OIL SPILL RESPONSE PLAN

Eastern Gulf Coast Pipeline System

Prepared for:

Valero Terminaling and Distribution Company
One Valero Way
San Antonio , Texas 78249

Prepared by:

Witt O'Brien's
818 Town & Country Blvd., Suite 200
Houston, TX 77024-4564
Phone: (281) 320-9796 | Fax: (281) 320-9700
wittobriens.com

ACKNOWLEDGMENT AND PLAN APPROVAL

The information and procedures in this Plan must be treated as guidelines only. The user should determine to what extent it is practical and advisable to follow them. This decision may involve considerations not discussed in this Plan.

The information and procedures contained herein are considered to be accurate as of this date and are consistent with the National Contingency Plan (NCP) and applicable Area Contingency Plans (ACP) as detailed in Section 1.5.

CERTIFICATION OF QUALIFIED INDIVIDUAL AND ALTERNATE QUALIFIED INDIVIDUAL

Valero Terminaling and Distribution Company hereby certifies that the individuals identified as Qualified Individual and Alternate Qualified Individual in this Plan have the full authority in accordance with the applicable United States Federal and State regulations and as detailed in this Plan to:

1. Activate and engage in contracting with oil spill removal organizations.

2. Act as a liaison with the pre-designated Federal On-Scene Coordinator (OSC), and

3. Obligate funds required to carry out response activities.

Plan Approved:

Signature	Title
Rodney L. Reese	2-18-10
Name (please type or print)	Date

NOTE: Witt O'Brien's provided consulting and plan development services in the preparation of this Plan utilizing data provided by the owner/operator. Witt O'Brien's assumes no liability for injury, loss, or damage of any kind resulting directly or indirectly from the use of the regulatory interpretation, response planning, or information contained in this plan.

OPERATOR'S STATEMENT - SIGNIFICANT AND SUBSTANTIAL HARM AND CERTIFICATION OF RESPONSE RESOURCES

FACILITY NAME: Eastern Gulf Coast Pipeline System

CORPORATE ADDRESS: One Valero Way
San Antonio, Texas 78249

1.	Is the pipeline greater than 6 and 5/8 inches (168 mm) in outside nominal diameter, greater than 10 miles (16.1 km) in length? and	Yes✓	No
2.	Has any line section experienced a release greater than 1,000 barrels (159 cubic meters) within the previous five years? or	Yes	No✓
3.	Has any line section experienced two or more reportable releases, as defined in 49 CFR 195.50, within the previous five years? or	Yes✓	No
4.	Does any line section contain any electric resistance welded pipe, manufactured prior to 1970 and operates at a maximum operating pressure established under 49 CFR 195.406 that corresponds to a stress level greater than 50 percent of the specified minimum yield strength of the pipe? or	Yes	No✓
5.	Is any line located within a 5-mile (8 km) radius of potentially affected public drinking water intakes and could reasonably be expected to reach public drinking water intakes? or	Yes	No✓
6.	Is any line located within a 1-mile (1.6 km) radius of potentially affected environmentally sensitive areas and could reasonably be expected to reach these areas?	Yes✓	No

Valero Terminaling and Distribution Company hereby certifies to the Pipeline and Hazardous Materials Safety Administration of the U.S. Department of Transportation that we have identified and ensured, by contract or by other means, the availability of personnel and equipment to respond, to the maximum extent practicable, to a worst case discharge.

Signature	Vice President
	Title
Rodney L. Reese	2-18-10
Name (please type or print)	Date

NOTE: It is the responsibility of the holder of this Plan to ensure that all changes and updates are made. The Plan Holder must:

- Remove and discard obsolete pages.
- Replace obsolete pages with the updated pages.

REVISION RECORD		
CHANGE DATE	**AFFECTED PAGE NUMBER(S)**	**DESCRIPTION OF CHANGE(S)**
January, 2013	Entire Plan	Separated Eastern and Western A et to form two Plan
February, 2013		Shared Contact has been updated.
April, 2013	ERAP, Section 2	Updated Internal Notification Sequence
July, 2013		Shared Contact has been updated.
July, 2013		Shared Contact has been updated.
August, 2013		Contact Association has been updated. - Texas Parks and Wildlife
August, 2013		Contact Association has been updated. US Fish & Wildlife Upper Coast
August, 2013		Shared Contact has been updated.

DISTRIBUTION LIST	
COPY NUMBER	**PLAN HOLDER[1]**
1	Valero Terminaling and Distribution Company Area Terminal Manager 9405 West Port Arthur Road Beaumont, Texas 77005
2	Valero Terminaling and Distribution Company Terminal Supervisor 16151 Craigen Road Beaumont, Texas 77005
3	Valero Terminaling and Distribution Company Executive Director - Operations One Valero Way San Antonio, Texas 78249
4	Valero Terminaling and Distribution Company HSE Specialist 9405 West Port Arthur Road Beaumont, Texas 77005
5	Valero Terminaling and Distribution Company HS&E Pipelines and Terminals 1 Valero Way San Antonio, Texas 78269-6000
(2 CDs Only)	U.S. Department of Transportation Melanie Barber 1200 New Jersey Avenue SE-E-22-311 Washington, District Of Columbia 20590
7	O'Brien's Response Management Inc. Compliance Services 818 Town & Country Blvd., Suite 200 Houston, Texas 77024

NOTE[1]: The Distribution of this Plan is controlled by the Copy Number located on the front cover or CD label. The Plan Distribution Procedures provided in Section 1.3 and the Plan Review and Update Procedures provided in Section 1.4 should be followed when making any and all changes.

1.0 INTRODUCTION AND PLAN CONTENT

1.1 PLAN PURPOSE/OBJECTIVES

The purpose of this Oil Spill Response Plan (Plan) is to assist Valero Terminaling and Distribution Company personnel in preparing for and responding quickly and safely to emergencies originating from the pipelines and associated facilities. The Plan provides techniques and guidelines for achieving an efficient, coordinated, and effective response to emergencies which may occur along the pipeline.

The specific objectives of the Plan are to:

- Establish Response Teams, assign individuals to fill the positions on the teams, and define the roles and responsibilities of team members.
- Define notification, activation, and mobilization procedures to be followed when a discharge occurs.
- Define organizational lines of responsibility to be adhered to during a response operation.
- Ensure compliance with federal, state, and local oil pollution regulations.
- Document equipment, manpower, and other resources available to assist with the response.
- Ensure compliance with the U.S. National Oil and Hazardous Substances Contingency Plan and associated Area Contingency Plan(s) for the area of operation.

1.2 SCOPE OF PLAN

This Plan has been developed in accordance with the regulation published in 49 CFR Part 194 - Response Plans for Onshore Oil Pipelines.

This Plan contains prioritized procedures for Company personnel to prevent or mitigate emergencies resulting from the operation of the pipeline. A description of the Pipeline's details is presented in Figure 1.1 with additional information provided in the sections, appendices and annexes.

1.3 CONTROLLED PLAN DISTRIBUTION PROCEDURES

The on site Managers at each Facility is responsible for maintenance and distribution of the Plan. Distribution will be handled in the following manner:

- Distribution of controlled Plans is determined by the copy number assigned to agency and designated corporate Plan Holders. A distribution list is included in the Foreword.
- Company personnel who may be called upon to provide assistance during discharge response activities will have access to a copy of the Plan for their use and training.
- Any person holding a controlled copy of the Plan shall ensure that the copy is transferred to their replacement in the event of reassignment or change in responsibility.
- Various regulatory agencies will also be distributed a controlled copy of the Plan. The list of agencies is detailed in the Distribution List located in the Foreword.

1.4 PLAN REVIEW AND UPDATE PROCEDURES

Review/Update

The Plan resides as a web-based document, which permits authorized Corporate and field staff access to make:

- Appropriate revisions as required by operational or organizational changes.
- Appropriate revisions as required by changes in the names and phone numbers detailed in Section 2.0.
- Appropriate revisions as required by improved procedures or deficiencies identified during response team tabletop exercises or actual emergency responses.

Incorporation of Plan Revisions

Email notification allows Authorized Plan Holders to update hard copy Plans as changes occur.

The Individual Plan Holder shall:

- Review and insert the revised pages into the Plan.
- Discard or archive the obsolete pages.

Agency Revision Requirements

Company shall revise and resubmit changes to the U.S. DOT/PHMSA Pipeline Response Plans Officer within 30 days of each change that would substantially affect the implementation of the Response Plan. Examples of changes in operating conditions that would cause a significant change to the Plan include:

Conditions Requiring Changes

- An extension of the existing pipeline or construction of a new pipeline in a response zone not covered by the previously approved Plan.
- Relocation or replacement of portions of the pipeline, which in any way substantially affect the information included in this Plan, such as a change in the Worst Case Discharge volume.
- A change in the type of oil handled, stored, or transferred that materially alters the required response resources.
- A change in the name of the Oil Spill Removal Organization (OSRO).
- A material change in capabilities of the OSRO that provides equipment and personnel.
- A change in emergency response procedures.
- A change in the Qualified Individual.
- A change in the NCP or an ACP that has significant impact on the equipment appropriate for response activities.
- Any other changes that materially affect the implementation of the Plan.
- As a result of post incident or drill evaluations.

1.5 REGULATORY COMPLIANCE

DOT/PHMSA must be provided with two copies of revisions. The Company must submit the DOT/PHMSA issued Facility Control Number with the changes (the PHMSA Control Number is listed in Figure 1.1). In addition to periodic updates, when applicable, the Facility will resubmit the Emergency Response Plan to DOT/PHMSA every five years from the last approval date of the Plan.

Except as provided above, amendments to the following do not require approval by DOT/PHMSA:

- Personnel and telephone number lists included in the Plan.
- OSRO(s) change which does not result in a material change in support capabilities.

The development, maintenance, and use of this Plan implements Company policy and addresses the following regulatory requirements and guidelines:

- Federal Oil Pollution Act of 1990: U.S. DOT Final Rule for Transportation Related Onshore Facilities (49 CFR Part 194).

The response zones have been reviewed for consistency with the following plans:

- U.S. National Oil and Hazardous Substances Contingency Plan (NCP)
- U.S. Environmental Protection Agency - Region VI, Regional Integrated Contingency Plan
- U.S. Coast Guard - One Gulf Plan and Geographic Response Plan - Sector Houston-Galveston - Galveston, TX

FIGURE 1.1

FACILITY INFORMATION

GENERAL INFORMATION	
Facility Name:	Eastern Gulf Coast Pipeline System
U.S. DOT/PHMSA Control:	1206
Operator Name:	Valero Terminaling and Distribution Company (VTDC)
Address:	***Physical Address*** 9405 West Port Arthur Road Beaumont, Texas 77705 ***Operator's Address*** One Valero Way San Antonio, Texas 78249
Mainline Number:	(866) 382-5376 (24 Hours)
Contact Person:	Stephen Gunter, Manager Area Terminal
Primary NAICS Code:	486910 and 486110
Determination of Significant and Substantial Harm (U.S. DOT PHMSA):	The Response Zone meets the criteria for "Significant and Substantial Harm."
Operator Statement of (U.S.DOT PHMSA) "Significant and Substantial Harm":	It is Valero Terminaling and Distribution Company 's goal to respond as quickly as possible to all uncontrolled releases of petroleum products, regardless of the source point location along the system. Based upon this goal, and the overbreadth of the definitions provided in 49 CFR 194.103(c)(4) & (5), the Company is compelled to consider all the active line sections listed below in the Response Zone Annexes as capable of a release potentially causing "significant and substantial harm".

PIPELINE LOCATION	
States/Counties:	The System covers 1 specific response zone(s) covering 1 state(s) and 1 county(ies) specifically detailed in the response zone annex.
States Traversed:	Texas
Pipeline System Overview Diagram:	**See Figure 1.2**

PHYSICAL DESCRIPTION - PIPELINE

Response Zone(s):

The Jefferson County Response Zone consists of the Lucas and Fannett facilities and the Port Arthur Area pipelines that run between these facilities, the Valero Port Arthur Refinery, and other facilities in the local area.

- Jefferson County Response Zone

General:

- The Eastern Gulf Coast Pipeline System includes pipeline sections described below as well as supporting equipment and facilities.
- This Plan is written in English and understood by personnel responsible for carrying out the Plan.

Pipeline Specifications:

- ***Products Type:***

  Crude Oil
  Diesel
  Gasoline

- ***Pipe Detail:*** The pipeline system consists of the following pipeline sections with the indicated diameters.

  - 32" Crude Line (Sun Dock (Tank Farm)) to Lucas, Crude
  - No. 1 - 20" (VPAR to PAPS - El Vista Area), Gasoline
  - No. 2 - 20" (VPAR to PAPS - El Vista Area), Diesel/Jet
  - Port Arthur 30" Crude Line
  - 6" - 4" Port Arthur to Fannett
  - 12 - 10 Lucas

RESPONSE ZONE INFORMATION

Response Resources:

Facility spill mitigation procedures and response guidelines are provided in Section 3.0 for discharges that could result from any of the following scenarios:

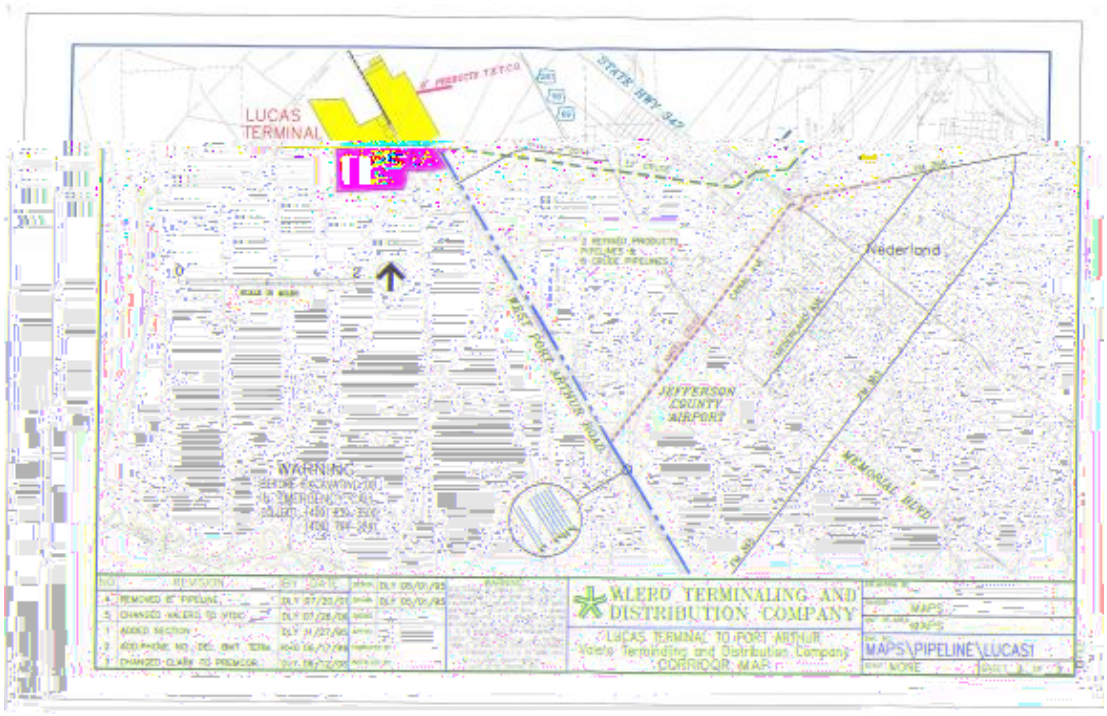
- Pipeline rupture/leak
- Explosion and/or fire
- Failure of facility piping
- Equipment failure (e.g. pumping system failure, relief valve failure, etc.)

These scenarios could result in the following discharge volumes (additional details in Appendix B):

Worst Case Discharge (WCD):

Response Zone	Discharge Scenario	Potential Oil Group	Planning Volume
Jefferson County Response Zone	(b) (7)(F)		

FIGURE 1.2
PIPING SYSTEM OVERVIEW



Maps have been redacted in accordance with the FOIA Exemption 7(F).

2.0 NOTIFICATION PROCEDURES

2.1 INTERNAL NOTIFICATION

The following internal notifications should be made for each emergency incident to the extent that the incident demands (telephone reference is provided in Figure 2.2). In no event shall notification be delayed because the immediate supervisor is inaccessible. Authorization is given to bypass management levels if necessary to provide timely notification to appropriate management. The typical internal notification responsibilities for each person potentially involved in the initial response are as follows:

All emergency incidents will require some notification. The emergency category of the incident will affect the notifications and the initial response to the incident. It is important to properly classify the emergency category to ensure proper notifications and response.

For Category 1 or 2 incidents or media inquiry, sites will make appropriate notifications through normal business chains based on the nature and extent of the emergency.

- First responder notifies supervisor.
- If the supervisor is not the Terminal/Station Manager then the supervisor will notify the Terminal/Station Manager.
- Terminal/Station Manager will notify the Area Manager and the HSE Representative.
- If Media is involved, Notify Corporate Communications.
- The VTDC Corporate Response Team* will be notified of the incident by email via IMPACT Incident Report.

The following steps will be taken for all **Category 3 or 4 incidents:**

- Following initial notification of the site's emergency response team, Area Manager, or other key individual(s), the incident will be reported to the Corporate Response Team and the HSE Representative utilizing Notify Valero.

*VTDC Corporate Response Team consists of a representative from each of the following groups:

- Operations
- HSE
- Regulatory Compliance

FIGURE 2.1

INTERNAL NOTIFICATION SEQUENCE

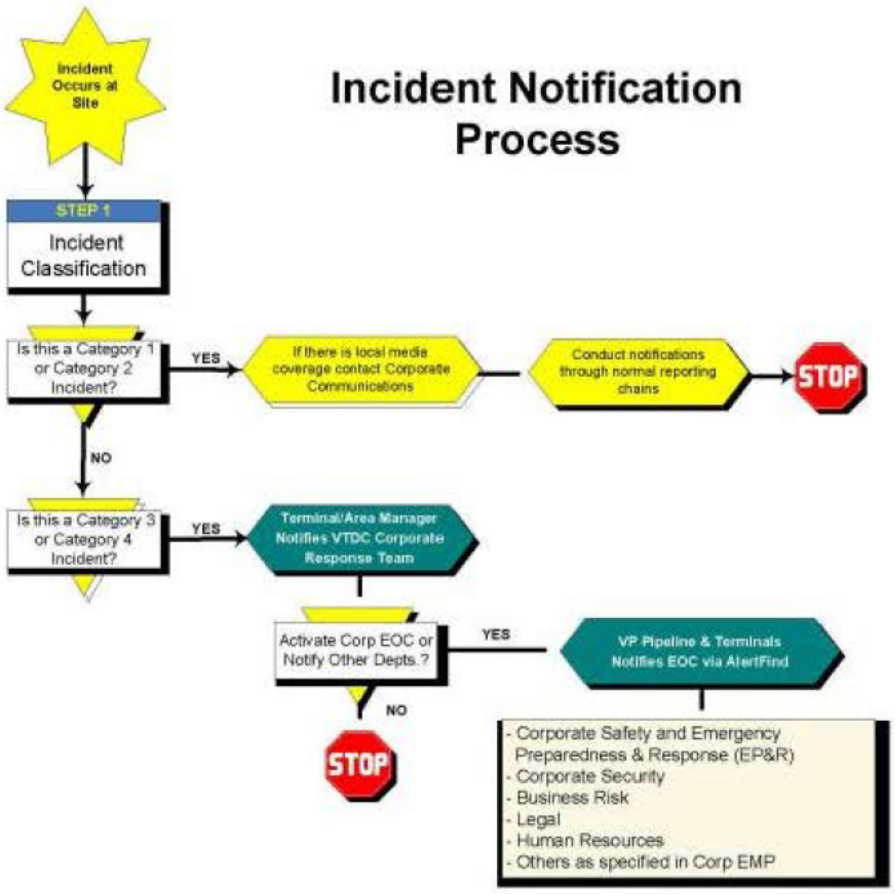


FIGURE 2.2

INTERNAL NOTIFICATION REFERENCES

CORPORATE RESPONSE PERSONNEL / OTHER COMPANY CONTACTS INTERNAL NOTIFICATIONS					
POSTION/TITLE	**NAME**	**LOCATION**	**OFFICE**	**HOME**	**OTHER**
Manger Area Terminal	Stephen Gunter	Valero Lucas Terminal	(409) 839-3518	(b) (6)	409) 504-9352
Supervisor Pipeline & Terminal	Jody Lambright	Valero Fannett Terminal	(409) 794-9765		409) 673-7612
INTERNAL NOTIFICATIONS - COPORATE EMERGENCY MANAGEMENT TEAM STAFF					
POSTION/TITLE	**NAME**	**LOCATION**	**OFFICE**	**HOME**	**OTHER**
Lead HSE Specialist	Moe Modarres	Valero Lucas Terminal	(409) 839-3513	(b) (6)	409) 554-5914
Manager HSE Pipelines and Terminals	John Tenison	Valero Headquarters	(210) 345-4665		210) 287-4665
Director HSE Pipelines & Terminals	Leroy Anderson	Valero Headquarters	(210) 345-4468		210) 260-5769
Lead Regulatory Compliance Specialist	Shawnna Poor	Valero Headquarters	(210) 345-5245		210) 215-4747
Lead Regulatory Compliance Specialist	James Trevino	Valero Headquarters	(210) 345-5145		210) 219-1401
Manager Regulatory Compliance	Jim Stokes	Valero Headquarters	(210) 345-4693		210) 872-8425
Sr. Area Manager Pipeline & Terminals	Brian Sarty	Valero Headquarters	(210) 345-5416		562) 833-9871
Executive Director Pipelines & Terminals	Ron McInturff	Valero Headquarters	(210) 345-4324		210) 867-9516
Executive Director Media Relations	Bill Day	Valero Headquarters	(210) 345-2928		210) 621-7191
Manager Pipeline Control Center	Rick Hatton	Valero Headquarters	(210) 345-5250		409) 988-1752 866) 382-5376 onsole #1

Jefferson County Response Zone				
POSTION/TITLE	**NAME**	**OFFICE**	**HOME**	**OTHER**
Lead HSE Specialist	Massoud Modarres	(409) 839-3513	(b) (6)	409) 554-5914 CELL
Manager Terminal	Stephen Gunter	(409) 839-3518		----
Maintenance Technician III (RC)	Jody Lambright	(409) 794-9765		409) 673-7612 CELL
Maintenance Technician III (RC)	Chadrick Traver	(409) 839-3527		----
Terminal Operator III (RC) (12hr)	Eric Chapman	(409) 839-6507		----
Terminal Operator III (RC) (12hr)	Kent Aguillard	(409) 839-3507		----
Maintenance Technician III	David Leach	(409) 839-3511		----
Maintenance Technician III (RC)	Marion Rothrock	(409) 839-3503		----
Maintenance Technician III (RC)	David Broussard	(409) 839-3521		----
Sr. I & E Technician	Perlo Gernale	(409) 839-3514		----
I & E Technician III (RC)	Todd Grymes	(409) 839-3522		----
Terminal Operator III (RC) (12hr)	Howard Greathouse	(409) 794-2350		409) 553-1080 CELL
Maintenance Technician III (RC)	Bruce Jennings	(409) 794-2356		----
Operations Associate	Jessica M. Harber	(409) 839-3508		----
Terminal Operator III (RC) (12hr)	Robert W. Lyons	(409) 794-2356		409) 749-0706 CELL
Supervisor Pipeline Control Center	Rick Hatton	(210) 346-5250		----

2.2 EXTERNAL NOTIFICATIONS

External notifications are those made to entities outside of the Company including Federal, State and local regulatory agencies, as well as railroad and utility companies. These notifications include both verbal and written requirements.

On Site Manager/HSE Specialist/QI

- National Response Center (NRC);
- Appropriate state agency;
- Local agencies;
- All releases reported to any agency due to special agreement; and
- USCG (as necessary).

The Notification Data Sheet (see Figure 2.3) should be used to begin the external notification process, keeping in mind that there are some strict time limits for making certain calls.

The following are guidelines to be considered when initiating external notifications:

- Receive faxed copy of Notification Data Sheet from Company employee or, at a minimum, gather pertinent incident information from the third party reporting the release.
- Do not report information that has not been verified or confirmed, usually by field personnel.
- Do not speculate as to the cause on an incident or make any statements about liability.
- Do not delay notifications because of incomplete information.
- When making notifications, document:
  - Agency notified, including telephone number
  - Date and time of notification
  - Person notified
  - Content of message
  - Incident number, if applicable

NOTE: Refer to Figure 2.5 for any additional State written reporting requirements.

FIGURE 2.3

NOTIFICATION DATA SHEET

Date of Incident: _____ ***Time of Incident:*** _____

INCIDENT DESCRIPTION

Reporter's Full Name: _____ ***Position:*** _____

Day Phone Number: _____ ***Evening Phone Number:*** _____

Company: Valero Terminaling and Distribution Company (VTDC) ***Organization Type:*** _____

Facility Address: 9405 West Port Arthur Road, Beaumont , Texas 77705 ***Owner's Address:*** One Valero Way, San Antonio , Texas 78249

Facility Latitude: _____ ***Facility Longitude:*** _____

Incident Address/Location: _____

(if not at Facility): _____

On-Scene Weather Conditions: _____

Responsible Party's Name: _____ ***Phone Number:*** _____

Responsible Party's Address: _____

Source and/or cause of discharge (Description): _____

Nearest City: _____

County/Parish: _____ ***State:*** _____ ***Zip Code:*** _____

Section: _____ ***Township:*** _____ ***Range:*** _____ ***Borough:*** _____

Distance from City: _____ ***Unit of Measure:*** _____ ***Direction from City:*** _____

Container Type: _____ ***Container Storage Capacity:*** _____ ***Unit of Measure:*** _____

Facility Oil Storage Capacity: _____ ***Unit of Measure:*** _____

Were Materials Discharged? (Y / N) **Confidential?** (Y / N)

CHRIS Code	Total Quantity Released	Water Impact (*YES or NO*)	Quantity into Water	Unit of Measure

RESPONSE ACTION(S)

Action(s) taken to Correct, Control, or Mitigate Incident: _____

Number of Injuries: _____ ***Number of Deaths:*** _____ ***Evacuation(s):*** (Y / N) ***Number Evacuated:*** _____

Was there any damage? (Y / N) ***Medium Affected:*** _____

Description: _____

More information about impacted medium: _____

CALLER NOTIFICATIONS

National Response Center (NRC): 1-800-424-8802

Additional Notifications (Circle all applicable): ***USCG*** ***EPA*** ***State*** ***OSHA*** ***Other*** _____

Describe: _____

NRC Incident Assigned No.: _____

ADDITIONAL INFORMATION

Any information about the incident not recorded elsewhere in this report:

Meeting Federal Obligations to Report (Y / N) **Date Called** _____

Calling for Responsible Party? (Y / N) **Time Called** _____

NOTE: DO NOT DELAY NOTIFICATION PENDING COLLECTION OF ALL INFORMATION.

FIGURE 2.4

EXTERNAL NOTIFICATION FLOWCHART

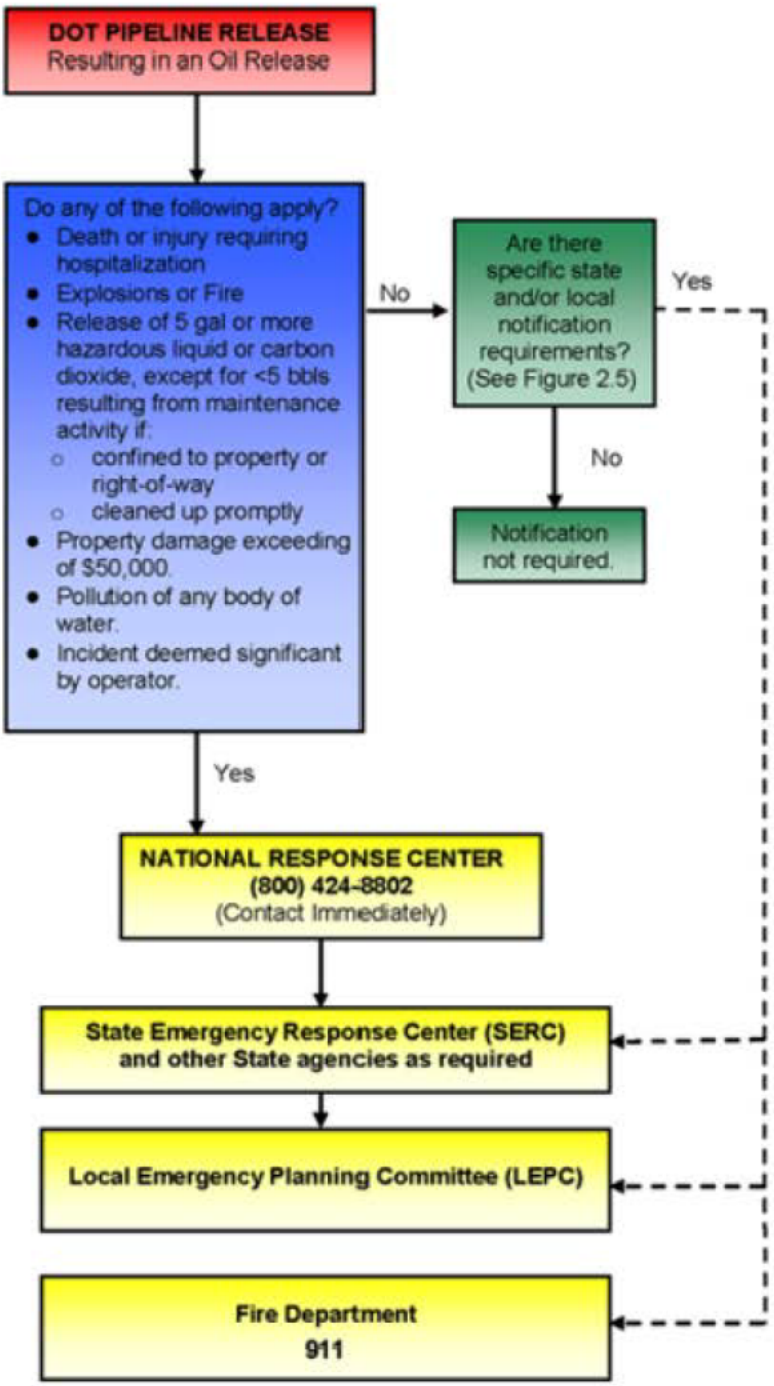


FIGURE 2.5

EXTERNAL NOTIFICATION REFERENCES

Required Notifications	
National Response Center (NRC)	
c/o United States Coast Guard (CG-5335) - Stop 7581, 2100 2nd Street, SW Washington, District Of Columbia 20593-0001	(800) 424-8802 (202) 267-2675
REPORTING REQUIREMENTS TYPE: Any discharge or sighting of oil on navigable waters. VERBAL: Immediate notification required (within 2 hours). WRITTEN: If an RQ limit is reached, refer to state requirements for written report requirements. NOTE: A call to the NRC must also be made for spills or releases of hazardous substances that meet or exceed their RQ. **** Additional reporting information may be contained in the Document Library under Other Documents.***	
U.S. Environmental Protection Agency, Region 6	
1445 Ross Avenue, Suite 1200 Dallas, Texas 75202	(214) 665-6595 (866) 372-7745
REPORTING REQUIREMENTS TYPE: Immediately for all spills that impact or threaten navigable water or adjoining shoreline. VERBAL: Notification to the EPA is typically accomplished by the call to the NRC. WRITTEN: As the agency may request depending on circumstances. NOTE: N/A **** Additional reporting information may be contained in the Document Library under Other Documents.***	
Department of Transportation for DOT Jurisdiction Office of Pipeline Safety and Hazardous Material	
1200 New Jersey Avenue SE-E-22-321 Washington, District Of Columbia 20590	(202) 366-4595 (202) 267-2675 NRC Direct (202) 366-4433 PHMSA Switchboard
REPORTING REQUIREMENTS TYPE: In addition to the reporting of accidents to the NRC, a written accident report may be required for incidents . VERBAL: Call to the NRC meets the required verbal notification under DOT reporting requirement. WRITTEN: As soon as practicable, an accident meeting any of the requisite criteria must be reported on PHMSA Form 7000-1. NOTE: N/A **** Additional reporting information may be contained in the Document Library under Other Documents.***	

Occupational Safety & Health Administration (OSHA)

200 Constitution Avenue Washington, District Of Columbia 20210	(800) 321-6742

REPORTING REQUIREMENTS

TYPE: Fatality from a work related incident or the inpatient hospitalization of three (3) or more employees as a result of a work related incident.
VERBAL: Immediately.
WRITTEN: As requested by the Agency.
NOTE: N/A
Additional reporting information may be contained in the Document Library under Other Documents.

Texas General Land Office (TGLO)

6300 Ocean Drive, Unit 5847 Corpus Christi, Texas 78412-5847	(800) 832-8224 (361) 825-3300

REPORTING REQUIREMENTS

TYPE: All spills of oil or petroleum products into water that causes a sheen and/or discharges onto land that meet or exceed 5 barrels for crude oil or 25 gallons for refined products.
VERBAL: Immediately.
WRITTEN: Within 30 days of discovery of a reportable discharge or spill submit TCEQ report to TCEQ Regional Manager (30 TAC Section 327.5(c)) 60 days after the state on-scene coordinator (TXGLOSOSC) directs.
NOTE: N/A
Additional reporting information may be contained in the Document Library under Other Documents.

Texas Railroad Commission / Oil and Gas Division

1701 N. Congress / P.O.Box 12967 Austin, Texas 78711-2967	(512) 463-6788 (713) 869-5001

REPORTING REQUIREMENTS

TYPE: (16 TAC Section 3.20 (a)-(b)) In the case of a fire, spill or break causing loss of over (5) barrels. For Pipeline incidents reportable to the NRC, notify the TRRC Pipeline Safety Section's District Office
VERBAL: Immediate notification to District Office.
WRITTEN: File Form H-8 in duplicate when appropriate measure have been taken, within 30 days following the date of the incident.
NOTE: N/A
Additional reporting information may be contained in the Document Library under Other Documents.

Texas Railroad Commission - Houston District 3

1706 Seamist Dr. Houston, Texas 77008	(713) 869-5001

REPORTING REQUIREMENTS

TYPE:	(16 TAC Section 3.20 (a)-(b)) In the case of a fire, spill or break causing loss of over (5) barrels. For Pipeline incidents reportable to the NRC, notify the TRRC Pipeline Safety Section's District.
VERBAL:	Immediate notification to District Office.
WRITTEN:	File Form H-8 in duplicate when appropriate measures have been taken, within 30 days following the date of the incident.
NOTE:	N/A

**** Additional reporting information may be contained in the Document Library under Other Documents.***

U.S. Fish and Wildlife Service

1849 C Street NW Washington, District Of Columbia 20240-0002	(800) 344-9453

REPORTING REQUIREMENTS

TYPE:	Wildlife Protection / Rehabilitation
VERBAL:	Immediately.
WRITTEN:	As the agency may request depending on circumstances.
NOTE:	N/A

**** Additional reporting information may be contained in the Document Library under Other Documents.***

Jefferson County (LEPC)

Mr. Greg Fountain 1149 Pearl, 1 Floor Beaumont, Texas 77701	(409) 835-8757 / (409) 835-8411

REPORTING REQUIREMENTS

TYPE:	Any release of a hazardous or extremely hazardous substance in an amount equal to or greater than the reportable quantity.
VERBAL:	Immediately
WRITTEN:	If requested
NOTE:	

**** Additional reporting information may be contained in the Document Library under Other Documents.***

U.S. Coast Guard - MSU Port Arthur, TX	
2901 Turtle Creek Drive Port Arthur, Texas 77642	(409) 723-6500 (409) 719-5000

REPORTING REQUIREMENTS

TYPE: Immediately for all spills that impact or threaten navigable water or adjoining shoreline.
VERBAL: Notification to the USCG is typically accomplished by the call to the NRC.
WRITTEN: As the agency may request depending on circumstances.
NOTE:
Additional reporting information may be contained in the Document Library under Other Documents.

State of Texas Spill-Reporting Hotline (SERC)	
12100 Park 35 Circle (PO Box 13087) Austin, Texas 78753	(800) 832-8224 (512) 463-7727

REPORTING REQUIREMENTS

TYPE: All spills of oil or petroleum products into water that causes a sheen and/or discharges onto land that meet or exceed 5 barrels for crude oil or 25 gallons for refined products.
VERBAL: Immediately.
WRITTEN: Within 30 days of discovery of a reportable discharge or spill submit TCEQ report to TCEQ Regional Manager (30 TAC Section 327.5(c)). 60 days after the state on-scene coordinator (TXGLOSOSC) directs.
NOTE: N/A
Additional reporting information may be contained in the Document Library under Other Documents.

Jefferson County Response Zone				
POSTION/TITLE	NAME	OFFICE	(b) (6)	OTHER
Lead HSE Specialist	Massoud Modarres	(409) 839-3513		409) 554-5914 CELL
Manager Terminal	Stephen Gunter	(409) 839-3518		----
Maintenance Technician III (RC)	Jody Lambright	(409) 794-9765		409) 673-7612 CELL
Maintenance Technician III (RC)	Chadrick Traver	(409) 839-3527		----
Terminal Operator III (RC) (12hr)	Eric Chapman	(409) 839-6507		----
Terminal Operator III (RC) (12hr)	Kent Aguillard	(409) 839-3507		----
Maintenance Technician III	David Leach	(409) 839-3511		----
Maintenance Technician III (RC)	Marion Rothrock	(409) 839-3503		----
Maintenance Technician III (RC)	David Broussard	(409) 839-3521		----
Sr. I & E Technician	Perlo Gernale	(409) 839-3514		----
I & E Technician III (RC)	Todd Grymes	(409) 839-3522		----
Terminal Operator III (RC) (12hr)	Howard Greathouse	(409) 794-2350		409) 553-1080 CELL
Maintenance Technician III (RC)	Bruce Jennings	(409) 794-2356		----
Operations Associate	Jessica M. Harber	(409) 839-3508		----
Terminal Operator III (RC) (12hr)	Robert W. Lyons	(409) 794-2356		409) 749-0706 CELL
Supervisor Pipeline Control Center	Rick Hatton	(210) 346-5250		----

USCG CLASSIFIED OIL SPILL REMOVAL ORGANIZATIONS (OSRO)		
COMPANY	**LOCATION**	**TELEPHONE**
National Response Corporation (NRC)	Seattle, Washington	(800) 899-4672

ADDITIONAL RESPONSE RESOURCES		
COMPANY	**LOCATION**	**TELEPHONE**
OMI Environmental Solutions	Beaumont, Texas	(800) 645-6671
Veolia Environmental Services	Port Arthur, Texas	(409) 736-2821
Wild Well Control	Houston, Texas	(281) 784-4700

3.0 RESPONSE ACTIONS

3.1 INITIAL RESPONSE ACTIONS

Initial response actions are those taken by local personnel immediately upon becoming aware of a discharge or emergency incident, before the Local Response Team (described in Section 4.0) is formed and functioning. Timely implementation of these initial steps is of the utmost importance because they can greatly affect the overall response operation.

The pages that follow discuss initial response actions for a variety of emergencies that have the possibility of occurring. These emergencies are discussed in the order listed below:

- Initial Response
- Line Break or Leak
- Fire
- Bomb Threat

It is important to note that **these actions are intended only as guidelines** . The appropriate response to a particular incident may vary depending on the nature and severity of the incident and on other factors that are not readily addressed. Note, that **without exception, employees and public safety is first priority.**

The first Company person on scene will function as the Incident Commander (IC) until relieved by an authorized supervisor who will assume the IC position. Transfer of command will take place as more senior management respond to the incident. For response operations within the control of the Local Response Team, the role of IC will typically be assumed and retained by area management.

The person functioning as **Incident Commander** during the initial response period **has the authority to take the steps necessary to control the situation and must not be constrained by these general guidelines.**

INITIAL RESPONSE ACTIONS - SUMMARY

PERSONNEL AND PUBLIC SAFETY IS FIRST PRIORITY

CONTROL

- Eliminate sources of ignition
- Isolate the source of the discharge, minimize further flow

NOTIFY

- Make internal and external notifications
- Activate local Company personnel as necessary
- Activate response contractors and other external resources as necessary

CONTAIN

- Begin spill mitigation and response activities
- Monitor and control the containment and clean-up effort
- Protect the public and environmental sensitive areas

In addition to the potential emergency events outlined in this Section, the Company has identified several "abnormal operations" that could occur at the pipeline facilities. The Company has defined the events and established procedures to identify, eliminate or mitigate the threat of a worst case discharge due to these events. In compliance with 49 CFR 195.402(d), these procedures are defined in the Company's Operations Manual.

