus 4 benzene PID's). See Attachment 1 at the end of this document for the current organization chart for the strike teams.

The priority of these tactical teams is to collect information including real-time monitoring from direct reading instruments and representative personal exposure monitoring data of decontamination activities (e.g. beach clean-up, vessel decon, booming decon, wildlife decontamination). This data will be critical in determining whether or not adjustments to personal protective equipment (e.g. respiratory protection) are necessary. Those performing decontamination activities would be expected to experience the highest potential exposures. Correspondingly, these results of worker exposure, coupled with ongoing community monitoring will allow us to make judgments about potential community exposures. The CIH from each team should be available to respond to community odor complaints when free from oversight of personal monitoring activities associated with decontamination work. Towards that end, when interfacing with the community, the industrial hygienist can use Attachment 2 (Public Health Information Statement) and Attachment 3 (Weathered Crude Oil MSDS) to assist in communication. The Weathered Crude Oil MSDS is being translated into Spanish and Vietnamese versions to better facilitate communications with local area residents.

Regarding personal monitoring details, the number of samples required to assess "representative exposures" for a given decontamination activity is left to the discretion of the CIH. However, OVM badge placement on at least 10% of the workforce should be considered the goal (e.g. for a beach clean-up crew of 100, the goal would be to sample at least 10 of its members.) OVM badges should be analyzed for benzene, toluene, xylenes, and total hydrocarbons. When professional judgment dictates broader sampling or analyses, the CIH shall consult with the BP Industrial Hygiene Lead.

3 Occupational Standards and Guidelines

The Occupational Safety and Health Administration (OSHA) establishes workplace standards to protect the safety and health of workers. The American Conference of Governmental Industrial Hygienists (ACGIH) and National Institute for Occupational Safety and Health (NIOSH) have also established exposure guidelines to protect workers from hazards on the job. Table 3.2 lists the OSHA, ACGIH, and NIOSH values for carbon monoxide, benzene, toluene, and xylene. When applicable, sampling data results will be compared to health- and risk-based ambient air and exposure guidelines such as Minimal Risk Levels from the Agency for Toxic Substances and Disease Registry, Acute Exposure Guideline Levels from the EPA, Emergency Response Planning Guidelines from the American Industrial Hygiene Association, and Temporary Emergency Exposure Limits from the US Department of Energy.

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Table 3-2 Occupational Exposure Standards and Guidelines

Compounds	OSHA PEL-TWA ^a (ppm)	OSHA PEL-STEL ^b (ppm)	OSHA PEL-C ^c (ppm)	ACGIH TLV-TWA ^d (ppm)	ACGIH TLV-STEL (ppm)
Benzene	1	5	–	0.5	2.5
Toluene	200	–	300	20	–
p-Xylene	100	–	–	100	150
Carbon monoxide	25	35	200	25	–
Hydrogen sulfide (H ₂ S)	20		50 (10 min. once only)	10	15

NE= Not Established

- a. OSHA PEL-TWA = The permissible concentration in air of a substance that shall not be exceeded in an 8-hour work shift or a 40-hour work week (OSHA, 1989).
- b. OSHA PEL-STEL = The time-weighted average exposure that should not be exceeded for any 15-minute period (OSHA, 1989).
- c. OSHA PEL-Ceiling = The exposure limit that shall at no time be exceeded. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time-weighted average (TWA) exposure, which shall not be exceeded at any time during the working day. (OSHA, 1989).
- d. ACGIH TLV-TWA = The Threshold Limit Value-TWA is the concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect (ACGIH, 2006).

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4 Site Action Levels

Site action levels have been established for the chemicals of interest.

Table 4-1. Site Action Levels for Chemicals of Interest

Compounds	Action Level*	Description of Action
Benzene	<0.5 ppm	No action required.
	≥0.5 ppm	Confirm with a duplicate sample. Benzene levels will be communicated to site officials and workers will be notified to move away from the area.
	0.5-5.0 PPM	If work plans indicate that benzene levels will not dissipate in a short amount of time, personnel who are fully trained in 24 HAZWOPER and have completed all requirements of the respiratory protection program may don half-mask respirators and continue work.
	≥5.0 PPM	Workers must leave area.
Carbon Monoxide	< 10 ppm	No action required
	10 ppm	Confirm with duplicate sample. CO levels will be communicated to site officials
	> 15 ppm	Confirm with duplicate sample. Workers will be notified and moved away from areas of elevated concentrations.
Toluene	< 50 ppm	No action required.
	50 ppm	Confirm with a duplicate sample. Toluene levels will be communicated to site officials.
	> 100ppm	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If work plans indicate that xylene levels will not dissipate in a short amount of time, personnel who are fully trained in 24 HAZWOPER and have completed all requirements of the respiratory protection program may don half-mask respirators and continue work
Xylene	< 50 ppm	No action required.
	50 ppm	Confirm with a duplicate sample. Xylene levels will be communicated to site officials..
	100 ppm	Confirm with a duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If work plans indicate that xylene levels will not dissipate in a short amount of time, personnel who are fully trained in 24 HAZWOPER and have completed all requirements of the respiratory protection program may don half-mask respirators and continue work

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Compounds	Action Level*	Description of Action
VOCs	< 25 ppm	No action required.
	25 ppm	VOC levels will be communicated to site officials
	> 50 ppm	Confirm with duplicate sample. Workers will be notified and moved away from areas of elevated concentrations. If work plans indicate that VOC levels will not dissipate in a short amount of time, personnel who are fully trained in 24 HAZWOPER and have completed all requirements of the respiratory protection program may don half-mask respirators and continue work.
LEL	1 %	Notify BP site safety officials of detected combustibles. Use PID and chemical specific monitoring capability to identify the source of combustible gas.
	10%	Confirm with duplicate sample. Nearby hot work will be stopped. Workers will be notified and moved away from areas of elevated concentrations.

* Action levels are based on sustained concentrations for each analyte.

5 Real-Time Monitoring with Direct Reading Instruments

Real-time air monitoring will be performed during shoreline clean-up operations.

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. Real-time measurements are not directly comparable to OSHA or ACGIH 8-hour TWA values or to community exposure standards or guidelines. Instantaneous real-time samples do not necessarily represent conditions experienced throughout the workday and can substantially underestimate or overestimate exposures potentially experienced by workers. 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.

Real-time monitoring will be conducted using the Rae Systems MultiRAE Plus with photo ionization detectors (PID) which are equipped with 10.6 eV lamps. Additionally, the MultiRAE plus PID will be equipped with CO and LEL electrochemical sensors.

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Table 5.1 Summary of Real-time Instrument Detection Limits

Instrument	Analyte	Energy Lamp (eV)	Detection Limit
MultRAE PID	VOCs	10.6	0.1 ppm*
MultRAE PID	Benzene	10.6	0.5 ppm**
RAE systems CO Sensor	CO	NA*	1.0 ppm
RAE systems LEL Sensor	LEL	NA	1%

*NA = Not Applicable

* The PID detection limit is for VOCs. For specific compounds, the detection limit will require adjustment based on the compounds published correction factor.