For initial response, the IC will assign the positions of RECON, Logistics, and Safety. The IC can assign more than one employee to RECON if the situation requires more than one location to be reconnoitered. Generally, the Immediate Response Team will be expanded by first activating the Assistant Incident Commander who can assist the IC by accepting specific assignments, or, if the IC prefers, the Assistant Incident Commander can supervise one or more of the groups or individuals of the team. The IC has the latitude of assigning team positions to team members based on the specific needs of the response team and the time of reporting of the team members. These responsibilities may be later transferred to other team members as they report, particularly when a more qualified team member in that area of specialization becomes available, or when the previous assignee can be relieved to perform tasks in their specialization.

For small releases, the Management on duty will normally assume the role of Incident Commander. Support will be utilized on an as needed bases. With a medium release, the on duty Manager will be the Incident Commander. Local Valero resources may be supplemented with other company and external resources, as required, and the Sustained Response Team may be activated.

Incident Command would be established for Worst Case Discharge, the on site Manager or higher Valero Management will be Incident Commander. Maximum Valero and external resources will respond and the Major Incident Response Team will be activated.

Immediate Response Team:

This team made up of the local Operating Team from the facility where the incident occurs, and the combined maintenance pool will be the initial respondents to the incident. The team's immediate duties are directed toward prevention of incident escalation first, then toward the protection, containment, and/or diversion of the impact. Contracted resources and personnel may or may not be required for the response effort.

Sustained Response Team:

This team, made up of Immediate Response Team members from other local Valero Response Teams and specifically trained employees from the Valero organization, will be activated when the magnitude of the incident indicates the need for additional manpower. Contracted resources and personnel will most likely be used in addition to Valero personnel and equipment.

Major Incident Response Team:

This team draws on specialists and specifically trained employees from the Valero organization and contracted resources.

SPILL RESPONSE EVALUATION FLOWCHART

(This flowchart depicts the steps to evaluate an incident to determine the appropriate level of response.)

Emergency/Incident Classification

Incident Category	CONSIDERATIONS			
	HEALTH/SAFETY	**COMMUNITY IMPACT**	**ENVIRONMENTAL IMPACT**	**RELIABILITY IMPACT**
I	No Onsite Injury to First Aid or No Injury to Public Small Fire - No ERT Response Required	No to Minor Impact to People or No Media Coverage	Minor Spill or Release No Reportable Quantity or No Agency Contact or No Response Needed	$0 to $100K
II	Onsite Recordable to Lost Time Injury or Nuisance to Public Moderate Fire - ERT Response Required	Community Warning or Local Media Coverage	Moderate Spill or Release Reportable Quantity with Agency Notification or Short Duration Remediation	From $100K to $1MM
III	Permanent Disabling Injury to Single or Multiple Fatality within the immediate area or Medical Treatment to Public Major Fire or Explosion - Mutual Aid Response Required	Shelter in Place or State to Regional Media Coverage	Major Spill or Release Reportable Quantity with Multi-Agency Involvement or Prolonged Remediation	From $1MM to $10 MM
IV	Multiple Fatalities across The Site or Public Fatality Catastrophic Fire or Explosion	Public Evacuation or National Media Coverage	Catastrophic Spill or Release Agency Intervention or Permanent Environmental Damage	Greater than $10MM

FIGURE 3.1

SPECIFIC INCIDENT RESPONSE CHECKLIST

INITIAL RESPONSE

Medical Emergency/Rescue Incident

- Apply appropriate first aid for both injury and shock, exercising care not to cause further injury.
- If victim is unconscious and not breathing, immediately apply artificial respiration (if trained in CPR) and continue without interruption until natural breathing is restored or until relieved by another CPR-trained individual or other qualified medical personnel.
- Call for ambulance or other medical evacuation resources, if appropriate.
- Notify hospital of patient arrival and extent of injury.
- Notify victim's immediate family.
- Complete follow-up and written reporting, as the situation demands.

Abnormal Pipeline Operations

- If operating design limits have been exceeded (increase or decrease pressure or flow) and no emergency condition exists, stop operations and immediately investigate the pipeline.
- Verify whether a true safety problem, equipment malfunction, or operator error is present.
- If the situation is due to malfunctioning equipment, can transfer operations can continue safely? If yes, then bypass the faulty equipment until the completion of the transfer and make appropriate repairs. **Note: In all cases, safety to operations, the general public, and property will govern actions taken.**
- If the transfer can not continue safely, make appropriate repairs before continuing operations. **Note: Corrective action will only be done by qualified personnel to perform the type of work involved.**
- Monitor affected systems until normal operations are resumed.
- Inform local operators such as utilities, telephone, and/or railway.
- Complete follow-up and written reporting, as the situation demands.

Note: Abnormal operations are further detailed in the Company's O&M Manual.

LINE BREAK OR LEAK, SPECIFIC RESPONSE (Including Piping Rupture/ Leak Valve Rupture/Leak and Manifold Failure)

Line Break or Leak

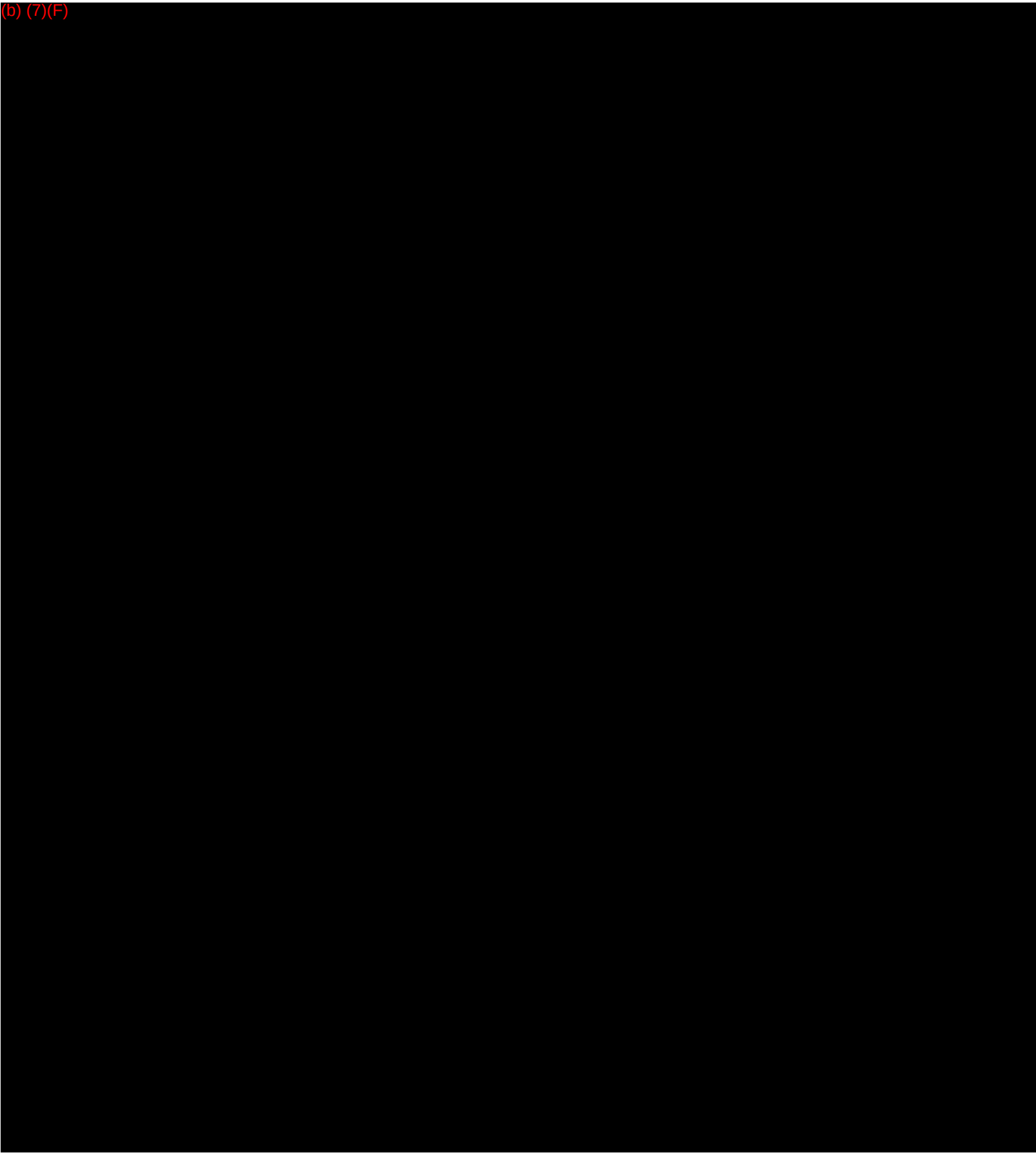
- Notify Control Center.
- Control Center and/or local operations will perform shut down procedures outlined in Procedural Manual.
- Obtain all the necessary information to complete the leak report.
- Qualified personnel should use Combustible Gas Indicator, O2 meter, proper colormetric indicator and/or other air sampling measurements to ensure that areas are safe to enter for continued response operations. Refer to Safety Volume for further guidance.
    - Mitigate spreading of the product, as the situation demands. Potential containment strategies include:
        - Earthen dike/berm
        - Ditching
        - Spreading sorbent material over the spill
    - Prevent the spill from entering the waterways, sewer, etc. to the greatest extent possible.
- Inform local operators such as utilities, telephone company, railway.
- Review the location of socio-economic and environmentally sensitive areas identified in Section 6.0. Determine which of these may be threatened by the spill and direct the response operation to these locations. Initiate protection and recovery actions.
- Determine the direction and expected duration of spill movement.
- Make all necessary repairs.
- Clean up spilled product to eliminate any possible environmental problems. Be alert for underground cables.
- Return the line to service when repairs are complete.
- Complete follow-up and written reporting, as the situation demands.

FIRES (MINOR, MAJOR, EXPLOSION) SPECIFIC RESPONSE

Pipeline Right of Way

- In the event of fire in the absence of the on site Terminal Manager, any Company employee on duty may be designated as the individual in charge.
- The individual discovering the fire will adhere to the instructions above:
  - Ensure that the fire department has been notified.
  - Alert all Facility areas of the exact location and extent of the fire.
  - Ensure supervisor is notified by telephone (refer to Figures 2.1 and 2.2).
- Prior to the arrival of a Response Team member or a supervisor, the individual will remain in charge and will direct the fire department to the scene of the fire.
- Handle the calls.
- Call the Fire and Police Departments (911).
- Notify the Control Center.
- Go to the scene of the incident to evaluate the situation.
- Update Control Center.

(b) (7)(F)



3.2 DOCUMENTATION OF INITIAL RESPONSE ACTIONS

It is difficult, particularly during the first few minutes of an initial response operation, to think about the importance of documentation. A log should be maintained that documents the history of the events and communications that occur during the response. When recording this information, it is important to remember that the log may become instrumental in legal proceedings, therefore:

- Record only facts, do not speculate.
- Do not criticize the efforts and/or methods of other people/operations.
- Do not speculate on the cause of the spill.
- Do not skip lines between entries or make erasures. If an error is made, draw a line through it, add the correct entry above or below it, and initial the change.
- Record the recommendations, instructions, and actions taken by government/regulatory officials.
- Document conversations (telephone or in person) with government/regulatory officials.
- **Request that government/regulatory officials document and sign their recommendations or orders (especially if company personnel do not agree with the suggestions, instructions, or actions).**

3.3 OIL CONTAINMENT, RECOVERY AND DISPOSAL/WASTE MANAGEMENT

The disposal of recovered oil and oily debris poses potential immediate and long term problems; therefore, every effort should be made to reclaim as much of the recovered oil as possible. All contaminated material will be disposed of in accordance with all applicable state, federal and local regulations. The Health, Safety and Environmental (HSE) Department must be consulted to ensure compliance with these regulations.

Recovered oil, oily liquids, gasoline or diesel contaminated soil, and other cleanup debris such as concrete, wood, oily rags, spill booms and sorbent materials will be collected, temporarily stored and eventually disposed of off-site. The disposal method will be determined by testing the wastes for ignitability, corrosivity, reactivity, and toxicity characteristics. Other tests required by recycling/disposal facilities will be conducted as required. Crude oil contaminated soil may be bio-remediated at one of the Valero Terminaling and Distribution facilities on a Railroad Commission of Texas approved remediation pad.

Waste containing any kind of oil is considered hazardous unless it can be shown to be non-hazardous by a certified laboratory analysis. To be classified as non-hazardous, the waste must be certified not to possess any of the following characteristics: ignitability, corrosivity, reactivity or toxicity. Laboratory analysis will be required by any disposal facility before they will accept oily waste for disposal. Valero has ongoing contracts with various laboratories. Analytical methods that are commonly used are:

- Benzene SW-846-8020
- Toluene SW-846-8020
- Ethyl benzene SW-846-8020
- Xylene SW-846-8020

- Total Petroleum Hydrocarbons 418.113550

Total Metals;

- Arsenic SW-846-7060
- Cadmium SW-846-7130
- Chromium SW-846-7191
- Lead SW-846-7420

Hazardous Waste Characteristics;

- Ignitability SW-846-1010
- Corrosivity SW-846-1110
- Cyanide SW-846-7.3.3.2
- Reactivity Sulfide SW-846-7.3.4.2
- TCLP Volatiles SW-846-8260

As directed by the HSE Department, materials deemed non-recyclable will be:

1) Sold to a commercial recycler, or

2) Disposed of off-site.

Valero has existing disposal contracts for Class I, II, and III non-hazardous materials and for hazardous materials. Valero also has contracts for the incineration of hazardous materials. The HSE Department will coordinate; labeling, placarding, manifesting and permitting requirements for waste shipments offsite.

FIGURE 3.2

PRODUCT SPECIFIC RESPONSE CONSIDERATIONS

FLAMMABLE LIQUIDS
(Non-Polar/Water-Immiscible)

The following information provides the initial responder(s) with data that may be useful in making quick decisions and executing prompt response actions. The information is intended for guideline purposes only.

HEALTH

GUIDE NO. 128	• Inhalation or contact with material may irritate or burn skin and eyes. • Fire may produce irritating, corrosive and/or toxic gases. • Vapors may cause dizziness or suffocation. • Runoff from fire control or dilution water may cause pollution.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure medical personnel are aware of materials involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

EVACUATION	**Large Spill** • Consider initial downwind evacuation for at least 300 meters (1,000 feet). **Fire** • If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Information provided by the Emergency Response Guidebook 2012.

3.4 STORAGE/DISPOSAL

Oil/Water/Debris Separation Strategies

All spilled oil will be removed from the environment as quickly as possible to minimize damage. Strategies and methods for oil/water/debris separation will depend upon the condition of the oil, in-house oil-processing equipment/policies, and government regulations.

Once the trajectory of the spill is predicted, the HSE Department Representative will attempt to anticipate areas where protective or deflective booming may help to reduce contamination. In areas where such defensive actions are unfeasible, shoreline cleanup and debris collection in advance of the spill may be necessary.

Oil recovered from shoreline areas will typically contain substantial amounts of water and debris. Excess water (in particular, salt water) greatly increases the quantity to be transported and can create problems at processing facilities. Debris will often clog pumps and cause other handling difficulties. Most debris in the form of vegetation, rocks, gravel, used sorbents, etc. is easily removed by screening, whereas, the separation of water and oil is somewhat more difficult. Oil/water/debris separation will largely be accomplished using the techniques described below. Certain conditions may make the use of this option unfeasible.

An oil/water separator can be constructed under field conditions using a 55 gallon drum or a large welded sheet metal box fitted with a valve and bottom-draining pipe. The oil/water mixture is pumped into the container and allowed to stand long enough for the oil and water to separate. The water is then separated off the bottom through the drain, and the oil is pumped into a storage tank or truck. A tank or vacuum truck also can be used as an effective oil/water separator by following the same procedure.

A second method involves the use of a 55 gallon drum and a natural or excavated, plastic lined sump pit. Several holes are drilled in the side near the bottom and a large hole is cut in the top. The sump is partially filled with water and the drum is suspended upright and positioned so that the bottom two-thirds are submerged. The oil/water mixture is pumped into the top of the drum at a rate slow enough to prevent the oil from being driven out of the holes at the bottom. As more of the mixture is pumped in, the water will flow out the holes at the bottom and the oil will concentrate at the water surface in the drum. Once the oil layer becomes thick enough, it can be pumped or vacuumed out and into a tank truck or storage tank.

Spill response personnel will make effort to keep oily solids (sorbents, booms, protective clothing, etc.) segregated from recovered oil and water. Most water will be decanted and removed from the recovered oil and water. Most water will be decanted and removed from the recovered oil by allowing it to stand and separate or by the use of skimmers. Oil recovered by the decanting and skimming will be returned to the Valero Terminaling and Distribution facility.

Spilled Material Sampling and Test Methods

Oil Sampling

Oil sampling and analysis is an important part of planning the response and documenting a spill. It is important to sample spilled oil as early as possible to predict and assess natural resource damages and to distinguish a Premcor spill from any unidentified spills which may follow.

Valero's methods of identification involves matching samples based on the assumption that no two oils have identical compositions unless they have identical histories. This relationship has been termed the "fingerprint principle" because, in theory, each oil product is unique.

3.5 SAMPLING AND WASTE ANALYSIS PROCEDURE

Sample Analysis Immediately following spill notification, the HSE Department will specify the approved sampling and analysis procedures, which are appropriate to that spill situation. At the discretion of the HSE Department, either in-house or contractor sampling and sample analysis will be used. In either case the person handling the samples shall complete a "chain of custody" upon release of the sample to the next individual taking charge of the sample. Valero's in-house labs have the capability of conducting gas chromatography, atomic absorption spectrophotometry, and infrared analysis. Gas chromatography (GC) will be used to characterize the organic components, determine the quality and quantity of different fractions present in the oil, and compare the spill samples to reference samples. Atomic absorption spectroscopy (AA) will be used in oil identification to determine the nickel/vanadium ratio in oils. Infrared analysis (IR) will be used to determine organic and inorganic components, fractions present in the oil, and to compare spill samples to reference samples

3.6 SAFETY AWARENESS

HSE Specialist

Safety Officer is responsible for PPE and duties outlined in Section 4.0

Personal Protective Equipment (PPE)

The following represents OSHA/USEPA designated PPE levels for responding to emergencies, post emergency cleanup sites, and/or Temporary Storage and Disposal (TSD) sites. The responder's PPE should be chosen based on his/her level of training and assigned job duties.

Personal Protective Equipment (PPE)	
LEVEL A • Self Contained Breathing Apparatus (SCBA) (worn inside suit) • Encapsulated Chemical Protective Suit • Chemical Protective Gloves • Chemical Protective Boots • Hard Hat • Safety Toe Footwear • Safety Glasses	To be selected when the greatest level of skin, respiratory, and eye protection is required.
LEVEL B • SCBA (worn outside suit) • Chemical Protective Suit w/Hood • Chemical Protective Boots • Chemical Protective Gloves • Hard Hat • Safety Toe Footwear • Safety Glasses	To be selected when the highest level of respiratory protection is necessary but a lesser level of skin protection is needed.
LEVEL C • Air Purifying Respirator (APR) • APR a½ Face or Full Face • Hard Hat • Glasses (worn with a½ face APR) • Chemical Protective Boots • Chemical Protective Gloves • Chemical Protective Suit/Tyvek • Safety Toe Footwear • Safety Glasses	To be selected when the concentration and type of airborne substances is known and the criteria for using air purifying respirators are met.
MODIFIED LEVEL C Same as level C except no APR requirements.	To be selected when the concentration and type of airborne substances is known and the levels are below the criteria for using air purifying respirators.
LEVEL D • Hard Hat • Safety Glasses • Work Uniform / Clothes • Leather Gloves • Safety Boots • Nomex (if required by the Company)	The atmosphere contains no known hazard and work functions preclude the potential for unexpected inhalation of or contact with hazardous levels of any chemicals.

3.7 EMERGENCY MEDICAL TREATMENT AND FIRST AID

General

Employees should report all injuries immediately to their supervisor. For minor injuries, the injured employee's supervisor will arrange transportation to and from the hospital.

Dial 911 for ambulance service.

- State your name.
- Request the ambulance and emergency personnel.
- Give the exact location, number of injured, and if possible, the nature of the injury(s).
- Remain in contact with the other party until they hang up.

For multiple injuries or rescue, the Incident Command System will be activated to the level necessary as determined by the Incident Commander.

Serious Injuries and Illnesses

The primary concern in dealing with a serious injury or illness is prompt and proper patient care. It is imperative that Emergency Response personnel are notified immediately.

VTDC employees with a suspected serious injury or illness in Jefferson County will be transported to either St. Elizabeth's or Baptist hospital. The injured employee may choose which hospital he/she prefers to be transported.

Examples of serious injuries/illnesses as determined by EMT/ECA Certified personnel include:

- Any suspected cardiac or pulmonary disorder
- Amputations
- Cuts involving arterial or venous bleeding
- Head injuries
- Any suspected spinal injury
- Femur fractures
- Diabetic emergencies (insulin shock or diabetic coma)
- Heat stroke
- Blunt trauma injuries to the chest or abdomen
- Seizures
- Any injury involving unconsciousness
- Shock
- Burns which may involve the respiratory tract and other serious burns

Emergency Response During Regular Working and Off Hours

The on site Manager, IC, or a delegate will proceed in a separate vehicle to the hospital, and will arrange for notification of the employees' family. The on site Manager, IC, or delegate will remain at the hospital until the employees' family arrives, or until the employee is released.

Contractor Employee Injuries

Contractors are responsible for arranging and providing emergency medical care and ambulance transportation for their employees. If the injury is serious in nature the contractor supervisor shall contact for outside ambulance service (Beaumont or Port Arthur EMS) will be requested. The employee's supervisor must accompany the employee any outside medical facility.

The contractor must report all injuries immediately to their VTDC Representative. The VTDC Representative shall provide a copy of the "Employer's First Report of Injury" to the HSE Specialist as soon as possible.

4.0 RESPONSE TEAMS

4.1 INTRODUCTION

The Company utilizes the Incident Command System (ICS) to manage emergency response activities. The ICS is a management tool that is readily adaptable to very small incidents as well as those of considerable significance. ICS shall be implemented for all discharge incidents. The staffing levels required to meet the specific needs of the incident will be based on its size and severity.

The first response to a discharge originating from the Facility will be provided by the Facility's Spill Response Team. In the event that the response operation is beyond the capability of the Facility's Spill Response Team, the Incident Commander/Qualified Individual (typically the on site Manager) will activate the Regional Response Team. The Facility's Spill Response Team and the Regional Response Team represent the Facility's Spill Management Team.

4.2 QUALIFIED INDIVIDUAL

It is the responsibility of the Qualified Individual (QI) or his/her designee to coordinate with the Federal On-Scene Coordinator (FOSC) and State On-Scene Coordinator (SOSC) throughout the response, if applicable.

Vital duties of the Qualified Individual (QI) include:

- Activate internal alarms and hazard communication systems to notify all Facility personnel.
- Notify all response personnel, as needed.
- Identify the character, exact source, amount, and extent of the release, as well as the other items needed for notification.
- Notify and provide necessary information to the appropriate Federal, State and Local authorities with designated response roles, including the National Response Center (NRC), State Emergency Response Commission (SERC), and local response agencies.
- Assess the interaction of the spilled substance with water and/or other substances stored at the Facility and notify response personnel at the scene of that assessment.
- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated, or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion).
- Assess and implement prompt removal actions to contain and remove the substance released.
- Coordinate rescue and response actions as previously arranged with all response personnel.
- Activate and engage in contracting with oil spill removal organizations.

- Use authority to immediately access Company funding to initiate cleanup activities.
- Direct cleanup activities until properly relieved of this responsibility.
- Arrangements will be made to ensure that the Qualified Individual (QI) or the Alternate Qualified Individual (AQI) is available on a 24-hour basis and is able to arrive at the Facility in a reasonable time.
- The AQI shall replace the QI in the event of his/her absence and have the same responsibilities and authority.

4.3 LOCAL RESPONSE TEAM

The first Company person on scene will function as the Incident Commander (IC) and person-in-charge until relieved by an authorized supervisor who will then assume the position of IC. Transfer of command will take place as more senior management respond to the incident. For response operations within the control of the Local Response Team (LRT), the role of IC will typically be assumed and retained by on site Management.

The number of positions/personnel required to staff the LRT will depend on the size and complexity of the incident. The duties of each position may be performed by the IC directly or delegated as the situation demands. The IC is always responsible for directing the response activities and will assume the duties of all the primary positions until the duties can be delegated to other qualified personnel.

The LRT should try to fill the necessary positions and request additional support from the Spill Management Team to fill/back up all the positions as the incident may dictate. Detailed job descriptions of the primary response team positions.

4.4 REGIONAL RESPONSE TEAM

For spill response operations outside the capabilities of the Local Response Team (LRT), the QI/AQI or IC will determine the need for mobilization of the Crisis Management Team (CRT). The members of the LRT will typically become members of the CRT.

The Crisis Response Team (CRT), once fully staffed, is designed to cover all aspects of a comprehensive and prolonged incident response. The number of positions/personnel required to staff the CRT will depend on the size and complexity of the incident. During a prolonged response, additional personnel may be cascaded in, and more than one level within the Team may be involved to sustain 24-hour operations.

The CRT is basically organized according to the NIMS Incident Command System principles. Led by the Incident Commander, the team is composed of the following principal components: a) Command; b) Planning; c) Finance; d) Operations, and e) Logistics.

The Crisis Response Team is staffed by specially trained personnel from various facility/corporate locations, and by various contract resources as the situation requires. The CRT is headed by the Senior Management Advisors (SMA).

4.5 INCIDENT COMMAND SYSTEM (ICS)

The Incident Command System is intended to be used as an emergency management tool to aid in mitigating all types of emergency incidents. This system is readily adaptable to very small emergency incidents as well as more significant or complex emergencies. The Incident Command System utilizes the following criteria as key operational factors:

- Assigns overall authority to one individual
- Provides structured authority, roles and responsibilities during emergencies
- The system is simple and familiar, and is used routinely at a variety of incidents
- Communications are structured
- There is a structured system for response and assignment of resources
- The system provides for expansion, escalation, and transfer/transition of roles and responsibilities
- The system allows for "Unified Command" where agency involvement at the command level is required

Effective establishment and utilization of the Incident Command System during response to all types of emergencies can:

- Provide for increased safety
- Shorten emergency mitigation time by providing more effective and organized mitigation
- Cause increased confidence and support from local, State, Federal, and public sector emergency response personnel
- Provide a solid cornerstone for emergency planning efforts

Section 4.7 provides a comprehensive list of every response team member’s duty assignment.

4.6 UNIFIED COMMAND

As a component of an Incident Command System, the Unified Command (UC) is a structure that brings together the Incident Commanders of all major organizations involved in the incident to coordinate an effective response while still meeting their own responsibilities. The Unified Command links the organizations responding to the incident and provides a forum for the Responsible Party and responding agencies to make consensus decisions. Under the Unified Command, the various jurisdictions and/or agencies and responders may blend together throughout the organization to create an integrated response team. The Incident Command System process requires the Unified Command to set clear objectives to guide the on-scene response resources.

Multiple jurisdictions may be involved in a response effort utilizing Unified Command. These jurisdictions could be represented by any combination of:

- Geographic boundaries
- Government levels
- Functional responsibilities
- Statutory responsibilities

The participants of Unified Command for a specific incident will be determined taking into account the specifics of the incident and existing response plans and/or decisions reached during the initial meeting of the Unified Command. The Unified Command may change as an incident progresses, in order to account for changes in the situation.

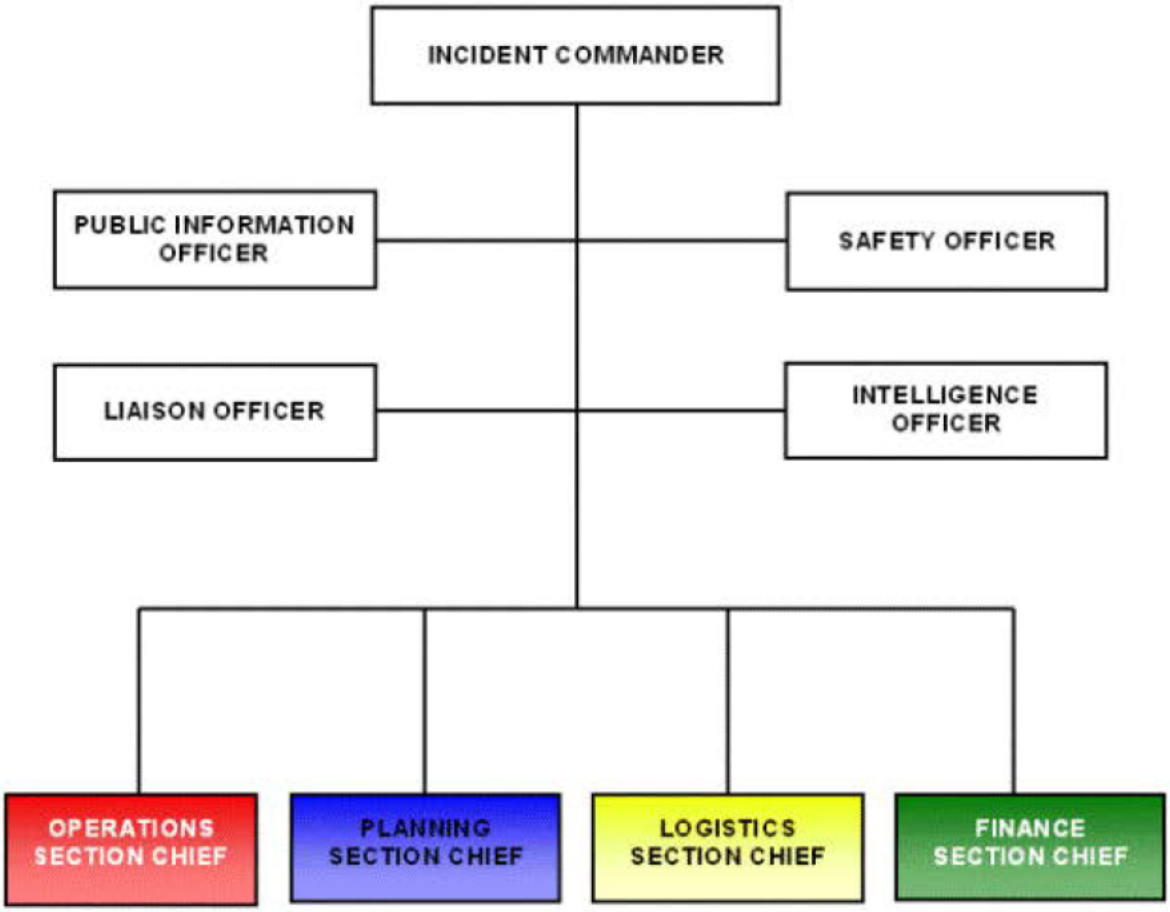
The Unified Command is responsible for overall management of an incident. The Unified Command directs incident activities and approves and releases resources. The Unified Command structure is a vehicle for coordination, cooperation and communication which is essential to an effective response.

Unified Command representatives must be able to:

- Agree on common incident objectives and priorities
- Have the capability to sustain a 24-hour-7-day-per-week commitment to the incident
- Have the authority to commit agency or Company resources to the incident
- Have the authority to spend agency or Company funds
- Agree on an incident response organization
- Agree on the appropriate Command and General Staff assignments
- Commit to speak with "one voice" through the Public Information Officer or Joint Information Center
- Agree on logistical support procedures
- Agree on cost-sharing procedures

FIGURE 4.1

INCIDENT COMMAND SYSTEM



4.7 ICS ROLES AND RESPONSIBILITIES

COMMON RESPONSIBILITIES

The following is a checklist applicable to all personnel in an Incident Command System organization:

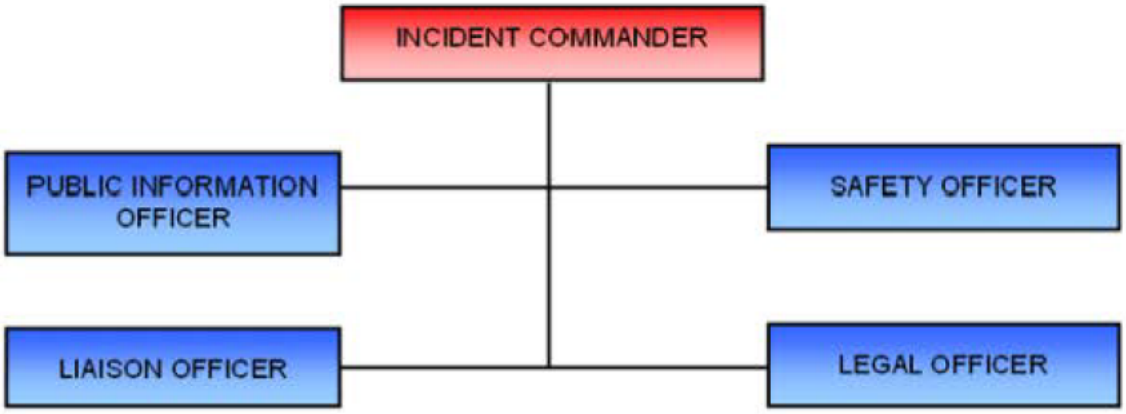
- Receive assignment, including:
  - Job assignment
  - Resource order number and request number
  - Reporting location
  - Reporting time
  - Travel instructions
  - Special communications instructions
- Upon arrival, check-in at designated check-in location.
- Receive briefing from immediate supervisor.
- Acquire work materials.
- Supervisors maintain accountability for assigned personnel.
- Organize and brief subordinates.
- Know your assigned radio frequency(s) and ensure communications equipment is operating properly.
- Use clear text and Incident Command System terminology (no codes) in all communications.
- Complete forms and reports required of the assigned position and send to Documentation Unit.
- Maintain unit records, including Unit Log (ICS Form 214).
- Respond to demobilization orders and brief subordinates regarding demobilization.

UNIT LEADER RESPONSIBILITIES

In Incident Command System, a Unit Leader's responsibilities are common to all units in all parts of the organization. Common responsibilities of Unit Leaders are listed below.

- Review common responsibilities.
- Receive briefing from Incident Commander, Section Chief or Branch Director, as appropriate.
- Participate in incident planning meetings, as required.
- Determine current status of unit activities.
- Order additional unit staff, as appropriate.
- Determine resource needs.
- Confirm dispatch and estimated time of arrival of staff and supplies.
- Assign specific duties to staff; supervise staff.
- Develop and implement accountability, safety and security measures for personnel and resources.
- Supervise demobilization of unit, including storage of supplies.
- Provide Supply Unit Leader with a list of supplies to be replenished.
- Maintain unit records, including Unit Log (ICS Form 214).

COMMAND



INCIDENT COMMANDER

- Assess the situation and/or obtain a briefing from the prior Incident Commander.
- Determine Incident Objectives and strategy.
- Establish the immediate priorities.
- Establish an Incident Command Post.
- Brief Command Staff and Section Chiefs.
- Review meetings and briefings.
- Establish an appropriate organization.
- Ensure planning meetings are scheduled as required. (Refer to Figure 4.2 "Operational Period Planning Cycle" for assistance).
- Approve and authorize the implementation of an Incident Action Plan.
- Ensure that adequate safety measures are in place.
- Coordinate activity for all Command and General Staff.
- Coordinate with key people and officials.
- Approve requests for additional resources or for the release of resources.
- Keep agency administrator informed of incident status.
- Approve the use of trainees, volunteers, and auxiliary personnel.
- Authorize release of information to the news media.
- Ensure incident Status Summary (ICS Form 209-CG) is completed and forwarded to appropriate higher authority.
- Order the demobilization of the incident when appropriate.
- Assign any of the Incident Commander roles and responsibilities to a Deputy Incident Commander as needed.

PUBLIC INFORMATION OFFICER

- Determine from the Incident Commander if there are any limits on information release.
- Develop material for use in media briefings.
- Obtain Incident Commander approval of media releases.
- Inform media and conduct media briefings.
- Arrange for tours and other interviews or briefings that may be required.
- Obtain media information that may be useful to incident planning.
- Maintain current information summaries and/or displays on the incident and provide information on the status of the incident to assigned personnel.

LIAISON OFFICER

- Be a contact point for Agency Representatives.
- Maintain a list of assisting and cooperating agencies and Agency Representatives. Monitor check-in sheets daily to ensure that all Agency Representatives are identified.
- Assist in establishing and coordinating interagency contacts.
- Keep agencies supporting the incident aware of incident status.
- Monitor incident operations to identify current or potential inter-organizational problems.
- Participate in planning meetings, providing current resource status, including limitations and capability of assisting agency resources.
- Coordinate response resource needs for Natural Resource Damage Assessment and Restoration (NRDAR) activities with the Operations during oil and HAZMAT responses.
- Coordinate response resource needs for incident investigation activities with the Operations.
- Ensure that all required agency forms, reports and documents are completed prior to demobilization.
- Coordinate activities of visiting dignitaries.

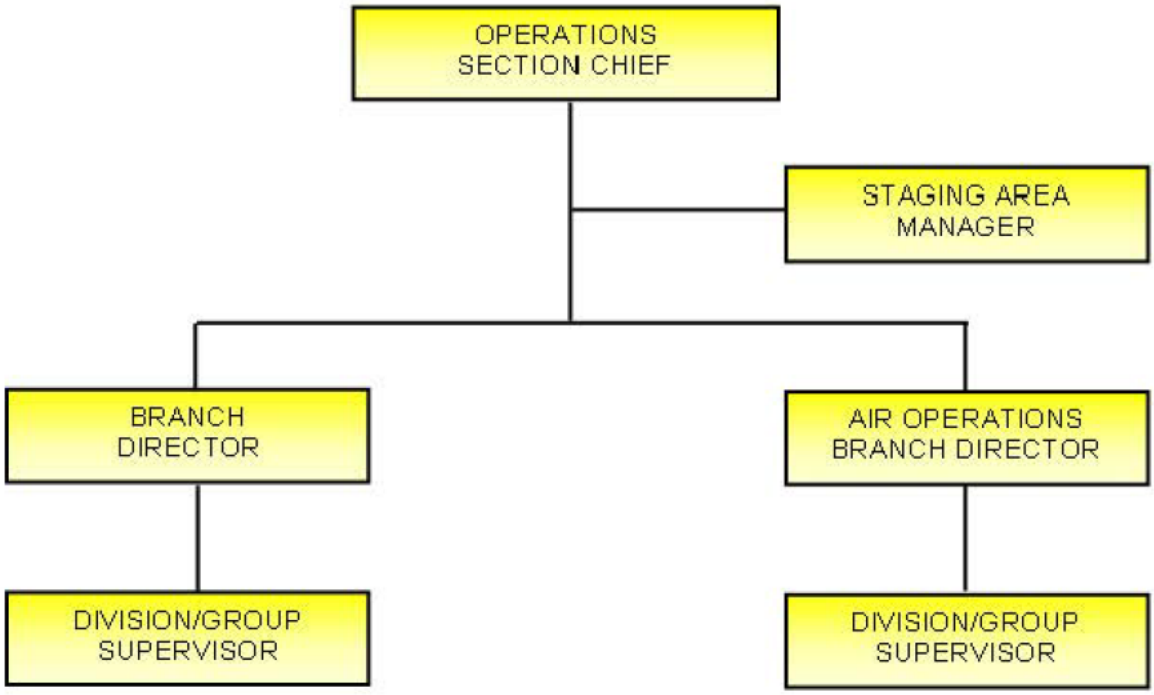
SAFETY OFFICER

- Participate in planning meetings.
- Identify hazardous situations associated with the incident.
- Review the Incident Action Plan for safety implications.
- Exercise emergency authority to stop and prevent unsafe acts.
- Investigate accidents that have occurred within the incident area.
- Review and approve the medical plan.
- Develop the Site Safety Plan and publish Site Safety Plan summary (ICS Form 208) as required.

LEGAL OFFICER

- Participate in planning meetings, if requested.
- Advise on legal issues relating to in-situ burning, use of dispersants, and other alternative response technologies.
- Advise on legal issues relating to differences between Natural Resource Damage Assessment Restoration (NRDAR) and response activities.
- Advise on legal issues relating to investigations.
- Advise on legal issues relating to finance and claims.
- Advise on legal issues relating to response.

OPERATIONS



OPERATIONS SECTION GENERAL FUNCTIONS

- Responsible for managing tactical operations at the incident site directed toward reducing the immediate hazard, saving lives and property, establishing situational control, and restoring normal operations.
- Directs and coordinates all incident tactical operations.
- Executes the Incident Action Plan.

OPERATIONS SECTION CHIEF

- Develop operations portion of Incident Action Plan.
- Brief and assign Operations Section personnel in accordance with the Incident Action Plan.
- Supervise Operations Section.
- Determine need and request additional resources.
- Review suggested list of resources to be released and initiate recommendation for release of resources.
- Assemble and disassemble strike teams assigned to the Operations Section.
- Report information about special activities, events, and occurrences to the Incident Commander.
- Respond to resource requests in support of National Resource Damage Assessment and Restoration activities.

BRANCH DIRECTOR

- Develop with subordinates alternatives for Branch control operations.
- Attend planning meetings at the request of the Operations.
- Review Assignment List (ICS Form 204-CG) for Divisions/Groups within the Branch. Modify lists based on effectiveness of current operations.
- Assign specific work tasks to Division/Group Supervisors.
- Supervise Branch operations.
- Resolve logistic problems reported by subordinates.
- Report to Operations when: the Incident Action Plan is to be modified; additional resources are needed; surplus resources are available; or hazardous situations or significant events occur.
- Approve accident and medical reports originating within the Branch.

DIVISION/GROUP SUPERVISOR

- Implement Incident Action Plan for Division/Group.
- Provide the Incident Action Plan to Strike Team Leaders, when available.
- Identify increments assigned to the Division/Group.
- Review Division/Group assignments and incident activities with subordinates and assign tasks.
- Ensure that the Incident Commander and/or Resources Unit is advised of all changes in the status of resources assigned to the Division/Group.
- Coordinate activities with adjacent Division/Group.
- Determine need for assistance on assigned tasks.
- Submit situation and resources status information to the Branch Director or the Operations.
- Report hazardous situations, special occurrences, or significant events (e.g., accidents, sickness, discovery of unanticipated sensitive resources) to the immediate supervisor.
- Ensure that assigned personnel and equipment get to and from assignments in a timely and orderly manner.
- Resolve logistics problems within the Division/Group.
- Participate in the development of Branch plans for the next operational period.

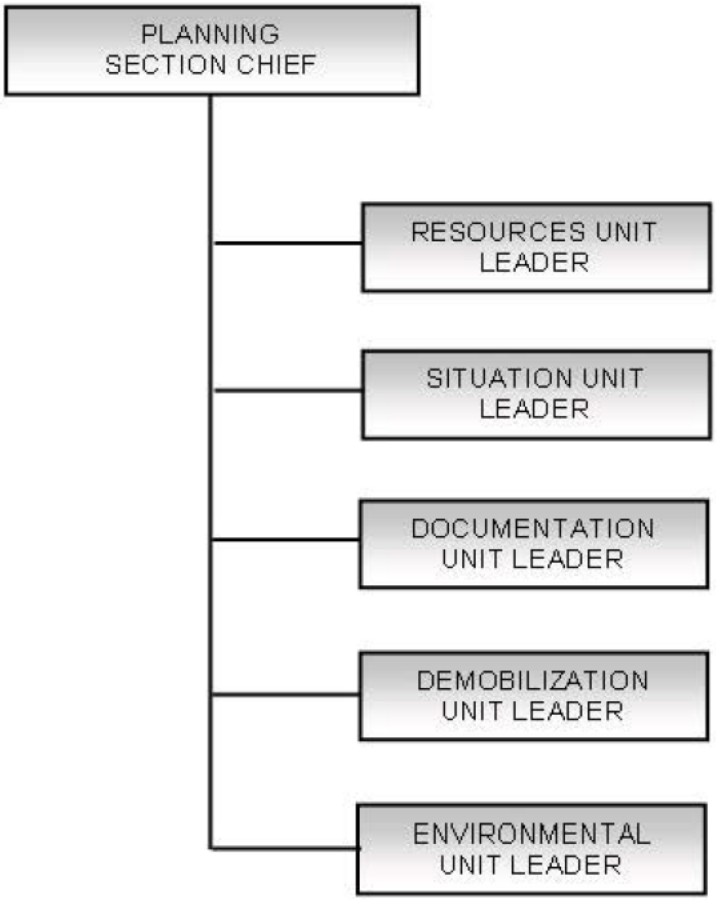
STAGING AREA MANAGER

- Establish Staging Area layout.
- Determine any support needs for equipment, feeding, sanitation and security.
- Establish check-in function as appropriate.
- Post areas for identification and traffic control.
- Request maintenance service for equipment at Staging Area as appropriate.
- Respond to request for resource assignments.
- Obtain and issue receipts for radio equipment and other supplies distributed and received at Staging Area.
- Determine required resource levels from the Operations.
- Advise the Operations when reserve levels reach minimums.
- Maintain and provide status to Resource Unit of all resources in Staging Area.
- Demobilize Staging Area in accordance with the Incident Demobilization Plan.

AIR OPERATIONS BRANCH DIRECTOR

- Organize preliminary air operations.
- Request declaration (or cancellation) of restricted air space
- Participate in preparation of the Incident Action Plan through the Operations. Insure that the air operations portion of the Incident Action Plan takes into consideration the Air Traffic Control requirements of assigned aircraft.
- Perform operational planning for air operations.
- Prepare and provide Air Operations Summary (ICS Form 220) to the Air Support Group and Fixed-Wing Bases.
- Determine coordination procedures for use by air organization with ground Branches, Divisions, or Groups.
- Coordinate with appropriate Operations Section personnel.
- Supervise all air operations activities associated with the incident.
- Evaluate helibase locations.
- Establish procedures for emergency reassignment of aircraft.
- Schedule approved flights of non-incident aircraft in the restricted air space area.
- Coordinate with the Operations Coordination Center (OCC) through normal channels on incident air operations activities.
- Inform the Air Tactical Group Supervisor of the air traffic situation external to the incident.
- Consider requests for non-tactical use of incident aircraft.
- Resolve conflicts concerning non-incident aircraft.
- Coordinate with Federal Aviation Administration.
- Update air operations plans.
- Report to the Operations on air operations activities.
- Report special incidents/accidents.
- Arrange for an accident investigation team when warranted.

PLANNING



PLANNING SECTION GENERAL FUNCTIONS

- Responsible for gathering, evaluating, and disseminating tactical information and intelligence critical to the incident.
- Maintaining incident documentation and providing documentation services.
- Preparing and documenting Incident Action Plans.
- Conducting long-range and/or contingency planning.
- Developing alternative strategies.
- Tracking resources assigned to the incident.
- Developing plans for waste disposal.
- Developing plans for demobilization.

PLANNING SECTION CHIEF

- Collect and process situation information about the incident.
- Supervise preparation of the Incident Action Plan.
- Provide input to the Incident Commander and the Operations in preparing the Incident Action Plan.
- Chair planning meetings and participate in other meetings as required. (Refer to Figure 4.5 "Operational Period Planning Cycle" for assistance.
- Reassign out-of-service personnel already on-site to Incident Command System organizational positions as appropriate.
- Establish information requirements and reporting schedules for Planning Section Units (e.g., Resources, Situation Units).
- Determine the need for any specialized resources in support of the incident.
- If requested, assemble and disassemble Strike Teams and Task Forces not assigned to Operations.
- Establish special information collection activities as necessary (e.g., weather, environmental, toxics, etc.).
- Assemble information on alternative strategies.
- Provide periodic predictions on incident potential.
- Report any significant changes in incident status.
- Compile and display incident status information.
- Oversee preparation and implementation of the Incident Demobilization Plan.
- Incorporate plans (e.g., Traffic, Medical, Communications, Site Safety) into the Incident Action Plan.

RESOURCES UNIT LEADER

- Establish the check-in function at incident locations.
- Prepare Organization Assignment List (ICS Form 203-CG) and Incident Organization (ICS Form 207-CG).
- Prepare appropriate parts of Assignment List (ICS Form 204).
- Prepare and maintain the Incident Command Post display (to include organization chart and resource allocation and deployment).
- Maintain and post the current status and location of all resources.
- Maintain master roster of all resources checked in at the incident.

SITUATION UNIT LEADER

- Begin collection and analysis of incident data as soon as possible.
- Prepare, post, or disseminate resource and situation status information as required, including special requests.
- Prepare periodic predictions or as requested by the Planning Section Chief.
- Prepare the Incident Status Summary (ICS Form 209-CG).
- Provide photographic services and maps if required.

DOCUMENTATION UNIT LEADER

- Set up work area; begin organization of incident files.
- Establish duplication service; respond to requests.
- File all official forms and reports.
- Review records for accuracy and completeness; inform appropriate units of errors or omissions.
- Provide incident documentation as requested.
- Store files for post-incident use.

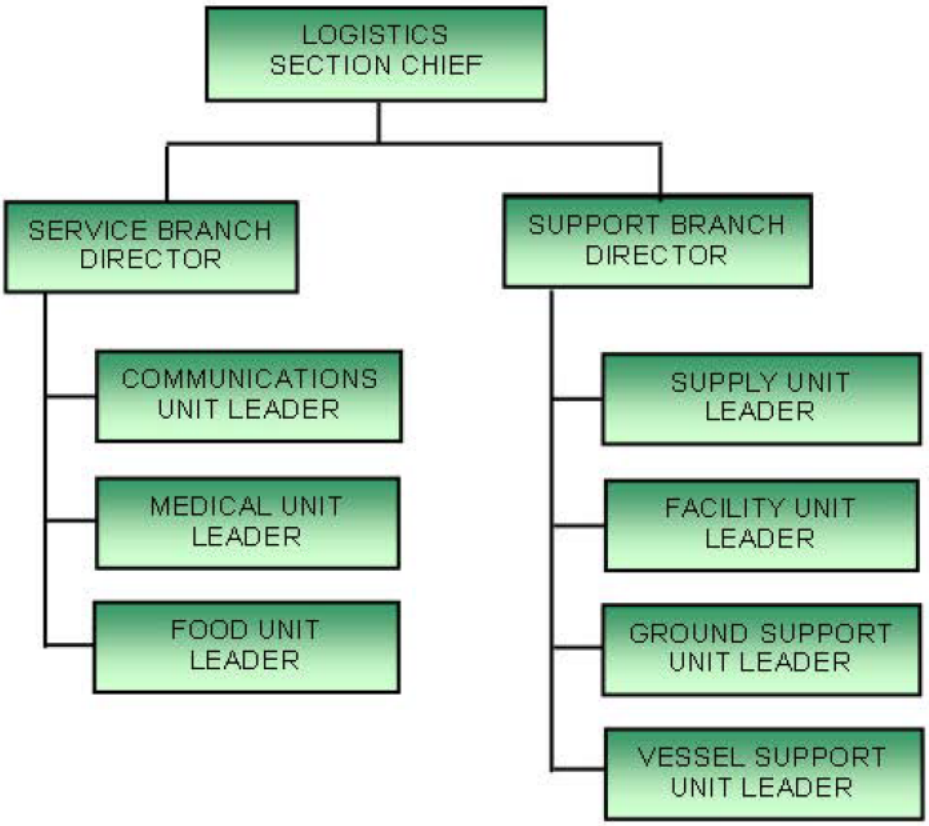
DEMOBILIZATION UNIT LEADER

- Participate in planning meetings as required.
- Review incident resource records to determine the likely size and extent of demobilization effort.
- Based on the above analysis, add additional personnel, workspace, and supplies as needed.
- Coordinate demobilization with Agency Representatives.
- Monitor the on-going Operations Section resource needs.
- Identify surplus resources and probable release time.
- Develop incident check-out function for all units.
- Evaluate logistics and transportation capabilities to support demobilization.
- Establish communications with off-incident facilities, as necessary.
- Develop an Incident Demobilization Plan detailing specific responsibilities and release priorities and procedures.
- Prepare appropriate directories (e.g., maps, instructions, etc.) for inclusion in the demobilization plan.
- Distribute demobilization plan (on and off-site).
- Provide status reports to appropriate requestors.
- Ensure that all Sections/Units understand their specific demobilization responsibilities.
- Supervise execution of the Incident Demobilization Plan.
- Brief the Planning Section Chief on demobilization progress.

ENVIRONMENTAL UNIT LEADER

- Participate in Planning Section meetings.
- Identify sensitive areas and recommend response priorities.
- Following consultation with natural resource trustees, provide input on wildlife protection strategies (e.g., removing oiled carcasses, pre-emptive capture, hazing, and/or capture and treatment).
- Determine the extent, fate and effects of contamination.
- Acquire, distribute and provide analysis of weather forecasts.
- Monitor the environmental consequences of cleanup actions.
- Develop shoreline cleanup and assessment plans. Identify the need for, and prepare any special advisories or orders.
- Identify the need for, and obtain, permits, consultations, and other authorizations including Endangered Species Act (ESA) provisions.
- Following consultation with the Federal OnScene Commander's Historical/Cultural Resources Technical Specialist identify and develop plans for protection of affected historical/cultural resources.
- Evaluate the opportunities to use various response technologies.
- Develop disposal plans.
- Develop a plan for collecting, transporting, and analyzing samples.

LOGISTICS



LOGISTICS SECTION GENERAL FUNCTIONS

- Responsible for all support requirements needed to facilitate effective and efficient incident management, including ordering resources from off-incident locations.
- Ordering, obtaining, maintaining, and accounting for essential personnel, equipment, and supplies.
- Providing communication planning and resources.
- Setting up food services.
- Setting up and maintaining incident facilities.
- Providing support transportation.
- Providing medical services to incident personnel.

LOGISTICS SECTION CHIEF

- Plan the organization of the Logistics Section.
- Assign work locations and preliminary work tasks to Section personnel.
- Notify the Resources Unit of the Logistics Section units activated including names and locations of assigned personnel.
- Assemble and brief Branch Directors and Unit Leaders.
- Participate in preparation of the Incident Action Plan.
- Identify service and support requirements for planned and expected operations.
- Provide input to and review the Communications Plan, Medical Plan and Traffic Plan.
- Coordinate and process requests for additional resources.
- Review the Incident Action Plan and estimate Section needs for the next operational period.
- Advise on current service and support capabilities.
- Prepare service and support elements of the Incident Action Plan.
- Estimate future service and support requirements.
- Receive Incident Demobilization Plan from Planning Section.
- Recommend release of Unit resources in conformity with Incident Demobilization Plan.
- Ensure the general welfare and safety of Logistics Section personnel.

SERVICE BRANCH DIRECTOR

- Determine the level of service required to support operations.
- Confirm dispatch of Branch personnel.
- Participate in planning meetings of Logistics Section personnel.
- Review the Incident Action Plan.
- Organize and prepare assignments for Service Branch personnel.
- Coordinate activities of Branch Units.
- Inform the Loigistic Section Chief of Branch activities.
- Resolve Service Branch problems.

COMMUNICATIONS UNIT LEADER

- Prepare and implement the Incident Radio Communications Plan (ICS Form 205-CG).
- Ensure the Incident Communications Center and the Message Center is established.
- Establish appropriate communications distribution/maintenance locations within the Base/Camp(s).
- Ensure communications systems are installed and tested.
- Ensure an equipment accountability system is established.
- Ensure personal portable radio equipment from cache is distributed per Incident Radio Communications Plan.
- Provide technical information as required on:
    - Adequacy of communications systems currently in operation.
    - Geographic limitation on communications systems.
    - Equipment capabilities/limitations.
    - Amount and types of equipment available.
    - Anticipated problems in the use of communications equipment.
- Supervise Communications Unit activities.
- Maintain records on all communications equipment as appropriate.
- Ensure equipment is tested and repaired.
- Recover equipment from Units being demobilized.

MEDICAL UNIT LEADER

- Participate in Logistics Section/Service Branch planning activities.
- Prepare the Medical Plan (ICS Form 206-CG).
- Prepare procedures for major medical emergency.
- Declare major emergency as appropriate.
- Respond to requests for medical aid, medical transportation, and medical supplies.
- Prepare and submit necessary documentation.

FOOD UNIT LEADER

- Determine food and water requirements.
- Determine the method of feeding to best fit each facility or situation.
- Obtain necessary equipment and supplies and establish cooking facilities.
- Ensure that well-balanced menus are provided.
- Order sufficient food and potable water from the Supply Unit.
- Maintain an inventory of food and water.
- Maintain food service areas, ensuring that all appropriate health and safety measures are being followed.
- Supervise caterers, cooks, and other Food Unit personnel as appropriate.

SUPPORT BRANCH DIRECTOR

- Determine initial support operations in coordination with the Loigistic Section Chief and Service Branch Director.
- Prepare initial organization and assignments for support operations.
- Assemble and brief Support Branch personnel.
- Determine if assigned Branch resources are sufficient.
- Maintain surveillance of assigned units work progress and inform the Loigistic Section Chief of their activities.
- Resolve problems associated with requests from the Operations Section.

SUPPLY UNIT LEADER

- Participate in Logistics Section/Support Branch planning activities.
- Determine the type and amount of supplies en route.
- Review the Incident Action Plan for information on operations of the Supply Unit.
- Develop and implement safety and security requirements.
- Order, receive, distribute, and store supplies and equipment.
- Receive and respond to requests for personnel, supplies, and equipment.
- Maintain an inventory of supplies and equipment.
- Service reusable equipment.
- Submit reports to the Support Branch Director.

FACILITY UNIT LEADER

- Review the Incident Action Plan.
- Participate in Logistics Section/Support Branch planning activities.
- Determine requirements for each facility, including the Incident Command Post (See Figure 2.6 for list of hotels).
- Prepare layouts of incident facilities.
- Notify Unit Leaders of facility layout.
- Activate incident facilities.
- Provide Base and Camp Managers and personnel to operate facilities.
- Provide sleeping facilities.
- Provide security services.
- Provide facility maintenance services (e.g., sanitation, lighting, clean up).
- Demobilize Base and Camp facilities.
- Maintain facility records.

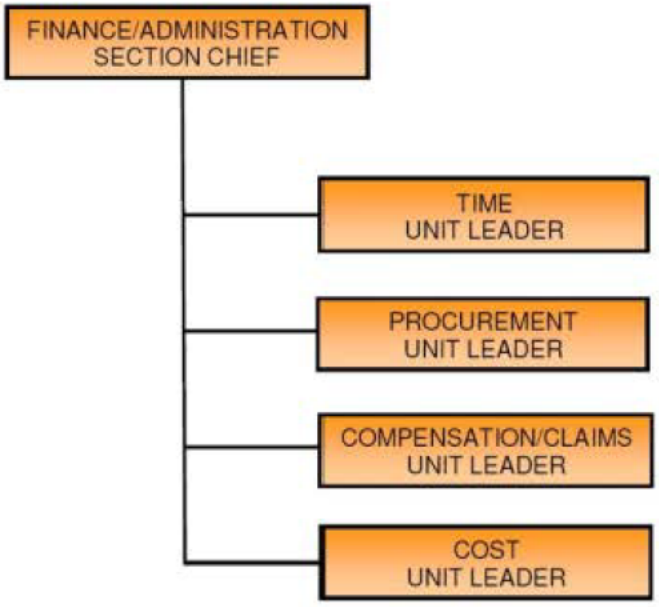
GROUND SUPPORT UNIT LEADER

- Participate in Support Branch/Logistics Section planning activities.
- Develop and implement the Traffic Plan.
- Support out-of-service resources.
- Notify the Resources Unit of all status changes on support and transportation vehicles.
- Arrange for and activate fueling, maintenance, and repair of ground resources.
- Maintain Support Vehicle Inventory and transportation vehicles (ICS Form 218).
- Provide transportation services, In accoradance with requests from the Loigistic Section Chief or Support Branch Director.
- Collect information on rented equipment.
- Requisition maintenance and repair supplies (e.g., fuel, spare parts).
- Maintain incident roads.
- Submit reports to Support Branch Director as directed.

VESSEL SUPPORT UNIT LEADER

- Participate in Support Branch/Logistics Section planning activities.
- Coordinate development of the Vessel Routing Plan.
- Coordinate vessel transportation assignments with the Protection and Recovery Branch or other sources of vessel transportation.
- Coordinate water-to-land transportation with the Ground Support Unit, as necessary.
- Maintain a prioritized list of transportation requirements that need to be scheduled with the transportation source.
- Support out-of-service vessel resources, as requested.
- Arrange for fueling, dockage, maintenance and repair of vessel resources, as requested.
- Maintain inventory of support and transportation vessels.

FINANCE/ADMINISTRATION



FINANCE/ADMINISTRATION SECTION GENERAL FUNCTIONS

- Responsible for all financial and cost analysis aspects of an incident. (Note: Not all incidents will require a separate Finance/Administration Section. In cases that require only one specific function (e.g., cost analysis), this service may be provided by a member of the Planning Section.)
- Administering any contract negotiation.
- Providing cost analysis as it pertains to the Incident Action Plan.
- Maintaining cost associated with the incident.
- Tracking personnel and equipment time.
- Addressing compensation for injury or damage to property issues.

FINANCE/ADMINISTRATION SECTION CHIEF

- Attend planning meetings as required.
- Manage all financial aspects of an incident.
- Provide financial and cost analysis information as requested.
- Gather pertinent information from briefings with responsible agencies.
- Develop an operating plan for the Finance/Administration Section; fill supply and support needs.
- Determine the need to set up and operate an incident commissary.
- Meet with assisting and cooperating agency representatives, as needed.
- Maintain daily contact with agency(s) administrative headquarters on Finance/ Administration matters.
- Ensure that all personnel time records are accurately completed and transmitted, according to policy.
- Provide financial input to demobilization planning.
- Ensure that all obligation documents initiated at the incident are properly prepared and completed.
- Brief administrative personnel on all incident-related financial issues needing attention or follow-up prior to leaving incident.

TIME UNIT LEADER

- Determine incident requirements for time recording function.
- Determine resource needs.
- Contact appropriate agency personnel/representatives.
- Ensure that daily personnel time recording documents are prepared and in compliance with policy.
- Establish time unit objectives.
- Maintain separate logs for overtime hours.
- Establish commissary operation on larger or long-term incidents as needed.
- Submit cost estimate data forms to the Cost Unit, as required.
- Maintain records security.
- Ensure that all records are current and complete prior to demobilization.
- Release time reports from assisting agency personnel to the respective Agency Representatives prior to demobilization.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

PROCUREMENT UNIT LEADER

- Review incident needs and any special procedures with Unit Leaders, as needed.
- Coordinate with local jurisdiction on plans and supply sources.
- Obtain the Incident Procurement Plan.
- Prepare and authorize contracts and land-use agreements.
- Draft memoranda of understanding as necessary.
- Establish contracts and agreements with supply vendors.
- Provide for coordination between the Ordering Manager, agency dispatch, and all other procurement organizations supporting the incident.
- Ensure that a system is in place that meets agency property management requirements. Ensure proper accounting for all new property.
- Interpret contracts and agreements; resolve disputes within delegated authority.
- Coordinate with the Compensation/Claims Unit for processing claims.
- Coordinate use of impress funds, as required.
- Complete final processing of contracts and send documents for payment.
- Coordinate cost data in contracts with the Cost Unit Leader.
- Brief the Finance/Administration Section Chief on current problems and recommendations, outstanding issues, and follow-up requirements.

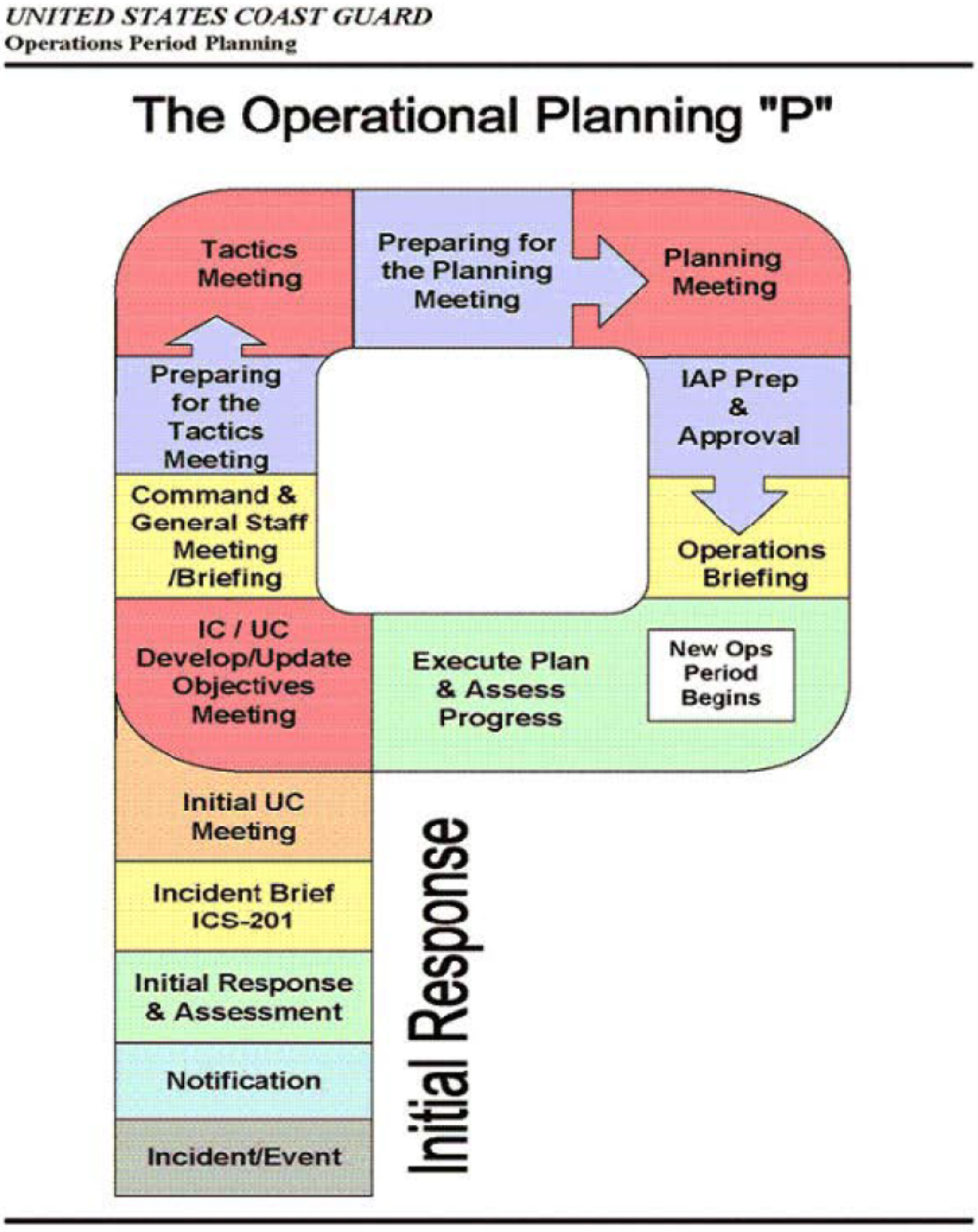
COMPENSATION/CLAIMS UNIT LEADER

- Establish contact with the incident Security Officer and Liason Officer (or Agency Representatives if no Liason Officer is assigned).
- Determine the need for Compensation for Injury and Claims Specialists and order personnel as needed.
- Establish a Compensation for Injury work area within or as close as possible to the Medical Unit.
- Review Medical Plan (ICS Form 206-CG).
- Ensure that Compensation/Claims Specialists have adequate workspace and supplies.
- Review and coordinate procedures for handling claims with the Procurement Unit.
- Brief the Compensation/Claims Specialists on incident activity.
- Periodically review logs and forms produced by the Compensation/Claims Specialists to ensure that they are complete, entries are timely and accurate and that they are in compliance with agency requirements and policies.
- Ensure that all Compensation for Injury and Claims logs and forms are complete and routed appropriately for post-incident processing prior to demobilization.
- Keep the Finance/Administration Section Chief briefed on Unit status and activity.
- Demobilize unit in accordance with the Incident Demobilization Plan.

COST UNIT LEADER

- Coordinate cost reporting procedures.
- Collect and record all cost data.
- Develop incident cost summaries.
- Prepare resources-use cost estimates for the Planning Section.
- Make cost-saving recommendations to the Finance/Administration Section Chief.
- Ensure all cost documents are accurately prepared.
- Maintain cumulative incident cost records.
- Complete all records prior to demobilization.
- Provide reports to the Finance/Administration Section Chief.

FIGURE 4.2



5.0 RESPONSE PLANNING

5.1 INCIDENT ACTION PLAN

Emergency response activities are planned and coordinated through the use of an Incident Action Plan (IAP), which is developed for each Operational Period of a response by the Initial Response Team. For small responses, an ICS 201 may be used as the IAP and, for all incidents, the ICS 201 will serve as the initial IAP.

For larger or more complex incidents, a more complete IAP will be necessary. These IAPs are generally created through the completion and compilation of several standard Incident Command System forms. These forms include, but are not limited to:

ICS FORM NUMBER	FORM TITLE	PREPARED BY
IAP Cover Sheet	ICS IAP Cover Sheet	**Planning Section** - Situation Unit Leader
201-CG	Incident Briefing	**Command Section** - Initial Response Incident Commander
202-CG	Incident Objectives	**Planning Section** - Planning Section Chief
203-CG	Organization Assignment List	**Planning Section** - Resources Unit Leader
204-CG	Assignment List	**Operations Section** - Chief & Resources Unit Leader
204a-CG	Assignment List Attachment	**Operations Section** - Chief & Resources Unit Leader
205-CG	Incident Radio Communication Plan	**Logistics Section** - Communication Unit Leader
205a-CG	Communications List	**Logistics Section** - Communication Unit Leader
206-CG	Medical Plan	**Logistics Section** - Medical Unit Leader
207-CG	Incident Organization	**Planning Section** - Resources Unit Leader
209-CG	Incident Status Summary	**Command Section** - Incident Commander
211-CG	Check-In List	
213-RR CG	Resource Request Message	
214-CG	Unit Log	**Planning Section** - Situation Unit Leader
215-CG	Operational Planning Worksheet	
215A-CG	Incident Action Plan Safety Analysis	
218	Support Vehicle Inventory	**Logi tic Section** Ground Support Unit Leader
220-CG	Air Operations Summary	**Operations Section** - Air Operations Branch Director
230-CG	Daily Meeting Schedule	
232-CG	Resources at Risk Summary	**Planning Section** - Situation Unit Leader
232a-CG	ACP Site Index	
233-CG	Incident Open Action Tracker	
234-CG	Work Analysis Matrix	
235-CG	Facility Needs Assessment Worksheet	
	Site Safety Plan	**Command Section** - Safety Officer
	Employee Certification Page	
	Media Statement	

Depending on the nature and severity of the emergency, additional documents may be included in the Incident Action Plan. These may include:

- Sensitivity Maps (Provided in Section 6)
- Waste Management and Disposal Plans (Provided in Appendix E)
- Plans for use of Alternative Technologies (Dispersant/In-situ Burning/ Bioremediation)
- Security Plans
- Decontamination Plans
- Traffic Plans

5.2 SITE SAFETY PLAN

Site Safety Plans (SSPs) are required by United States Occupational Safety and Health Administration (29 CFR 1910.120(b)(4)) for all hazardous waste operations. The Site Safety Plan should address all on-site operations and hazardous as well as on-site emergency procedures.

The Site Safety Plan is typically prepared by the Safety Officer and approved by the Incident Commander. All personnel must be familiar with the contents of the Site Safety Plan and the Site Safety Plan must be updated as conditions, operations and hazards associated with the response change.

1. Incident Name	2. Operational Period to be covered by IAP (Date/Time) From: To:	IAP COVER SHEET

3. Approved by:

FOSC

SOSC

RPIC

INCIDENT ACTION PLAN

The items checked below are included in this Incident Action Plan:

- ☐ ICS 202-OS (Response Objectives)
- ☐ ICS 203-OS (Organization List) – OR – ICS 207-OS (Organization Chart)
- ☐ ICS 204-OSs (Assignment Lists)
  One Copy each of any ICS 204-OS attachments:
  - ☐ Map
  - ☐ Weather forecast
  - ☐ Tides
  - ☐ Shoreline Cleanup Assessment Team Report for location
  - ☐ Previous day's progress, problems for location
- ☐ ICS 205-OS (Communications List)
- ☐ ICS 206-OS (Medical Plan)
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

4. Prepared by: Date/Time

IAP COVER SHEET June 2000

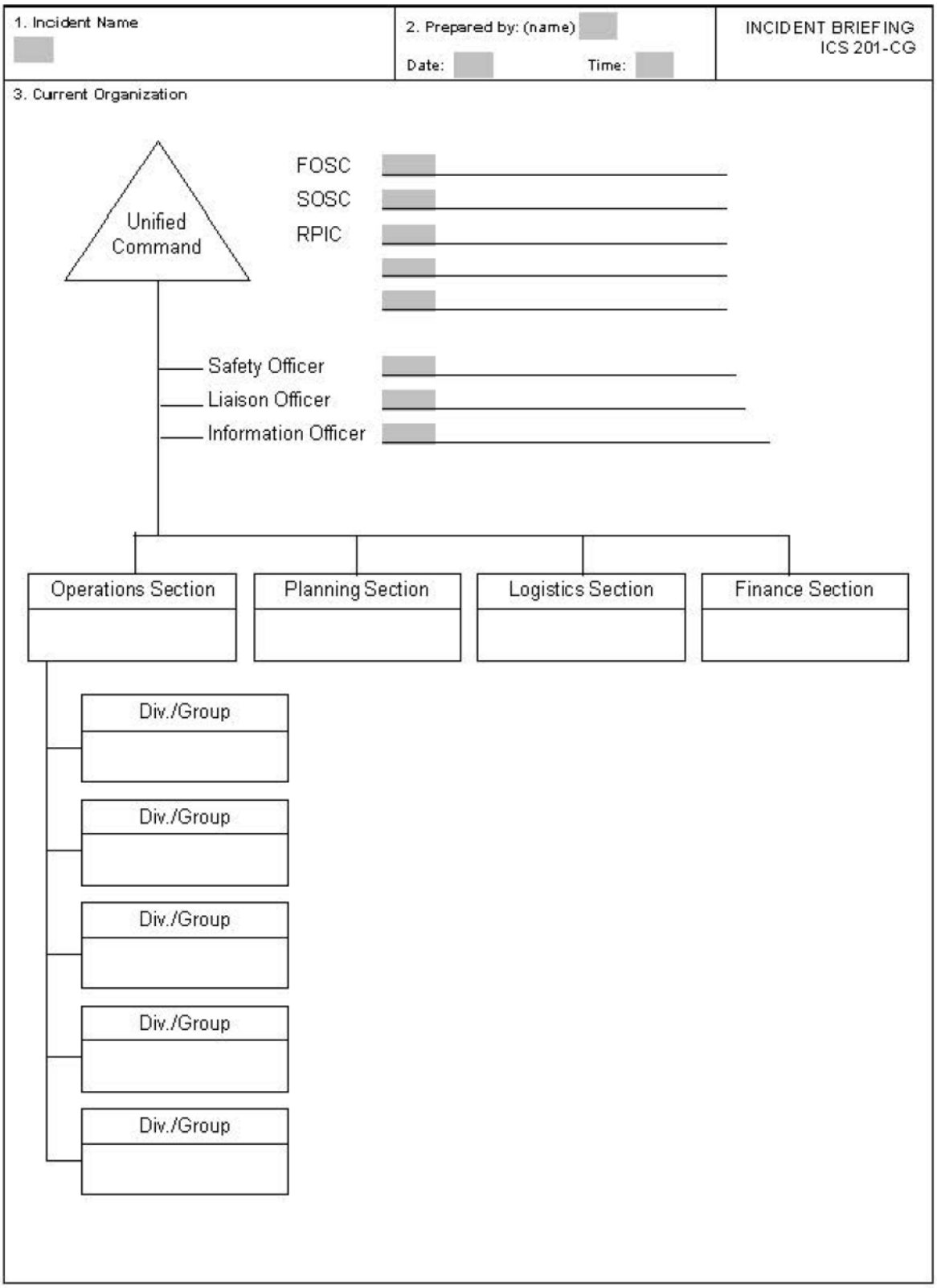
1. Incident Name	2. Prepared by: (name) Date: Time:	INCIDENT BRIEFING ICS 201-CG

3. Map/Sketch (include sketch, showing the total area of operations, the incident site/area, overflight results, trajectories, impacted shorelines, or other graphics depicting situational and response status)

4. Current Situation:

1. Incident Name	2. Prepared by: (name) Date: Time:	INCIDENT BRIEFING ICS 201-CG

5. Initial Response Objectives, Current Actions, Planned Actions



1. Incident Name	2. Prepared by: (name) Date: Time:	INCIDENT BRIEFING ICS 201-CG

7. Resources Summary Resource	Resource Identifier	Date Time Ordered	ETA	On-Scene (X)	NOTES: (Location/Assignment/Status)

1. Incident Name	2. Operational Period (Date/Time) From: To:	INCIDENT OBJECTIVES ICS 202-CG

3. Objective(s)

4. Operational Period Command Emphasis (Safety Message, Priorities, Key Decisions/Directions)

Approved Site Safety Plan Located at:

5. Prepared by: (Planning Section Chief) Date/Time

1. Incident Name	2. Operational Period (Date/Time) From: To:	ORGANIZATION ASSIGNMENT LIST ICS 203-CG

3. Incident Commander(s) and Staff		
Agency	IC	Deputy
Safety Officer:		
Information Officer:		
Liaison Officer:		

4. Agency Representatives	
Agency	Name

5. PLANNING/INTEL SECTION	
Chief	
Deputy	
Resources Unit	
Situation Unit	
Environmental Unit	
Documentation Unit	
Demobilization Unit	
Technical Specialists	

6. LOGISTICS SECTION	
Chief	
Deputy	
a. Support Branch	
Director	
Supply Unit	
Facilities Unit	
Vessel Support Unit	
Ground Support Unit	
b. Service Branch	
Director	
Communications Unit	
Medical Unit	
Food Unit	

7. OPERATION SECTION		
Chief		
Deputy		
Deputy		
Staging Area Manager		
Staging Area Manager		
Staging Area Manager		
a. Branch – Division Groups		
Branch Director		
Deputy		
Division Group		
Division Group		
Division Group		
Division/Group		
Division/Group		
b. Branch – Division/Groups		
Branch Director		
Deputy		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
c. Branch – Division/Groups		
Branch Director		
Deputy		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
Division/Group		
d. Air Operations Branch		
Air Operations Br. Dir		
Helicopter Coordinator		

8. FINANCE/ADMINISTRATION SECTION	
Chief	
Deputy	
Time Unit	
Procurement Unit	
Compensation/Claims Unit	
Cost Unit	

9. Prepared By: (Resources Unit)	Date/Time

NRC Incident No. #_____

1. Incident Name	2. Operational Period (Date / Time) From: To:	MEDICAL PLAN ICS 206-CG

3. Medical Aid Stations

Name	Location	Contact #	Paramedics On site (Y/N)

4. Transportation

Ambulance Service	Address	Contact #	Paramedics On board (Y/N)

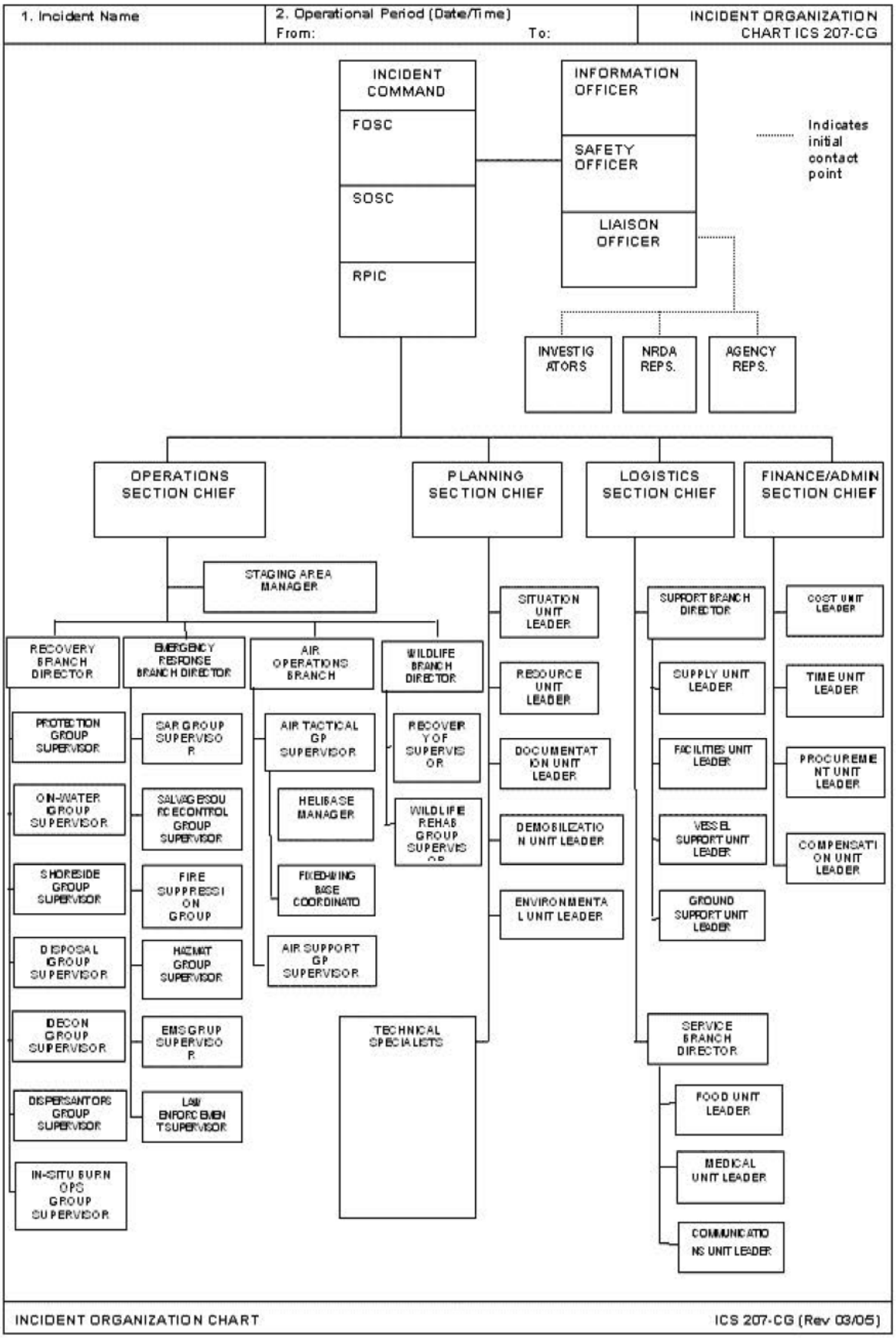
5. Hospitals

Hospital Name	Address	Contact #	Travel Time		Burn Ctr?	Heli-Pad?
			Air	Ground		

6. Special Medical Emergency Procedures

7. Prepared by: (Medical Unit Leader) Date/Time	8. Reviewed by: (Safety Officer) Date/Time

MEDICAL PLAN ICS 206-CG (Rev.07/04)



SITE SAFETY PLAN

I. General

☐ Pump Station ☐ Pipeline Spill ☐ Spill to Water ☐ Excavation ☐ Other: _____

Location: _____

Work to be performed: _____

Issuing Date: _____ Time: _____
Temperature: ___° Wind Direction: ___
Humidity: _____

II. Hazards to be Evaluated

Y	N		Y	N		SPECIFIC HAZARDS Y	N	
☐	☐	Oxygen Deficient/Enriched	☐	☐	Ingestion / Skin Absorption	☐	☐	Crude Oil
☐	☐	Flammable Atmosphere	☐	☐	Frostbite	☐	☐	Other* ( )
		(Explosion Fire)	☐	☐	Chemical/MSDS # _____			
☐	☐	Toxic Atmosphere: _____			(Must be attached)			
☐	☐	Boat Operations	☐	☐	Physical Hazard _____			
☐	☐	Confined Space	☐	☐	Traffic _____			
			☐	☐	Vapor Cloud			

III. Testing & Monitoring (Check required items)

Tests are to be performed in the order listed.