**The correction factor for benzene is 0.53. Therefore, if 100% of the 0.1 ppm limit of detection reading was attributable to benzene, then the L.O.D. for benzene would be 0.53 ppm for the MultiRAE PID.

5.1 Photo Ionization Detectors

MultiRAE 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. The 10.6 eV PID lamp will be used to monitor for the primary chemicals of interest. To record measurements that most accurately reflect specific contaminant's concentrations in air, a correction factor may be applied to VOC concentrations as measured by the RAE systems PID in the MultiRAE PID. For example, the correction factor applied to benzene with the 10.6 eV lamp is 0.53.

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5.2 Real-Time Air Monitoring Locations

Airborne contaminants generated by crude oil will be measured at various locations throughout the work sites. Air monitoring will be focused in the work areas near shorelines impacted by crude oil. Air sampling personnel will be designated to the work area during work activities. CTEH will survey the worksite and downwind regions using real-time and analytical sampling methods. Real time air monitoring and analytical air sampling may be performed at the following locations:

- Shoreline clean-up worksites,
- Wildlife clean-up worksites,
- at varying locations targeting fugitive vapor emissions from crude oil,
- along the perimeter of the shoreline clean-up worksite,
- at selected locations that will address potential on-site receptors, accounting for possible changes in wind-direction,
- at selected locations that will address potential on-site receptors in regards to workers.
- On Vessels of Opportunity (VOOs) involved in skimming operations and boom work.

6 Air Sampling

6.1 Definitions

- The term “real-time air monitoring” generally refers to using handheld, portable direct reading instruments that rapidly detect and display the airborne concentration of a chemical.
- The term “analytical air sampling” refers to air sampling methods that involve collection of air samples over a specified period, followed by analysis at a laboratory. The results of these samples represent the average airborne concentration for the sample period. These methods typically involve passing a known volume of air through a collection medium (e.g. charcoal sample tube or filter cassette) that efficiently traps and retains the compound until it can be analyzed by the laboratory. By knowing the volume of air collected and the quantity of chemical absorbed onto the collection medium, the average air concentration can be calculated. The initial personal air sampling will be conducted for VOCs via the use of passive diffusion badges. The organic hydrocarbon analytes of concern are toluene, xylene, benzene, and ethyl benzene.

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6.2 Air Sampling Procedure

Analytical air sampling may be conducted for the purpose of collecting personal samples to evaluate potential exposure to constituents of crude oil. When applicable, sampling will be conducted and analyzed for various constituents of crude oil, specifically benzene, toluene, and xylenes. Monitoring will be responsive to onsite activities and may require additional personnel to sample.

A similar exposure group (SEG) analysis will be conducted to determine the number of samples that will be collected to best represent the various job tasks conducted at the shoreline clean-up areas. SEGs are groups of workers and quantity of workers having the same general exposure profile because of the similarities & frequency of the tasks they perform, the materials/processes in which they work, & the similarity of the way they perform the tasks. The observational approach to determining SEGs will be utilized. The major processes and work operations will be defined and correlated with the potential exposure to crude oil based on proximity to impacted areas. The following steps will be taken to maintain the pre-established SEGs.

1. Observer workers to determine the work tasks they perform as the default approach to defining SEGs
2. Assess exposures for observed work groups broken into SEGs
3. Identify critical SEGs for which the consequences of misclassification are very severe due to potential exposures.
4. Use exposure monitoring results & statistical analysis to check & refine critical SEGs

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 for volatile organic compounds are summarized in Table 6.1 and copies of the method are available in Appendix B.

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Table 6.1 Summary of Analytical Air Sampling Methods

Analyte	Analytical Method	Sample Media	Flow Rate (mL/min)	Max Volume
Volatile Organic Compounds	NIOSH 1500/1501	100mg / 50 mg charcoal tube	200	96L
Volatile Organic Compounds	EPA TO15+TICs	1 Liter Mini-Can	-	1L
Organic Vapor	EPA Method No. 7	3M 3520 OVM Passive Dosimeter	NA	NA

7 Equipment and Data Management

- All analytical air samples will be sent to Galson Laboratories, an AIHA Accredited Laboratory located in East Syracuse, N.Y. Bureau Veritas, located in Michigan and also an AIHA accredited laboratory, is the back-up laboratory.
- A request for complete data packages will be made to the laboratory for all samples analyzed.
- Chain of Custody forms will be completed for all physical samples collected.
- 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 CTEH personnel.
- Calibration logs will be completed daily.
- Real-time readings will be documented. Handwritten notes, handheld PDA, or the use of data logging capabilities of the instrument are all acceptable means of documentation.
- Real-time data will be entered onsite and drafts made available upon request.

8 Project Organization

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CTEH will be responsible for the following:

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

The BP Industrial Hygienist will be responsible for providing support and direction for the CTEH Strike Teams. This will occur through continual interaction with the CTEH Strike Team Director and a daily teleconference with the Strike Team Leaders to discuss daily air monitoring issues and resource needs and deployment. In addition, a separate daily conference call occurs with the BP Industrial Hygiene Team to coordinate activities, manage data gathering & communications, and share best practices.

The BP Industrial Hygienist will also be responsible for interfacing with applicable outside organizations, including Coast Guard personnel, EPA, OSHA, State Public Health Agencies, the FDA, ATSDR, CDC, and any other organizations interested in BP Industrial Hygiene data, knowledge, and practices.

The BP Industrial Hygiene Lead and the CTEH employees report up through the Mobile Safety Organization, in the Planning Section within the Mobile Alabama MS-252 Incident Command Center.

9 Equipment Decontamination

If required, equipment will be decontaminated by the decontamination group where all entries and exits occur. The decontamination will be with damp cloths as the equipment cannot be submerged under water.

10 Field Documentation

During the project, the team members will maintain various field books, reports, electronic database, and logs. Each of the components of the field documentation is described below.

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10.1 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 shall be documented in the Calibration Logs or Site Safety and Health Logbooks.

10.2 Sample Labels and Chain of Custody (COC)

All sample labels used on sample containers will include, at a minimum, a sample identification code, the date of the sample, and the analyte. Each sample will be identified on a chain of custody record. The analytical sample numbering system will include site name, date, analyte, and identification code unique to each sample.

11 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.