Y	N		Continuous		Frequency
☐	☐	Oxygen Level	☐Y	☐N	_____ every ____
☐	☐	LEL	☐Y	☐N	_____ every ____
☐	☐	Hydrogen Sulfide	☐Y	☐N	_____ every ____
☐	☐	Benzene	☐Y	☐N	_____ every ____
☐	☐	Total Hydrocarbons	☐Y	☐N	_____ every ____
☐	☐	Other: _____	☐Y	☐N	_____ every ____

ACCEPTABLE ENTRY CONDITIONS

19.5 – 23.0% ℓ air	< 19.5% or 23.0% ℓ air	< 16.0 or ≥ 23.5% ℓ air
< 10% ℓ air	≥ 10.0 but < 20.0% ℓ air	≥ 20.0% ℓ air
< 10 ppm	≥ 10 but < 100 ppm	≥ 100 ppm
< 5 ppm	≥ 5 but < 10 ppm	≥ 10 ppm
< 300 ppm	≥ 300 but < 750 ppm	≥ 750 ppm

IV. Required Personal Protective Equipment (Check for required use)

General	Eye Prot.	Respiratory Prot.	Hearing Prot.	Gloves	Footwear	Clothing
☐ Hard Hat	☐ Safety Glasses	☐ SCBA/Air Line w/Escape	☐ Ear Plugs	☐ Leather	☐ Steel-toes	☐ FR Coveralls
☐ Safety Harness	☐ Goggles	☐ Air Line	☐ Ear Muffs	☐ Rubber	☐ Rubber	☐ Tyvek
☐ PFD	☐ Face-shield	☐ Air Purifying (Full Mask)	☐ Combination	☐ Nitrile	☐ Hip-boots	☐ Coated Tyvek
	☐ Tinted Lens	Cartridge Type: ☐ OV	☐ Hepa-OVV	☐ PVC	☐ _____	☐ Saranyx
				☐ _____		☐ _____

Any other special PPE: _____

V. Emergency Information and Rescue Services

Emergency Contact Person: _____ Contact by: _____
Fire Department: _____ Contact by: _____
Ambulance: _____ Contact by: _____
Hospital: _____ Contact by: _____
Rescue Services: _____ Contact by: _____
(if not provided by above)

VI. Required Safety & Rescue Equipment (on site)

☐Lights	☐Fall Protection	☐First Aid Kit	☐Drinking Water	☐Fire Extinguisher	☐Tripod	☐Other:
☐Ladder	☐Retrieval Lines	☐Resuscitator	☐Communication Method			

VII. Comments or Special Work Procedures

VIII. Report All Injuries Immediately

IX. Control Measures

• Isolation & Lockout (identify items to be locked out)	• Ventilation ☐ Natural ☐ Mechanical
• Establish Work Zones when completed	Continuous ☐ No ☐ Yes
☐ Hot Zone = Red Ribbon	• Flagman / Watchman ☐
☐ Warm Zone = Yellow Ribbon	• Confined Space – Safety Watch ☐
☐ Cold Zone = Blue Ribbon	(See Exhibit "B" for Permit)
	• Evacuation Routes – (Identify on Map)
	☐ Air Horn – Emergency
	☐ Primary Route
	☐ Secondary Route

X. Monitoring Results	Zone								
	Time								
Oxygen	Level								
	By								
	Time								
LEL	Level								
	By								
	Time								
Hydrogen Sulfide	Level								
	By								
	Time								
Benzene	Level								
	By								
	Time								
VOC	Level								
	By								
	Time								
	Level								
	By								
	Time								
	Level								
	By								
	Time								
	Level								
	By								
	Time								
	Level								
	By								

Equipment: Type:_____ Mfger:_____ Calibration / Expiration: _____
Type:_____ Mfger:_____ Calibration / Expiration: _____

NRC Incident No. #:_____

1. Incident Name	2. Operational Period (Date/Time) From: To:	UNIT LOG ICS 214-CG
3. Unit Name/Designators	4. Unit Leader (Name and ICS Position)	

5. Personnel Assigned

NAME	ICS POSITION	HOME BASE

6. Activity Log (Continue on Reverse)

TIME	MAJOR EVENTS

7. Prepared by: Date/Time

UNIT LOG ICS 214-CG (Rev 6/05)

NRC Incident No. #____________________

1. Incident Name	2. Operational Period (Date/Time) From: To:	UNIT LOG (CONT.) ICS 214-CG

6. Activity Log (Continue on Reverse)

TIME	MAJOR EVENTS

7. Prepared by:	Date/Time:

UNIT LOG ICS 214-CG (Rev 6/05)

6.0 SPILL IMPACT CONSIDERATIONS

6.1 CRITICAL AREAS TO PROTECT

The critical areas to protect are classified as high, moderate, and low sensitivity to oil for non-coastal/inland environments. The Federal, State, and Local authorities will further clarify these categories at the time of the response. The categories are defined as follows:

HIGH SENSITIVITY

- Areas which are high in productivity, abundant in many species, extremely sensitive, difficult to rehabilitate, or inhabited by threatened/endangered species.
- Areas which consist of forested areas, brush/grassy areas, wooded lake areas, freshwater marshes, wildlife sanctuaries/refuges, and vegetated river/stream banks.

MODERATE SENSITIVITY

- Areas of moderate productivity, somewhat resistant to the effects of oiling.
- Areas which consist of degraded marsh habitat, clay/silt banks with vegetated margins, and gravel/cobble beaches.

LOW SENSITIVITY

- Areas of low productivity, man-made structures, and/or high energy.
- Areas which consist of gravel, sand, or clay material, barren/rocky riverbanks and lake edges, man-made structures, and concrete/compacted earthen drainage ditches.

6.2 ENVIRONMENTAL/SOCIO-ECONOMIC SENSITIVITIES

Environmental/Socio-economic sensitivities are of extreme importance when planning a response effort. The health and safety of the public and the environment, as well as the protection of the various socio-economic sensitivities, must be promptly addressed in order to mitigate the extent of damage and minimize the cost of the clean-up effort.

The Company will explore, where appropriate, equivalent environmental protection systems, methods, devices, or technologies that maintain or may be less damaging to the character of heritage resources or archeological sites. If a release from the pipeline impacts a heritage resource, the Company will respond as outlined in Section 3.0, report to the appropriate authority prescribed by law, cleanup and restore the area as required by regulation, and conduct such sampling, analyses, or associated monitoring during and after restoration.

All environmental/socio-economic sensitivities are worthy of protection, but must be prioritized during a response effort. When making decisions on which areas to designate as collection areas and which to protect, the following sources may be consulted:

- U.S. Fish and Wildlife Service and related state agencies
- Applicable Area Contingency Plans
- Other industry and private experts

The environmental and socio-economic sensitivities in the vicinity of the Pipeline have been broken down into specific categories and identified in this Section. To further clarify the location of the sensitive areas of concern, references to published Area Contingency Plans and Environmental Sensitivity Maps are also provided in this section.

6.3 FISHERIES AND WILDLIFE PROTECTION

The Company will work with Federal, State, and local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill, as necessary. Oversight of the Company's wildlife preservation activities and coordination with Federal, State, and Local agencies during an oil spill is the responsibility of the Incident Commander.

Protecting fish habitat (e.g. spawning and rearing grounds) is important to both consumers and commercial fisheries. Beyond typical response strategies, other options could include moving floating facilities, temporarily sinking facilities using cages designed for this purpose, temporary suspension of water intakes, or closing sluice gates to isolate the facilities from contamination.

Special consideration should be given to the protection and rehabilitation of endangered species and other wildlife and their habitat in the event of an oil spill and subsequent response. Jurisdictional authorities should be notified and worked with closely on all response/clean-up actions related to wildlife protection and rehabilitation. Laws with significant penalties are in place to ensure appropriate protection of these species.

Wildlife Rescue

The Company will work with Federal, Province/State, and Local agency personnel to provide labor and transportation to retrieve, clean, and rehabilitate wildlife affected by an oil spill, as the situation demands.

The following are items which should be considered for wildlife rescue and rehabilitation during a spill response:

- Bird relocation can be accomplished using a variety of deterrents, encouraging birds to avoid areas of spilled oil. Bird relocation can be accomplished by utilizing deterrent methods including:
  - Use of visual stimuli, such as inflatable bodies, owls, stationary figures, or helium balloons, etc.
  - Use of auditory stimuli, such as propane cannons, recorded sounds, or shell crackers.
  - Use of herding with aircraft, boats, vehicles, or people (as appropriate). Use of capture and relocation.

Search and Rescue - Points to consider

- **The Company's involvement should be limited to offering assistance as needed or requested by the agencies.**
- Prior to initiating any organized search and rescue plan, **authorization must be obtained from the appropriate Federal/State agency.**
- **Initial search and rescue efforts, if needed, should be left up to the appropriate agencies.** They have the personnel, equipment, and training to immediately begin capturing contaminated wildlife.
- With or without authorization, it must be anticipated that volunteer citizens will aid distressed/contaminated wildlife on their own. It is important to communicate that it may be illegal to handle wildlife without express authority from appropriate agencies. Provisions should be made to support an appropriate rehabilitator; however, **no support should be given to any unauthorized volunteer rescue efforts.**
- The regulatory agencies and response personnel should be provided the name and location of a qualified rehabilitator in the event contaminated wildlife is captured.
- Resources and contacts that can assist with wildlife rescue and rehabilitation are provided in Section 2.0. This list includes:
  - Outside rehabilitation organizations
  - Local regulatory agencies
  - Other resources

6.4 STAGING AREAS

When establishing personnel and equipment staging areas for a response to a Pipeline discharge, the following criteria should be evaluated:

- Access to waterborne equipment launching facilities and/or land equipment.
- Access to open space for staging/deployment of heavy equipment and personnel.
- Access to public services utilities (electricity, potable water, public phone, restroom and washroom facilities, etc.).
- Access to the environmental and socio-economically sensitive areas which are projected for impact.

6.5 CONTAINMENT AND RECOVERY OF SPILLED PRODUCT

General descriptions of various specific response techniques that may be applied during a response effort are discussed below. Company responders are free to use all or any combination of these methods as incident conditions require, provided they meet the appropriate safety standards and other requirements relative to the situation encountered. Data was obtained from reports, manuals and pamphlets prepared by the American Petroleum Institute, Environmental Protection Agency, and the United States Coast Guard. The most effective cleanup of a product spill will result from an integrated combination of clean-up methods. Each operation should complement and assist related operations and not merely transfer spillage problems to areas where they could be more difficult to handle.

The spill should be assessed as soon as possible to determine the source, extent and location of travel. Terrain and other physical conditions downgradient of the spill site will determine the methods of control at a point in advance of the moving product. Often, the bulk of a spill can be contained at a single location or a few key locations in the immediate vicinity of the source point. When possible, the execution of this type of initial containment strategy helps confine a spill to a relatively limited area.

Spill on Land (Soil Surfaces)

- **Confinement Methods**

  Product can be trapped in ditches and gullies by earth dams. Where excavating machinery is available, dams can be bulldozed to contain lakes of product. Dams, small and large, should be effectively employed to protect priority areas such as inlets to drains, sewers, ducts and watercourses. These can be constructed of earth, sandbags, absorbents, or any other effective method. If time does not permit a large dam, many small ones can be made, each one holding a portion of the spill as it advances. The terrain will dictate the placement of the dams. If the spill is minor, natural dams or earth absorption will usually stop the product before it advances a significant distance. Cleanup is the main concern in such situations.

  In situations where vapors from a spill present a clear and present danger to property or life (possible ignition because of passing automobiles, nearby houses, or work vehicles approaching the area), spraying the surface of the spill with dispersant will greatly reduce the release of additional vapors from the product. This method is especially adapted to gasoline spills on soil surfaces.

  Prior to the use of dispersant agents, ensure that permission has been granted by government authorities and local landowner. Local government authorities to be contacted may include city council, county board of commissioners, city or county fire chiefs, the county forestry commission or firetower, and the local environmental protection agency. In seeking permission from these authorities, be prepared to convince them that adequate safety precautions have been and will be taken during the operation. Regional Response Teams can only give approval for use of dispersant agents.

- **Removal Methods**

  The recovery and removal of free product from soil surfaces is a difficult job. The best approaches at present seem to be:

  - Removal with suction equipment to tank truck if concentrated in volumes large enough to be picked up. Channels can be formed to drain pools of product into storage pits. The suction equipment can then be used.
  - Small pockets may have to be dipped up by hand.

Spill on Small to Medium Size Streams (Fast-Flowing Creeks)

- **Confinement Methods**

  The techniques used for product containment on fast-flowing shallow streams are quite different from the ones used on lakes, ponds, or other still bodies of water. The containment and removal processes require a calm stretch of water to allow the product to separate onto the surface of the water. If a calm stretch of water does not exist naturally, a deep slow-moving area should be created by damming. The dam can be constructed by using sandbags, planks or earth. If a dam is required, it should be situated at an accessible point where the stream has high enough banks. The dam should be constructed soundly and reinforced to support the product and water pressure.

  - Underflow dam - The underflow dam is one method that can be used, especially on small creeks. The water is released at the bottom, of the dam using a pipe or pipes which are laid during construction of the dam. The flow rate through the pipe must be sufficient to keep the dam from overflowing. One method is to lay the pipe at an angle through the dam (while dam is being constructed) so that the height of the downstream end of the pipe will determine the height the water will rise behind the dam.

  - Overflow dam - Another method of containment is the overflow type dam. The dam is constructed so that water flows over the dam, but a deep pool is created which slows the surface velocity of the water. Therefore, the condition of a calm stretch of water is met. The overflow dam may be used where larger flow rates (medium size creeks) of water are involved.

    With this type dam, a separate barrier (floating or stationary boom) must be placed across the pool created by the dam. The separate barrier arrests the surface layer of product. At the same time, the water is flowing under the barrier and over the top of the dam. The barrier should be placed at an angle of 45 % across the pool to decrease the effective water velocity beneath it. Also, it helps to concentrate the product at the bank and not all along the barrier. A second barrier should be placed approximately 10 to 15 feet downstream of the first one as a secondary back-up.

    The stationary boom type barrier should be made of wood planks or other suitable material. The stationary boom should be soundly constructed and sealed against the bank. The ends of the planks can be buried in the banks of the stream and timber stakes driven into the stream bed for support as needed. The necessary length of the boom will be approximately 1-1/2 times the width of the waterway.

    The plank boom should extend six to eight inches deep into the water and about two inches or higher above the water level. If the increase in velocity under the stationary boom is causing release of trapped product, it should be moved upward slightly. At no time should barrier be immersed more than 20% of the depth of the pool at the barrier location; that is, if the pool created by damming is three feet deep, do not exceed an immersion depth of seven inches with the barrier at the position the barrier is installed.

Another method used with the underflow dam is having the pipe or pipes sized to carry only a portion of the flow needed. The pipe would be placed at the bottom of the dam and level with the creek bed. The remaining flow of the creek could be siphoned or preferably pumped around the dam from a point away from the dam and from the deepest portion of the pool. The pumping or siphoning can be controlled to maintain the desired water level at the dam. The key is the removal of water through or around the dam at the lowest point in the basin. This prevents the oil from escaping with the released water.

A floating boom can be used in place of the stationary type if the created pool's size (bank to bank) and depth will permit. Since changing the depth and/or length of a standard floating boom in a small stream is difficult, the use of the stationary type permits adjustments to be made in depth to provide for a better separation of product and water. The advantages of using a floating boom are the speed of deployment and the fact that there is no need for additional support as with the stationary boom.

- Multiple Impoundments - Since emergency built dams (either underflow or overflow) are seldom perfect, a series of dams is usually required. The first one or two will trap the bulk and the ones that are downstream will trap the last traces of product. Precautions should be taken to ensure that the foundations of emergency dams are not washed away by the released water. If earth is used to construct an overflow dam, a layer of earth-filled bags should be placed on top of the dam so erosion will not take place.

- **Removal Methods**

Once the containment dams are constructed, the problem or removal of the product from the water surface should be the prime consideration. The removal must be continuous or else build-up of product behind the dams or booms might lead to product escaping the traps.

The type of removal procedures used depends largely on the amount of product being trapped in a given span of time, if the amount of product moving down the stream is of sufficient quantity, the first dam or fixed boom would quite possibly trap enough for the floating skimmer to work efficiently. The skimmer will pump the product and possibly some water to a tank truck or other holding tank. Separated water may be released from the bottom of the tank truck if it becomes necessary. The absorbents could then be used at downstream dams or booms. It is inadvisable to place an absorbent in the stream prior to or at the first dam in anticipation of the arriving product. Let the product accumulate at the first dam and use the floating skimmer to recover the product.

Disposal of gross amount of product-soaked absorbent would not then be a problem. Follow directions on use of each absorbent. Some are designed to be placed on water before product arrives; others are intended only to be placed on the product after it accumulates on the water. Plastic sheets should be used to place the product- soaked absorbent on as it is hand skimmed from the water. Alternatively, the material may be placed in drums or lined roll-off boxes.

The containment and removal of spilled product on small to medium fast-flowing streams might require a combination of underflow or overflow dams, fixed booms, skimmers, and absorbents, to ensure a complete cleanup.

Spill on Stream which Flows into Lake or Pond

In certain locations where streams (small and large ones) flow into lakes or ponds at relatively short distances, it is conceivable that a spill could reach the lake before containment and recovery operations are set up. If time permits for containment operations to be set up on the stream in question, it then would be handled as described above depending upon the stream size involved.

However, if product in the stream is near the lake site or if product is flowing into the lake with a significant amount yet to arrive, a different containment should be employed.

- **Confinement Methods**

  Product on a stream flowing into a lake should be boomed as close to the entrance as possible. The boom should be positioned on the lake at an angle to the residential stream current so as to direct the surface water to a slower moving area. The area where the product is being deflected should be enclosed by booms to contain it. An additional boom for sweeping the product to the bank will be required. This area of containment should not have a current velocity of more than 1/2 knot (0.8 ft./sec.), preferably less.

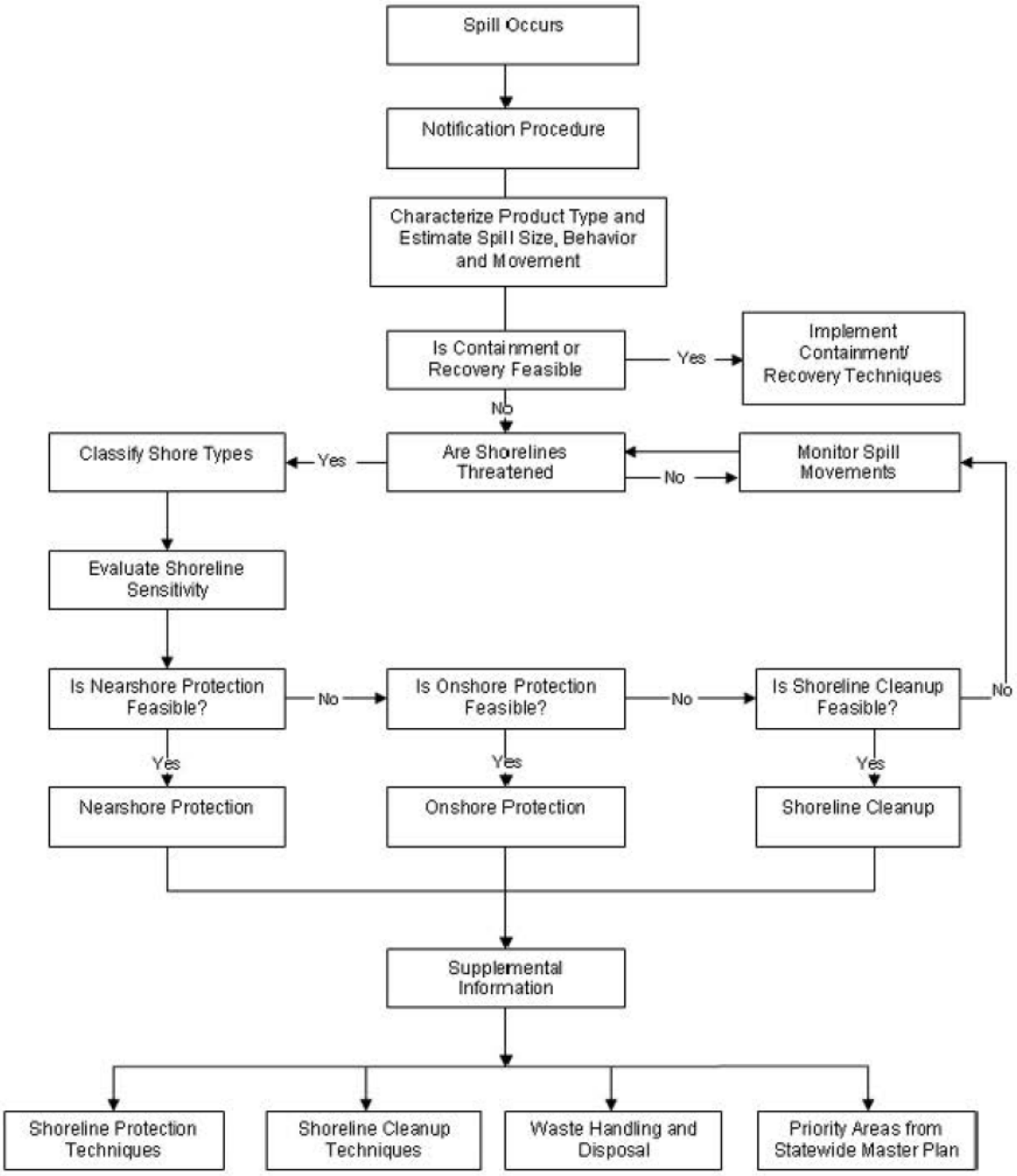
- **Removal Methods**

  The removal of product from the lake or pond's surface would be handled as described earlier.

  For sizable releases, collected product will usually be pumped into tank trucks and transported to a storage facility. Tank trucks are available at several locations throughout.

FIGURE 6.1

ON-WATER RESPONSE FLOWCHART



6.6 VULNERABILITY ANALYSIS

The thorough examination of published Area Contingency Plans (ACPs) was conducted to identify sensitive areas in all the response zones.

The Environmental Sensitivity Maps located in Figure 6.2 identify sensitive areas along the Pipeline. The appropriate Area Contingency Plan maps are also included to provide more detailed information on sensitivities and possible potential response options.

6.7 ALTERNATIVE RESPONSE STRATEGIES

There are no pre-approved response options for inland spills within the United States. Any plans to use dispersants or in situ burn by the Company will be submitted to the Federal On-Scene Coordinator for Regional Response Team approval prior to such action being taken.

FIGURE 6.2

ENVIRONMENTAL SENSITIVITY MAPS

Remember these maps are to be utilized as guidelines only. During a real response effort Federal, State, and local agencies should be contacted to provide further assistance in the proper identification and protection of the various environmental and socio-economic sensitive areas

Jefferson County		
Map Index	Sabine Lake Area Index Map	Beaumont East
Beaumont East Map No. 4	Beaumont East Base Map	Site Specific Map No. 4
Terry ACP	Terry Map No. 3	Terry Base Map
Site Specific Map No. 6	Port Acres	Port Acres No. 7
Port Arthur North ACP	Port Arthur North Map No. 6	Port Arthur North Base Map
Site Specific Map No. 6 Polygons	Alligator Hole Marsh	Alligator Hole Marsh Map No. 11
Big Hill Bayou	Big Hill Bayou Map No. 10	Big Hill Bayou Base Map
bighillbayou_site079	bighillbayou_site080	bighillbayou_site081
bighillbayou_site103	bighillbayou_site104	bighillbayou_site105
Port Arthur 30 Inch Line		

FIGURE 6.3

ENDANGERED/THREATENED SPECIES LISTING

Texas		
Animals		
Status	**Species Name**	**Scientific Name**
E	Amphipod, Peck's cave	*Stygobromus (=Stygonectes) pecki*
E	Bat, Mexican long-nosed	*Leptonycteris nivalis*
T	Bear, Louisiana black	*Ursus americanus luteolus*
E	Beetle, American burying	*Nicrophorus americanus*
E	Beetle, Coffin Cave mold	*Batrisodes texanus*
E	Beetle, Comal Springs dryopid	*Stygoparnus comalensis*
E	Beetle, Comal Springs riffle	*Heterelmis comalensis*
E	Beetle, Helotes mold	*Batrisodes venyivi*
E	Beetle, Kretschmarr Cave mold	*Texamaurops reddelli*
E	Beetle, Tooth Cave ground	*Rhadine persephone*
E	Crane, whooping except where EXPN	*Grus americana*
E	Curlew, Eskimo	*Numenius borealis*
E	Darter, fountain	*Etheostoma fonticola*
E	Falcon, northern aplomado	*Falco femoralis septentrionalis*
E	Flycatcher, southwestern willow	*Empidonax traillii extimus*
E	Gambusia, Big Bend	*Gambusia gaigei*
E	Gambusia, Clear Creek	*Gambusia heterochir*
E	Gambusia, Pecos	*Gambusia nobilis*
E	Gambusia, San Marcos	*Gambusia georgei*
E	Ground beetle, [unnamed]	*Rhadine exilis*
E	Ground beetle, [unnamed]	*Rhadine infernalis*
E	Harvestman, Bee Creek Cave	*Texella reddelli*
E	Harvestman, Bone Cave	*Texella reyesi*
E	Harvestman, Cokendolpher Cave	*Texella cokendolpheri*
E	Jaguar	*Panthera onca*
E	Jaguarundi, Gulf Coast	*Herpailurus (=Felis) yagouaroundi cacomitli*
E	Manatee, West Indian	*Trichechus manatus*

Texas (Cont'd)		
Animals		
Status	**Species Name**	**Scientific Name**
E	Margay Mexico southward	*Leopardus (=Felis) wiedii*
E	Meshweaver, Braken Bat Cave	*Cicurina venii*
E	Meshweaver, Government Canyon Bat Cave	*Cicurina vespera*
E	Meshweaver, Madla's Cave	*Cicurina madla*
E	Meshweaver, Robber Baron Cave	*Cicurina baronia*
T	Minnow, Devils River	*Dionda diaboli*
E	Minnow, Rio Grande silvery	*Hybognathus amarus*
E	Ocelot	*Leopardus (=Felis) pardalis*
T	Owl, Mexican spotted	*Strix occidentalis lucida*
E	Pelican, brown except U.S. Atlantic coast, FL, AL	*Pelecanus occidentalis*
T	Plover, piping except Great Lakes watershed	*Charadrius melodus*
E	Prairie-chicken, Attwater's greater	*Tympanuchus cupido attwateri*
E	Pseudoscorpion, Tooth Cave	*Tartarocreagris texana*
E	Pupfish, Comanche Springs	*Cyprinodon elegans*
E	Pupfish, Leon Springs	*Cyprinodon bovinus*
E	Salamander, Barton Springs	*Eurycea sosorum*
T	Salamander, San Marcos	*Eurycea nana*
E	Salamander, Texas blind	*Typhlomolge rathbuni*
E	Sawfish, smalltooth	*Pristis pectinata*
T	Sea turtle, green except where endangered	*Chelonia mydas*
E	Sea turtle, hawksbill	*Eretmochelys imbricata*
E	Sea turtle, Kemp's ridley	*Lepidochelys kempii*
E	Sea turtle, leatherback	*Dermochelys coriacea*
T	Sea turtle, loggerhead	*Caretta caretta*
T	Shiner, Arkansas River Arkansas R. Basin	*Notropis girardi*
E	Snail, Pecos assiminea	*Assiminea pecos*
T	Snake, Concho water	*Nerodia paucimaculata*

Texas (Cont'd)		
Animals		
Status	**Species Name**	**Scientific Name**
E	Spider, Government Canyon Bat Cave	*Neoleptoneta microps*
E	Spider, Tooth Cave	*Leptoneta myopica*
E	Tern, least interior pop.	*Sterna antillarum*
E	Toad, Houston	*Bufo houstonensis*
E	Vireo, black-capped	*Vireo atricapilla*
E	Warbler (=wood), golden-cheeked	*Dendroica chrysoparia*
E	Whale, finback	*Balaenoptera physalus*
E	Whale, humpback	*Megaptera novaeangliae*
E	Wolf, gray Lower 48 States, except where delisted and where EXPN. Mexico.	*Canis lupus*
E	Wolf, red except where EXPN	*Canis rufus*
E	Woodpecker, ivory-billed	*Campephilus principalis*
E	Woodpecker, red-cockaded	*Picoides borealis*

Texas		
Plants		
Status	**Species Name**	**Scientific Name**
E	Ambrosia, south Texas	*Ambrosia cheiranthifolia*
E	Ayenia, Texas	*Ayenia limitaris*
E	Bladderpod, white	*Lesquerella pallida*
E	Bladderpod, Zapata	*Lesquerella thamnophila*
E	Cactus, black lace	*Echinocereus reichenbachii var. albertii*
T	Cactus, Chisos Mountain hedgehog	*Echinocereus chisoensis var. chisoensis*
T	Cactus, Lloyd's Mariposa	*Echinomastus mariposensis*
E	Cactus, Nellie cory	*Coryphantha minima*
E	Cactus, Sneed pincushion	*Coryphantha sneedii var. sneedii*
E	Cactus, star	*Astrophytum asterias*
E	Cactus, Tobusch fishhook	*Ancistrocactus tobuschii*
E	Cat's-eye, Terlingua Creek	*Cryptantha crassipes*
T	Cory cactus, bunched	*Coryphantha ramillosa*
E	Dawn-flower, Texas prairie	*Hymenoxys texana*
E	Dogweed, ashy	*Thymophylla tephroleuca*
E	Frankenia, Johnston's	*Frankenia johnstonii*
E	Ladies'-tresses, Navasota	*Spiranthes parksii*
E	Manioc, Walker's	*Manihot walkerae*
T	Oak, Hinckley	*Quercus hinckleyi*
E	Phlox, Texas trailing	*Phlox nivalis ssp. texensis*
E	Pitaya, Davis' green	*Echinocereus viridiflorus var. davisii*
E	Pondweed, Little Aguja (=Creek)	*Potamogeton clystocarpus*
E	Poppy-mallow, Texas	*Callirhoe scabriuscula*
E	Rush-pea, slender	*Hoffmannseggia tenella*
E	Sand-verbena, large-fruited	*Abronia macrocarpa*
E	Snowbells, Texas	*Styrax texanus*
T	Sunflower, Pecos (=puzzle, =paradox)	*Helianthus paradoxus*

Texas (Cont'd)		
Plants (Cont'd)		
Status	**Species Name**	**Scientific Name**
E	Wild-rice, Texas	*Zizania texana*

APPENDIX A

RESPONSE EQUIPMENT/RESOURCES

A.1 COMPANY OWNED RESPONSE EQUIPMENT

Valero VTDC relies on its contracted OSRO's for all equipment and response needs and other clean-up contractors that are capable of responding to all discharges along the Pipeline. Figure A.2 lists the contracted Oil Spill Removal Organizations.

The Qualified Individual has the authority to activate other private contractors, experts, and consultants as the situation demands.

All Pipeline personnel who might be involved in an oil spill have been informed that detergents or other surfactants are prohibited from being used on an oil spill in the water and that dispersants can only be used with the approval of the US Regional Response Team, the interagency group composed of Federal and State agency representatives that coordinates oil spill response.

A.2 OTHER COMPANY RESOURCES

Additional Company spill response equipment and manpower resources are not available to supplement the response operation, however third party contractors will be activated on an as needed basis.

A.3 CONTRACT RESOURCES

In the event of a discharge which is beyond the initial response capabilities of the Local Response Team, contract manpower and equipment resources can be obtained through Oil Spill Removal Organization(s) (OSRO). These OSROs can provide manpower and containment/clean-up equipment for the response operation.

The resources will be secured from a Company approved contractor. Management will typically handle notification/implementation of these resources. Figure A.2 provides a quick reference to the Oil Spill Removal Organizations and details their response capability and estimated response times. **Telephone reference is provided in Figure 2.5.** *(Note: The Company will ensure that each OSRO has a comprehensive maintenance program and applicable training / drills programs in place at contract renewal.)*

A.4 COOPERATIVE/MUTUAL AID RESOURCES

Valero will not utilize Cooperative for the response operations.

A.5 VOLUNTEERS

Volunteers will not be utilized by the Company for the response operations.

A.6 COMMUNICATIONS

Effective and efficient communications systems are essential for emergency response at every level. The communications system will be utilized to gather information and current status reports as well as to provide coordination and direction to widely separated work groups involved in search, containment/diversion, repair, traffic control, public control or evacuation, and restoration. (Note: All communication equipment used within an area that may potentially contain a flammable atmosphere will be intrisically safe. During regular operations, any device that is not intrisically safe will not be allowed in transfer areas, safety zones, or any area containing flammable atmospheres.)

Central Communications System

Prearranged communication channels are of the utmost importance in dealing with Company emergencies. The notification procedures and telephone contacts documented in Section 2.0 will be reviewed in accordance with the earlier documented updating procedures. The predetermined communications channels include the following:

- A list of emergency telephone numbers for internal management and emergency response personnel (Figures 2.2 and 2.5).
- A list of emergency telephone numbers for various external resources such as the Fire Departments, Public Officials and local agencies is provided in the Annexes.
- A list of emergency telephone numbers for contract response resources (Figure 2.5).

Communications Equipment

Field communications during a spill response will be handled via radios, telephones, cellular phones, fax machines, and computers and will be maintained by Company personnel. In the event of a Worst Case Discharge, field communications will be enhanced with contract resources as the situation demands.

Communications Type

Voice communications may be conducted over the public telephone system or Company provided two-way radio equipment.

Radios- Valero response personnel have portable handheld radios that work off of batteries. These radios have a limited range and are used in conjunction with the 800 MHz radios.

Telephone (Conventional)- Terminals have phones available for emergency responses.

Cellular- All VTDC maintenance personnel have cellular phones. In the event of a sustained response effort additional mobile and/or hand held cellular phones can be purchased, installed and activated, in a few hours time, to establish a more secure network of communications between the Command Center and remote work locations.

FAX Machines- Terminals have fax machines available for emergency responses.

Computers- Terminals have computers available for emergency responses.

FIGURE A.1

COMPANY OWNED SPILL RESPONSE EQUIPMENT

Company Owned Response Equipment		
NAME	**LOCATION**	**DESCRIPTION**
N/A _____	N/A	Facility relies on contracted OSRO's and other outside resources.

FIGURE A.2

RESPONSE RESOURCES

Zone : Jefferson County Response Zone

Area : Jefferson County Response Area

OSRO Name	Contract Number	Environment Type	Facility Classification Level			
			MM	W1	W2	W3
National Response Corporation	10000014825	River/Canal	X	X	X	X
		Inland	X	X	X	X
		Open Ocean			X	X
		OffShore			X	X
		Near Shore	X	X	X	X
		Great Lakes	X	X	X	X

FIGURE A.3

USCG OSRO CLASSIFICATIONS

The USCG has classified OSROs according to their response capabilities, within each Captain of the Port (COTP) zone, for vessels and for facilities in four types of environments. Response capabilities are rated MM, W1, W2, or W3 as described below.

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS			
Classification	**Resource Quantity Guidelines**	**Maximum Facility Response Times**	**Maximum Vessel Response Times**
Rivers/Canals			
MM	Protective Boom: 4,000*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W1	Protective Boom: 25,000*ft EDRC: 1,875 bbls TSC: 3,750 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W2	Protective Boom: 25,000*ft EDRC: 3,750 bbls TSC: 7,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
W3	Protective Boom: 25,000*ft EDRC: 7,500 bbls TSC: 15,000 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports: 60 hours Other Ports: 72 hours
Great Lakes			
MM	Protective Boom: 6,000*ft EDRC: 1,250 bbls TSC: 2,500 bbls	All Ports: 6 hours	All Ports: 12 hours
W1	Protective Boom: 30,000*ft EDRC: 6,250 bbls TSC: 12,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W2	Protective Boom: 30,000*ft EDRC: 12,500 bbls TSC: 25,000 bbls	All Ports: 36 hours	All Ports: 42 hours
W3	Protective Boom: 30,000*ft EDRC: 25,000 bbls TSC: 50,000 bbls	All Ports: 60 hours	All Ports: 66 hours

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS			
Classification	**Resource Quantity Guidelines**	**Maximum Facility Response Times**	**Maximum Vessel Response Times**
Inland			
MM	Protective Boom: 6,000*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W1	Protective Boom: 30,000*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W2	Protective Boom: 25,000*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
W3	Protective Boom: 25,000*ft EDRC: 50,500 bbls TSC: 100,500 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports: 60 hours Other Ports: 72 hours
Great Lakes			
MM	Protective Boom: 8,000*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W1	Protective Boom: 30,000*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 12 hours Other Ports: 24 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W2	Protective Boom: 30,000*ft EDRC: 25,500 bbls TSC: 50,500 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
W3	Protective Boom: 30,000*ft EDRC: 50,000 bbls TSC: 100,000 bbls	High Volume Ports: 54 hours Other Ports: 60 hours (for open ocean, plus travel time from shore)	High Volume Ports: 60 hours Other Ports: 72 hours (for open ocean, plus travel time from shore)

MINIMUM EQUIPMENT REQUIREMENTS FOR OSRO CLASSIFICATIONS			
Classification	**Resource Quantity Guidelines**	**Maximum Facility Response Times**	**Maximum Vessel Response Times**
Offshore			
MM	Protective Boom: 6,000*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W1	Protective Boom: 15,000*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 24 hours Other Ports: 48 hours	High Volume Ports: 24 hours Other Ports: 48 hours
W2	Protective Boom: 15,000*ft EDRC: 25,000 bbls TSC: 50,000 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
W3	Protective Boom: 15,000*ft EDRC: 50,000 bbls TSC: 100,000 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports: 60 hours Other Ports: 72 hours
Open Ocean			
MM	Protective Boom: 0*ft EDRC: 1,200 bbls TSC: 2,400 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W1	Protective Boom: 0*ft EDRC: 12,500 bbls TSC: 25,500 bbls	High Volume Ports: 6 hours Other Ports: 12 hours	High Volume Ports: 12 hours Other Ports: 24 hours
W2	Protective Boom: 0*ft EDRC: 25,000 bbls TSC: 50,000 bbls	High Volume Ports: 30 hours Other Ports: 36 hours	High Volume Ports: 36 hours Other Ports: 48 hours
W3	Protective Boom: 0*ft EDRC: 50,000 bbls TSC: 100,000 bbls	High Volume Ports: 54 hours Other Ports: 60 hours	High Volume Ports: 60 hours Other Ports: 72 hours

1. Rivers/canals include bodies of water, including the Intracoastal Waterway and other bodies artificially created for navigation, confined within an inland area and having a project depth of 12 feet (3.66 meters).
2. EDRC stands for "effective daily recovery capacity," or the calculated recovery capacity of oil recovery devices determined by using a formula that takes into account limiting factors such as daylight, weather, sea state, and emulsified oil in the recovered material.
3. TSC stands for "temporary storage capacity," meaning sufficient storage capacity equal to twice the EDRC of an OSRO. Temporary storage may include inflatable bladders, rubber barges, certified barge capacity, or other temporary storage that can be utilized on scene at a spill response and which is designed and intended for the storage of flammable or combustible liquids. It does not include vessels or barges of opportunity for which no pre-arrangements have been made. Fixed shore-based storage capacity, ensured available by contract or other means, will be acceptable.