12 Attachments Description

The attachments are supplemental forms supporting this Industrial Hygiene Air Monitoring Strategy. Since users of this plan may be reading from a printed document, the attachments listed below are provided in their entirety at the end of this document

- **Attachment 1:** IH Tactical Strike Team Organization (May 23, 2010)
- **Attachment 2:** Community response air monitoring example
- **Attachment 3:** Crude Oil MSDS
- **Attachment 4:** Weathered Crude MSDS
- **Attachment 5:** Public Health Information for Crude Oil Spill

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14. Attachments

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**Summary of CTEH's Air Monitoring Activities for the Community
 In Response to the MC 252 Oil Spill**

Daily Summary for May 23, 2010

Air monitoring was conducted between New Iberia, LA and Apalachee Bay, FL to address public concern for crude oil vapors. The results of air monitoring for May 22, 2010 18:00 – May 23, 18:00 are shown in Tables 1 and 2 below and the locations where monitoring was conducted are shown in the map below (Figure 1).

Table 1 Summary of Air Monitoring In Residential and Commercial Areas Along the Gulf Coast

Crude Oil Chemicals of Interest	Number of Measurements	Average Concentration (ppm)	Maximum Concentration (ppm)
Volatile Organic Chemicals including benzene (VOCs)	589	0	0
Hydrogen sulfide	592	0	0
Sulfur dioxide	486	0	0
Benzene*	52	0	0
Total	1719		

*Benzene measured with detector tubes

Table 2

Particulates	Number of Measurements	Average Concentration (mg/m ³)	Maximum Concentration (mg/m ³)
Particulate Matter (PM10)*	62	0.054	1.36
Particulate Matter (PM2.5)*	509	0.022	0.17
Total	571		

*PM10 – is particulate matter less than 10 microns

*PM2.5 – is particulate matter less than 2.5 microns

Air monitoring results show that crude oil vapors were not detected throughout residential and commercial areas between New Iberia, LA and Apalachee Bay. Particulate levels show that concentrations were in range with baseline readings and were below levels of concern. Testing teams trained in odors also noted the presence or absence of crude oil vapors (Figure 2). Oil odors were not detected between New Iberia, LA and Apalachee, FL.

University of Arkansas for Medical Sciences Bioventures Program Associate

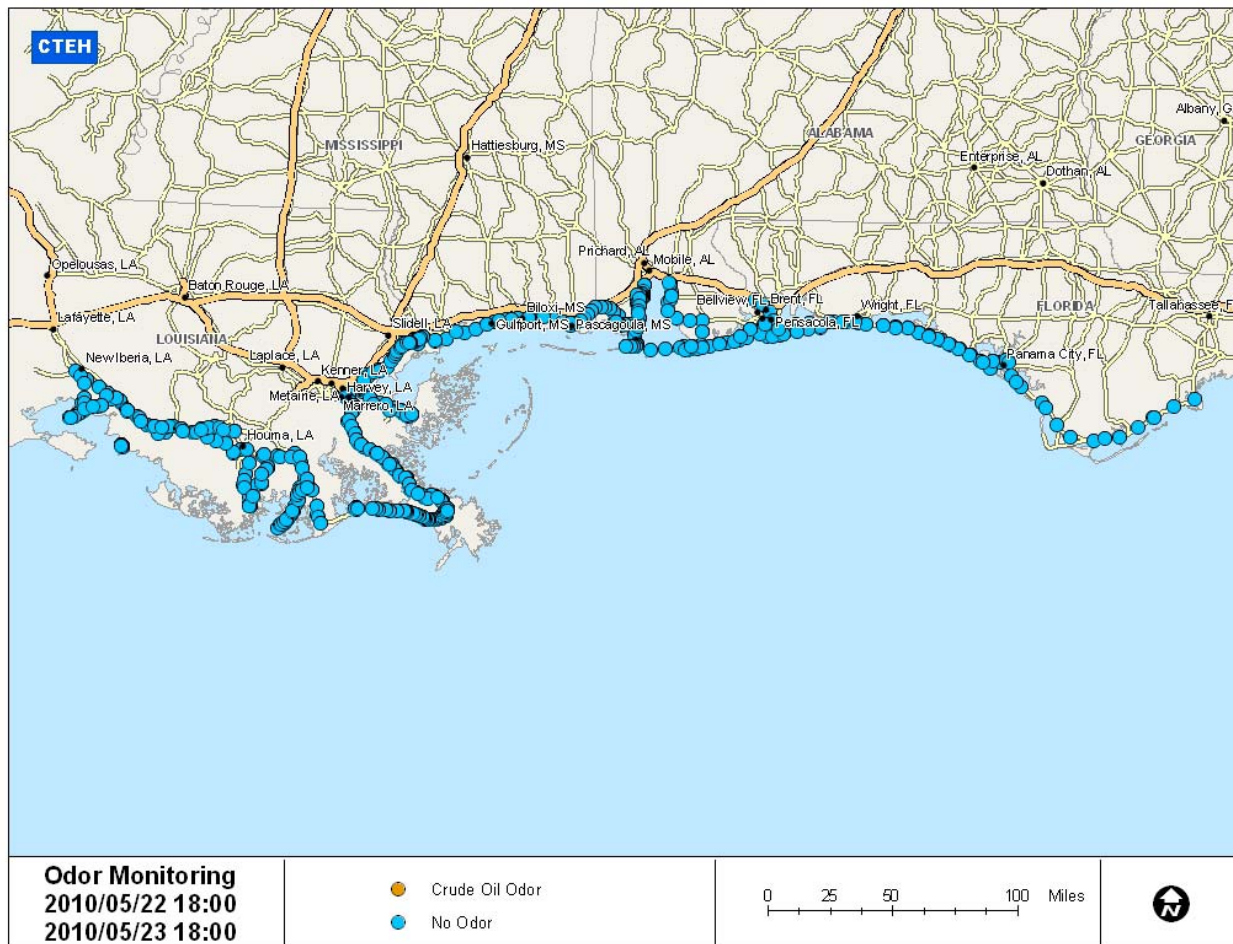
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Figure 1 Map Showing Where Air Monitoring is Being Conducted Throughout the Gulf Coast States



Figure 2 – Odor Investigation Results

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Note – blue dot means no odor detected, orange dot indicates that crude oil odors were detected.



Material Safety Data Sheet

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1. Product and company identification

Product name Petroleum Crude Oil - Sweet

MSDS # 0000001688

Historic MSDS #: 03885

Product use Industrial

Code 0000001688

Supplier BP Energy Company

501 WestLake Park Boulevard

Houston, TX 77079

USA

EMERGENCY HEALTH

INFORMATION:

1 (800) 447-8735

Outside the US: +1 703-527-3887 (CHEMTREC)

EMERGENCY SPILL

INFORMATION:

1 (800) 424-9300 CHEMTREC (USA)

OTHER PRODUCT

INFORMATION

1 (866) 4 BP - MSDS

(866-427-6737 Toll Free - North America)

email: bpcares@bp.com

This material can contain hydrogen sulfide (H₂S), a very toxic and extremely flammable gas.

The amount of dissolved H₂S can vary considerably with the crude oil source.

2. Hazards identification

Physical state Liquid.

Color Brown. to Black.

Emergency overview DANGER !

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE.

MAY BE FATAL IF INHALED.

VAPOR MAY CONTAIN HYDROGEN SULFIDE (H₂S) GAS WHICH CAN BE HARMFUL OR

FATAL IF INHALED.

INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS.

CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

HARMFUL OR FATAL IF SWALLOWED

ASPIRATION HAZARD.

CAN ENTER LUNGS AND CAUSE DAMAGE.

DANGER ! CONTAINS BENZENE. CANCER HAZARD.

CAN CAUSE BLOOD DISORDERS.

HARMFUL IF ABSORBED THROUGH SKIN.

Contains a component that is a possible skin cancer hazard based on studies in laboratory animals.

Flammable liquid. Very toxic by inhalation. Harmful in contact with skin. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. Aspiration hazard if swallowed.

Can enter lungs and cause damage. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. If ingested, do not induce vomiting. Do not get in eyes or on skin or clothing. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

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Routes of entry Dermal contact. Eye contact. Inhalation. Ingestion.

Potential health effects

Eyes Causes eye irritation.

Skin Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. Harmful if absorbed through the skin. Cancer hazard. Can cause cancer. . Can cause blood disorders. Contains a component that is a possible skin cancer hazard based on studies in laboratory animals. See toxicological information (section 11).

Inhalation May be fatal if inhaled. This material can contain hydrogen sulfide (H₂S), a very toxic and extremely flammable gas. Inhalation causes headaches, dizziness, drowsiness and nausea and may lead to unconsciousness. Causes respiratory tract irritation. Cancer hazard. Can cause cancer. . Can cause blood disorders.

Ingestion Aspiration hazard if swallowed -- harmful or fatal if liquid is aspirated into lungs. Ingestion may cause gastrointestinal irritation and diarrhea.

See toxicological information (section 11)

3. Composition/information on ingredients

Ingredient name CAS # %

Crude Oil: complex hydrocarbon mixture comprising mainly of aliphatic, naphthenic and aromatic hydrocarbons.

8002-05-9 98 - 100

Contains:

Benzene 71-43-2 0 - 2

Hydrogen Sulfide 7783-06-4 < 0.1

Polycyclic aromatic hydrocarbons (PAHs) mixture < 0.1

4. First aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin contact Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Clean shoes thoroughly before reuse. Wash contaminated clothing before reuse. Get medical attention.

Inhalation If inhaled, remove to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5. Fire-fighting measures

Explosion limits Lower: 1.1%

Upper: 5.9%

(May vary with source of crude.)

Flammability of the product

Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Unusual fire/explosion hazards

Flammable liquid.

In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground.

Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Fire/explosion hazards

Flash point Open cup: <4°C (<39.2°F) [Cleveland.]

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Extinguishing media

Suitable Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable Do not use water jet.

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Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Protective clothing (fire) Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus

(SCBA) with a full face-piece operated in positive pressure mode.

Fire-fighting procedures

Hazardous combustion

products

Combustion products may include the following:

carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)

Hydrogen Sulfide (H₂S)

sulfur oxides (SO₂, SO₃ etc.)

6. Accidental release measures

Stop leak if without risk. Eliminate all ignition sources. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas.

Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Environmental

precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Large spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Small spill

Methods for cleaning up

Personal protection in

case of a large spill

Chemical splash goggles. Chemical-resistant protective suit. Boots. Chemical-resistant gloves.

Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Suggested protective clothing might not be adequate. Consult a specialist before handling this product. CAUTION: The protection provided by air-purifying respirators is limited. Use a positive pressure air-supplied respirator if there is any potential for an uncontrolled release, if exposure levels are not known, or if concentrations exceed the protection limits of air-purifying respirator.

7. Handling and storage

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Handling Put on appropriate personal protective equipment (see section 8). Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Do not enter storage tanks without breathing apparatus unless the tank has been well ventilated and the tank atmosphere has been shown to contain hydrocarbon vapours concentrations of less than 1% of the lower flammability limit and an oxygen concentration of at least 20% volume.

Light hydrocarbon vapors can build up in the headspace of tanks. These can cause flammability/explosion hazards even at temperatures below the normal flash point (note: flash point must not be regarded as a reliable indicator of the potential flammability of vapor in tank headspaces). Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling.

Other information

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and sampling from storage tanks. When the product is pumped (e.g. during filling, discharge or ullaging) and when sampling, there is a risk of static discharge. Ensure equipment used is properly earthed or bonded to the tank structure. Use spark-proof tools and explosion-proof equipment.

This material can contain hydrogen sulphide (H₂S), an extremely toxic and flammable gas. Vapors containing hydrogen sulfide may accumulate during storage or transport and may also be vented during filling of tanks. Hydrogen sulfide has a typical "bad egg" smell but at high concentrations the sense of smell is rapidly lost, therefore do not rely on sense of smell for detecting hydrogen sulfide. Use specially designed measuring instruments for determining its concentration.

8. Exposure controls/personal protection

Occupational exposure limits

Crude Oil: complex hydrocarbon mixture comprising mainly of aliphatic, naphthenic and aromatic hydrocarbons.

ACGIH TLV (United States).

STEL: 10 mg/m³ 15 minute(s). Form: OIL MIST, MINERAL (Recommended)

TWA: 5 mg/m³ 8 hour(s). Form: OIL MIST, MINERAL (Recommended)

TWA: 100 ppm 8 hour(s). Form: Stoddard Solvent (Recommended)

TWA: 525 mg/m³ 8 hour(s). Form: Stoddard Solvent (Recommended)

OSHA PEL (United States).

TWA: 5 mg/m³ 8 hour(s). Form: OIL MIST, MINERAL (Recommended)

TWA: 2900 mg/m³ 8 hour(s). Form: Stoddard Solvent (Recommended)

TWA: 500 ppm 8 hour(s). Form: Stoddard Solvent (Recommended)

Benzene **ACGIH TLV (United States). Absorbed through skin.**

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STEL: 8 mg/m³ 15 minute(s). Issued/Revised: 5/1997

STEL: 2.5 ppm 15 minute(s). Issued/Revised: 5/1997

TWA: 1.6 mg/m³ 8 hour(s). Issued/Revised: 5/1997

TWA: 0.5 ppm 8 hour(s). Issued/Revised: 5/1997

NIOSH REL (United States).

STEL: 1 ppm 15 minute(s). Issued/Revised: 6/1994

TWA: 0.1 ppm 10 hour(s). Issued/Revised: 6/1994

OSHA PEL (United States).

STEL: 5 ppm 15 minute(s). Issued/Revised: 6/1993

TWA: 1 ppm 8 hour(s). Issued/Revised: 6/1993

OSHA PEL Z2 (United States).

AMP: 50 ppm 10 minute(s). Issued/Revised: 6/1993

CEIL: 25 ppm Issued/Revised: 6/1993

TWA: 10 ppm 8 hour(s). Issued/Revised: 6/1993

Hydrogen Sulfide **ACGIH TLV (United States).**

STEL: 21 mg/m³ 15 minute(s). Issued/Revised: 9/1994

STEL: 15 ppm 15 minute(s). Issued/Revised: 9/1994

TWA: 14 mg/m³ 8 hour(s). Issued/Revised: 9/1994

TWA: 10 ppm 8 hour(s). Issued/Revised: 9/1994

NIOSH REL (United States).