* In addition, 1,000 feet of containment boom plus 300 feet per skimming system.

FIGURE A.4

AGREEMENTS/CONTRACTS

Click to view the file - NRC Contract_2_2_2010_17_32_37.pdf

NATIONAL RESPONSE CORPORATION

SPILL RESPONSE CONTRACT CERTIFICATION

National Response Corporation (NRC), by its President, hereby certifies that the entities listed in Schedule 1 (the "Clients") have ensured, by contract with NRC, the availability of private personnel and equipment necessary to respond, to the maximum extent practicable, to a worst case discharge for the named Facilities in Schedule 1. NRC agrees that the Clients have the right to name NRC and its resources, including those within its Independent Contractor Network (ICN), for Oil Pollution Act of 1990 (OPA) coverage for the named Facilities in Schedule 1. NRC has filed its Spill Response Plan Appendix with the U.S. Coast Guard, and the Clients are authorized to reference this Appendix in their Facility Response Plan. This Appendix presently covers all ports in the U.S. East, West and Gulf Coasts, Great Lakes and the U.S. Caribbean. NRC reserves the right to rescind this authorization in the event of termination of its contractual arrangements with the Facilities.

Covered Facilities

(SEE ATTACHED SCHEDULE)

Acknowledged by:
National Response Corporation

Date: September 6, 2007

Steven A. Candito
President, NRC

3500 Sunrise Highway, Suite T103 • Great River, New York 11739
631-224 9141 (24 hours) • Fax 631-224 9082

NATIONAL RESPONSE CORPORATION

Covered Facilities:

Diamond Shamrock Refining and Marketing Company

- McKee-Stewart Pipeline System
- McKee-ConCarb Pipeline
- Turpin Terminal

Michigan Reutilization, LLC

- Arkansas City Asphalt Terminal

The Premcor Pipeline Co.

- Delaware City Pipeline
- Collierville Crude Pipeline
- Sun to Lucas Crude Pipeline
- Lucas to Valero Port Arthur Refinery Crude Pipeline
- Valero Lucas Terminal to Teppco Terminal Products Pipeline
- Valero Port Arthur Refinery to Premcor Pipeline's Lucas Terminal Products Pipeline
- Valero Port Arthur Refinery to Port Arthur Products System Terminal Products Pipeline
- Port Arthur Products System Terminal to Colonial and Explorer Products Pipeline
- Memphis Airport Jet Line
- East Chicago Pipeline
- Hammond Pipeline
- Shorthorn Products Pipeline
- Fannett 4" LPG Pipeline
- Fannett 6" LPG Pipeline
- Fannett 8" LPG Pipeline
- Amdel Crude Pipeline
- Hammond Terminal
- Collierville Terminal
- Fannett Terminal
- Lucas Terminal
- El Vista Tankage
- Port Arthur Products System (PAPS) Joint Interest
- St. James Tankage

The Premcor Refining Group Inc.

- Delaware City Truck Rack

3500 Sunrise Highway, Suite T103 • Great River, New York 11739
631-224 9141 (24 hours) • Fax 631-224 9082

NATIONAL RESPONSE CORPORATION

- Memphis Truck Rack
- Riverside Terminal
- Riverside Dock
- West Memphis Terminal
- Alsip Terminal
- Hartford Terminal
- Memphis Refinery
- Delaware City Refinery
- Port Arthur Refinery

The Shamrock Pipe Line Corporation

- Texas Gathering System
- Perryton Station
- Waka Station
- Coble Truckhaul
- Farnsworth Truckhaul
- Hitchland Truckhaul
- Hooker Truckhaul
- Clawson Truckhaul
- Merten #1 Truckhaul
- Merten #2 Truckhaul
- Miles Truckhaul
- Piper #1 Truckhaul
- Piper #2 Truckhaul
- Tubbs Truckhaul

Sigmor Corporation

- Refugio Pipeline
- Sigmor Natural Gas Pipeline

Valero Marketing and Supply Company

- Corpus Christi Asphalt Blending Plant
- Houston Asphalt Blending Plant
- Louisiana (St. James) Asphalt Blending Plant

Valero Refining Company – Oklahoma

- Oklahoma-Texas Ardmore Gas Pipeline
- Ardmore Refinery

NATIONAL RESPONSE CORPORATION

Valero Terminaling and Distribution Company (f/n/a, Emerald Pipe Line Corporation)
- Turpin Refined Products Pipeline

Valero Refining-Texas, L.P.
- Bill Greehey Refinery East & West
- Houston Refinery
- Texas City Refinery

Diamond Shamrock Refining Company, L.P.
- Three Rivers Refinery
- McKee Refinery

Ultramar Inc.
- Wilmington Refinery

Valero Refining Company – California
- Benicia Refinery
- Benicia Asphalt Plant
- Wilmington Asphalt Plant

Valero Refining Company - Louisiana
- Krotz Springs

Valero Refining Company - New Orleans, L.L.C.
- St. Charles Refinery

Valero Refining Company - New Jersey
- Paulsboro

Lima Refining Company
- Lima

Port Arthur Coker Company LP

Valero Refining - Aruba N.V.
- Aruba Refinery

Valero Coker Company - Aruba N.V.

3500 Sunrise Highway, Suite T103 • Great River, New York 11739
631-224 9141 (24 hours) • Fax 631-224 9082

NATIONAL RESPONSE CORPORATION

Ultramar Ltée/Ultramar Ltd.

- Jean Gaullin Refinery

Term: 5 years from the effective date of the Agreement, unless earlier terminated in accordance with the provisions of this Agreement.

Client:

Diamond Shamrock Refining and Marketing Company

- McKee-Stewart Pipeline System
- McKee-ConCarb Pipeline
- Turpin Terminal

Michigan Reutilization, LLC

- Arkansas City Asphalt Terminal

The Premcor Pipeline Co.

- Delaware City Pipeline
- Collierville Crude Pipeline
- Sun to Lucas Crude Pipeline
- Lucas to Valero Port Arthur Refinery Crude Pipeline
- Valero Lucas Terminal to Teppco Terminal Products Pipeline
- Valero Port Arthur Refinery to Premcor Pipeline's Lucas Terminal Products Pipeline
- Valero Port Arthur Refinery to Port Arthur Products System Terminal Products Pipeline
- Port Arthur Products System Terminal to Colonial and Explorer Products Pipeline
- Memphis Airport Jet Line
- East Chicago Pipeline
- Hammond Pipeline
- Shorthorn Products Pipeline
- Fannett 4" LPG Pipeline
- Fannett 6" LPG Pipeline
- Fannett 8" LPG Pipeline
- Amdel Crude Pipeline
- Hammond Terminal
- Collierville Terminal
- Fannett Terminal
- Lucas Terminal

NATIONAL RESPONSE CORPORATION

- Louisiana (St. James) Asphalt Blending Plant

Valero Refining Company – Oklahoma
- Oklahoma-Texas Ardmore Gas Pipeline
- Ardmore Refinery

Valero Terminaling and Distribution Company (f/n/a, Emerald Pipe Line Corporation)
- Turpin Refined Products Pipeline

Valero Refining-Texas, L.P.
- Bill Greehey Refinery East & West
- Houston Refinery
- Texas City Refinery

Diamond Shamrock Refining Company, L.P.
- Three Rivers Refinery
- McKee Refinery

Ultramar Inc.
- Wilmington Refinery

Valero Refining Company – California
- Benicia Refinery
- Benicia Asphalt Plant
- Wilmington Asphalt Plant

Valero Refining Company - Louisiana
- Krotz Springs

Valero Refining Company - New Orleans, L.L.C.
- St. Charles Refinery

Valero Refining Company - New Jersey
- Paulsboro

Lima Refining Company
- Lima

Port Arthur Coker Company LP

3500 Sunrise Highway, Suite T103 • Great River, New York 11739
631-224 9141 (24 hours) • Fax 631-224 9082

NATIONAL RESPONSE CORPORATION

Valero Refining - Aruba N.V.

- Aruba Refinery

Valero Coker Company - Aruba N.V.

Ultramar Ltée/Ultramar Ltd.

- Jean Gaullin Refinery

3500 Sunrise Highway, Suite T103 • Great River, New York 11739
631-224 9141 (24 hours) • Fax 631-224 9082

North East Region

1. Alsip Distribution Center & Blue Island/Hammond Pipeline

   3600 W. 131st St.

   Alsip, IL 60803

2. Delaware City Terminal

   River Road & J Street

   Delaware City, DE 19706

3. Delaware City Pipeline

   1811 River Road

   Delaware City, DE 19706

4. Hammond Terminal / Hammond Pipeline

   East Chicago Pipeline

   1020 141st St.

   Hammond, IN 46320

5. Hartford Distribution Center

   201 E. Hawthorne St.

   Hartford, IL 62048

South East Region

1. Arkansas City

   1400 S. M

   Arkansas City, KS 67005

2. Collierville Terminal

   772 Wingo Road

   Byhalia, MS 38611

   (P.O. Box 522, Collierville, TN 38027)

3. Memphis Truck Terminal
   321 West Mallory Ave.
   Memphis, TN 38109
4. West Memphis Terminal
   1282 South 8th St.
   West Memphis, AR 72301
   (P.O. Box 975, 72303)
5. Mobile, AL
   1437 Cochrane Causeway N.
   Mobile, AL 36652
   (P.O. Box 3128, 36652)
6. Riverside Terminal
   1237 Riverside Blvd.
   Memphis, TN 38106

Southern Region

1. Corpus Christi
   6746 Up River Road
   Corpus Christi, TX 78409
   (P.O. Box 4606, 78469)
2. Fannett Terminal
   16151 Craigen Road
   Beaumont, TX 77705
3. Lucas Terminal
   9405 West Port Arthur Road
   Beaumont, TX 77705

4. Houston

   9704 Clinton Drive

   Houston, TX 77029

5. St. James, LA

   Highway 18 # 10455

   St. James, LA 70086

6. Texas Gathering P& T

   21 S. Juniper

   P.O. Box 708

   Perryton, TX 79070

7. Turpin Terminal

   Junction of Hwy. 83 & 64 (3 mi. North of Turpin)

   P.O. Box 98

   Turpin, OK 73950

APPENDIX B

WORST CASE DISCHARGE ANALYSIS AND SCENARIOS

INTRODUCTION

This Appendix identifies potential causes for oil discharges and discusses the response efforts that are necessary for successful mitigation. Included in this Appendix are hypothetical scenarios for various types of spills that have the potential to occur along the system. It is anticipated that the Company will respond to spills in a consistent manner regardless of the location. Therefore, the guidelines discussed in this appendix will apply to all spills whenever possible.

United States Department of Transportation/Pipeline and Hazardous Materials Safety Administration Discharge Volume Calculation

- **Worst Case Discharge**
  The largest volume (Bbls) of the following:
  - *Pipeline's maximum release time (hrs), plus the maximum shutdown response time (hrs), multiplied by the maximum flow rate (bph), plus the largest line drainage volume after shutdown of the line section.*

  --OR--

  - *Largest foreseeable discharge for the line section is based on the maximum historic discharge, if one exists, adjusted for any subsequent corrective action or preventive action taken.*

  --OR--

  - *Capacity of the single largest breakout tank or battery of tanks within a single secondary containment system, adjusted for the capacity or size of the secondary containment system.*

Scenario Types

Time of Spill: 1630

Date of Spill: February 6

Spill Source: Crude Tank 2086

Quantity Spilled: (b) (7)(F) [redacted] allowed by PHMSA for spill prevention countermeasures.

Product Type: Crude Oil

Spill Cause: Total Tank Failure

Age of Equipment: Constructed approximately 1977, typically in good condition

Probability of Chain Reaction or Failure: Improbable

Conditions which Affect Response Efforts

Weather: Northwest winds at 25-30 mph; Temperature 38 F

Forecast: Northern began blowing throughout the day with light rain showers associated with this front

Proximity to Downgradient Water: < 0.25 mile

Proximity to Fish/Wildlife/Sensitive Environments: < 0.5 mile

Likelihood of Offsite Impacts: Probable, due to high H2S levels in the air, unlikely but not impossible that oil would impact offsite waters.

Spill Pathway: The spill would initially fill the secondary containment levee. The spill would migrate from the levee into drainage ditches to the retention ponds prior to NPDES Outfall #5.

Time Events

16:00 Flow alarm sounds on crude tank inside Control Center. Control Center notes there should be no movement from this tank.

16:01 Control Center checks automatic gauging for level in tank. No level is seen.

16:02 Control Center notifies Field Operator at tank farm to inspect tank.

16:05 Field Operator is in route to crude tank.

16:10 Field Operator notifies Control Center that there has been a complete tank failure and there is a significant amount of oil within the containment levee on the bare ground.

Field Operator assumes the role of Incident Commander (IC) and implements the VTDC Incident Command System. IC notifies on site Manager, company cleanup and repair crews, and vacuum trucks. IC confirms with Control Center that all tank valves are closed.

16:20 On site Manager arrives and assumes the role of IC from Field Operator.

IC notifies VTDC Director - Operations and HSE Department.

16:22 IC informs local fire department of spill. Fire department is dispatched for standby in case of fire and hydrogen sulfide release.

16:24 IC calls local law enforcement officials and requests assistance in blocking off West Port Arthur Road on each side of the Lucas Tank Farm and possible evacuation of any nearby communities.

16:30 IC sets up command post near the spill site in safe zone, appoints Evacuation Group Leader, and develops a site-specific safety/health plan and possible evacuation plan. Notifies OSRO and requests assistance for spill response.

16:40 IC initiates notification of National Response Center.

16:45 HSE Representative notifies appropriate state agencies.

16:50 VTDC cleanup/repair crews arrive with safety and boom trailers.

16:55 HSE Rep. surveys spill site and establishes response zones.

HSE Rep. continues to monitor zones.

IC holds a safety meeting with crews and reviews the site-specific safety and health plan.

Residents and other businesses are notified of the spill.

Booms are deployed at storm water outfall for safety precaution in case a breach of secondary containment occurs.

17:10 Vacuum trucks start arriving at spill site. Media arrives. Valero Public Affairs gives them an update on the situation.

17:15 Vacuum trucks commence recovery of crude.

17:30 Local agency representatives arrive on location to obtain additional information and review response actions.

OSRO arrives with additional vacuum trucks and assists VTDC crews and other vacuum truck operators with recovery.

IC requests additional equipment and supplies decon equipment, fresh water and food, and lighting equipment from surrounding Valero facilities and local mutual aid group.

19:00 Spill remains contained. Recovery continues. HSE Rep. continues to monitor weather conditions and work location.

20:00 IC completes 12-hour site plan and plans for next 12-hour planning cycle. Orders additional equipment and relief resources for the next 12-hour cycle.

Recovery continues.

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06:30 Vacuum trucks continue to pick up crude. When trucks become full, crude is then transported to tankage and shipped back to Port Arthur Refinery via pipeline, where it will be stored. Contract crews are reduced as the situation allows.

Waste disposal plans are put into effect.

Once all crude is recovered, a long-term site remediation plan is developed and instituted. Final cleanup is expected in 4-6 weeks.

Periodic progress reports are made to state and federal agencies as well as to company management.

All response team members and contract personnel involved in the incident meet to critique the response. The critique is documented, and copies are sent to the HSE and VTDC management. Changes to current procedures are made as appropriate, based on the critique.

Investigation is well underway to determine the cause of the tank failure.

IC prepares the proper documentation and submits it to the HSE and VTDC management and appropriate agencies.

The response actions to each of these scenarios are outlined in Section 3.1 and Figure 3.1. The response resources are identified in a quick reference format in Figure 2.5. Pipeline response personnel list/telephone numbers and other internal/external resources telephone numbers are detailed in Figures 2.2 and 2.5.

RESPONSE CAPABILITY SCENARIOS

Jefferson County Response Zone

PHMSA Worst Case Discharge (b) (7)(F)

A worst case discharge for the Jefferson County Response Zone is considered to be discharge that does not exceed (b) (7)(F) .

Pipeline Worst Case Discharge = (b) (7)(F)

Description

Worst case discharge volume was determined based on GLO, USCG, and DOT definitions.

Volume

Worst Case Discharge = (Rate of Flow x Maximum Time to Detect the Spill and Shut Down the Pipeline)+ Drainage Volume

Given:

Rate of flow = 30000 bbls per hour

Maximum time to detect the spill and shut down line = 0.083 hour

Drainage volume = 19017 bbls

(b) (7)(F)

Response Requirement

The Company has identified sufficient response resources, by contract or other approved means, to respond to a Worst Case Discharge to the maximum extent practicable. These response resources include:

- Resources capable of arriving at the staging area within the applicable response tier requirements for non-high volume areas (Tier 1 = 12 hours; Tier 2 = 36 hours; Tier 3 = 60 hours).
- Resources capable of arriving at the staging area within the applicable response tier requirements for high volume areas (Tier 1 = 6 hours; Tier 2 = 30 hours; Tier 3 = 54 hours).
- Resources capable of oil recovery in inclement weather conditions (i.e. heavy rain, snow, ice).

Notes

- Contracted and Company owned equipment and manpower resources are detailed in Figure 2.5 and Appendix A.
- Telephone references are provided in Figures 2.2 and 2.5.

Breakout Tank Worst Case Discharge = (b) (7)(F) [redacted]

Description

Worst case discharge volume was determined based on GLO, USCG, and DOT definitions.

Volume

The worst case discharge scenario involving breakout tankage uses the single largest volume tank in the response zone, adjusted for the size of the secondary containment system. Applicable adjustment(s) for the largest tank include:

Spill Prevention Measures	Percent Reduction Allowed
Built Repaired to API standards	10%
Overfill protection standards	5%
Testing/cathodic protection	5%
Tertiary Containment/drainage/treatment	5%
Secondary containment capacity greater than 100% capacity of tank and designed according to NFPA 30	50%

(b) (7)(F) [redacted]

A catastrophic discharge can orignate from a line section. However, the maximum amount does not exceed the amount that could be released from the largest storage tank.

Jefferson County Response Zone

RESPONSE PLANNING VOLUME CALCULATIONS

Location Data			
Location Type			River/Canal
Port Type			High Volume
WCD Product Type			Crude Oil
Product Group			2
Pipeline and Hazardous Materials Safety Administration WCD Volume (bbls)			(b) (7)
Discharge Volumes/Calculations			
Worst Case Discharge - Based on Pipeline and Hazardous Materials Safety Administration criteria (bbls)			(b) (7)
Selected Calculation Factors (Based on USCG Tables)			
Removal Capacity Planning Volume - Percent Natural Dissipation			40%
Removal Capacity Planning Volume - Percent Recovered Floating Oil			15%
Removal Capacity Planning Volume - Percent Oil Onshore			45%
Emulsification Factor			1.8
Tier 1 - On Water Oil Recovery Resource Mobilization Factor			30%
Tier 2 - On Water Oil Recovery Resource Mobilization Factor			40%
Tier 3 - On Water Oil Recovery Resource Mobilization Factor			60%
Response Planning Volume Calculation			
On-Water Recovery Volume (bbls)			15,000
Shoreline Recovery Volume (bbls)			45,000
Shoreline Cleanup Volume (bbls)			81,000
	Tier 1	Tier 2	Tier 3
On-Water Recovery Cpcty (bbls/day)	8,100	10,800	16,200
Shallow Water Resp Cpblty (bbls/day)	1,620	2,160	3,240
Storage Capacity (bbls/day)	16,200	21,600	32,400
On-Water Response Caps (bbls/day)	1,875	3,750	7,500
Additional Response Req'd (bbls/day)	6,225	7,050	8,700
Response Time (hrs)	6	30	54

APPENDIX C

EMERGENCY PRE-PLANNING

EMERGENCY PRE-PLANNING

Leak detection and discharge prevention is accomplished through safe operating procedures and maintenance procedures outlined in the Company Operations and Maintenance (O&M) Manual. The Company Operations and Maintenance Manual is designed to meet the requirements found in Title 49, US Code of Federal Regulations, Part 195, Transportation of Hazardous Liquids by Pipeline.

C.1 RELEASE DETECTION

All VTDC personnel are assigned the responsibility to immediately report any type of release within the facility. A telephone number **(866) 382-5376** is constantly manned to receive any emergency reports. Discharge detection is a key job responsibility of all personnel.

Operations personnel are trained to handle spills or uncontrolled releases in their areas of responsibility. Emergency Response personnel from the Valero Port Arthur Refinery and Three Rivers Refinery are available on all shifts who are properly trained to give assistance. Emergency Operating Procedures have been developed for facility personnel to use in the event of an uncontrolled release or spill. These procedures are kept at each facility. In addition to unit specific emergency procedures, a set of generic checklists have been developed as part of this spill response plan. Tab B. 2(a) contains several checklists designed to guide Initial Emergency Actions of the first responder.

Operating procedures call for operations to monitor and record all active tanks (product moving in or out) on a frequent basis. This monitoring of level activity safeguards against tank overfills.

C.2 LEAK DETECTION SYSTEMS

(b) (7)(F)

C.3 DISCHARGE PREVENTION SYSTEMS

Valero Terminaling and Distribution Company's (VTDC) primary objective is to prevent the release of petroleum. VTDC will respond and continue response activities for any petroleum release until it can be positively determined that the release did not come from a VTDC pipeline, pump station, tank farm or other facility.

The pipeline, pumping and storage systems are subject to extensive maintenance and inspection programs, that meet or exceed all applicable regulations. The programs include:

1. External Corrosion Protection

VTDC has a regularly monitored impressed current cathodic protection system consisting of; rectifiers, ground beds, sacrificial anodes, test stations, and trend monitoring. The program is coordinated with adjacent or nearby systems or utilities to address the possibility of interference. Underground piping at the pump stations and other facilities are similarly protected and monitored. Pipe to soil surveys are performed on a scheduled routine basis to locate possible areas of coating damage or inadequate cathodic protection.

Buried piping at pump stations and tank farms as well as tankage are electrically inspected. Supplementary cathodic protection is installed based on the results of the survey and inspection.

All tankage is inspected for cathodic protection on an annual basis and records are kept electronically in a Cathodic Protection Data Management System at Headquarters and paper copies of these inspections are kept at the at the respective facilities. All above grounded piping is protected from atmospheric corrosion with paint.

2. Internal Corrosion Protection

All pipelines have corrosion coupons to monitor internal corrosion. These coupons are inspected twice every year.

3. Safety Inspection and Maintenance

VTDC technicians conduct regular inspections, tests, and recalibration of all instruments and devices to ensure their continued protection of the pipeline system. Shutdown and relief devices and their circuitry, as well as the data routes are routinely exercised to confirm proper operation. Relief devices are deadweight tested and recertified in accordance with a predetermined frequency. All sectionalization and block valves are routinely exercised for proper closure, and ease of operation. Visual and instrument examinations of flanges, mechanical joints and seals, packages and other potential failure points are routinely conducted.

4. Damage Prevention

Many pipeline leaks occur as a result of physical damage to the buried pipe by outside construction parties. VTDC takes several measures to prevent such damage. VTDC flies patrol flights along the pipeline routes weekly. The pilots are instructed to observe evidence of any construction or other activities in the area of the pipeline. When such activities are reported, VTDC contacts the responsible parties, informs them of the presence and location of the underground line, and installs warning stakes to mark the line. VTDC also determines when the excavation will be made along or across the pipeline, and arranges for a representative to be present. VTDC also maintains membership and provides details of line locations to the Texas Excavation Safety System (TESS) service. This organization provides a toll free telephone number to provide contractors and other interested parties with buried cable, piping and utility location and contact information. VTDC maintains an extensive pipeline marking system along the pipeline right of way. The marker signs carry the name of the company, a contact telephone number that is answered 24 hours a day.

APPENDIX D

TRAINING AND DRILLS

D.1 RESPONSE TEAM TRAINING

Valero Terminaling and Distribution Company (VTDC) has an annual training and education plan and a long range training process, which meets the requirements of 49 CFR §195.403, 29 CFR §1910.120, and TAC Rule 95. The annual plan consists of classroom and team-based training that includes safety and environmental issues. A qualified trainer provides the HAZWOPER annual update training. Training includes classroom training that is highly structured. The team-based training has a standard lesson plan, but is structured to be specific to the team's operations. All training is documented and records are kept for each individual and each instructor for as long as they are assigned duties under the plan. Training records are kept in an electronic database system, and in files for individual personnel at each VTDC facility.

This annual training plan and associated training activities include both annually required and periodically required training. All employees participate in this training. Field and supervisory employees receive additional safety and environmental training specific to work practices in field work environment. On an annual basis, training on this Emergency Response Plan is conducted. The following information is covered in this training session:

- Individual responsibilities under the plan
- Name, address, and procedures for contacting the Control Center on a 24-hour basis
- Name of, and procedures for contacting the Qualified Individual on a 24-hour basis
- The content of the Core Plan Information Summary
- The telephone number of the National Response Center
- The notification process
- The characteristics and hazards of the oil discharged
- The conditions that are likely to worsen emergencies, including facility malfunctions, and the appropriate corrective actions
- The steps necessary to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage
- The proper firefighting procedures and the use of equipment, fire suits, and breathing apparatus.

Training records for Contractor personnel that may be utilized in spill response activities are maintained by the Contractor. In order to gain further experience in the application of the process learned in the classroom, and to practice the local emergency response plan, training and hypothetical drills are conducted.

Guidelines For Drill Requirements

Drills are categorized as either internal or external exercises and are intended to ensure the preparedness of the facility and its resources to respond to a spill emergency. The PREP Guidelines, 31 TAC 19.14 (11), have been adopted for the implementation of the internal drill/exercise program. The HSE Specialist will be responsible for implementing and scheduling the drills.

Through the various training methods described below the Company's training program is intended to ensure the following results:

That all personnel know:

- Their responsibilities under the Plan.
- The name, address and procedures for contacting the Control Center on a 24-hour basis.
- The name of and procedures for contacting the Qualified Individual on a 24-hour basis.

That all reporting personnel know:

- The Pipelines and Response Zone details for the affected area (Response Zones Annexes).
- The telephone number of the Federal, State and local agencies and other required notifications (Section 2.0).
- The notification process. (Section 2.0).

That all response personnel know:

- The characteristics and hazards of the oil discharged (Section 3.0 and Appendix H - MSDS).
- The conditions that is likely to worsen emergencies, including the consequences of pipeline malfunctions, and the appropriate corrective actions.
- The steps necessary to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity or environmental damage (Section 3.0).

Oil Spill Response Plan Review

All Response Team Members should review their Oil Spill Response Plan whenever their job position or responsibilities change under the Plan. A copy of this Plan will be available at all times to Team Members.

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (29 CFR 1910.120)

Federal and State regulations require that Response Team Members maintain up-to-date Hazardous Waste Operations and Emergency Response training necessary to function in their assigned positions. At a minimum, team members will receive "First Responder Awareness Level" training. All personnel responding to an incident must satisfy the applicable Hazardous Waste Operations and Emergency Response training requirements of 29 CFR 1910.120.

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE TRAINING REQUIREMENTS		
Responder Classification	**Required Training Hours**	**Refresher**
29CFR 1910.120(q) Emergency Response		
First Responder - Awareness Level	2-4 hrs demonstration of competency	same
First Responder - Operations Level	8 hrs	8 hrs
Hazardous Materials Technician	24 hrs plus competency	8 hrs
Hazardous Materials Specialist	24 hrs plus competency in specialized areas	8 hrs
Incident Commander	24 hrs plus competency	8 hrs
29CFR 1910.120(e) Clean Up Sites		
General Site Workers	40 hrs / 3 days on the job training	8 hrs
Occasional Workers (Limited Tasks)	24 hrs / 1 day on the job training	8 hrs
General Site Workers (Low Hazard)	24 hrs / 1 day on the job training	8 hrs
Supervisors	8 hrs supervisor training	8 hrs
* Previous work experience and/or training certified as equivalent by employer.		

Incident Command System

Response Team Members will receive Incident Command System training and may also receive supplemental training in other related general topics.

Training Records Maintenance

Emergency response training records are maintained at the Company's office. Training records for response personnel will be maintained for as long as personnel have duties in this Emergency Response Plan.

Contractor Training

The Company also recognizes that contract personnel must also have sufficient training to respond emergency response situations. The Company communicates this training need to its key contractors during contract negotiations and often specifically spells out this requirement in its contracts. The Company uses well-known spill response contractors whose reputation and experience levels help ensure personnel who respond will be trained to appropriate levels.

Training Qualifications

As no formalized method of certifying training instructors has been provided by the Occupational Safety and Health Administration, the Company ensures the competency of its instructors and training organizations by selecting trainers and/or organizations with professional reputations and extensive hands-on and classroom experience in their subject matter. The Company personnel with responsibility to coordinate the training program also conduct periodic informal audits of training courses selected for the Company training program to ensure their suitability for the program.

D.2 RESPONSE TEAM EXERCISES

Spill Management Team members, government agencies, contractors, and other resources must participate in response exercises required by Federal, State, or local regulations and as detailed in the "National Preparedness for Response Exercise Program (PREP) Guidelines." The Company will conduct announced drills to maintain compliance, and each plan-holder must participate in at least one exercise annually. The following table lists the triennial exercise cycle for facilities (see National Preparedness for Response Exercise Program Guidelines for full details).

TRIENNIAL CYCLE		
Total Number	**Frequency**	**Exercise Type/Description**
12	Quarterly	Qualified Individual Notification Exercise
3	Annually	Equipment Deployment Exercise *(Facility-owned equipment)*
3	Annual	Response Team Tabletop Exercise
3	Annual	Equipment Deployment Exercise *(facilities with Oil Spill Removal Organization-owned equipment)*
3	3 per Triennial Cycle	Unannounced Exercise *(not a separate exercise)* Actual response can be considered as an unannounced exercise. Credit can also be given for unannounced equipment deployment and Response Team tabletop exercises.
NOTES: 1) All Emergency Response Plan components must be exercised at least once in the Cycle. 2) Triennial cycle is completed for each response zone.		

Quarterly QI Notification Exercise

- **Scope:** Exercise communication between Pipeline personnel and the Qualified Individual(s) and/or designated alternate(s). At least once each year, one of the notification exercises should be conducted during non-business hours.
- **Objective:** Contact must be made with a Qualified Individual or designated alternate, as identified in the Plan.
- **General:** All personnel receiving notification shall respond to the notification and verify their receipt of the notification. Personnel who do not respond should be contacted to determine whether or not they received the notification.

Annual Equipment Deployment Exercise (for operator and/or Oil Spill Removal Organization equipment)

- **Scope:** Demonstrate ability to deploy spill response equipment identified in the Oil Spill Response Plan.

  May consist entirely of operator or OSRO owned equipment, or a combination of OSRO and operator equipment.
  The number of equipment deployment exercises conducted should be such that equipment and personnel assigned to each Response Zone are exercised at least once a year and semi-annually for each terminal with response equipment. If the same personnel and equipment respond to multiple zones, they need only exercise once per year. If different personnel and equipment respond to various Response Zones, each must participate in an annual equipment deployment exercise.

- **Objective:** Demonstrate personnel's ability to deploy and operate response equipment. Ensure that the response equipment is in proper working order.

- **General:** The Facility may take credit for actual equipment deployment to a spill, or for training sessions, as long as the activities are properly documented.

Annual Response Team Tabletop Exercise

- **Scope:** Exercise the response team's organization, communication, and decision-making in managing a spill response. Each team identified within the Plan must conduct an annual Response Team Tabletop Exercise.

- **Objective:** Exercise the response team in a review of the following:

  - Knowledge of the Plan.
  - Proper notifications.
  - Communications system.
  - Ability to access an OSRO.
  - Coordination of internal spill response personnel.
  - Review of the transition from an initial team to a regional team.
  - Ability to effectively coordinate response activity with the National Response System (NRS) Infrastructure.
  - Ability to access information in the Area Contingency Plan.

- **General:** A minimum of one Response Team Tabletop Exercise in a triennial cycle will involve a Worst Case Discharge scenario.

Government-Initiated Unannounced Exercise

- **Scope:** Demonstrate ability to respond to a Worst Case Discharge spill event.

- **Objectives:** Designated Oil Spill Response Team Members should demonstrate adequate knowledge of their Emergency Response Plan and the ability to organize, communicate, coordinate, and respond in accordance with that Plan.

- **General:** Maximum of 20 unannounced Pipeline and Hazardous Materials Safety Administration exercises conducted annually for the pipeline industry as a whole. A single owner or operator will not be required to participate in a PHMSA-initiated unannounced exercise if they have already participated in one within the previous 36 months.

Area Exercises

- **Objective:** The purpose of the area exercise is to exercise the entire response community in a particular area. An area is defined as that geographic area for which a separate and distinct Area Contingency Plan has been prepared, as described in Oil Pollution Act 90. The response community includes the Federal, State, and local government and industry. The area exercises are designed to exercise the government and industry interface for spill response.

- **General:** The goal is to ensure that all areas of the country are exercised triennially. All of the area exercises will be developed by an exercise design team. The exercise design team is comprised of representatives from the Federal, State, and local government and industry. A lead plan holder would lead each area exercise. The lead plan holder is the organization (government or industry) that holds the primary plan that is exercised in the area exercise. The lead plan holder would have the final word on designing the scope and scenario of the exercise.

Exercise Documentation

- All exercises should be documented and maintained at the Company office; documentation should specify:
    - The type of exercise;
    - Date and time of the exercise;
    - A description of the exercise;
    - The objectives met in the exercise;
    - The components of the response plan exercised; and
    - Lessons learned.

- Exercise documentation should be kept on file for the required length of time depending on the regulating agency (three (3) years for the U.S. Coast Guard and five (5) years for the Pipeline and Hazardous Materials Safety Administration and the U.S. Environmental Protection Agency).

D.3 PURPOSE OF REVIEW AND EVALUATION

This Section provides procedures and information useful to responders for post incident/exercise review and evaluation. Post incident/exercise reviews should be conducted in a timely manner following an incident/exercise. The Plan should be evaluated to determine its usefulness during the incident/exercise and appropriate revisions should be made. All incident/exercise documentation should be included in the Plan evaluation process.

Outline of Review

Given below are items a team composed of outside people knowledgeable in spill response and key members of the response teams should examine. These questions are intended as guidelines only; many other questions are likely to be appropriate at each stage of a critique.

Detection

- Was the spill detected promptly?
- How was it detected? By whom?
- Could it have been detected earlier? How?
- Are any instruments or procedures available to consider which might aid in spill detection?

Notification

- Were proper procedures followed in notifying government agencies? Were notifications prompt?
- Was management notified promptly/response appropriate?
- Was the Pipeline owner/operator notified promptly? If so, why, how, and who? If not, why not?

Assessment/Evaluation

- Was the magnitude of the problem assessed correctly at the start?
- What means were used for this assessment?
- Are any guides or aids needed to assist spill evaluation?
- What sources of information were available on winds and on water currents?
- Is our information adequate?
- Was this information useful (and used) for spill trajectory forecasts? Were such forecasts realistic?
- Do we have adequate information on product properties?
- Do we need additional information on changes of product properties with time, i.e., as a result of weathering and other processes?

Mobilization

- What steps were taken to mobilize spill countermeasures?
- What resources were used?
- Was mobilization prompt?
- Could it have been speeded up or should it have been?
- What about mobilization of manpower resources?
- Was the local spill cooperative used appropriately?
- How could this be improved?
- Was it appropriate to mobilize the Pipeline owner/operator resources and was this promptly initiated?
- What other resources are available and have they been identified and used adequately?

Response - Strategy

- Is there an adequate Spill Response Plan for the location?
- Is it flexible enough to cope with unexpected spill events?
- Does the Plan include clear understanding of local environmental sensitivities?
- What was the initial strategy for response to this spill?
- Is this strategy defined in the Spill Plan?
- How did the strategy evolve and change during this spill and how were these changes implemented?
- What caused such changes?
- Are there improvements needed? More training?

Response - Resources Used

- What resources were mobilized?
- How were they mobilized?
- How did resource utilization change with time? Why?
- Were resources used effectively?
    - Contractors
    - Government agencies
    - Company resources
    - Cooperatives
    - Volunteers
    - Consultants
    - Other (e.g., bird rescue centers)
- What changes would have been useful?
- Do we have adequate knowledge of resource availability?
- Do we have adequate knowledge of waste disposal capabilities?

Response - Effectiveness

- Was containment effective and prompt?
- How could it have been improved?
- Should the location or the local cooperative have additional resources for containment?
- Was recovery effective and prompt?
- How could it have been improved?
- Should the location or the local cooperative have additional resources for recovery of spilled product?
- Was contaminated equipment disposed promptly and safely?

- Was there adequate in-house product separation, recovery, and disposal?
- How could it have been improved?
- Was there adequate outside disposal resources available?

Command Structure

- Who was initially in charge of spill response?
- What sort of organization was initially set up?
- How did this change with time? Why?
- What changes would have been useful?
- Was there adequate surveillance?
- Should there be any changes?
- Were communications adequate?
- What improvements are needed? Hardware, procedures, etc.
- Was support from financial services adequate? Prompt?
- Should there be any changes?
- Is more planning needed?
- Should financial procedures be developed to handle such incidents?

Measurement

- Was there adequate measurement or estimation of the volume of product spilled?
- Was there adequate measurement or estimation of the volume of product recovered?
- Was there adequate measurement or estimation of the volume of product disposed?
- Should better measurement procedures be developed for either phase of operations?
- If so, what would be appropriate and acceptable?

Government Relations

- What are the roles and effects of the various government agencies which were involved?
- Was there a single focal point among the government agencies for contact?
- Should there have been better focus of communications to the agencies?
- Were government agencies adequately informed at all stages?
- Were too many agencies involved?
- Are any changes needed in procedures to manage government relations?
- Examples of affected U.S. agencies (there may be others):
    - U.S. Coast Guard
    - Environmental Protection Agency
    - National Oceanic and Atmospheric Administration
    - Dept of Fish and Wildlife
    - State Parks
    - Harbors and Marinas
    - States
    - Cities
    - Counties

- Was there adequate agreement with the government agencies on disposal methods?
- Was there adequate agreement with the government agencies on criteria for cleanup?
- How was this agreement developed?
- Were we too agreeable with the agencies in accepting their requests for specific action items (e.g., degree of cleanup)?
- Should there be advance planning of criteria for cleanup, aimed at specific local environmentally sensitive areas? (Such criteria should probably also be designed for different types of product.)

Public Relations

- How were relations with the media handled?
- What problems were encountered?
- Are improvements needed?
- How could public outcry have been reduced? Was it serious?
- Would it be useful to undertake a public information effort to "educate" reporters about product and effects to it if spilled?
- These areas should be investigated shortly after the incident to assure that actions taken are fresh in peoples' minds.

APPENDIX E

DISPOSAL PLAN

E.1 OVERVIEW

A major oil spill response would generate significant quantities of waste materials ranging from oily debris and sorbent materials to sanitation water and used batteries. All these wastes need to be classified and separated (i.e., oily, liquid, etc.), transported from the site, and treated and/or disposed of at approved disposal sites. Each of these activities demands that certain health and safety precautions be taken, which are strictly controlled by federal and state laws and regulations. This section provides an overview of the applicable state regulations governing waste disposal, and a discussion of various waste classification, handling, transfer, storage, and disposal techniques. It is the responsibility of the Company's HSE Specialist to manage waste disposal needs during an oil spill cleanup.

E.2 WASTE CLASSIFICATION

Environmental Department Representative

Waste containing any kind of oil is considered hazardous unless it can be shown to be non-hazardous by a certified laboratory analysis. To be classified as non-hazardous, the waste must be certified not to possess any of the following characteristics: ignitability, corrosivity, reactivity or toxicity. Laboratory analysis will be required by any disposal facility before they will accept oily waste for disposal. VTDC has contracts with various laboratories.

E.3 WASTE HANDLING

Waste Disposal Leader

Materials deemed non-recyclable will be:

1) Sold to a commercial recycler, or

2) Disposed of off-site.

E.4 WASTE STORAGE

Transportation to Temporary Storage or Disposal

Areas potentially threatened by a spill are largely accessible via roadway or boat. Special permits to position spill equipment (such as oversize load permits) are not anticipated. If such permits are required, the HSE Department will be responsible for obtaining them.

Recovered oil and oily debris are considered to be Class 1 waste. Proper shipments of Class 1 waste (hazardous and non-hazardous) to the disposal and storage sites will be coordinated by the Waste Disposal Leader to ensure compliance with DOT and TCEQ regulations in transportation of hazardous waste.