CEIL: 15 mg/m³ 10 minute(s). Issued/Revised: 6/1994

CEIL: 10 ppm 10 minute(s). Issued/Revised: 6/1994

OSHA PEL Z2 (United States).

AMP: 50 ppm 10 minute(s). Issued/Revised: 6/1993

CEIL: 20 ppm Issued/Revised: 6/1993

Polycyclic aromatic hydrocarbons (PAHs) **ACGIH TLV (United States).**

TWA: 0.2 mg/m³ 8 hour(s). Form: Benzene-soluble

OSHA PEL (United States).

TWA: 0.2 mg/m³ 8 hour(s). Form: Benzene-soluble

Ingredient name Occupational exposure limits

Some states may enforce more stringent exposure limits.

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Control Measures Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

Eyes Avoid contact with eyes. Safety glasses with side shields or chemical goggles.

Skin and body Do not get on skin or clothing. Wear clothing and footwear that cannot be penetrated by chemicals or oil.

Respiratory Use adequate ventilation. Do not breathe vapor or mist. Approved air-supplied breathing

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apparatus must be worn where there is a risk of inhaling hydrogen sulfide gas. Personal gas monitors may also provide early warning of hydrogen sulfide. Air supplied respiratory protection should be worn whenever it is required for the worker's face to be within 3 feet of an open hatch.

Hands Recommended: Gloves made from Viton or comparable material resistant to hydrocarbons. Nitrile gloves. Butyl rubber gloves.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

Consult your supervisor or S.O.P. for special handling instructions.

9. Physical and chemical properties

Physical state Liquid.

Color Brown. to Black.

Odor Petroleum Hydrocarbon, Rotten eggs.

Boiling point / Range -17.8 to 537.8°C (-0.04 to 1000°F)

Melting point / Range -60 to -20°C (-76 to -4°F)

Specific gravity 0.74 to 1.03

Explosion limits Lower: 1.1%

Upper: 5.9%

(May vary with source of crude.)

Viscosity SUS: 31 to 9000 SUS at 20°C

Flash point Open cup: <4°C (<39.2°F) [Cleveland.]

Vapor density >1 [Air = 1]

Vapor pressure

Solubility Insoluble in water.

>0.359 kPa (>2.7 mm Hg)

10. Stability and reactivity

The product is stable.

Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis. hydrogen fluoride

Decomposition products may include the following materials: carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide), sulfur oxides (SO₂, SO₃ etc.) Vapor may contain hydrogen sulfide (H₂S) gas which can be harmful or fatal if inhaled.

Keep away from heat, sparks and flame. Avoid all possible sources of ignition (spark or flame).

Stability and reactivity

Conditions to avoid

Incompatibility with

various substances

Hazardous decomposition

products

Hazardous polymerization Under normal conditions of storage and use, hazardous polymerization will not occur.

Possibility of hazardous

reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

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11. Toxicological information

Acute toxicity

Classification

Benzene 1 Proven. +

Polycyclic aromatic hydrocarbons (PAHs) - Possible -

Product/ingredient name IARC NTP OSHA

To the best of our knowledge, the toxicological properties of this product have not been thoroughly investigated.

Crude oil is a naturally occurring complex mixture of hydrocarbons whose exact composition and physical properties can vary widely depending upon its source.

From skin-painting studies in laboratory animals, it has been concluded that most, if not all, petroleum crudes, regardless of source, possess carcinogenic activity to some degree. This means that workers who practice poor personal hygiene and who are repeatedly exposed by direct skin contact to crude oil over many years may potentially be at risk of developing skin cancer. However, intermittent or occasional skin contact with petroleum crude oils is not expected to have serious health effects as long as good personal hygiene measures such as those outlined in this material safety data sheet are followed. Crude oil has not been identified as a carcinogen by NTP, IARC or OSHA.

Exposure to sunlight may increase the degree of skin irritation.

Crude oil administered orally or dermally to pregnant rats during gestation produced increased numbers of resorptions and decreases in fetal weight. Repeated exposures to some crude oils in rats have produced effects on the blood, liver and thymus.

Benzene: Acute toxicity of benzene results primarily from depression of the central nervous system (CNS). Inhalation of concentrations over 50 ppm can produce headache, lassitude, weariness, dizziness, drowsiness, or excitation. Exposure to very high levels can result in unconsciousness and death.

Benzene: Long-term overexposure to benzene has been associated with certain types of leukemia in humans. In addition, the International Agency for Research on Cancer (IARC), the National Toxicology Program, and OSHA consider benzene to be a human carcinogen. Chronic exposures to high levels of benzene have been reported to cause adverse blood effects including anemia.

Benzene exposure can occur by inhalation and absorption through the skin.

Inhalation and forced feeding studies of benzene in laboratory animals have produced a carcinogenic response in a variety of organs, including possibly leukemia, other adverse effects on the blood, chromosomal changes and some effects on the immune system. Exposure to benzene at levels up to 300 ppm did not produce birth defects in animal studies; however, exposure to higher dosage levels resulted in a reduction of body weight of the rat pups (fetotoxicity). Changes in the testes have been observed in mice exposed to benzene at 300 ppm, but reproductive performance was not altered in rats exposed to benzene at the same level. Aspiration of this material into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this material.

Hydrogen sulfide (H₂S) gas may accumulate in storage tanks of bulk transport compartments containing this material. Contact with eyes causes painful conjunctivitis, sensitivity to light, tearing and clouding of vision. Inhalation of low concentrations causes a runny nose with a loss of sense of smell, labored breathing and shortness of breath. Direct contact with skin causes pain and redness. Other symptoms of exposure include profuse salivation, nausea, vomiting, diarrhea, giddiness, headache, dizziness, confusion, rapid breathing, rapid heart rate, sweating, weakness, sudden collapse, unconsciousness and death due to respiratory paralysis.

Other information

IARC :

1 - Carcinogenic to human.

NTP :

Proven - Known to be human carcinogens.

Possible - Reasonably anticipated to be human carcinogens.

OSHA :

+ Potential occupational carcinogen

Date of issue 02/06/2009.

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Retention Code:	ADM3000	Next Review Date (if applicable):	MM/DD/YYYY
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Petroleum Crude Oil - Sweet Page: 6/9

ENGLISH.

(ENGLISH)

Product name Product code

Version 2 Format US-COMP Language

0000001688

(US-COMP)

Potential chronic health effects

Carcinogenicity Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Cardiac neurological effects have also been reported. Prolonged breathing (greater than one hour) of concentrations of H₂S around 50 ppm can produce eye and respiratory tract irritation. Levels of 250 to 600 ppm will result in fluid in the lungs, and concentrations around 1,000 ppm will cause unconsciousness and death in a short period of time. Since the sense of smell rapidly becomes insensitive to this toxic, colorless gas, odor cannot be relied upon as an indicator of concentrations of the gas. Always exercise caution when working around closed containers.