Recovered Materials Storage

Depending on the magnitude of the spill, large quantities of recovered oil and waste and oily debris may need to be temporarily stored prior to recycling or disposal. Vacuum trucks and/or skimmers are the primary equipment used to recover spilled oil. If large amounts of oily debris must be temporarily stored, a storage site will have to be constructed, which has the following characteristics:

- Good access to the recovery site operations
- Good access to nearby roads or highways
- Be located above the ocean's high water mark
- Away from steep slope areas
- Away from populated areas

Storage within the site may include leak resistant containers such as:

- Roll-off bins lined with plastic sheeting
- Dump trucks lined with plastic sheeting
- Drums, garbage cans, plastic bags, etc.

E.5 WASTE DISPOSAL

Disposal

Recovery, reuse, and recycling are the best choices for remediation of a spill, thereby reducing the amount of oily debris to be bermed onsite or disposed of at a solid waste landfill. Treatment is the next best alternative, but incineration and burning for energy recovery have more options within the state. There are some limitations and considerations in incinerating for disposal. Environmental quality of incineration varies with the type and age of the facility. Therefore, when incineration becomes an option during an event, local air quality authorities would be contacted for advice about efficiency and emissions of facilities within their authority. Approval of the local air authorities is a requirement for any incineration option. Landfilling is the last option. Final disposal at a solid or dangerous waste landfill is the least environmentally sound method of dealing with a waste problem such as oily debris.

During an oil spill incident, the Company representative will consult with the federal and state On Scene Coordinators (OSCs) to identify the acceptable disposal methods and sites appropriately authorized to receive such wastes. The Company maintains a list of approved disposal sites that satisfy local, state, and federal regulations and company requirements. This identification of suitable waste treatment and disposal sites will be prepared by a HSE Specialist of the Company's Response Team in the form of an Incident Disposal Plan which must then be authorized by the U.S. Coast Guard and/or the EPA. An Incident Disposal Plan should include predesignated interim storage sites, segregation strategies, methods of treatment and disposal for various types of debris, and the locations/contacts of all treatment and disposal site selections. Onsite treatment/disposal is preferred.

In order to obtain the best overall Incident Disposal Plan, a combination of methods should be used. There is no template or combination of methods that can be used in every spill situation. Each incident should be reviewed carefully to ensure an appropriate combination of disposal methods are employed.

The different types of wastes generated during response operations will require different disposal methods. To facilitate the disposal of wastes, they should be separated by type for temporary storage, transport and disposal. Table E-3 lists some of the options that are available to segregate oily wastes. The table also depicts methods that can be employed to separate free and/or emulsified water from the oily liquid waste.

The following is a brief discussion of some disposal techniques available for recovered oil and oily debris.

Recycling

This technique entails removing water from the oil and blending the oil with uncontaminated oil. Recovered oil can be shipped to refineries provided that it is exempt from hazardous waste regulations. There it can be treated to remove water and debris, and then blended and sold as a commercial product.

The Company's HSE Specialist is responsible for ensuring that all waste materials are disposed of at a Company internally approved disposal site.

Incineration

This technique entails the complete destruction of the recovered oil by high temperature incineration. There are licensed incineration facilities as well as portable incinerators that may be brought to a spill site. Incineration may require the approval of the local Air Pollution Control Authority. Factors to consider when selecting an appropriate site for onsite incineration include:

- Proximity to recovery locations.
- Access to recovery locations.
- Adequate fire control.
- Approval of the local air pollution control authorities.

In Situ Burning/Open Burning

Burning techniques entail igniting oil or oiled debris and allowing it to burn under ambient conditions. These disposal techniques are subject to restrictions and permit requirements established by federal, state and local laws. They cannot be used to burn PCBs, waste oil containing more than 1,000 parts per million of halogenated solvents, or other substances regulated by the EPA. Permission for in situ burning may be difficult to obtain when the burn takes place near populated areas.

As a general rule, in situ burning is appropriate only when atmospheric conditions will allow the smoke to rise several hundred feet and rapidly dissipate. Smoke from burning oil will normally rise until its temperature drops to equal the ambient temperature. Afterwards, it will travel in a horizontal direction under the influence of prevailing winds.

Landfill Disposal

This technique entails burying the recovered oil in an approved landfill in accordance with regulatory procedures. Landfill disposal of free liquids is prohibited by federal law in the United States.

With local health department approval, non-burnable debris which consists of oiled plastics, gravel and oiled seaweed, kelp, and other organic material may be transported to a licensed, lined, approved municipal or private landfill and disposed of in accordance with the landfill guidelines and regulations. Landfill designation should be planned only for those wastes that have been found to be unacceptable by each of the other disposal options (e.g., waste reduction, recycling, energy recovery). Wastes are to be disposed of only at Company-approved disposal facilities. The Company's HSE Specialist is responsible for ensuring that all waste materials are disposed of at a Company-approved disposal site. Disposal at a non-approved facility would require approval by the Company's HSE Specialist prior to sending any waste to such a facility.

FIGURE E-1

TEMPORARY STORAGE METHODS

CONTAINER	ONSHORE	OFFSHORE	SOLIDS	LIQUIDS	NOTES
Barrels	x	x	x	x	May require handling devices. Covered and clearly marked.
Tank Trucks	x	x		x	Consider road access. Barge-mounted offshore.
Dump/Flat Bed Trucks-Roll-offs	x		x		May require impermeable liner and cover. Consider flammability of vapors at mufflers.
Barges		x	x	x	Liquids only in tanks. Consider venting of tanks.
Oil Storage Tanks	x	x		x	Consider problems of large volumes of water in oil.
Bladders	x	x		x	May require special hoses or pumps for oil transfer.
Frac Tanks	x			x	Consider road access.

FIGURE E-2

OILY WASTE SEPARATION AND DISPOSAL METHODS

TYPE OF MATERIAL	SEPARATION METHODS	DISPOSAL METHODS
LIQUIDS		
Non-emulsified oils	Gravity separation of free water	Incineration Use of recovered oil as refinery/production facility feedstock
Emulsified oils	Emulsion broken to release water by: • heat treatment • emulsion breaking chemicals • mixing with sand • centrifuge • filter/belt press	Use of recovered oil as refinery/production facility feedstock
SOLIDS		
Oil mixed with sand and soil	Collection of liquid oil leaching from sand during temporary storage Extraction of oil from sand by washing with water or solvent Removal of solid oils by sieving	Incineration Use of recovered oil as refinery/production facility feedstock Direct disposal Stabilization with inorganic material Degradation through land farming or composting
Oil mixed with cobbles or pebbles	Screening Collection of liquid oil leaching from materials during temporary storage Extraction of oil from materials by washing with water or solvent	Incineration Direct Disposal Use of recovered oil as refinery/production facility feedstock
Oil mixed with wood and sorbents	Screening Collection of liquid oil leaching from debris during temporary storage Flushing of oil from debris with water	Incineration Direct disposal Degradation through land farming or composting for oil mixed with seaweed or natural sorbents

FIGURE E-3

COMPARATIVE EVALUATION OF OIL SPILL TRANSFER SYSTEMS

CHARACTERISTICS OF TRANSFER SYSTEM	CENTRIFUGAL PUMP	LOBE PUMP	GEAR PUMP	INTERMESCHING SCREW	VALVE PUMP	FLEXIBLE IMPELLER	SCREW/AUGER PUMP	PROGRESSING CAVITY	PISTON PUMP	DIAPHRAGM PUMP	AIR CONVEYOR	VACUUM TRUCK	PORTABLE VACUUM PUMP	CONVEYOR BELT	SCREW CONVEYOR	WHEELED VEHICLES
High Viscosity Fluids	1	5	5	5	3	2	5	5	5	3	5	4	4	5	4	5
Low Viscosity Fluids	5	2	2	2	3	4	1	3	3	4	5	5	5	1	1	5
Transfer Rate	5	2	1	1	3	4	1	2	2	3	4	5	3	2	2	2
Debris Tolerance																
• Silt/Sand	5	3	1	1	1	4	5	5	3	4	5	5	5	5	5	5
• Gravel/Particulate	5	2	1	1	1	2	5	3	2	3	5	5	4	5	4	5
• Seaweed/Stringy Matter	2	3	4	3	2	2	4	4	3	3	4	4	3	5	4	5
Tendency to Emulsify Fluids	1	4	3	3	3	3	5	5	2	5	5	5	5	5	5	5
Ability to Run Dry	5	3	2	1	2	3	4	3	3	2	5	5	5	4	3	
Ability to Operate Continuously	5	3	2	2	2	3	3	3	4	4	3	3	3	3	2	4
Self Priming	1	3	2	2	2	5	1	5	4	4	5	5	5	5	5	
Suction/Head	2	3	2	2	3	4	1	5	5	2	5	4	3			
Back Pressure/Head	1	5	5	5	4	3	4	5	2	4	1	1	1	3	3	
Portability	5	3	3	2	4	4	3	2					2	1	1	
Ease of Repair	5	3	2	2	3	4	3	2	3	5	1	1	2	3	2	3
Cost	5	B	2	2	3	3	1	2	3	5	1	1	2	2	2	3
Comments	E,J	B	B	B,J		F	A	B	B,D	A,C,D	F,G,I	F,G,I	F,G			G,H,I

KEY TO RATING 5=Best; 1=Worst

KEY TO COMMENTS

A. Normally require remote power source, thus are safe around flammable fluids.
B. Should have a relief valve in the outlet line to prevent bursting hoses.
C. Air powered units tend to freeze up in sub-freezing temperatures.
D. Units with work ball valves are difficult to prime.
E. Some remotely powered types are designed to fit in a tanker's butterworth hatch.
F. Can also pump air at low pressure.
G. Transfer is batch-wise rather than continuous.
H. Waste must be in separate container for efficient transfer.
I. Transportable with its own prime mover.
J. High shear action tends to emulsify oil and water mixtures.

APPENDIX F

MISCELLANEOUS FORMS

Forms and Exercise Documentation File Maintenance Procedures
• Forms and exercise documentation records should be maintained in a separate file in the Facility's office filing system. • These files must be available for presentation upon request by regulatory agency personnel.

Caller Characteristics Checklist

Click to view the file - Caller Characteristics Checklist_27_1_2010_16_19_45.pdf

Department of Transportation Liquid Pipeline Accident Report

Click to view the file - Department of Transportation Liquid Pipeline Accident Report_27_1_2010_16_19_58.pdf

Dike Drain Checklist

Click to view the file - Dike Drain Checklist_25_2_2010_9_53_44.pdf

Dike Drainage Report

Click to view the file - Dike Drainage Report_27_1_2010_16_21_7.pdf

Internal Exercise Documentation Form (Semi-Annual) Equipment Deployment Exercise

Click to view the file - Internal Exercise Documentation Form (Semi-Annual) Equipment Deployment Exercise_27_1_2010_16_21_46.pdf

Internal Exercise Documentation Form (Spill Management Team Tabletop Exercise)

Click to view the file - Internal Exercise Documentation Form (Spill Management Team Tabletop Exercise)_19_2_2010_15_33_7.pdf

Notification Data Sheet

Click to view the file - Notification Data Sheet_27_1_2010_16_22_50.pdf

VTDC Activity Log

Click to view the file - VTDC Activity Log_23_2_2010_14_46_28.pdf

Qualified Individual (QI) Notification Exercise (Internal ExerciseDocumentation)

Click to view the file - Qualified Individual (QI) Notification Exercise (Internal ExerciseDocumentation)_27_1_2010_16_23_26.pdf

Response Team Tabletop Exercise (Internal Exercise Documentation)

Click to view the file - Response Team Tabletop Exercise (Internal Exercise Documentation)_27_1_2010_16_23_46.pdf

Revision Record

Click to view the file - Revision Record_27_1_2010_16_24_1.pdf

RSPA F 7000-1

Click to view the file - RSPA F 7000-1_27_1_2010_16_24_16.pdf

Sample Discharge Prevention Meeting Log

Click to view the file - Sample Discharge Prevention Meeting Log_27_1_2010_16_24_32.pdf

Sample Personnel Response Training Log

Click to view the file - Sample Personnel Response Training Log_27_1_2010_16_24_49.pdf

Secondary Containment Inspection Checklist

Click to view the file - Secondary Containment Inspection Checklist_27_1_2010_16_27_44.pdf

Tank Farm Drainage Procedures

Click to view the file - Tank Farm Drainage Procedures_27_1_2010_16_25_33.pdf

Tank High Level Alarm Systems Operations Check - Inspection Report Form

Click to view the file - Tank High Level Alarm Systems Operations Check - Inspection Report Form_27_1_2010_16_25_47.pdf

Tank Inspection Checklist

Click to view the file - Tank Inspection Checklist_27_1_2010_16_26_6.pdf

Telephone Bomb Threat Checklist

Click to view the file - Telephone Bomb Threat Checklist_27_1_2010_16_26_38.pdf

TXRRC Form H-8

Click to view the file - TXRRC Form H-8_27_1_2010_16_26_51.pdf

Annual In Service Tank Inspection Report

Click to view the file - Annual In Service Tank Inspection Report_2_2_2010_17_36_14.pdf

Oiled Wildlife Response Information Guide

Wildlife response guidance and TGLO contact information for the Upper and Lower coast.

Click to view the file - wildlife-info-guide-2009_8_12_2011_11_0_31.pdf

CALLER CHARACTERISTICS CHECKLIST

MALE _____ FEMALE _____ ADULT _____ JUVENILE _____

VOICE CHARACTERISTICS

____ LOUD	____ SOFT	____ FAST	____ SLOW
____ HIGH PITCH	____ DEEP	____ DISTINCT	____ STUTTER
____ PLEASANT	____ RASPY	____ DISTORTED	____ NASAL
____ INTOXICATED	____ OTHER	____ SLURRED	____ LISP

SPEECH

LANGUAGE

____ EXCELLENT	____ GOOD
____ FAIR	____ POOR
____ FOUL	____ OTHER

MANNER

____ CALM	____ ANGRY
____ RATIONAL	____ IRRATIONAL
____ COHERENT	____ INCOHERENT
____ DELIBERATE	____ EMOTIONAL
____ RIGHTEOUS	____ LAUGHING

ACCENT

____ LOCAL

____ NOT LOCAL

____ FOREIGN

BACKGROUND NOISES

____ FACTORY MACHINES	____ JUKE BOXES	____ PARTY ATMOSPHERE	____ VOICES
____ BEDLAM	____ MIXED STREET TRAFFIC	____ ANIMALS	____ QUIET
____ OFFICE MUSIC	____ TRAINS	____ AIRPLANES	

DID CALLER APPEAR FAMILIAR WITH TERMINAL OR BUILDING BY HIS DESCRIPTION OF THE BOMB LOCATION?_____

_____

DEPARTMENT OF TRANSPORTATION
LIQUID PIPELINE ACCIDENT REPORT

Instructions: Submit in duplicate for each accident reportable under Code of Federal Regulations, Title 49, Part 195, Subpart B.

If the space provided for any question is not adequate, attach an additional sheet. File both copies of this report within 30 days after discovery of the accident with the Information Resources Manager (Room 2335), Office of Pipeline Safety, Department of Transportation, 400 Seventh Street, S.W., Washington, D.C. 20590. However, reports for intrastate pipelines subject to the jurisdiction of a State agency pursuant to certification under Section 205 of the Hazardous Liquid Pipelines Safety Act of 1979 may be submitted in duplicate to State agency if the regulations of that agency require submissions of these reports and provide for further transmittal of one copy within 10 days of receipt to the Information Resource Manager.

Please write or call the Information Resource Manager (202-366-4758) concerning questions about this report or these instructions, or to obtain copies of DOT Form 7000-1.

Each operator shall prepare each report of an accident of Form DOT 7000-1 or a facsimile as follows:

(1) General. Each applicable item must be marked or filled in fully and as accurately as information accessible to the operator at the time of filing the report will permit. More than one item may apply.

(2) Part A. Enter the complete corporate name of the operator. Enter the address of the operator's principal place of business, including zip code.

(3) Part B, Item 1. Enter the date the accident occurred or was discovered. If the accident was not discovered on the date it occurred, state this under Part K. Indicate whether the accident occurred on Federal Lands. For purpose of the report "Federal lands" means all lands owned by the United States except lands in the National Park System, lands held in trust for an Indian or Indian tribe, and lands on the Outer Continental Shelf.

Item 2. Enter the time the accident occurred according to a 24 hour clock (e.g. 1945). If the time of occurrence is not known, enter the time the accident was discovered state this fact under Part K.

(4) Part E. Give the number of deaths and injuries known at the time of filing this report even if they were previously reported telephonically to the Department of Transportation. If none, state none.

(5) Part F. Indicate the total estimated property damage in the present day costs including the cost of the commodity not recovered, damage to other parties, and cost of clean up. If none, state none.

(6) Part G. Item 1. State the commonly used name of the commodity spilled such as #2 fuel oil, regular gasoline, propane, etc.

Item 2. Give the classification of the commodity spilled and if it is a petroleum product, indicate whether it is a highly volatile liquid (HVL) or non "HVL" means a hazardous liquid which will form a vapor cloud when released to the atmosphere and which has a vapor pressure exceeding 276Pa (40 psia) at 37.8º c (100º F). If the commodity spilled is not anhydrous ammonia, petroleum, or a petroleum product, it is not necessary to file this report.

(7) Part K. Give an account of the accident sufficiently complete and detailed to convey an understanding of the cause of the accident. Continue on an extra sheet of paper if more space is needed.

DIKE DRAIN CHECKLIST

Date: _____ Valve #: _____

Inspector: _____

Valve operates easily? ___ YES ___ NO ____ Needs Lubrication

Paint Condition: ____ GOOD ____ FAIR ____ POOR ____ Needs Paint

Valve inlet free of debris? ___ YES ___ NO ____ Needs Cleaning

Valve inlet free of silt? ___ YES ___ NO ____ Needs Removal

Comment on any other condition you observed that needs repair or work to ensure a clean and safe dike draining operation:

_____

_____

_____

Status board indicates the actual position of the drain valve? ____ YES ____ NO

_____

SIGNATURE

Date given to Operators for corrective action: _____

Date corrective action complete: _____ _____

SIGNATURE

This form shall be completed by the Terminal Supervisor on a quarterly basis.

DIKE DRAINING REPORT

Date: _____ Valve #: _____

Indicate Tank #s in dike area to be drained: _____ _____ _____

Products stored in dike area: _____

Water checked for contamination by: _____ (Initials)

Contamination found? ___ YES ___ NO

If contamination found, what was done to clean it up? _____

_____

Time dike valve opened: _____

Time drain checked: _____ _____ _____ _____

(Must be checked hourly) _____ _____ _____ _____

_____ _____ _____ _____

Time dike valve closed: _____

Describe anything unusual about the draining: _____

_____

Valve position status board changed? ___ YES ___ NO

_____ TIME: _____

SIGNATURE

Supervisor observing draining: _____ (Initials)

This form is to be completed by the Terminal Operator each time a dike is drained.
A separate form shall be completed for each dike that is drained.

Internal Exercise Documentation Form
(Semiannual)

Equipment Deployment Exercise

1. Date(s) performed: _____

2. Exercise or actual response? _____
   If an exercise, announced or unannounced? _____

3. Deployment location(s):
   _____
   _____
   _____
   _____
   _____
   _____

4. Time started: _____
   Time completed: _____

5. Equipment deployed was:
   _____ Facility - owned
   _____ Oil Spill Removal Organization-owned if so, which OSRO? _____
   _____ Both

6. List type and amount of all equipment (e.g., boom and skimmers) deployed and number of support personnel employed:
   _____
   _____
   _____
   _____
   _____
   _____

7. Describe goals of the equipment deployment and list any Area Contingency Plan strategies tested (Attach a sketch of equipment deployments and booming strategies):
   _____
   _____
   _____
   _____
   _____

8. For deployment of facility-owned equipment, was the amount of equipment deployed <u>at least</u> the amount necessary to respond to your facility's average most probable spill?
   _____
   _____

   Was the equipment deployed in its intended operating environment?
   _____
   _____

Internal Exercise Documentation Form
(Semiannual)

Equipment Deployment Exercise (Cont'd)

9. For deployment of OSRO-owned equipment, was a representative sample of each type deployed?

   Was the equipment deployed in its intended operating environment?

10. Are all pipeline personnel that are responsible for response operations involved in a comprehensive training program, and all pollution response equipment involved in a comprehensive maintenance program? _____

    If so, describe the program: _____

    Date of last equipment inspection: _____

11. Was the equipment deployed by personnel responsible for its deployment in the event of an actual spill? _____

12. Was all deployed equipment operational? If not, why not?

Response Equipment Inspection Log

Inspector	Date	Comments

Internal Exercise Documentation Form

Spill Management Team Tabletop Exercise

1. Date(s) performed:

2. Exercise or actual response?

   If an exercise, announced or unannounced?

3. Location of Tabletop:

4. Time started:

   Time completed:

5. Response plan scenario used (check one):

   ____ Average most probable discharge
   ____ Maximum most probable discharge
   ____ Worst case discharge

   Size of (simulated) spill _____ bbls

6. Describe how the following objectives were exercised:

   a) Spill Management Team's knowledge of Integrated Contingency Plan:

   b) Proper Notifications:

   c) Communications System:

d) Spill Management Team's ability to access contracted Oil Spill Removal Organizations:

e) Spill Management Team's ability to operate within a Unified Command:

f) Spill Management Team's ability to access sensitive site and resource information in the Area Contingency Plan:

7. Identify which of the 15 core components of your response plan were exercised during this particular exercise:

	Notifications		Disposal
	Staff Mobilization		Communications
	Operate in Response Mgmt. System		Transportation
	Discharge Contained		Personnel Support
	Assessment		Equipment Maintenance
	Containment		Procurement
	Recovery		Documentation
	Protection		

8. Attach description of lesson(s) learned and person(s) responsible for follow up of corrective measures.

_____ _____

Name/Title/Company

Retain this form for a minimum of three (3) years (for USCG/PHMSA/BSEE) or five (5) years (for EPA).

NOTIFICATION DATA SHEET

NOTIFICATION DATA SHEET

Date: _____ *Time:* _____

INCIDENT DESCRIPTION

Reporter's Full Name: _____ *Position:* _____
Day Phone Number: _____ *Evening Phone Number:* _____
Company: _____ *Organization Type:* _____

Facility Address: _____ *Owner's Address:* _____

Facility Latitude: _____ *Facility Longitude:* _____
Spill Location (if not at Facility): _____
Responsible Party's Name _____ *Phone Number:* _____
Responsible Party's Address: _____
Source and/or cause of discharge (Description): _____

Nearest City: _____ *Distance from City:* _____ *Unit of Measure:* _____
County: _____ *State:* _____ *Zip code:* _____
Section: _____ *Township:* _____ *Range:* _____ *Borough:*
Distance from City: _____ *Direction from City:* _____
Container Type: _____ *Container Storage Capacity:* _____
Facility Oil Storage Capacity: _____ *Unit of Measure:* _____
Were Materials Discharged? _____ *(Y/N) Confidential?* _____ *(Y/N) Material:* _____

CHRIS Code	Total Quantity Released	Unit of Measure	Water Impact (*YES or NO*)	Quantity into Water	Unit of Measure

RESPONSE ACTION(S)

Action(s) taken to Correct, Control, or Mitigate Incident: _____

Number of Injuries: _____ *Number of Deaths:* _____
Evacuation(s): _____ *Number Evacuated:* _____
Damage in Dollars (approximate): _____
Medium Affected: _____
Description: _____
More Information about Medium: _____

CALLER NOTIFICATIONS

National Response Center (NRC): 1-800-424-8802
Additional Notifications (Circle all applicable): *USCG* *EPA* *State* *Other*
Describe: _____
NRC Incident Assigned No: _____

ADDITIONAL INFORMATION

Any information about the incident not recorded elsewhere in this report: _____

Meeting Federal Obligations to Report? _____ *(Y/N) Date Called:* _____
Calling for Responsible Party? _____ *(Y/N) Time Called:* _____

NOTE: DO NOT DELAY NOTIFICATION PENDING COLLECTION OF ALL INFORMATION.

ACTIVITY LOG

SECTOR	INCIDENT

TIME	DATE	ACTION	RESULT

QUALIFIED INDIVIDUAL (QI) NOTIFICATION EXERCISE
Internal Exercise Documentation
(*Excerpted from the PREP Guidelines)*

PIPELINE NAME _____ **BSEE COMPLEX ID NO.** _____

1. Date performed: _____
2. Exercise or actual response: _____
3. Person initiating exercise: _____
4. Name of person notified: _____
   Is this person identified in the response plan as the: ☐ QI ☐ AQI
5. Time initiated: _____
   Time QI or AQI responded: _____
6. Method used to contact:
   ☐ Telephone ☐ Pager ☐ Radio
   ☐ Other _____
7. Description of notification procedure:
   _____
   _____
   _____
   _____
8. Identify which components of your response plan were exercised during this particular exercise:

Organizational Design
- ☐ Notifications
- ☐ Staff Mobilization
- ☐ Ability to Operate Within the Response Management System Described in the Plan

Operational Response
- ☐ Discharge Control
- ☐ Assessment of Discharge
- ☐ Containment of Discharge
- ☐ Recovery of Spilled Material
- ☐ Protection of Economically and Environmentally Sensitive Areas
- ☐ Disposal of Recovered Product

Response Support
- ☐ Communications
- ☐ Transportation
- ☐ Personnel Support
- ☐ Equipment Maintenance and Support
- ☐ Procurement
- ☐ Documentation

Certifying Signature: _____ Name (Printed): _____

Date: _____

Response Team Tabletop Exercise

Internal Exercise Documentation

1. Date(s) performed: _____
2. Exercise or actual response: _____
   Exercise type: ☐ Announced ☐ Unannounced
3. Location of exercise: _____
4. Time started: _____
   Time completed: _____
5. Response plan scenario used (check one):
   ☐ Small ☐ Medium ☐ Worst Case Discharge
   Size of (simulated) spill _____ Bbls
6. Describe how the following objectives were exercised:

   a) Response Team's knowledge of Integrated Contingency Plan:

   _____
   _____
   _____
   _____
   _____
   _____

   b) Proper notifications:

   _____
   _____
   _____
   _____
   _____
   _____

   c) Communications system:

   _____
   _____
   _____
   _____
   _____
   _____

Response Team Tabletop Exercise

Internal Exercise Documentation (Cont'd)

d) Response Team's ability to access contracted OSRO:

e) Response Team's ability to coordinate spill response with OSC, state and applicable agencies:

f) Response Team's ability to access sensitive site and resource information in Area Contingency Plan:

7. Identify which components of your response plan were exercised:

8. Attach description of lesson(s) learned and person(s) responsible for follow up of corrective measures.

Certifying Signature: _____ Name (Printed): _____
Date: _____

REVISION RECORD

It is the responsibility of the holder of this plan to ensure that all changes and updates are made. The holder shall:

- Remove and discard obsolete pages.
- Replace obsolete pages with the updated pages.
- Initial once completed.

Change Date	Affected Page Number(s)	Description of Change(s)	Initial

NOTICE: This report is required by 49 CFR Part 195. Failure to report can result in a civil penalty not to exceed $25,000 for each violation for each day that such violation persists except that the maximum civil penalty shall not exceed $500,000 as provided in 49 USC 60122

Form Approved
OMB No. 2137-0047

U.S. Department of Transportation
Research and Special Programs Administration

ACCIDENT REPORT – HAZARDOUS LIQUID PIPELINE SYSTEMS

Report Date _____

No. _____
(DOT Use Only)

INSTRUCTIONS

Important: *Please read the separate instructions for completing this form before you begin. They clarify the information requested and provide specific examples. If you do not have a copy of the instructions, you can obtain one from the Office Of Pipeline Safety Web Page at http://ops.dot.gov.*

PART A – GENERAL REPORT INFORMATION

Check: ☐ **Original Report** ☐ **Supplemental Report** ☐ **Final Report**

1. a. Operator's OPS 5-digit Identification Number (if known) /___/___/___/___/___/
   b. If Operator does not own the pipeline, enter Owner's OPS 5-digit Identification Number (if known) /___/___/___/___/___/
   c. Name of Operator _____
   d. Operator street address _____
   e. Operator address _____
   City, County, State and Zip Code

IMPORTANT: IF THE SPILL IS SMALL, THAT IS, THE AMOUNT IS AT LEAST 5 GALLONS BUT IS LESS THAN 5 BARRELS, COMPLETE THIS PAGE ONLY, UNLESS THE SPILL IS TO WATER AS DESCRIBED IN 49 CFR §195.52(A)(4) OR IS OTHERWISE REPORTABLE UNDER §195.50 AS REVISED IN CY 2001.

2. Time and date of the accident
   /___/___/___/___/ hr. /___/___/ month /___/___/ day /___/___/ year

3. Location of accident
   (If offshore, do not complete a through d. See Part C.1)
   a. Latitude: _____ Longitude: _____
   (if not available, see instructions for how to provide specific location)
   b. _____ City, and County or Parish
   c. _____ State and Zip Code
   d. Mile post/valve station ○ or survey station no. ○ (whichever gives more accurate location)
   _____

4. Telephone report
   /___/___/___/___/___/___/___/ NRC Report Number /___/___/ month /___/___/ day /___/___/ year

5. Losses *(Estimated)*

Public/Community Losses reimbursed by operator:

Public/private property damage	$_____
Cost of emergency response phase	$_____
Cost of environmental remediation	$_____
Other Costs	$_____
(describe) _____	

Operator Losses:

Value of product lost	$_____
Value of operator property damage	$_____
Other Costs	$_____
(describe) _____	
Total Costs	$_____

6. Commodity Spilled ○Yes ○ No
(If Yes, complete Parts a through c where applicable)

a. Name of commodity spilled _____

b. Classification of commodity spilled:
- ○ HVLs /other flammable or toxic fluid which is a gas at ambient conditions
- ○ CO_2 or other non-flammable, non-toxic fluid which is a gas at ambient conditions
- ○ Gasoline, diesel, fuel oil or other petroleum product which is a liquid at ambient conditions
- ○ Crude oil

c. **Estimated amount of commodity involved :**
- ○ **Barrels**
- ○ **Gallons (check only if spill is less than one barrel)**

Amounts:
Spilled : _____
Recovered: _____

CAUSES FOR SMALL SPILLS ONLY (5 gallons to under 5 barrels) : ***(For large spills [5 barrels or greater] see Part H)***

○ **Corrosion** ○ **Natural Forces** ○ **Excavation Damage** ○ **Other Outside Force Damage**
○ **Material and/or Weld Failures** ○ **Equipment** ○ **Incorrect Operation** ○ **Other**

PART B – PREPARER AND AUTHORIZED SIGNATURE

(type or print) Preparer's Name and Title _____ Area Code and Telephone Number _____

Preparer's E-mail Address _____ Area Code and Facsimile Number _____

Authorized Signature _____ (type or print) Name and Title _____ Date _____ Area Code and Telephone Number _____

PART C – ORIGIN OF THE ACCIDENT (Check all that apply)

1. Additional location information
   a. Line segment name or ID _____
   b. Accident on Federal land other than Outer Continental Shelf ○ Yes ○ No
   c. Is pipeline interstate? ○ Yes ○ No

Offshore: ○ Yes ○ No *(complete d if offshore)*

d. Area _____ Block # _____

State _/___/___/ or Outer Continental Shelf ☐

2. Location of system involved (*check all that apply*)
   ☐ Operator's Property
   ☐ Pipeline Right of Way
   ☐ High Consequence Area (HCA)?
   Describe HCA_____

3. Part of system involved in accident
   ○ Above Ground Storage Tank
   ○ Cavern or other below ground storage facility
   ○ Pump/meter station; terminal/tank farm piping and equipment, including sumps
   ○ Other *Specify:*_____

   ○ Onshore **pipeline**, including valve sites
   ○ Offshore **pipeline**, including platforms

*If failure occurred on **Pipeline**, complete items a - g:*

4. Failure occurred on
   ○ Body of Pipe ○ Pipe Seam ○ Scraper Trap
   ○ Pump ○ Sump ○ Joint
   ○ Component ○ Valve ○ Metering Facility
   ○ Repair Sleeve ○ Welded Fitting ○ Bolted Fitting
   ○ Girth Weld
   Other *(specify)* _____

   Year the component that failed was installed: /___/___/___/___/

5. Maximum operating pressure *(MOP)*
   a. Estimated pressure at point and time of accident: _____ *PSIG*
   b. MOP at time of accident: _____ *PSIG*
   c. Did an over pressurization occur relating to the accident? ○Yes ○ No

a. Type of leak or rupture
   ○Leak: ○ Pinhole ○ Connection Failure *(complete sec. H5)*
   ○ Puncture, diameter *(inches)* _____
   ○Rupture: ○ Circumferential – Separation
   ○ Longitudinal – Tear/Crack, length *(inches)* _____
   Propagation Length, total, both sides *(feet)* _____
   ○N/A
   ○Other _____

b. Type of block valve used for isolation of immediate section:
   Upstream: ☐ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve
   Downstream: ☐ Manual ☐ Automatic ☐ Remote Control ☐ Check Valve

c. Length of segment isolated _____ ft

d. Distance between valves _____ ft

e. Is segment configured for internal inspection tools? ○Yes ○ No

f. Had there been an in-line inspection device run at the point of failure? ○ Yes ○ No ○ Don't Know
   ○ Not Possible due to physical constraints in the system

g. If *Yes*, type of device run (*check all that apply*)
   ☐ High Resolution Magnetic Flux tool Year run: _____
   ☐ Low Resolution Magnetic Flux tool Year run: _____
   ☐ UT tool Year run: _____
   ☐ Geometry tool Year run: _____
   ☐ Caliper tool Year run: _____
   ☐ Crack tool Year run: _____
   ☐ Hard Spot tool Year run: _____
   ☐ Other tool Year run: _____

PART D – MATERIAL SPECIFICATION

1. Nominal pipe size *(NPS)* /___/___/___/___/ in.
2. Wall thickness /___/___/___/___/ in.
3. Specification _____ SMYS /___/___/___/___/___/___/
4. Seam type _____
5. Valve type _____
6. Manufactured by _____ in year /___/___/___/___/

PART E – ENVIRONMENT

1. Area of accident ○ In open ditch
   ○ Under pavement ○ Above ground
   ○ Underground ○ Under water
   ○ Inside/under building ○ Other _____

2. Depth of cover: _____ inches

PART F – CONSEQUENCES

1. **Consequences** *(check and complete all that apply)*

a.	Fatalities	Injuries
Number of operator employees:		
Contractor employees working for operator:		
General public:		
Totals:		

b. Was pipeline/segment shutdown due to leak? ○Yes ○ No
If Yes, how long? _____days _____hours _____ minutes

c. Product ignited ○Yes ○ No d. Explosion ○Yes ○ No

e. ☐ Evacuation *(general public only)* /___/___/___/___/ people
Reason for Evacuation:
○ Precautionary by company
○ Evacuation required or initiated by public official

f. Elapsed time until area was made safe:
/___/___ hr. /___/___ min.

2. **Environmental Impact**
   a. Wildlife Impact: Fish/aquatic ○ Yes ○ No; Birds ○ Yes ○ No; Terrestrial ○ Yes ○ No
   b. Soil Contamination ○ Yes ○ No
   If Yes, estimated number of cubic yards: _____
   c. Long term impact assessment performed: ○ Yes ○ No
   d. Anticipated remediation ○ Yes ○ No
   If Yes, check all that apply: ☐ Surface water ☐ Groundwater ☐ Soil ☐ Vegetation ☐ Wildlife

   e. Water Contamination: ○ Yes ○ No (*If Yes, provide the following*)
   Amount in water _____ barrels
   Ocean/Seawater ○ No ○ Yes
   Surface ○ No ○ Yes
   Groundwater ○ No ○ Yes
   Drinking water ○ No ○ Yes (*If Yes, check below.*)
   ○ Private well ○ Public water intake

PART G – LEAK DETECTION INFORMATION

1. Computer based leak detection capability in place? O Yes O No

2. Was the release initially detected by? (check one):
O CPM/SCADA-based system with leak detection
O Static shut-in test or other pressure or leak test
O Local operating personnel, procedures or equipment
O Remote operating personnel, including controllers
O Air patrol or ground surveillance
O A third party O Other (specify) _____

3. Estimated leak duration days ____ hours ____

PART H – APPARENT CAUSE

Important: *There are 25 numbered causes in this Part H. Check the box corresponding to the primary cause of the accident. Check one circle in each of the supplemental categories corresponding to the cause you indicate. See the instructions for guidance.*

H1 – CORROSION

1. ☐ External Corrosion

2. ☐ Internal Corrosion

(Complete items a – e where applicable.)

a. Pipe Coating
O Bare
O Coated

b. Visual Examination
O Localized Pitting
O General Corrosion
O Other _____

c. Cause of Corrosion
O Galvanic O Atmospheric
O Stray Current O Microbiological
O Cathodic Protection Disrupted
O Stress Corrosion Cracking
O Selective Seam Corrosion
O Other _____

d. Was corroded part of pipeline considered to be under cathodic protection prior to discovering accident?
O No O Yes, Year Protection Started: /___/___/___/___/

e. Was pipe previously damaged in the area of corrosion?
O No O Yes ⇒ Estimated time prior to accident: /___/___/ *years* /___/___/ *months* *Unknown* ☐

H2 – NATURAL FORCES

3. ☐ Earth Movement ⇒ O Earthquake O Subsidence O Landslide O Other _____
4. ☐ Lightning
5. ☐ Heavy Rains/Floods ⇒ O Washouts O Flotation O Mudslide O Scouring O Other _____
6. ☐ Temperature ⇒ O Thermal stress O Frost heave O Frozen components O Other _____
7. ☐ High Winds

H3 – EXCAVATION DAMAGE

8. ☐ Operator Excavation Damage (including their contractors/Not Third Party)
9. ☐ Third Party *(complete a-f)*

a. Excavator group
O General Public O Government O Excavator other than Operator/subcontractor

b. Type: O Road Work O Pipeline O Water O Electric O Sewer O Phone/Cable
O Landowner-not farming related O Farming O Railroad
O Other liquid or gas transmission pipeline operator or their contractor
O Nautical Operations O Other _____

c. Excavation was: O Open Trench O Sub-strata (boring, directional drilling, etc…)

d. Excavation was an ongoing activity (Month or longer) O Yes O No If Yes, Date of last contact /___/___/___/

e. Did operator get prior notification of excavation activity?
O Yes; Date received: /___/___/ mo. /___/___/ day /___/___/___/___/ yr. O No
Notification received from: O One Call System O Excavator O Contractor O Landowner

f. Was pipeline marked as result of location request for excavation? O No O Yes *(If Yes, check applicable items i - iv)*
i. Temporary markings: O Flags O Stakes O Paint
ii. Permanent markings: O
iii. Marks were (check one) : O Accurate O Not Accurate
iv. Were marks made within required time? O Yes O No

H4 – OTHER OUTSIDE FORCE DAMAGE

10. ☐ Fire/Explosion as primary cause of failure ⇒ Fire/Explosion cause: O Man made O Natural
11. ☐ Car, truck or other vehicle not relating to excavation activity damaging pipe
12. ☐ Rupture of Previously Damaged Pipe
13. ☐ Vandalism

H5 – MATERIAL AND/OR WELD FAILURES

Material

14. ☐ Body of Pipe	⇒	O Dent	O Gouge	O Bend	O Arc Burn	O Other _____
15. ☐ Component	⇒	O Valve	O Fitting	O Vessel	O Extruded Outlet	O Other _____
16. ☐ Joint	⇒	O Gasket	O O-Ring	O Threads		O Other _____

Weld

17. ☐ Butt	⇒	O Pipe	O Fabrication			O Other _____
18. ☐ Fillet	⇒	O Branch	O Hot Tap	O Fitting	O Repair Sleeve	O Other _____
19. ☐ Pipe Seam	⇒	O LF ERW	O DSAW	O Seamless	O Flash Weld	
		O HF ERW	O SAW	O Spiral		O Other _____

*Complete a-g if you indicate **any** cause in part H5.*

a. Type of failure:
O Construction Defect ⇒ O Poor Workmanship O Procedure not followed O Poor Construction Procedures
O Material Defect

b. Was failure due to pipe damage sustained in transportation to the construction or fabrication site? O Yes O No

c. Was part which leaked pressure tested before accident occurred? O Yes, *complete d-g* O No

d. Date of test: /___/___/___/___/ yr. /___/___/ mo. /___/___/ day

e. Test medium: O Water O Inert Gas O Other _____

f. Time held at test pressure: /___/___/ hr.

g. Estimated test pressure at point of accident: _____ *PSIG*

H6 – EQUIPMENT

20. ☐ Malfunction of Control/Relief Equipment	⇒	O Control valve	O Instrumentation	O SCADA	O Communications
		O Block valve	O Relief valve	O Power failure	O Other _____
21. ☐ Threads Stripped, Broken Pipe Coupling	⇒	O Nipples	O Valve Threads	O Dresser Couplings	O Other _____
22. ☐ Seal Failure	⇒	O Gasket	O O-Ring	O Seal/Pump Packing	O Other _____

H7 – INCORRECT OPERATION

23. ☐ Incorrect Operation

a. Type: O Inadequate Procedures O Inadequate Safety Practices O Failure to Follow Procedures
O Other _____

b. Number of employees involved who failed a post-accident test: drug test: /___/___/___/___/ alcohol test /___/___/___/___/

H8 – OTHER

24. ☐ Miscellaneous, *describe:* _____

25. ☐ Unknown
O Investigation Complete O Still Under Investigation *(submit a supplemental report when investigation is complete)*

PART I – NARRATIVE DESCRIPTION OF FACTORS CONTRIBUTING TO THE EVENT

(Attach additional sheets as necessary)

SAMPLE

DISCHARGE PREVENTION MEETING LOG

Date:	
Attendees:	

Subject/Issue	Required Action	Implementation

SAMPLE

PERSONNEL RESPONSE TRAINING LOG

Name	Response Training/ Date and number of hours	Prevention Training/ Date and number of hours

Secondary Containment Inspection Checklist

Inspected By: _____ Date: _____

Facility Secondary Containment systems are visually inspected daily. The following checklist is a sample that may be used, if applicable:

Inspection Item	Inspection Results			Remarks
	OK	Needs Further Attention	N/A	
Dike or berm system				
Level of precipitation in dike/available capacity				
Operational status of drainage valves				
Dike or berm permeability				
Permeability of the earthen floor of diked area				
Location/status of pipes, inlets, drainage beneath tanks, etc.				
Inspection Item	**Is condition present?**			**Remarks**
	Yes	**No**	**N/A**	
Dike or berm system				
Debris				
Erosion				
Secondary containment				
Cracks				
Discoloration				
Presence of spilled or leaked material (standing liquid)				
Corrosion				
Valve conditions				
Retention and drainage ponds (as applicable)				
Erosion				
Available capacity				
Presence of spilled or leaked material				
Debris				
Stressed vegetation				

Records of the daily and annual inspection are maintained at the Facility. These records are available for review at any time at the Facility Office.