12. Ecological information

No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14.

International transport regulations

Transport information

DOT

Classification

IMDG

Classification

Regulatory information

UN

number

Proper shipping name Class Packing group Additional information

TDG

Classification

IATA/ICAO

Classification

UN1267

UN1267

UN1267 PETROLEUM CRUDE OIL

(Hydrogen Sulfide)

PETROLEUM CRUDE OIL

(Hydrogen Sulfide)

PETROLEUM CRUDE OIL

(Hydrogen Sulfide)

3

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3
3 II
II

II Reportable quantity

10 lbs. (4.54 kg)

-
-

UN1267 PETROLEUM CRUDE OIL

(Hydrogen Sulfide)

3 II -

15. Regulatory information

All components are listed or exempted.

U.S. Federal Regulations

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: Crude Oil: complex hydrocarbon mixture comprising mainly of aliphatic, naphthenic and aromatic hydrocarbons. ; Benzene

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Petroleum Crude Oil - Sweet: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

United States inventory

(TSCA 8b)

Date of issue 02/06/2009.

Petroleum Crude Oil - Sweet **Page: 7/9**

ENGLISH.

(ENGLISH)

Product name Product code

Version 2 Format US-COMP Language

0000001688

(US-COMP)

State regulations

Benzene 71-43-2 0 - 2

Polycyclic aromatic hydrocarbons (PAHs) 0 - 0.1

Benzene 71-43-2 0 - 2

Polycyclic aromatic hydrocarbons (PAHs) 0 - 0.1

SARA 313

Form R - Reporting

requirements

Supplier notification

Product name CAS number Concentration

CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.54 kg); Hydrogen Sulfide: 100 lbs. (45.4 kg); Polycyclic aromatic hydrocarbons (PAHs): 1 lb. (0.454 kg);

CERCLA Sections

102a/103 Hazardous

Substances (40 CFR

Part 302.4):

Massachusetts

Substances

The following components are listed: PETROLEUM CRUDE; BENZENE

New Jersey Hazardous

Substances

The following components are listed: MOTOR FUEL, n.o.s.; BENZENE; Polycyclic aromatic hydrocarbons (PAHs)

Pennsylvania RTK

Hazardous Substances

The following components are listed: PETROLEUM; BENZENE; Polycyclic aromatic hydrocarbons (PAHs)

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WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Benzene

California Prop. 65

All components are listed or exempted.

All components are listed or exempted.

All components are listed or exempted.

Not determined.

Not determined.

Not determined.

Not determined.

Canada inventory

Europe inventory

China inventory (IECSC)

Japan inventory (ENCS)

Korea inventory (KECI)

Philippines inventory

(PICCS)

Australia inventory (AICS)

Inventories

16. Other information

Label requirements DANGER !

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE.

MAY BE FATAL IF INHALED.

VAPOR MAY CONTAIN HYDROGEN SULFIDE (H₂S) GAS WHICH CAN BE HARMFUL OR FATAL IF INHALED.

INHALATION CAUSES HEADACHES, DIZZINESS, DROWSINESS AND NAUSEA AND MAY LEAD TO UNCONSCIOUSNESS.

CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.

HARMFUL OR FATAL IF SWALLOWED

ASPIRATION HAZARD.

CAN ENTER LUNGS AND CAUSE DAMAGE.

DANGER ! CONTAINS BENZENE. CANCER HAZARD.

CAN CAUSE BLOOD DISORDERS.

HARMFUL IF ABSORBED THROUGH SKIN.

Contains a component that is a possible skin cancer hazard based on studies in laboratory animals.

Date of issue 02/06/2009.

Petroleum Crude Oil - Sweet **Page: 8/9**

ENGLISH.

(ENGLISH)

Product name Product code

Version 2 Format US-COMP Language

0000001688

(US-COMP)

National Fire

Protection

Association (U.S.A.) Health 0

3

2

Fire hazard

Instability

Specific hazard

History

Date of issue

Date of previous issue

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Prepared by Product Stewardship

Notice to reader

NOTICE : This Material Safety Data Sheet is based upon data considered to be accurate at the time of its preparation.

Despite our

efforts, it may not be up to date or applicable to the circumstances of any particular case. We are not responsible for any

damage or

injury resulting from abnormal use, from any failure to follow appropriate practices or from hazards inherent in the nature of

the

product.

HMIS® Rating :

Physical

Hazard

Flammability

Health * 2

3

0

Personal X

protection

02/06/2009.

02/02/2009.

Date of issue 02/06/2009.

Petroleum

Material Safety Data Sheet

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1. Product and company identification

Product name Mississippi Canyon 252 Weathered Crude Oil (Louisiana Light Sweet Crude)

MSDS # 0000003277

Product use Oil spill recovery / cleanup.

Synonyms Crude Oil, Louisiana Sweet Crude Oil

Code 0000003277

The primary exposure hazard of weathered crude is by physical contact with the skin.

Supplier BP America Production Company

501 WestLake Park Boulevard

Houston TX 77079

EMERGENCY HEALTH

INFORMATION:

1 (800) 447-8735

Outside the US: +1 703-527-3887 (CHEMTREC)

EMERGENCY SPILL

INFORMATION:

1 (800) 424-9300 CHEMTREC (USA)

OTHER PRODUCT

INFORMATION

1 (866) 4 BP - MSDS

(866-427-6737 Toll Free - North America)

email: bpcares@bp.com

2. Hazards identification

Physical state

Color Various colors: Brown to Black. Reddish brown, and orange.

Emergency overview WARNING !

CAUSES EYE AND SKIN IRRITATION.

Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. May be combustible at high temperature. Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Use adequate ventilation. Do not ingest. If ingested, do not induce vomiting. Wash thoroughly after handling.

Routes of entry Skin contact. Eye contact. Inhalation. Ingestion.

Potential health effects

Eyes Causes eye irritation.

Skin Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. See toxicological information (section 11).

Inhalation Potential for toxic vapor exposures is very low: with the loss of the highly volatile components, weathered oil does not present an inhalation hazard.

Ingestion Causes gastrointestinal irritation and diarrhea.

See toxicological information (section 11)

Liquid./ Semi-solid

Date of issue 05/18/2010.

Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 1/7**

Light Sweet Crude)

ENGLISH.

(ENGLISH)

Product name Product code

Version 1 Format US-COMP Language

0000003277

(US-COMP)

3. Composition/information on ingredients

Ingredient name CAS # %

Crude oil 8002-05-9 98 - 100

Contains:

Naphthalene 91-20-3 <0.1

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Low molecular weight, highly volatile components are not present.

Hydrogen sulfide and sulfur dioxide have not been detected in air sampled above sources of this weathered oil.