TANK FARM DRAINAGE PROCEDURES

PURPOSE:

Petroleum product storage tanks are enclosed inside dikes to contain the product in the event of a leak or spill. These dikes minimize the damage to the environment should a leak or spill occur and prevent the leak or spill from becoming a larger safety hazard.

The drainage of water from the dike areas must be done under controlled conditions to assure that contaminants do not escape thereby creating an environmental or safety hazard.

By the utilization of the following procedures, we can be certain that the necessary precautions have been taken to control the release of petroleum products that may be released due to a leak or spill.

OPERATING PROCEDURES:

1. All tank dike drain valves are to remain in the **closed position and locked** at all times, EXCEPT when it is necessary to drain water from the diked area. The draining of diked areas must be approved by a Supervisor when there is a Supervisor at the Terminal. Draining of diked areas only will be performed while Terminal staff is in attendance.

2. Before draining water from the diked area, the water must be visually inspected for any signs of product contamination. Should any contamination be present, such as an oil sheen, it will be removed prior to draining the water.

3. The tank dike drain valves must be kept free of debris or other material that would hamper the proper operation of the drain valve.

4. Dike drains shall be checked every hour by the person responsible for draining the water. This inspection shall be noted on the Dike Draining Report.

5. The Supervisor who approved the dike draining shall periodically observe the draining of the dike and initial the Dike Draining Report.

TANK HIGH LEVEL ALARM SYSTEMS
OPERATIONS CHECK / INSPECTION REPORT FORM

PLANT: _____ DATE: _____

OPERATIONS CHECKS (Checker should initial appropriate boxes)

TANK NO.								
ANNUNCIATOR PANEL TEST								
ALARM TEST	HI							
	HI – HI							
REMARKS								

PERIODIC INSPECTIONS

DATE:	
INSPECTIONS PERFORMED: (describe)	
REMARKS:	
INSPECTION CONDUCTED BY:	

DATE:	
INSPECTIONS PERFORMED: (describe)	
REMARKS:	
INSPECTION CONDUCTED BY:	

Tank Inspection Checklist

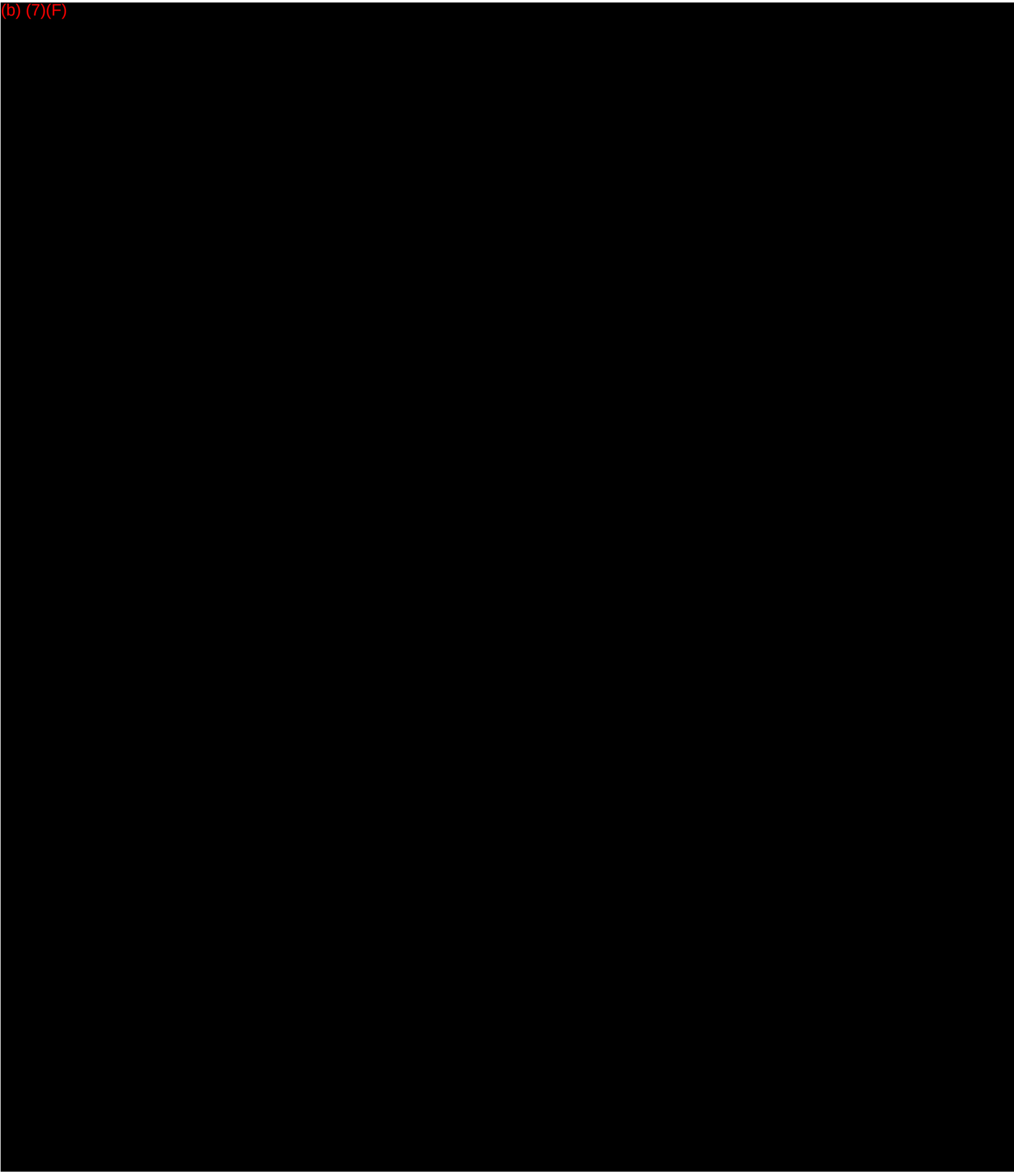
Inspected By: _____ Date: _____

Facility Tanks are visually inspected daily and are thoroughly inspected annually as detailed in the Facility's SPCC Plan. The following checklist is a sample that may be used, if applicable:

Inspection Item	Is condition present?			Remarks
	Yes	No	N/A	
Check tanks for leaks, specifically looking for:				
■ Drip marks				
■ Discoloration of tanks				
■ Puddles containing spilled or leaked material				
■ Corrosion				
■ Cracks				
■ Localized dead vegetation				
Check foundation for:				
■ Cracks				
■ Discoloration				
■ Puddles containing spilled or leaked material				
■ Settling				
■ Gaps between tank and foundations				
■ Damage caused by vegetation roots				
Check piping for:				
■ Droplets of stored material				
■ Discoloration				
■ Corrosion				
■ Bowing of pipe between supports				
■ Evidence of stored material seepage from valves or seals				
■ Localized dead vegetation				

Records of the annual inspection are maintained at the Facility. These records are available for review at any time at the Facility Office.

(b) (7)(F)



RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
CRUDE OIL, GAS WELL LIQUIDS, OR ASSOCIATED PRODUCTS LOSS REPORT

Form H-8
(Eff. 6/4/70)

1. Field Name (as per current proration schedule, including reservoir, if applicable)		2. RRC District
3. Company	Check appropriate block(s): ☐ Producer ☐ Transporter ☐ Other _____	4. County
5. Lease Name(s) and RCC Lease Number(s) (if applicable)		
6. Location where Liquid Hydrocarbon (crude oil, gas well liquids, or associated products) Loss occurred (Section, Block, & Survey)		
7. Description of Facility from which Liquid Hydrocarbon Loss Occurred		
8. Name of Landowner where Liquid Hydrocarbon Loss Occurred	9. Type of Liquid Hydrocarbon Loss ☐ Crude Oil ☐ Gas Well Liquid ☐ Other _____	
10. Date Liquid Hydrocarbon Loss Occurred	11. Date Liquid Hydrocarbon Loss Reported to RRC District Office by Telephone or Telegraph	
12. Total Barrels of Liquid Hydrocarbon Lost in Lost in Leak or Spill	13. Total Barrels of Liquid Hydrocarbon Recovered	14. Barrels of Liquid Hydrocarbon Unrecovered (Net Loss)
15. Did Liquid Hydrocarbon Loss Affect Inland or Coastal Water? (If yes, explain.)		
16. Cause of Liquid Hydrocarbon Loss (Explain.) (If additional space is required, attach page(s).)		
17. Remedial Measures Taken and How Successful (Explain.)		
18. Remarks		

I declare under penalties prescribed in Article 6036c, R. C. S., that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Date	Signature
Company	Name of Person (type or Print)
Street Address or P.O. Box	Title of Person
City, State Zip Code	Telephone Area Code Number

(COMPANY MUST COMPLY WITH THE INSTRUCTIONS ON THE REVERSE SIDE HEREOF.) (OVER)

Clear Form

PREMCOR P. A. PIPELINE COMPANY **ANNUAL IN-SERVICE TANK INSPECTION REPORT**	PAGE 1 OF 3

TANK NO:	DATE INSPECTED:
TANK LOCATION:	INSPECTED BY:
TNRCC PERMIT NO.:	NOMINAL CAPACITY:
CONSTRUCT. DATE:	PRODUCT STORED:
DIAMETER:	MAXIMUM FILL HEIGHT:
SHELL HEIGHT:	SEAL TYPE:
SHELL COLOR	PRIMARY:
BERM CAPACITY:	SECONDARY:

IMPORTANT! FOR ALL "NO RESPONSES" LIST APPROPRIATE COMMENTS, BY ITEM NUMBER, ON THE LAST PAGE

PART 1: PERIMETER - WALK AROUND THE BASE OF THE TANK	**YES**	**NO**	**N/A**
1. IS THE TANK BASIN SOUND AND CLEAR OF COMBUSTIBLES?			
2. IS PROPER DRAINAGE AND IMPOUNDING PROVIDED AROUND THE TANK SHELL?			
3. ARE THE DRAINAGE PATHS CLEAR OF DEBRIS AND OBSTRUCTIONS?			
4. IS THE REEL GAGE FREE AND OPERATIONAL?			
5. ARE LEAK DETECTION DRAIN PIPE OUTLETS (i.e., RAT-HOLES) CLEAR OF OBSTRUCTIONS?			
6. IS THE TANK AND SURROUNDING AREA FREE OF ANY VISUAL SIGNS OF OIL LEAKAGE?			
7. ARE ALL OPEN ENDED CONNECTIONS PLUGGED OR BLINDED? (REGULARLY USED WATERDRAWS AND SAMPLE LOCKS ARE EXEMPT)			
8. ARE WATERDRAW AREAS FREE OF HYDROCARBONS?			
9. IS THE TANK SHELL FREE FROM EXCESSIVE CORROSION?			
10. ARE FLANGES FREE OF LEAKS AND PROPERLY BOLTED?			
11. ARE TANK VALVES IN GOOD OPERATING CONDITION?			
12. IS THE ROOF DRAIN FREE FROM VISUAL SIGNS OF OIL LEAKAGE?			
13. IS BERM AND BERM DRAIN IN GOOD CONDITION?			
PART II: ROOF INSPECTION - CLIMB AND INSPECT THE TOP OF THE TANK			
14. ARE THE STAIRS AND HANDRAILS IN GOOD CONDITION?			
15. IS THERE A CLEAR AND LEVEL LANDING AT THE BASE OF THE STAIRS?			
16. IS THE GAUGERS PLATFORM IN GOOD HOUSEKEEPING?			
17. IS THE ROOF FREE FROM EXCESSIVE CORROSION?			
FLOATING ROOF TANKS:			
18. ARE THE CONNECTIONS WHERE THE ROLLING LADDER ATTACHES TO THE PLATFORM IN GOOD CONDITION? (INSPECT PIVOT BOX, COTTER PINS, ETC., FOR EXCESSIVE WEAR)			
19. ARE ROOF SEALS IN GOOD CONDITION AND TIGHT AGAINST THE SHELL?			
20. IF "SHOE" TYPE SEAL APPLIES, IS THE DEAL "FABRIC" IN GOOD CONDITION?			
21. IF "WIPER" TYPE SEAL APPLIES, IS THE SEAL "TIP" IN GOOD CONDITION?			
22. ARE PONTOONS LEAK TIGHT? (CHECK FOR VAPORS USING A GAS DETECTOR)			
23. ARE THE PONTOON ACCESSWAY COVERS IN PLACE AND SECURED?			

Texas General Land Office
Oil Spill Prevention and Response

Oiled Wildlife Response Information Guide

General Response

- Federal regulations prohibit handling of migratory birds.
- Untrained personnel should not attempt to rescue oiled wildlife because of the potential of serious, sometimes fatal zoonotic diseases (transmission of disease from animal to human.)
- Oiled animals can inflict serious injury to untrained personnel.
- Only personnel from state fish & game agencies and U.S. Fish & Wildlife Service, or properly trained and permitted rehabilitators designated by these agencies are allowed to capture oiled wildlife.
- Make appropriate notifications and await instruction from licensed personnel on how to deal with affected wildlife.
- Only personnel licensed by the State of Texas are allowed to handle oil wildlife.

Resources

TX General Land Office 24 Hour Oil Spill Notification
800-832-8224

Wildlife Rehab & Education
Sharon Schmalz, Certified Oiled Wildlife and Response Team Member
Federal License # PRT673173 • State License # SPH090-090 • LA License # R-09-30
Margaret Pickell, Certified Oiled Wildlife & Response Team Member
Upper and Lower Coast: Cell 281-731-8826 • Office 713-861-9453 • Pager 713-279-1417 • Home (b) (6) [redacted]

Wildlife Response Services LLC
Rhonda Murgatroyd, Certified Oiled Wildlife & response Team Member
Federal License # SPRH039465, TX License # REH-0401-713, LA License # R-07-13
713-705-5897 • Pager 281-266-0054

UPPER COAST

Region 1 (Beaumont/Port Arthur)
Region 2 (LaPorte / Houston)

Texas Parks and Wildlife
281-842-8100 (24 hrs)

Texas Parks and Wildlife – Spills and Kills-Winston Denton
281-534-0138 • 281-842-8100 • 281-534-0130 (office)

U.S. Fish & Wildlife (pager for Ron Brinkley)
281-286-8282 • Pager 281-505-4754 • Cell 713-542-1873

LOWER COAST

Region 3 (Corpus Christi • Region 4 (Brownsville)
Region 5 (Pt. Lavaca)

Texas Parks and Wildlife
956-350-4490

Texas Parks and Wildlife - Spills and Kills
361-825-3246

U.S. Fish & Wildlife (*pager for Claire Lee*)
512-994-9005

Animal Rehabilitation Keep (ARK) – Port Aransas, TX
361-749-6793

APPENDIX G

STATE REQUIREMENTS

G.1

G.1

There are no more stringent requrements required in the State.

APPENDIX H

MATERIAL SAFETY DATA SHEET(S)

Material Safety Data Sheets will be attached seperately and maintained for each area within the response zone.

Gasoline MSDS

PlanFiles/PlanContent/VALEGC/Gasoline MSDS_23_2_2010_15_7_19.pdf

Click to view the file - Gasoline MSDS_23_2_2010_15_7_19.pdf

Diesel MSDS

PlanFiles/PlanContent/VALEGC/Diesel MSDS_23_2_2010_15_8_29.pdf

Click to view the file - Diesel MSDS_23_2_2010_15_8_29.pdf

Crude MSDS

PlanFiles/PlanContent/VALEGC/Crude MSDS_23_2_2010_15_10_12.pdf

Click to view the file - Crude MSDS_23_2_2010_15_10_12.pdf

MATERIAL SAFETY DATA SHEET

Unleaded Gasoline

VALERO MARKETING & SUPPLY COMPANY
and Affiliates
P.O. Box 696000
San Antonio, TX 78269-6000

Emergency Phone Numbers
24 Hour Emergency: 866-565-5220
Chemtrec Emergency: 800-424-9300

General Assistance
General Assistance: 210-345-4593

BRAND NAMES: Valero, Diamond Shamrock, Shamrock, Ultramar, Beacon, Total

Section 1. Chemical Product and Company Identification

Common / Trade name : Unleaded Gasoline

Synonym : Regular/Premium/Midgrade - Unleaded Gasoline, RFG - Reformulated Unleaded Gasoline, Conventional Unleaded Gasoline, Oxygenated Unleaded Gasoline, Non-Oxygenated Unleaded Gasoline, CARB (California Air Resource Board) Unleaded Gasoline, RBOB - Reformulated Blendstock for Oxygenate Blending, CBOB - Conventional Blendstock for Oxygenate Blending, Petrol, Motor Fuel,

SYNONYMS/COMMON NAMES: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Material uses : Motor Fuel

MSDS # : 002

CAS # : 86290-81-5

Section 2. Hazards Identification

Danger! Contains Benzene. Cancer Hazard. Can cause kidney, liver and blood disorders. May cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard; can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. Extremely flammable liquid. Vapors may explode.

Physical state : Liquid.

Emergency overview : Danger!

EXTREMELY FLAMMABLE LIQUID AND VAPOR. FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Do not ingest. Avoid prolonged contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

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

Potential acute health effects

Eyes : May cause severe irritation, redness, tearing, blurred vision and conjunctivitis.

Continued on next page

Skin : Prolonged or repeated contact may cause moderate irritation, defatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful.

Inhalation : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposure may cause behavioral changes.

Ingestion : Toxic if swallowed. This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Medical conditions aggravated by over-exposure : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Preexisting eye, skin, heart, central nervous system and respiratory disorders may be aggravated by exposure to this product. Impaired kidney, liver and blood disorders may be aggravated by exposure to this product.

Over-exposure signs/symptoms : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest or sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

See toxicological information (section 11)

Section 3. Composition, information on ingredients

Name	CAS number	Concentration (%)
Gasoline	86290-81-5	0 - 100
Toluene	108-88-3	0 - 30
Hexane (Other Isomers)	96-14-0	5 - 25
Xylene (o,m,p isomers)	1330-20-7	0 - 25
Octane (All Isomers)	111-65-9	0 - 18.5
Ethanol	64-17-5	0 - 10
1,2,4-Trimethylbenzene	95-63-6	0 - 6
n-Heptane	142-82-5	1 - 5
Pentane	109-66-0	1 - 5
Cumene	98-82-8	0 - 5
Ethylbenzene	100-41-4	0 - 5
Benzene	71-43-2	0 - 4.9
n-Hexane	110-54-3	0 - 3
Cyclohexane	110-82-7	0 - 3

Section 4. First Aid Measures

Eye contact : Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

Skin contact : Remove contaminated clothing and shoes. Wash exposed area thoroughly with soap and water. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

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Ingestion : This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5. Fire Fighting Measures

Flammability of the product : Flammable.

Auto-ignition temperature : >260°C (500°F)

Flash point : Closed cup: -40°C (-40°F).

Flammable limits : Lower: 1.3% Upper: 7.1%

Products of combustion : These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_x, SO_x), particulate matter, VOC's.

Fire hazards in the presence of various substances : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.

Explosion hazards in the presence of various substances : Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge.

Fire-fighting media and instructions

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Collect contaminated fire-fighting water separately. It must not enter the sewage system. Dike area of fire to prevent runoff. Decontaminate emergency personnel and equipment with soap and water.

Highly flammable liquid and vapor. Vapor may cause flash fire. 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.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Dangerous when exposed to heat or flame. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources (pilot lights, welding equipment, electrical equipment, etc.) and flash back. Vapors may accumulate in low areas. Vapors may concentrate in confined areas. Flowing product can be ignited by self generated static electricity. Use adequate bonding and grounding to prevent static buildup. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. For fires involving this material, do not enter any enclosed or confined space without proper protective equipment, which may include NIOSH approved self-contained breathing apparatus with full face mask. Clothing, rags or similar organic material contaminated with this product and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly bonded and grounded containers.

Special remarks on fire hazards : Dangerous when exposed to heat or flame. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources (pilot lights, welding equipment, electrical equipment, etc.) and flash back. Vapors may accumulate in low areas. Vapors may concentrate in confined areas. Flowing product can be ignited by self generated static electricity. Use adequate bonding and grounding to prevent static buildup. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be

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emitted upon thermal decomposition. For fires involving this material, do not enter any enclosed or confined space without proper protective equipment, which may include NIOSH approved self-contained breathing apparatus with full face mask. Clothing, rags or similar organic material contaminated with this product and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly bonded and grounded containers.

Section 6. Accidental Release Measures

Personal precautions : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic,flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Gasoline may contain oxygenated blend products (Ethanol, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination.If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

Methods for cleaning up

Small 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.

Large spill : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

Handling : Do not ingest. Avoid prolonged contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. Use only in well ventilated locations. Keep away from heat, spark and flames. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire.
Use good personal hygiene practices. After handling this product, wash hands before

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eating, drinking, or using toilet facilities.
Keep out of reach of children. Failure to use caution may cause serious injury or illness. Never siphon by mouth. For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, or using toilet facilities.

Storage : Store in tightly closed containers in cool, dry, isolated and well ventilated area away from heat, sources of ignition and incompatible materials. Use non-sparking tools and explosion proof equipment. Ground lines, containers, and other equipment used during product transfer to reduce the possibility of a static induced spark. Do not "switch load" because of possible accumulation of a static charge resulting in a source of ignition. Use good personal hygiene practices.

Section 8. Exposure controls, personal protection

Engineering 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.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Keep away from eyes. Eye contact can be avoided by wearing safety glasses or chemical splash goggles.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Keep away from skin. Skin contact can be minimized by wearing protective gloves such as neoprene, nitrile-butadiene rubber, etc. and, where necessary, impervious clothing and boots. Leather goods contaminated with this product should be discarded. A source of clean water should be available in the work area for flushing eyes and skin. Flame Retardant Clothing is recommended.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protective equipment (Pictograms) : Consult your Supervisor or S.O.P. for special handling directions.

Personal protection in case of a large spill : Splash goggles. Full suit. Vapor respirator. Boots. 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.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

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Hygiene measures
Environmental exposure controls

: 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. Ensure that eyewash stations and safety showers are close to the workstation location.

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Component	Exposure limits
Gasoline	**ACGIH TLV (United States, 5/2004).** STEL: 500 ppm 15 minute(s). Form: All forms TWA: 300 ppm 8 hour(s). Form: All forms
Toluene	**ACGIH TLV (United States, 5/2004). Skin Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.** TWA: 50 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 150 ppm 15 minute(s). Form: All forms TWA: 100 ppm 10 hour(s). Form: All forms **OSHA PEL Z2 (United States, 6/2002).** AMP: 500 ppm 10 minute(s). Form: All forms CEIL: 300 ppm Form: All forms TWA: 200 ppm 8 hour(s). Form: All forms
Hexane (Other Isomers)	**ACGIH TLV (United States, 9/2004).** STEL: 1000 ppm 15 minute(s). Form: All forms TWA: 500 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** CEIL: 510 ppm 15 minute(s). Form: All forms
Xylene (o,m,p isomers)	**ACGIH TLV (United States, 5/2004).** STEL: 150 ppm 15 minute(s). Form: All forms TWA: 100 ppm 8 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 100 ppm 8 hour(s). Form: All forms
Octane (All Isomers)	**NIOSH REL (United States, 6/2001).** CEIL: 385 ppm 15 minute(s). Form: All forms TWA: 75 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms **ACGIH TLV (United States, 3/2004). Notes: 1999 Adoption.** TWA: 300 ppm 8 hour(s). Form: All forms
Ethanol	**ACGIH TLV (United States, 5/2004). Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.** TWA: 1000 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 1000 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 1000 ppm 8 hour(s). Form: All forms
1,2,4-Trimethylbenzene	**NIOSH REL (United States, 12/2001).** TWA: 25 ppm 10 hour(s). Form: All forms **ACGIH TLV (United States, 1/2005).** TWA: 25 ppm 8 hour(s). Form: All forms
n-Heptane	**ACGIH TLV (United States, 9/2004).** STEL: 500 ppm 15 minute(s). Form: All forms TWA: 400 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 350 mg/m³ 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms
Pentane	**ACGIH TLV (United States, 9/2004). Notes: 1998 Adoption.** TWA: 600 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** CEIL: 610 ppm 15 minute(s). Form: All forms TWA: 120 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 1000 ppm 8 hour(s). Form: All forms
Cumene	**ACGIH TLV (United States, 3/2004). Notes: 1999 Adoption.** TWA: 50 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001). Skin**

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	TWA: 50 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993). Skin** TWA: 50 ppm 8 hour(s). Form: All forms
Ethylbenzene	**ACGIH TLV (United States, 1/2004).** STEL: 125 ppm 15 minute(s). Form: All forms TWA: 100 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 125 ppm 15 minute(s). Form: All forms TWA: 100 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 100 ppm 8 hour(s). Form: All forms
Benzene	**NIOSH REL (United States, 6/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen** STEL: 1 ppm 15 minute(s). Form: All forms TWA: 0.1 ppm 10 hour(s). Form: All forms **ACGIH TLV (United States, 1/2006). Skin** STEL: 2.5 ppm 15 minute(s). Form: All forms TWA: 0.5 ppm 8 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** STEL: 5 ppm 15 minute(s). Form: All forms TWA: 1 ppm 8 hour(s). Form: All forms
n-Hexane	**OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms **ACGIH TLV (United States, 9/2004). Skin** TWA: 50 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 50 ppm 10 hour(s). Form: All forms
Cyclohexane	**ACGIH TLV (United States, 1/2004).** TWA: 100 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 300 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 300 ppm 8 hour(s). Form: All forms

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state : Liquid.

Color : Light Straw to Red Clear Liquid

Odor : Characteristic Gasloine Odor (Strong.)

Boiling point : 26.7 to 226.7°C (80.1 to 440.1°F)

Melting/freezing point : May start to solidify at the following temperature: 6.67°C (44°F) This is based on data for the following ingredient: Cyclohexane. Weighted average: -91.9°C (-133.4°F)

Specific gravity : 0.66 to 0.75 (Water = 1) (@ 60 °F)

Vapor pressure : 60.8 to 101.3 kPa (456 to 760 mm Hg) (at 20°C)

Vapor density : 3 to 4 (Air = 1)

Volatility : Essentially 100%

Evaporation rate : 10 to 11 compared with Butyl acetate.

Solubility : Very slightly soluble in the following materials: cold water and hot water.

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Section 10. Stability and reactivity data

Stability : The product is stable.

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

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Avoid exposure - obtain special instructions before use.

Materials to avoid : Highly reactive or incompatible with the following materials: oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Conditions of reactivity : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.

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

Section 11. Toxicological Information

Toxicity data

BENZENE is considered to be a carcinogen to humans, and may cause adverse health effects following exposure via inhalation, ingestion or dermal or eye contact. Acute inhalation of benzene by rats, mice or rabbits caused narcosis, spontaneous heart contractions (ventricular fibrillation) and death due to respiratory paralysis. Subchronic inhalation of benzene by rats produced decreased white blood cell counts, decreased bone marrow cell activity, increased red blood cell activity and cataracts. In rats, chronic inhalation or oral administration of benzene produced cancers of the liver, mouth and Zymbal gland. Acute inhalation exposure of benzene in humans has caused nerve inflammation (polyneuritis), central nervous system depression and cardiac sensitization. Chronic exposure to benzene has produced anorexia and irreversible injury to the blood forming organs. Potential effects include aplastic anemia and leukemia. It has a caused fetal defects in tests on laboratory animals.

CUMENE can affect the body if it is it inhaled, swallowed or comes in contact with the eyes or skin. The main toxic effect is irritation of the eyes, skin and upper respiratory tract. Narcosis has been reported to occur in animals on high exposure. There are no reports of systemic effects in man as a result of industrial exposure. Chronic exposure of rats above 500 ppm causes congestion of lungs, liver and kidneys, but no bone marrow changes.

CYCLOHEXANE can affect the body if it is inhaled, swallowed, or comes in contact with the eyes or skin. It is primarily a local irritant and central nervous system depressant. The depressant effect is from exposure to concentrations above 12,000 ppm, while prolonged or repeated exposure to concentrations above 300 ppm produces a mild irritation of the eyes and upper respiratory tract.

ETHANOL is rapidly absorbed through the gastrointestinal tract and normally metabolized and excreted in a relatively few hours. Only in very unusual work situations could the inhalation of ethanol vapors result in symptoms of alcohol intoxication. Can be fatal or cause blindness if swallowed in extreme quantities. Inhalation or ingestion can cause headache, nausea, dizziness or narcosis. Chronic overexposure (inhalation or ingestion) can cause damage to the gastrointestinal tract, liver, kidneys and cardiovascular system. Prolonged contact causes irritation to skin and eyes. Medical conditions aggravated by exposure include kidney, liver, heart and GI conditions. This material is not listed as a cancer causing agent but is suspected of being a promoter.

ETHYLBENZENE can affect the body if it is inhaled, swallowed or comes in contact with the eyes or skin. It is primarily an irritant of skin, and to some degree, of eyes and upper respiratory tract. Systemic absorption causes depression of the central nervous system with narcosis at very high concentrations. On the eyes and nose, the vapor at 5000 ppm causes intolerable irritation, eye irritation and lacrimation are immediate and severe at 2000 ppm, irritation and tearing occur at 1000 ppm although tolerance develops rapidly, and the vapor is a transient irritant on human eyes at 200 ppm. Aspiration of small amounts causes extensive edema and hemorrhage of lung tissue. A draft report on a study conducted by the National Toxicology program states that lifetime inhalation exposure of rats and mice to concentrations of ethylbenzene(750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations of ethlybenzene (75 ppm or 250 ppm). The draft report does not address the relevance of these results to humans.

GASOLINE contains benzene, as well as n-hexane, other aromatics and certain olefins. Gasoline generally acts as an anesthetic and mucous membrane irritant. Inhalation is the most important route of occupational entry. Eye and throat irritation occur in several hours at exposures of 160 to 270 ppm, eye, nose and throat irritation and dizziness occurs at exposures of 500 to 900 ppm in one hour, mild anesthesia occurs in 30 minutes at exposures of 2000 ppm. The threshold for immediate mild toxic effect if 900 to 1000 ppm. There are reports of toxic neuritis after exposure to gasoline. Repeated exposure of laboratory animals to high concentrations of gasoline vapors has caused kidney damage and cancer in rats and cancer in mice. Gasoline was evaluated for genetic activity in assays using microbial cells, cultured mammalian cells and rat bone marrow cells. The results were all negative so gasoline was considered nonmutagenic under these conditions. Overexposure to this product or its components has been suggested as a cause of liver abnormalities in laboratory animals and humans. Lifetime studies by the American Petroleum Institute have shown that kidney damage and kidney cancer can occur in male rats after prolonged inhalation exposures at elevated concentrations of total gasoline. Kidneys of mice and female rats were unaffected. The U.S. EPA Risk Assessment Forum has concluded that the male rat kidney tumor results are not relevant for humans. Total gasoline exposure also produced liver tumors in female mice only. The implication of these data for humans has not neen determined.

HEPTANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Heptane vapor is a narcotic. Concentrations of 10,000 to 15,000 ppm produced narcosis in mice within 30 to 60 minutes, while 15,000 to 20,000 ppm caused convulsions and death. At 48,000 ppm, respiratory arrest was produced in mice in 3 to 4 minutes from the start of exposure. Human subjects exposed to 1,000 ppm for 6 minutes, or to 2,000 ppm for 4 minutes, reported slight vertigo. At 5,000 ppm for 4 minutes, there was marked vertigo, inability to walk a straight line, hilarity, and incoordination, but no complaints of eye and upper respiratory tract or mucous membrane irritation. A 15-minute exposure at 5,000 ppm produced in some subjects a state of stupor lasting for 30 minutes after exposure. These subjects also reported loss of appetite, slight nausea, and a taste resembling gasoline for several hours after exposure. Although chronic nervous system affects have not been attributed to heptane, polyneuritis has been reported following prolonged exposure to a petroleum fraction with boiling range between 70°C and 100° C, and this fraction would normally contain various

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isomers of heptane as major ingredients.

n-HEXANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Hexane vapor is a narcotic and a mild upper respiratory irritant. Polyneuropathy (peripheral nerve damage) has been reported to occur in workers exposed to hexane vapors, characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity. Recovery ranges from no recovery to complete recovery depending upon the duration of exposure and severity of nerve damage. Concentrations of 30,000 ppm produced narcosis in mice within 30 to 60 minutes, convulsions and death occurred at 35,000 to 40,000 ppm, and at 64,000 ppm respiratory arrest was produced in 2.5 to 4.5 minutes from the start of exposure. Concentrations up to 8000 ppm produced no anesthesia. In human subjects, 2000 ppm for 10 minutes produced no effects, but 5000 ppm resulted in dizziness and a sensation of giddiness. Other investigators reported slight nausea, headache and irritation of the eyes and throat at 1400 to 1500 ppm. In industrial practice, mild narcotic symptoms such as dizziness have been observed when concentrations exceeded 1000 ppm, but not below 500 ppm.

OCTANE can affect the body if it is inhaled, comes in contact with the skin or eyes or is swallowed. Octane vapor is a mild narcotic and mucous membrane irritant. Concentrations of 6600 to 13,700 ppm produced narcosis in mice in 30 to 90 minutes, the fatal concentration for animals is near 13,500 ppm. No chronic systemic effects have been reported in humans.

PENTANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. The chief effects of inhalation are narcosis and irritation of the respiratory passages. Exposures of 90,000 to 120,000 ppm resulted in narcosis in animals in 5 to 6 minutes, 130,000 ppm was fatal with respiratory arrest occurring within 5 minutes of exposure. Pentane injected subcutaneously in rats produced temporary impairment of liver function and moderate neutropenia. While other aliphatic hydrocarbons produce drowsiness and mild irritation of the eyes and nose in human subjects, no symptoms resulted from exposure to pentane vapor for 10 minutes at 5000 ppm. Chronic exposure to high concentrations may lead to polyneuropathy (peripheral nerve damage), characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity.

TOLUENE can affect the body if it is inhaled, comes in contact with the eyes or skin or it is swallowed. It may also enter the body through the skin. Toluene vapors cause narcosis. Controlled exposures of human subjects to 200 ppm for 8 hours produced mild fatigue, weakness, confusion, lacrimation and paresthesia. At 600 ppm for 8 hours, there was euphoria, headache, dizziness, dilated pupils and nausea. At 800 ppm for 8 hours, symptoms were more pronounced, and after effects included nervousness, muscular fatigue and insomnia persisting for several days. In workers exposed for many years to concentrations in the range of 80 to 300 ppm, there was no clinical or laboratory evidence of altered liver function. Toluene exposure does not result in the same chronic injury to bone marrow caused by benzene. Liquid splashed in the eyes of workers has caused transient corneal damage and conjunctival irritation, complete recovery occurred within 48 hours. Animal studies have shown that inhalation of high levels of toluene produced cardiac sensitization. Such sensitization may cause fatal changes in heart rhythms. This later effect was shown to be enhanced by hypoxia or the injection of adrenalin-like agents. Workers exposed at less than 200 ppm have complained of headache, lassitude and nausea, but physical findings were essentially negative. At concentrations between 200 and 500 ppm, impairment of coordination, momentary loss of memory and anorexia were present. Between 500 and 1500 ppm, palpitation, extreme weakness, pronounced loss of coordination and impairment of reaction time were noted. The red cell count fell in many instances and there were cases of aplastic anemia in which recovery followed intensive hospital treatment (although some of the effects may have been due to benzene impurity). Toluene has been reported to decrease immunological responses and cause recordable hearing loss in test animals. Damages genetic material in mammalian test systems. May cause adverse reproductive effects based on animal testing.

TRIMETHYL BENZENE (PSEUDOCUMENE) can affect the body if it is inhaled, comes in contact with the eyes or skin or it is swallowed. It may also enter the body through the skin. The liquid is a primary skin irritant, but system intoxication due to absorption through the skin is not probable. High concentrations of vapors (5000 to 9000 ppm) caused central nervous system depression. Pseudocumene may cause nervousness, tension, anxiety, and asthmatic bronchitis. In addition, the peripheral blood showed a tendency to hypochromic anemia and a deviation from the normal in the coagulability of the blood.

XYLENE can affect the body if it is inhaled, comes in contact with the eyes or skin or it is swallowed. It may also enter the body through the skin. Xylene vapor irritates the eyes, mucous membranes and skin. At high concentrations it causes narcosis. In animals, xylene causes blood changes reflecting mild toxicity to the hematopoietic system. Laboratory animals exposed by various routes to high does of xylene showed evidence of effects in the liver, kidneys, lungs, spleen, heart and adrenals. Rats exposed to xylene vapor during pregnancy showed embryo/fetotoxic effects. Mice exposed orally to doses producing maternal toxicity also showed embryo or fetotoxic effects. Laboratory rats exposed to high concentrations of toluene experienced recordable hearing loss. In humans, exposure to high concentrations can cause dizziness, excitement, drowsiness, incoordination and a staggering gait. Workers exposed to concentrations above 200 ppm complain of anorexia, nausea, vomiting and abdominal pain. Brief exposures of humans to 200 ppm caused irritation of the eyes, nose and throat. There are reports of reversible corneal vacuolation in workers exposed to xylene, or to xylene plus other volatile solvents.

HEXANE ISOMERS are three times as toxic to mice as is pentane. Narcosis was produced in mice within 30-60 minutes at concentrations of 30,000 ppm. In man, concentrations for 10 minutes at 2000 ppm produced no effects, but 5000 ppm caused dizziness and a sense of giddiness. Concentrations of 1400-1500 ppm produced slight nausea, headache, eye, and throat irritation.