A complex mixture of hydrocarbons consisting predominantly of paraffins, cyclic paraffins, and aromatic hydrocarbons having carbon numbers of C10 or greater.

4. First aid measures

Eye contact In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin contact Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Inhalation If inhaled, remove to fresh air. Get medical attention if symptoms occur.

Ingestion Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting.

Never give anything by mouth to an unconscious person. Get medical attention.

5. Fire-fighting measures

Flammability of the product

Unusual fire/explosion hazards None identified.

May be combustible at high temperature.

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.

No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Protective clothing (fire) Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus

(SCBA) with a full face-piece operated in positive pressure mode.

Fire-fighting procedures

Hazardous combustion products

Combustion products may include the following:

carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)

sulfur oxides (SO₂, SO₃ etc.)

nitrogen oxides (NO, NO₂ etc.)

Fire/explosion hazards May be combustible at high temperature.

Flash point Closed cup: >93°C (>199.4°F) ESTIMATED.

Extinguishing media

Suitable Use dry chemical, CO₂, water spray (fog) or foam.

Not suitable Do not use water jet.

6. Accidental release measures

Environmental precautions

Avoid material runoff and contact with soil, waterways, drains and sewers.

Contact Gulf of Mexico Response:

Environmental hotline and to report oiled shoreline: +1 866.448.5816

Methods for cleaning up

Personal protection in case of a large spill

Safety glasses with side shields or chemical goggles. Tyvek protective suit.. Rubber boots. Gloves (nitrile or polyethylene). Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

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Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 2/7**

Light Sweet Crude)

ENGLISH.

(ENGLISH)

Product name Product code

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0000003277

(US-COMP)

Contact Gulf of Mexico Response:

Environmental hotline and to report oiled shoreline: +1 866.448.5816

Large spill

Contact Gulf of Mexico Response:

Environmental hotline and to report oiled shoreline: +1 866.448.5816

Small spill**7. Handling and storage**

Handling Put on appropriate personal protective equipment (see section 8). Workers should wash hands and face before eating, drinking and smoking. Avoid contact with eyes, skin and clothing. Do not ingest. Use with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Store and use away from heat, sparks, open flame or any other ignition source.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10). Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection**Occupational exposure limits**

Weathered Crude Oil None established.

Other Applicable Exposure limit values:

Mineral oil **NIOSH REL (United States).**CEIL: 1800 mg/m³ 15 minute(s). Form: All formsTWA: 350 mg/m³ 10 hour(s). Form: All forms**ACGIH TLV (United States).**STEL: 10 mg/m³ 15 minute(s). Form: OIL MIST, MINERALTWA: 5 mg/m³ 8 hour(s). Form: OIL MIST, MINERAL**OSHA PEL (United States).**TWA: 5 mg/m³ 8 hour(s). Form: OIL MIST, MINERAL**Ingredient name Occupational exposure limits****Some states may enforce more stringent exposure limits.**

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Control Measures Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.

Personal protection

Eyes Avoid contact with eyes. Safety glasses with side shields or chemical goggles.

Skin and body Avoid contact with skin and clothing. Wear Tyvek protective suit.

Respiratory Use adequate ventilation. If ventilation is inadequate, use a NIOSH certified P95 particulate respirator.

Hands Wear protective gloves. (Nitrile or polyethylene)

Consult your supervisor or S.O.P. for special handling instructions.

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Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 3/7**)

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Light Sweet Crude)

ENGLISH.

(ENGLISH)

Product name Product code

Version 1 Format US-COMP Language

0000003277

(US-COMP)

9. Physical and chemical properties

Physical state Liquid./ Semi-solid

Color Various colors: Brown to Black. Reddish brown, and orange.

Odor Petroleum Hydrocarbon [Slight]

Specific gravity <1 [Water = 1]

Flash point Closed cup: >93°C (>199.4°F) ESTIMATED.

Solubility insoluble in water.

10. Stability and reactivity

The product is stable.

Reactive or incompatible with the following materials: oxidizing materials.

carbon oxides (CO, CO₂) (carbon monoxide, carbon dioxide)

sulfur oxides (SO₂, SO₃ etc.)

nitrogen oxides (NO, NO₂ etc.)

Avoid all possible sources of ignition (spark or flame). Avoid excessive heat.

Stability and reactivity

Conditions to avoid

Incompatibility with

various substances

Hazardous decomposition

products

Hazardous polymerization Under normal conditions of storage and use, hazardous polymerization will not occur.

Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

11. Toxicological information

Classification

Crude oil 3 - -

Product/ingredient name IARC NTP OSHA

Potential chronic health effects

Carcinogenicity No known significant effects or critical hazards.

Medical conditions

aggravated by overexposure

Individuals with preexisting disease of the skin may be at increased risk from exposure to this chemical.

Crude oil is a naturally occurring complex mixture of hydrocarbons whose exact composition and physical properties can vary widely depending upon its source. Weathered crude oil is different from complete crude oil due to the loss of low molecular weight, highly volatile components.

Specific toxicity tests have not been conducted on this material. Our hazard evaluation is based on information from similar materials, the ingredients, technical literature, and/or professional experience.

Exposure to sunlight may increase the degree of skin irritation.

Crude oil administered orally or dermally to pregnant rats during gestation produced increased numbers of resorptions and decreases in fetal weight. Repeated exposures to some crude oils in rats have produced effects on the blood, liver and thymus.

From skin-painting studies in laboratory animals, it has been concluded that most, if not all, petroleum crudes, regardless of source, possess carcinogenic activity to some degree. This means that workers who practice poor personal hygiene and who are repeatedly exposed by direct skin contact to crude oil over many years may potentially be at risk of developing skin cancer.

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However, intermittent or occasional skin contact with petroleum crude oils is not expected to have serious health effects as long as good personal hygiene measures such as those outlined in this material safety data sheet are followed. Crude oil has not been identified as a carcinogen by NTP, IARC or OSHA.

Other information

IARC :

3 - Not classifiable as a human carcinogen.

Date of issue 05/18/2010.

Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 4/7**

Light Sweet Crude)

ENGLISH.

(ENGLISH)

Product name Product code

Version 1 Format US-COMP Language

0000003277

(US-COMP)

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid material runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing),

transportation and disposal

14.

International transport regulations

Transport information

DOT

Classification

IMDG

Classification

Regulatory

information

UN

number

Proper shipping name Class Packing group Additional information

TDG

Classification

IATA/ICAO

Classification

---- Proper classification to be determined at the time of shipment

Proper classification to be determined at the time of shipment

Proper classification to be

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determined at the time of
shipment

-

- -

-

-

---- Proper classification to be
determined at the time of
shipment

15. Regulatory information

All components are listed or exempted.

U.S. Federal Regulations

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: No products were found.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Mississippi Canyon 252 Weathered Crude Oil (Louisiana Light Sweet Crude): Immediate (acute) health hazard, Delayed (chronic) health hazard
TSCA 12(b) one-time export: Naphthalene

This product does not contain any hazardous ingredients at or above regulated thresholds.

This product does not contain any hazardous ingredients at or above regulated thresholds.

SARA 313

Form R - Reporting requirements

Supplier notification

United States inventory

(TSCA 8b)

Date of issue 05/18/2010.

Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 5/7**

Light Sweet Crude)

ENGLISH.

(ENGLISH)

Product name Product code

Version 1 Format US-COMP Language

0000003277

(US-COMP)

State regulations

CERCLA Sections CERCLA: Hazardous substances.: Naphthalene: 100 lbs. (45.4 kg);

102a/103 Hazardous

Substances (40 CFR

Part 302.4):

Massachusetts

Substances

The following components are listed: PETROLEUM CRUDE

New Jersey Hazardous

Substances

The following components are listed: PETROLEUM DISTILLATES; CRUDE OIL (PETROLEUM)

Pennsylvania RTK

Hazardous Substances

The following components are listed: PETROLEUM

WARNING: This product contains a chemical known to the State of California to cause cancer.

Naphthalene

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California Prop. 65

All components are listed or exempted.

All components are listed or exempted.

All components are listed or exempted.

All components are listed or exempted.

Not determined.

All components are listed or exempted.

All components are listed or exempted.

Canada inventory

Europe inventory

China inventory (IECSC)

Japan inventory (ENCS)

Korea inventory (KECI)

Philippines inventory

(PICCS)

Australia inventory (AICS)

Inventories

16. Other information

Label requirements WARNING !

CAUSES EYE AND SKIN IRRITATION.

National Fire

Protection

Association (U.S.A.) Health 0

2

2

Fire hazard

Instability

Specific hazard

History

Date of previous issue

Prepared by Product Stewardship

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information

contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. Additionally this data and advice apply to weathered crude oil that is recovered from the environment for potential reuse or recycling. You should not use the

product other than for these stated application or applications without seeking advice from us.

It is the user's obligation to evaluate and use this material safely and to comply with all applicable laws and regulations. The BP

Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from

any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for

supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the

product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of

any hazards described in this sheet and of any precautions that should be taken.

HMIS® Rating :

Physical

Hazard

Flammability

Health * 2

2

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**Personal X
protection**

05/18/2010.

No previous validation.

Date of issue**Date of issue** 05/18/2010.Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 6/7**

Light Sweet Crude)

ENGLISH.**(ENGLISH)****Product name Product code****Version 1 Format US-COMP Language**

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(US-COMP)**Date of issue** 05/18/2010.Mississippi Canyon 252 Weathered Crude Oil (Louisiana **Page: 7/7**

Light Sweet Crude)

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(US-COMP)

Public Health Information - FAQs

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MC-252 Crude Oil Spill

Updated: May 13, 2010

What are crude oils?

Crude oils are a naturally occurring complex combination of predominantly carbon-containing chemicals referred to as “hydrocarbons”. Crude oils also contain sulfur, oxygen and nitrogen compounds, metals, and dissolved gases such as hydrogen sulfide.

Crude oils range from thin, light colored oils consisting mainly of gasoline-quality materials to heavy, thick tar-like materials. The type of crude oil released in the Deep Horizon incident is described as “light sweet crude.” The term “light” indicates that it contains high amounts of the chemical compounds needed to produce gasoline, kerosene, and diesel. The term “sweet” indicates that the crude oil has a low sulfur content.

What happens to crude oil when it is released in the environment?

When crude oil is released in the environment, its composition changes as a result of “weathering.” Evaporation is one of the more significant weathering processes. Evaporation occurs mainly during the first 24-48 hours after release and it greatly reduces the amount of the lighter components of crude oil. Some crude oils may lose up to 40% of their volume due to evaporation in the first few days after a release. Thus, the composition of any released material remaining in the affected area is likely to be substantially different from the originally-released crude oil.

Analysis has so far shown that the weathered crude from the MC252 incident does not contain concentrations in excess of 0.1% of any of the chemicals of most concern to public health, for example: benzene, toluene, ethylbenzene, and xylenes.

What are the potential health effects caused by exposure to crude oil?

Some substances from crude oil evaporate into the air. Persons may breathe these substances from fresh crude oil, but as noted above weathered crude oil has already lost its volatile components to a level which is well below that which may cause any adverse health effects.

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Crude oil has been noted to have a low order of oral and dermal toxicity. Prolonged skin contact with most petroleum products including crude oil may cause skin irritation. In the case of individuals working directly with crude oil, the irritation may sometimes be related more to the solvents that are used to remove the crude oil from skin rather than the crude oil itself.

The International Agency for Research on Cancer (IARC) has concluded there was inadequate evidence for the carcinogenicity of crude oil in humans and limited evidence for carcinogenicity in experimental animals.

I smelled the released crude oil — is this a health concern?

Weathered crude oil contains some sulfur compounds that can be smelled at levels far below levels of concern. Since April 26, 2010, the Unified Command and US EPA have been conducting air monitoring tests in the coastal areas potentially impacted by the incident. The levels measured to date would not lead to adverse health effects.

What can I do to protect myself from exposure to crude oil?

The best way to protect yourself from exposure to crude oil is to avoid direct contact with the oil. Response workers that must go near the oil will wear oil-resistant gloves. Latex gloves should not be used since they may be dissolved by the oil. Instead, use nitrile or polyethylene gloves. Keep your arms and legs covered to avoid skin contact with the oil. Wear old clothing or disposable protective clothing that can be left at the site of oil contamination if you must. If you do get crude oil on your skin then it should be washed off using soap and water, or waterless hand cleaners (such as those found at auto parts stores).

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Public Health Information - FAQs

MC-252 Crude Oil Spill

Updated: May 13, 2010

Are there any risks to health associated with the dispersants being used?

All dispersants used in the US must be on the NCP Product Schedule as required by Subpart J of the National Oil and Hazardous Substances Pollution Contingency Plan.

Two dispersants manufactured by Nalco have been used in this incident to break down crude oil. The dispersants are Corexit EC9527A and Corexit EC9500. Information from the manufacturer's material safety data sheets indicate that the two dispersants have a relatively low toxicity to humans. One component of Corexit EC 9527A is 2-butoxyethanol which is associated with a risk of skin, eye and respiratory irritation. However the actual level present in the dispersant, coupled with the further dilution associated with its use, mean that the risk of adverse effects occurring is low. These dispersants are in wide-spread use around the World and all the precautions, as specified in the Material Safety Data Sheets, are in place to minimize exposure of personnel to dispersants during spraying and oil recovery operations. The nature of these operations mean there should be no risk to the General Public, however anybody working adjacent to spraying operations may need to adopt the same precautions recommended in the material safety data sheets, e.g. chemical eye protection.

If you have concerns about your health in relation to potential exposure to either crude oil or dispersants, then seek advice from your personal Physician.

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