Acute toxicity

Product/ingredient name	Result	Species	Dose
Gasoline	LD50 Oral	Rat	92 g/kg
	LD50 Oral	Rat	13.6 g/kg
Toluene	LD50 Dermal	Rabbit	14100 uL/kg
	LD50 Intraperitoneal	Rat	1332 mg/kg
	LD50 Intravenous	Rat	1960 mg/kg
	LD50 Oral	Rat	636 mg/kg
	LD50 Unreported	Rat	6900 mg/kg
	LDLo Intraperitoneal	Rat	2.5 mL/kg
	TDLo Intraperitoneal	Rat	900 mg/kg
	TDLo Intraperitoneal	Rat	1 g/kg
	TDLo Intraperitoneal	Rat	750 mg/kg
	TDLo Intraperitoneal	Rat	600 mg/kg
	TDLo Oral	Rat	400 mg/kg
	TDLo Oral	Rat	800 mg/kg

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Xylene (o,m,p isomers)	LD50 Dermal	Rabbit	>1700 mg/kg
	LD50 Intraperitoneal	Rat	2459 mg/kg
	LD50 Oral	Rat	4300 mg/kg
	LD50 Subcutaneous	Rat	1700 mg/kg
Ethanol	LD50 Intra-arterial	Rat	11 mg/kg
	LD50 Intraperitoneal	Rat	3600 ug/kg
	LD50 Intravenous	Rat	1440 mg/kg
	LD50 Oral	Rat	7060 mg/kg
	LD50 Oral	Rat	7 g/kg
	LDLo Dermal	Rabbit	20 g/kg
	TDLo Intraperitoneal	Rat	2700 mg/kg
	TDLo Intraperitoneal	Rat	1.25 mg/kg
	TDLo Intraperitoneal	Rat	1000 mg/kg
	TDLo Intracerebral	Rat	363.6 ug/kg
	TDLo Intraperitoneal	Rat	500 mg/kg
	TDLo Intravenous	Rat	0.5 g/kg
	TDLo Intraperitoneal	Rat	0.5 g/kg
	TDLo Oral	Rat	6 g/kg
	TDLo Oral	Rat	10 mL/kg
	TDLo Oral	Rat	6.67 mL/kg
	TDLo Oral	Rat	5 mL/kg
	TDLo Intraperitoneal	Rat	2.45 g/kg
	TDLo Oral	Rat	6000 mg/kg
	TDLo Oral	Rat	5250 mg/kg
	TDLo Oral	Rat	5000 mg/kg
	TDLo Oral	Rat	4800 mg/kg
	TDLo Oral	Rat	5.25 g/kg
	TDLo Oral	Rat	0.5 g/kg
	TDLo Oral	Rat	3 g/kg
	TDLo Oral	Rat	2.5 g/kg
	TDLo Intraperitoneal	Rat	0.25 g/kg
	TDLo Oral	Rat	0.72 g/kg
	TDLo Oral	Rat	1600 mg/kg
	TDLo Oral	Rat	1500 mg/kg
	TDLo Oral	Rat	5 g/kg
	TDLo Intraperitoneal	Rat	1.5 g/kg
	TDLo Oral	Rat	8000 mg/kg
	TDLo Intraperitoneal	Rat	2 g/kg
	TDLo Oral	Rat	6.4 g/kg
	TDLo Intraperitoneal	Rat	1 g/kg
	TDLo Intraperitoneal	Rat	3500 mg/kg
	TDLo Intracerebral	Rat	106 ug/kg
	TDLo Intraperitoneal	Rat	2.4 mg/kg
	TDLo Intraperitoneal	Rat	3000 mg/kg
	TDLo Unreported	Rat	3 g/kg
1,2,4-Trimethylbenzene	LD50 Oral	Rat	5 g/kg
	LDLo Intraperitoneal	Rat	1752 mg/kg
Pentane	LD50 Oral	Rat	>2000 mg/kg
Cumene	LD50 Dermal	Rabbit	12300 uL/kg
	LD50 Oral	Rat	1400 mg/kg
	LD50 Oral	Rat	2.9 g/kg
Ethylbenzene	LD50 Dermal	Rabbit	17800 uL/kg
	LD50 Oral	Rat	3500 mg/kg
	TDLo Intraperitoneal	Rat	1062 mg/kg
Benzene	LD50 Dermal	Rabbit	>9400 uL/kg
	LD50 Intraperitoneal	Rat	1100 ug/kg
	LD50 Oral	Rat	1800 mg/kg
	LD50 Oral	Rat	930 mg/kg
	LD50 Oral	Rat	1 mL/kg
	LD50 Oral	Rat	6400 mg/kg
	LDLo Subcutaneous	Rat	5 mg/kg
	TDLo Dermal	Rat	0.92 mL/kg
	TDLo Oral	Rat	320 mg/kg
	TDLo Oral	Rat	1280 mg/kg
n-Hexane	LD50 Oral	Rat	25 g/kg
	LDLo Intraperitoneal	Rat	9100 mg/kg
	TDLo Oral	Rat	20000 mg/kg
Cyclohexane	LD Dermal	Rabbit	>180 g/kg
	LD50 Oral	Rat	12705 mg/kg

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA

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Gasoline	A3	-	-	-	-	-
Toluene	A4	3	-	-	-	-
Xylene (o,m,p isomers)	A4	3	-	-	-	-
Ethanol	A4	-	-	-	-	-
Ethylbenzene	A3	2B	-	-	-	-
Benzene	A1	1	-	+	Proven.	+

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified A3 (Proven for animals.) by ACGIH [Gasoline]. Classified 2 (Suspected for humans.) by European Union [Gasoline]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Toluene]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Xylene (o,m,p isomers)]. Classified A4 (Not classifiable for humans or animals.) by ACGIH [Ethanol]. Classified A3 (Proven for animals.) by ACGIH, 2B (Possible for humans.) by IARC [Ethylbenzene]. Classified A1 (Confirmed for humans.) by ACGIH, 1 (Proven for humans.) by IARC, 1 (Known to be human carcinogens.) by NTP, + (Proven.) by OSHA, + (Proven.) by NIOSH, 1 (Proven for humans.) by European Union [Benzene].
MUTAGENIC EFFECTS: Classified 2 by European Union [Benzene].
Contains material which may cause damage to the following organs: blood, kidneys, lungs, the reproductive system, liver, peripheral nervous system, gastrointestinal tract, upper respiratory tract, skin, bone marrow, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : Extremely hazardous by the following route of exposure: of ingestion.
Very hazardous by the following route of exposure: of eye contact (irritant), .
Hazardous by the following route of exposure: of skin contact (irritant).
Slightly hazardous by the following route of exposure: of inhalation (lung irritant).

Specific effects

Carcinogenic effects : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which causes damage to the following organs: skin.
Contains material which may cause damage to the following organs: blood, kidneys, lungs, the reproductive system, liver, peripheral nervous system, gastrointestinal tract, upper respiratory tract, bone marrow, central nervous system (CNS), eye, lens or cornea.

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Toluene	Acute EC50 6880 to 9830 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 6780 to 7810 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute EC50 6000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 19600 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 15.5 ppm Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 15500 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 36.2 to 44.6 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 17.03 to 19.05 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 6780 to 7810 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 6410 to 7180 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 15.53 to 17.16 mg/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 5800 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 5500 ug/L Fresh water	Fish - Coho salmon,silver salmon - Oncorhynchus kisutch	96 hours
	Acute LC50 310000 to 420000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 170000 ug/L Marine water	Crustaceans - Dungeness or edible crab - Cancer magister	48 hours
	Acute LC50 97700 to 174700 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 13 to 15 mg/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 86300 to 174700 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 7.3 ul/L Marine water	Fish - Striped bass - Morone saxatilis	96 hours
Xylene (o,m,p isomers)	Acute LC50 8.5 ppm Marine water	Crustaceans - Daggerblade grass shrimp -	48 hours

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		Palaemonetes pugio	
	Acute LC50 13500 to 15034 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 13500 to 19200 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 13400 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 13300 to 16114 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 12000 to 16114 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 12000 to 13762 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 8600 to 9591 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 8500 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 8200 to 10032 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 3300 to 4093 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 13500 to 16100 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
Ethanol	Acute EC50 9.3 to 11.2 g/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 10600 to 11200 mg/L Fresh water	Daphnia - Water flea - Daphnia obtusa	48 hours
	Acute EC50 >100 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 13 to 16 ml/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 5577000 to 6557000 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia	48 hours
	Acute LC50 3715000 to 4432000 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia	48 hours
	Acute LC50 >100000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 42000 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	4 days
	Acute LC50 25500 ug/L Marine water	Crustaceans - Brine shrimp - Artemia franchiscana	48 hours
	Acute LC50 11000000 ug/L Marine water	Fish - Bleak - Alburnus alburnus	96 hours
	Acute LC50 10000000 to 11500000 ug/L Marine water	Fish - Bleak - Alburnus alburnus	96 hours
	Acute LC50 5680 to 7392 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 6076000 to 7115000 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia	48 hours
	Acute LC50 6325000 to 7413000 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia	48 hours
	Acute LC50 14200000 to 15100000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 13480000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Chronic NOEC <6.3 g/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
1,2,4-Trimethylbenzene	Acute LC50 17000 ug/L Marine water	Crustaceans - Dungeness or edible crab - Cancer magister	48 hours
	Acute LC50 7720 to 8280 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
n-Heptane	Acute LC50 4924000 ug/L Fresh water	Fish - Western mosquitofish - Gambusia affinis	96 hours
	Acute LC50 375000 ug/L Fresh water	Fish - Mozambique tilapia - Tilapia mossambica	96 hours
Cumene	Acute EC50 11200 to 14100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 10600 to 14100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 7500 to 11200 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute EC50 7400 to 11290 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 30500 to 39900 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 8000 to 12590 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 20300 to 45100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 34300 to 46300 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 7400 to 11290 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 6320 to 6610 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 5100 ug/L Fresh water	Fish - Guppy - Poecilia reticulata	96 hours
	Acute LC50 2700 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
Ethylbenzene	Acute EC50 13300 to 18100 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute EC50 6530 to 9460 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute EC50 2970 to 4400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2930 to 4400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 13300 to 18100 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 150 to 200 mg/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 12100 to 12700 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 11900 to 15600 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 9600 ug/L Fresh water	Fish - Guppy - Poecilia reticulata	96 hours
	Acute LC50 9100 to 11000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 9090 to 11000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 8780 to 13700 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 40000 ug/L Marine water	Crustaceans - Dungeness or edible crab - Cancer magister	48 hours
	Acute LC50 >5200 ug/L Marine water	Crustaceans - Opossum shrimp - Americamysis bahia	48 hours
	Acute LC50 5100 to 5700 ug/L Marine water	Fish - Atlantic silverside - Menidia menidia	96 hours
	Acute LC50 4200 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 18400 to 25400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 13900 to 17200 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 75000 to 120000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 4.3 to 4.7 ul/L Marine water	Fish - Striped bass - Morone saxatilis	96 hours
	Chronic NOEC 3300 ug/L Marine water	Fish - Atlantic silverside - Menidia menidia	96 hours

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Benzene	Acute EC50 22000 to 29500 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 11730 to 15600 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 10000 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 9230 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 58400 to 82300 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 35 to 43.8 ppm Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 33000 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 9.2 to 11.7 mg/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 21000 ug/L Marine water	Crustaceans - Brine shrimp - Artemia salina	48 hours
	Acute LC50 11.38 ml/L Marine water	Crustaceans - Crab - Scylla serrata	48 hours
	Acute LC50 9.15 ml/L Marine water	Crustaceans - Crab - Scylla serrata	48 hours
	Acute LC50 6.59 ml/L Marine water	Crustaceans - Crab - Scylla serrata	48 hours
	Acute LC50 35000 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 99200 to 122600 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 135700 to 168800 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 96200 to 134100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 76900 to 114100 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 59600 to 80700 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 5.02 ml/L Marine water	Crustaceans - Crab - Scylla serrata	48 hours
	Acute LC50 11.73 to 13.63 ul/L Fresh water	Fish - Chinook salmon - Oncorhynchus tshawytscha	96 hours
	Acute LC50 14.09 to 18.3 ul/L Fresh water	Fish - Coho salmon,silver salmon - Oncorhynchus kisutch	96 hours
	Acute LC50 8.47 to 9.09 ul/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 10.9 ul/L Marine water	Fish - Striped bass - Morone saxatilis	96 hours
	Acute LC50 10.76 to 12.04 ul/L Fresh water	Fish - Sockeye salmon - Oncorhynchus nerka	96 hours
	Acute LC50 5.8 ul/L Marine water	Fish - Striped bass - Morone saxatilis	96 hours
	Acute LC50 5.55 to 8.21 ul/L Marine water	Fish - Sockeye salmon - Oncorhynchus nerka	96 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 9.8 ul/L Fresh water	Fish - Coho salmon,silver salmon - Oncorhynchus kisutch	96 hours
n-Hexane	Acute LC50 113000 ug/L Fresh water	Fish - Mozambique tilapia - Tilapia mossambica	96 hours
	Acute LC50 2500 to 2980 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
Cyclohexane	Acute LC50 610000 ug/L Marine water	Fish - Tigerfish, crescent perch - Terapon jarbua	96 hours
	Acute LC50 117000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 93000 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 57680 to 68760 ug/L Fresh water	Fish - Guppy - Poecilia reticulata	96 hours
	Acute LC50 42330 to 53470 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 34720 to 44690 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 32710 to 42070 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 8300 ug/L Marine water	Fish - Striped bass - Morone saxatilis	96 hours
	Acute LC50 4530 to 5180 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours

Biodegradability

Biodegradability

Products of degradation : Products of degradation: carbon oxides (CO, CO_2) and water.

Section 13. Disposal Considerations

Waste disposal : 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.

Consult your local or regional authorities.

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Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	1203	Gasoline	3	II		Not available.
TDG Classification	1203	Gasoline	3	II		Not available.

Section 15. Regulatory Information

United States

HCS Classification : Flammable liquid
Irritating material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 4(a) final test rules: Hexane (Other Isomers); n-Heptane; Pentane; n-Hexane
TSCA 8(a) PAIR: n-Heptane; Pentane
United States inventory (TSCA 8b): All materials are listed on the inventory
TSCA 12(b) one-time export: n-Heptane; Pentane
TSCA 12(b) annual export notification: Hexane (Other Isomers); n-Hexane

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: Toluene; Hexane (Other Isomers); Xylene (o,m,p isomers); Octane (All Isomers); Ethanol; 1,2,4-Trimethylbenzene; n-Heptane; Pentane; Cumene; Ethylbenzene; Benzene; n-Hexane; Cyclohexane
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Toluene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Hexane (Other Isomers): Fire hazard, Immediate (acute) health hazard; Xylene (o,m,p isomers): Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Octane (All Isomers): Fire hazard; Ethanol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; 1,2,4-Trimethylbenzene: Fire hazard, Delayed (chronic) health hazard; n-Heptane: Fire hazard; Pentane: Fire hazard, Immediate (acute) health hazard; Cumene: Fire hazard, Immediate (acute) health hazard; Ethylbenzene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Benzene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; n-Hexane: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Cyclohexane: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Gasoline: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Toluene; Ethylbenzene; Benzene

Clean Water Act (CWA) 311: Toluene; Xylene (o,m,p isomers); Ethylbenzene; Benzene; Cyclohexane

Clean Air Act (CAA) 112 accidental release prevention: Pentane

Clean Air Act (CAA) 112 regulated flammable substances: Pentane

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

Product name	CAS number	Concentration

Continued on next page

Form R - Reporting requirements :	Toluene	108-88-3	0 - 30
	Xylene (o,m,p isomers)	1330-20-7	0 - 25
	1,2,4-Trimethylbenzene	95-63-6	0 - 6
	Cumene	98-82-8	0 - 5
	Ethylbenzene	100-41-4	0 - 5
	Benzene	71-43-2	0 - 4.9
	n-Hexane	110-54-3	0 - 3
	Cyclohexane	110-82-7	0 - 3
Supplier notification :	Toluene	108-88-3	0 - 30
	Xylene (o,m,p isomers)	1330-20-7	0 - 25
	1,2,4-Trimethylbenzene	95-63-6	0 - 6
	Cumene	98-82-8	0 - 5
	Ethylbenzene	100-41-4	0 - 5
	Benzene	71-43-2	0 - 4.9
	n-Hexane	110-54-3	0 - 3
	Cyclohexane	110-82-7	0 - 3

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Connecticut Carcinogen Reporting**: None of the components are listed.
Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
Louisiana Reporting: None of the components are listed.
Louisiana Spill: None of the components are listed.
Massachusetts Spill: None of the components are listed.
Massachusetts Substances: The following components are listed: TOLUENE; 3-METHYLPENTANE; XYLENE; OCTANE; ETHYL ALCOHOL; PSEUDOCUMENE; HEPTANE (N-HEPTANE); PENTANE; CUMENE; ETHYL BENZENE; BENZENE; HEXANE;CYCLOHEXANE
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.
New Jersey Hazardous Substances: The following components are listed: MOTOR FUEL, n.o.s.; TOLUENE; XYLENES; OCTANE; ETHYL ALCOHOL; PSEUDOCUMENE; n-HEPTANE; PENTANE; CUMENE; ETHYL BENZENE; BENZENE; n-HEXANE;CYCLOHEXANE
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: The following components are listed: Toluene; Xylene (mixed); Benzene,1-methylethyl-; Ethylbenzene; Benzene; Hexane;Benzene, hexahydro-
New York Toxic Chemical Release Reporting: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: GASOLINE; BENZENE, METHYL-; PENTANE, 3-METHYL-; BENZENE, DIMETHYL-; OCTANE; DENATURED ALCOHOL; PSEUDOCUMENE; HEPTANE; PENTANE; BENZENE, (1-METHYLETHYL)-; BENZENE, ETHYL-; BENZENE; HEXANE;CYCLOHEXANE
Rhode Island Hazardous Substances: None of the components are listed.

California Prop. 65

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

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level

Continued on next page

Toluene	No.	Yes.	No.	7000 µg/day (ingestion) 13000 µg/day (inhalation)
Ethylbenzene	Yes.	No.	No.	No.
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA DSL & NDSL: All materials are either listed or exempt

EU regulations

Hazard symbol or symbols

Risk phrases : R12- Extremely flammable.
R45- May cause cancer.
R46- May cause heritable genetic damage.
R63- Possible risk of harm to the unborn child.
R20/21- Also harmful by inhalation and in contact with skin.
R48/20/21/22- Also harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
R38- Irritating to skin.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S53- Avoid exposure - obtain special instructions before use.
S2- Keep out of the reach of children.
S29- Do not empty into drains.
S36/37- Wear suitable protective clothing and gloves.
S46- If swallowed, seek medical advice immediately and show this container or label.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Section 16. Other Information

Label requirements : EXTREMELY FLAMMABLE LIQUID AND VAPOR. FLAMMABLE. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. MAY BE HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Hazardous Material Information System (U.S.A.) :

National Fire Protection Association (U.S.A.) :

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Disclaimer

Continued on next page

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Definitions of Material Safety Data Sheet Terminology

GOVERNMENT AGENCIES AND PRIVATE ASSOCIATIONS

ACGIH - American Conference of Governmental Industrial Hygienists, (private association)
DOT - United States Department of Transportation
EPA - United States Environmental Protection Agency
IARC - International Agency for Research on Cancer, (private association)
NFPA - National Fire Protection Association, (private association)
MSHA - Mine Safety and Health Administration, U.S. Department of Labor
NIOSH - National Institute of Occupational Safety and Health, U.S. Department of Health and Human Services
NTP - National Toxicology Program, (private association)
OSHA - Occupational Safety and Health Administration, U.S. Department of Labor
WHMIS- Workplace Hazardous Material Information System
CSA- Canadian Standards Association

HAZARD AND EXPOSURE INFORMATION

Acute Hazard - An adverse health effect which occurs rapidly as a result of short term exposure.
CAS # - American Chemical Society's Chemical Abstract service registry number which identifies the product and/or ingredients.
Ceiling - The concentration that should not be exceeded during any part of the working exposure
Chronic Hazard - An adverse health effect which generally occurs as a result of long term exposure or short term exposure with delayed health effects and is of long duration
Fire Hazard - A material that poses a physical hazard by being flammable, combustible, phyrophoric or an oxidizer as defined by 29 CFR 1910.1200
Hazard Class - DOT hazard classification
Hazardous Ingredients - Names of ingredients which have been identified as health hazards
IDLH- Immediately Dangerous to Life and Health, the airborne concentration below which a person can escape without respiratory protection and exposure up to 30 minutes, and not suffer debilitating or irreversible health effects. Established by NIOSH.
mg/m3 - Milligrams of contaminant per cubic meter of air, a mass to volume ratio
N/A - Not available or no relevant information found
NA - Not applicable
PEL - OSHA permissible exposure limit; an action level of one half this value may be applicable
ppm - Part per million (one volume of vapor or gas in one million volumes of air)
Pressure Hazard - A material that poses a physical hazard due to the potential of a sudden release of pressure such as explosive or a compressed gas as defined by 29 CFR 1910.1200
Reactive Hazard - A material that poses a physical hazard due to the potential to become unstable reactive, water reactive or that is an organic peroxide as defined by 29 CFR 1910.1200.
STEL - The ACGIH Short-Term Exposure Limit, a 15-minute Time-Weighted Average exposure which should not be exceeded at any time during a workday, even if the 8-hour TWA is less than the TLV.
TLV - ACGIH Threshold Limit Value, represented herein as an 8-hour TWA concentration.
8-hour TWA - The time weighted average 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.
LD50 – Single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of the defined animal population.
LC50 - The concentration of a substance in air that, when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50% of a defined animal population.

MATERIAL SAFETY DATA SHEET

Diesel Fuels

VALERO MARKETING & SUPPLY COMPANY
and Affiliates
P.O. Box 696000
San Antonio, TX 78269-6000

Emergency Phone Numbers
24 Hour Emergency: 866-565-5220
Chemtrec Emergency: 800-424-9300

General Assistance
General Assistance: 210-345-4593

BRAND NAMES: Valero, Diamond Shamrock, Shamrock, Ultramar, Beacon, Total

Section 1. Chemical Product and Company Identification

Common / Trade name : Diesel Fuels

Synonym : Diesel Fuels All Grades, Diesel Fuel No.2, Fuel Oil No.2, High Sulfur Diesel Fuel, Low Sulfur Diesel Fuel, Ultra Low Sulfur Diesel Fuel, CARB (California Air Resource Board) Diesel Fuel, Off-Road Diesel Fuel, Dyed Diesel Fuel, X Grade Diesel Fuel, X-1 Diesel Fuel

SYNONYMS/COMMON NAMES: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Material uses : This product is intended for use as a refinery feedstock, fuel, or for use in engineered processes. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

MSDS # : 102

CAS # : 68476-34-6

Section 2. Hazards Identification

Danger! Diesel Exhaust has been Reported to be an Occupational hazard due to NIOSH-reported potential carcinogenic properties.

Danger! Product May Contain or Release Hydrogen Sulfide. H2S is a highly toxic, highly flammable gas which can be fatal if inhaled at certain concentrations.

May cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard, can enter lungs and cause damage. May cause irritation or be harmful if inhaled or absorbed through the skin. Avoid prolonged or repeated skin contact. Combustible Liquid. Vapors may explode.

Physical state : Liquid. (May be dyed red.)

Emergency overview : Danger!

CAUSES EYE BURNS.
HARMFUL IF SWALLOWED.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BLOOD, KIDNEYS, LIVER, PERIPHERAL NERVOUS SYSTEM, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER.
COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FIRE.

Continued on next page

Do not ingest. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

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

Potential acute health effects

Eyes : Corrosive to eyes. May cause severe irritation, redness, tearing, blurred vision and conjunctivitis.

Skin : Prolonged or repeated contact may cause moderate irritation, defatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful.

Inhalation : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposure may cause behavioral changes. NIOSH Current Intelligence Bulletin 50 reports a potential occupational carcinogenic hazard exists due to human exposure to diesel exhaust.

Ingestion : Toxic if swallowed. May cause burns to mouth, throat and stomach. This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Medical conditions aggravated by over-exposure : Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray or mist may produce respiratory tract irritation, leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Over-exposure signs/symptoms : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest or sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

See toxicological information (section 11)

Section 3. Composition, information on ingredients

Name	CAS number	Concentration (%)
Diesel fuel	68476-34-6	85 - 95
Naphthalene	91-20-3	1 - 3
n-Nonane	111-84-2	1 - 3
Hexane (Other Isomers)	mixture	1 - 3
n-Heptane	142-82-5	1 - 2
n-Hexane	110-54-3	1 - 2
Octane (All Isomers)	111-65-9	1 - 2

Section 4. First Aid Measures

Eye contact : Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

Continued on next page

Skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention. Wash exposed area thoroughly with soap and water. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion : This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Section 5. Fire Fighting Measures

Flammability of the product : Combustible.

Auto-ignition temperature : 257.2°C (495°F)

Flash point : Closed cup: 51.67 to 87.78°C (125 to 190°F).

Flammable limits : Lower: 0.4% Upper: 8%

Products of combustion : These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_x, SO_x), particulate matter, VOC's.

Fire hazards in the presence of various substances : Flammable in the presence of open flames, sparks and static discharge.

Explosion hazards in the presence of various substances : Explosive in the presence of open flames, sparks and static discharge.

Fire-fighting media and instructions

Extinguishing media

Suitable : Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable : Do not use water jet.

Collect contaminated fire-fighting water separately. It must not enter the sewage system. Dike area of fire to prevent runoff. Decontaminate emergency personnel and equipment with soap and water.

Combustible liquid and vapor. Vapor may cause flash fire. 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.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. No additional remark.

Special remarks on fire hazards : No additional remark.

Continued on next page

Section 6. Accidental Release Measures

Personal precautions : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic,flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

Methods for cleaning up

Small 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.

Large spill : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

Handling : Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. Use only in well ventilated locations. Keep away from heat, spark and flames. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire.

Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, or using toilet facilities.

Keep out of reach of children. Failure to use caution may cause serious injury or illness. Never siphon by mouth. For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses. Wash thoroughly after handling. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, or using toilet facilities.

Continued on next page

Storage : Store in tightly closed containers in cool, dry, isolated and well ventilated area away from heat, sources of ignition and incompatible materials. Use non-sparking tools and explosion proof equipment. Ground lines, containers, and other equipment used during product transfer to reduce the possibility of a static induced spark. Do not "switch load" because of possible accumulation of a static charge resulting in a source of ignition. Use good personal hygiene practices.

Section 8. Exposure controls, personal protection

Engineering 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.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame Retardant Clothing is recommended.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protective equipment (Pictograms) : Consult your supervisor or S.O.P. for special handling direction.

Personal protection in case of a large spill : Splash goggles. Full suit. Vapor respirator. Boots. 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.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

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. Ensure that eyewash stations and safety showers are close to the workstation location.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Component	Exposure limits
Diesel fuel	**ACGIH TLV (United States, 1/2004). Skin Notes: 2002 Adoption.** TWA: 100 mg/m^3 8 hour(s). Form: Total hydrocarbons **NIOSH REL (United States, 6/2001).** STEL: 15 ppm 15 minute(s). Form: All forms TWA: 10 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 10 ppm 8 hour(s). Form: All forms **ACGIH TLV (United States, 5/2004). Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.** STEL: 15 ppm 15 minute(s). Form: All forms TWA: 10 ppm 8 hour(s). Form: All forms
Naphthalene	

Continued on next page

n-Nonane	**NIOSH REL (United States, 6/2001).** TWA: 200 ppm 10 hour(s). Form: All forms **ACGIH TLV (United States, 9/2004).** TWA: 200 ppm 8 hour(s). Form: All forms
Hexane (Other Isomers)	**ACGIH TLV (United States, 9/2004).** STEL: 1000 ppm 15 minute(s). Form: All forms TWA: 500 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** CEIL: 510 ppm 15 minute(s). Form: All forms
n-Heptane	**ACGIH TLV (United States, 9/2004).** STEL: 500 ppm 15 minute(s). Form: All forms TWA: 400 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 350 mg/m^3 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms
n-Hexane	**OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms **ACGIH TLV (United States, 9/2004). Skin** TWA: 50 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 50 ppm 10 hour(s). Form: All forms
Octane (All Isomers)	**NIOSH REL (United States, 6/2001).** CEIL: 385 ppm 15 minute(s). Form: All forms TWA: 75 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour(s). Form: All forms **ACGIH TLV (United States, 3/2004). Notes: 1999 Adoption.** TWA: 300 ppm 8 hour(s). Form: All forms

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state : Liquid. (May be dyed red.)

Color : Clear. Straw.

Odor : Kerosene (Strong.)

Boiling point : 162.78 to 371.11°C (325 to 700°F)

Melting/freezing point : May start to solidify at the following temperature: -51.15°C (-60.1°F) This is based on data for the following ingredient: n-Nonane. Weighted average: -92.6°C (-134.7°F)

Specific gravity : 0.84 to 0.93 (Water = 1) (@ 60 °F)

Vapor pressure : <0.7 kPa (<5.2 mm Hg) (at 20°C)

Vapor density : 3 (Air = 1)

Evaporation rate : 0.02

Section 10. Stability and reactivity data

Stability : The product is stable.

Hazardous polymerization : Will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Materials to avoid : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Conditions of reactivity : Flammable in the presence of open flames, sparks and static discharge.
Explosive in the presence of open flames, sparks and static discharge.

Continued on next page

Section 11. Toxicological Information

Toxicity data

DIESEL EXHAUST FUMES have been reported to be a potential occupational carcinogen in humans by NIOSH Current Intelligence Bulletin 50.

HEPTANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Heptane vapor is a narcotic. Concentrations of 10,000 to 15,000 ppm produced narcosis in mice within 30 to 60 minutes, while 15,000 to 20,000 ppm caused convulsions and death. At 48,000 ppm, respiratory arrest was produced in mice in 3 to 4 minutes from the start of exposure. Human subjects exposed to 1,000 ppm for 6 minutes, or to 2,000 ppm for 4 minutes, reported slight vertigo. At 5,000 ppm for 4 minutes, there was marked vertigo, inability to walk a straight line, hilarity, and incoordination, but no complaints of eye and upper respiratory tract or mucous membrane irritation. A 15-minute exposure at 5,000 ppm produced in some subjects a state of stupor lasting for 30 minutes after exposure. These subjects also reported loss of appetite, slight nausea, and a taste resembling gasoline for several hours after exposure. Although chronic nervous system affects have not been attributed to heptane, polyneuritis has been reported following prolonged exposure to a petroleum fraction with boiling range between 70C and 100C, and this fraction would normally contain various isomers of heptane as major ingredients.

n-HEXANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Hexane vapor is a narcotic and a mild upper respiratory irritant. Polyneuropathy (peripheral nerve damage) has been reported to occur in workers exposed to hexane vapors, characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity. Recovery ranges from no recovery to complete recovery depending upon the duration of exposure and severity of nerve damage. Concentrations of 30,000 ppm produced narcosis in mice within 30 to 60 minutes, convulsions and death occurred at 35,000 to 40,000 ppm, and at 64,000 ppm respiratory arrest was produced in 2.5 to 4.5 minutes from the start of exposure. Concentrations up to 8000 ppm produced no anesthesia. In human subjects, 2000 ppm for 10 minutes produced no effects, but 5000 ppm resulted in dizziness and a sensation of giddiness. Other investigators reported slight nausea, headache and irritation of the eyes and throat at 1400 to 1500 ppm. In industrial practice, mild narcotic symptoms such as dizziness have been observed when concentrations exceeded 1000 ppm, but not below 500 ppm.

NONANE causes a four hour LC50 in rats at concentrations of 3200 ppm, or at about the same level as VM&P Naphtha. This level is markedly lower than the lethal concentrations reported in earlier mice studies involving octane (13,500 ppm) and heptane (16,000 ppm), supporting the lower limit for nonane.

OCTANE can affect the body if it is inhaled, comes in contact with the skin or eyes or is swallowed. Octane vapor is a mild narcotic and mucous membrane irritant. Concentrations of 6600 to 13,700 ppm produced narcosis in mice in 30 to 90 minutes, the fatal concentration for animals is near 13,500 ppm. No chronic systemic effects have been reported in humans.

NAPHTHALENE can affect the body if it is inhaled, comes into contact with the eyes or the skin or if it is swallowed. Naphthalene vapor causes hemolysis and eye irritation, and may cause cataracts. Severe intoxication from ingestion of the solid results in characteristic manifestations of marked intravascular hemolysis and its consequences, including potentially fatal hyperkalemia. Initial symptoms include eye irritation, headache, confusion, excitement, malaise, profuse sweating, nausea, vomiting, abdominal pain, and irritation of the bladder. There may be progression to jaundice, hematuria, hemoglobinuria, renal tubular blockage, and acute renal shutdown. Hematologic features include red cell fragmentation, icterus, severe anemia with nucleated red cells, leukocytosis, and dramatic decreases in hemoglobin, hematocrit and red cell count; sometimes there is formation of Heinz bodies and methemoglobin. Individuals with a deficiency of glucose-6-phosphate dehydrogenase in erythrocytes may be more susceptible to hemolysis by naphthalene. Cataracts and ocular irritation have been produced experimentally in animals and have been described in humans. Of 21 workers exposed to high concentrations of fume or vapor for 5 years, 8 had peripheral lens opacities; in other studies, no abnormalities of the eyes have been detected in workers exposed to naphthalene for several years. The vapor causes eye irritation at 15 ppm. Eye contact with the solid may result in conjunctivitis, superficial injury to the cornea, chorioretinitis, scotoma, and diminished visual acuity. Naphthalene on the skin may cause hypersensitivity dermatitis, chronic dermatitis is rare.

HEXANE ISOMERS are three times as toxic to mice as is pentane. Narcosis was produced in mice within 30-60 minutes at concentrations of 30,000 ppm. In man, concentrations for 10 minutes at 2000 ppm produced no effects, but 5000 ppm caused dizziness and a sense of giddiness. Concentrations of 1400-1500 ppm produced slight nausea, headache, eye, and throat irritation.

Acute toxicity

Product/ingredient name	Result	Species	Dose
Diesel fuel	TDLo Oral	Rat	1.25 mL/kg
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg
	LD50 Dermal	Rat	>2500 mg/kg
	LD50 Oral	Rat	>490 mg/kg
	LD50 Unreported	Rat	1250 mg/kg
	TDLo Intraperitoneal	Rat	100 mg/kg
n-Hexane	LD50 Oral	Rat	25 g/kg
	LDLo Intraperitoneal	Rat	9100 mg/kg
	TDLo Oral	Rat	20000 mg/kg

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Diesel fuel	A3	3	-	-	-	-
Naphthalene	A4	2B	-	-	Possible	-

Continued on next page

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified A3 (Proven for animals.) by ACGIH [Diesel fuel]. Classified 3 (Not classifiable for humans.) by IARC [Diesel fuel].
Contains material which may cause damage to the following organs: blood, kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : Very hazardous by the following route of exposure: of eye contact (corrosive).
Hazardous by the following route of exposure: of skin contact (irritant), of ingestion, of inhalation (lung irritant).

Specific effects

Carcinogenic effects : Contains material which may cause cancer.. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which causes damage to the following organs: blood, kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Naphthalene	Acute EC50 1.96 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 1600 to 3400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2550 to 3400 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 2194 to 2459 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute EC50 6470 to 9140 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute EC50 5960 to 9190 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 32.9802 ppm Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 31.0265 ppm Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 19.7675 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 17.6998 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 2.6 to 2.89 ppm Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 2.1 ppm Fresh water	Fish - Coho salmon,silver salmon - Oncorhynchus kisutch	96 hours
	Acute LC50 1600 ug/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 17.4 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 1370 to 1680 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 1240 to 1620 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 1200 ug/L Marine water	Fish - Pink salmon - Oncorhynchus gorbuscha	96 hours
	Acute LC50 2920 to 3890 ug/L Fresh water	Daphnia - Water flea - Daphnia pulex	48 hours
	Acute LC50 9.93 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 12500 to 20500 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 2350 ug/L Marine water	Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio	48 hours
	Acute LC50 4.9 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
	Acute LC50 9820 to 13100 ug/L Fresh water	Crustaceans - Brine shrimp - Artemia sp.	48 hours
	Acute LC50 2.25 mg/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss	96 hours
	Acute LC50 25.4 mg/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 2160 to 2560 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Acute LC50 4000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
	Acute LC50 2000 to 4000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
	Acute LC50 4000 to 6000 ug/L Fresh water	Crustaceans - Shrimp - Macrobrachium kistnensis	48 hours
n-Heptane	Acute LC50 4924000 ug/L Fresh water	Fish - Western mosquitofish - Gambusia affinis	96 hours
	Acute LC50 375000 ug/L Fresh water	Fish - Mozambique tilapia - Tilapia mossambica	96 hours
n-Hexane	Acute LC50 113000 ug/L Fresh water	Fish - Mozambique tilapia - Tilapia mossambica	96 hours
	Acute LC50 2500 to 2980 ug/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours

Biodegradability

Biodegradability

Products of degradation : Decomposition products may include the following materials: carbon oxides (CO, CO_2) and water.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

Continued on next page

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

Consult your local or regional authorities.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1202	Diesel fuel	3 Combustible liquid.	III		Not available.
TDG Classification	UN1202	Diesel fuel Mixture	3	III		Not available.

Section 15. Regulatory Information

United States

HCS Classification : Combustible liquid
Toxic material
Corrosive material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 4(a) final test rules: Hexane (Other Isomers); n-Hexane
TSCA 8(a) PAIR: Naphthalene; n-Heptane; n-Nonane
TSCA 8(b) inventory: Hexane (Other Isomers); Naphthalene; n-Heptane; n-Hexane; n-Nonane; Diesel fuel; Octane (All Isomers); Toluene; Benzene

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: Hexane (Other Isomers); Naphthalene; n-Heptane; n-Hexane; n-Nonane; Octane (All Isomers)
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Hexane (Other Isomers): Fire hazard, Immediate (acute) health hazard; Naphthalene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; n-Heptane: Fire hazard; n-Hexane: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; n-Nonane: Fire hazard, Immediate (acute) health hazard; Octane (All Isomers): Fire hazard

Clean Water Act (CWA) 307: Naphthalene; Toluene; Benzene

Clean Water Act (CWA) 311: Naphthalene; Toluene; Benzene

Clean Air Act (CAA) 112 accidental release prevention: No products were found.

Clean Air Act (CAA) 112 regulated flammable substances: No products were found.

Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 313

	Product name	CAS number	Concentration
Form R - Reporting requirements :	Naphthalene	91-20-3	1 - 3
	n-Hexane	110-54-3	1 - 2
Supplier notification :	Naphthalene	91-20-3	1 - 3
	n-Hexane	110-54-3	1 - 2

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

Continued on next page

State regulations : Connecticut Carcinogen Reporting: Benzene
Connecticut Hazardous Material Survey: Naphthalene; n-Hexane; Toluene; Benzene
Illinois Toxic Substances Disclosure to Employee Act: Naphthalene; n-Hexane; Toluene; Benzene
Rhode Island Hazardous Substances: Naphthalene; n-Hexane; Toluene; Benzene
Pennsylvania RTK Hazardous Substances: Hexane (Other Isomers): (generic environmental hazard); Naphthalene: (environmental hazard, generic environmental hazard); n-Heptane: (generic environmental hazard); n-Hexane: (generic environmental hazard); n-Nonane: (generic environmental hazard); Octane (All Isomers): (generic environmental hazard); Toluene: (environmental hazard, generic environmental hazard); Benzene: (special hazard, environmental hazard, generic environmental hazard)
Florida: Naphthalene; n-Hexane; Toluene; Benzene
Michigan Critical Material: Toluene; Benzene
Massachusetts Substances: Hexane (Other Isomers); Naphthalene; n-Heptane; n-Hexane; n-Nonane; Octane (All Isomers); Toluene; Benzene
New Jersey: Naphthalene; n-Heptane; n-Hexane; n-Nonane; Diesel fuel; Octane (All Isomers); Toluene; Benzene

California Prop. 65

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

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Naphthalene	Yes.	No.	Yes.	No.
Toluene	No.	Yes.	No.	7000 µg/day (ingestion) 13000 µg/day (inhalation)
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)

Canada

WHMIS (Canada) : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive liquid.

CEPA DSL: Hexane (Other Isomers); Naphthalene; n-Heptane; n-Hexane; n-Nonane; Diesel fuel; Octane (All Isomers); Toluene; Benzene

EU regulations

Hazard symbol or symbols

Risk phrases : R40- Limited evidence of a carcinogenic effect.
R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases : S2- Keep out of the reach of children.
S29- Do not empty into drains.
S36/37- Wear suitable protective clothing and gloves.
S46- If swallowed, seek medical advice immediately and show this container or label.
S61- Avoid release to the environment. Refer to special instructions/safety data sheet.

Continued on next page

Section 16. Other Information

Label requirements : CAUSES EYE BURNS.
HARMFUL IF SWALLOWED.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BLOOD, KIDNEYS, LIVER, PERIPHERAL NERVOUS SYSTEM, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER.
COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FIRE.

Hazardous Material Information System (U.S.A.) :

National Fire Protection Association (U.S.A.) :

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Disclaimer

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Definitions of Material Safety Data Sheet Terminology

GOVERNMENT AGENCIES AND PRIVATE ASSOCIATIONS

ACGIH - American Conference of Governmental Industrial Hygienists, (private association)
DOT - United States Department of Transportation
EPA - United States Environmental Protection Agency
IARC - International Agency for Research on Cancer, (private association)
NFPA - National Fire Protection Association, (private association)
MSHA - Mine Safety and Health Administration, U.S. Department of Labor
NIOSH - National Institute of Occupational Safety and Health, U.S. Department of Health and Human Services
NTP - National Toxicology Program, (private association)
OSHA - Occupational Safety and Health Administration, U.S. Department of Labor
WHMIS- Workplace Hazardous Material Information System
CSA- Canadian Standards Association

HAZARD AND EXPOSURE INFORMATION

Continued on next page

Acute Hazard - An adverse health effect which occurs rapidly as a result of short term exposure.
CAS # - American Chemical Society's Chemical Abstract service registry number which identifies the product and/or ingredients.
Ceiling - The concentration that should not be exceeded during any part of the working exposure
Chronic Hazard - An adverse health effect which generally occurs as a result of long term exposure or short term exposure with delayed health effects and is of long duration
Fire Hazard - A material that poses a physical hazard by being flammable, combustible, phyrophoric or an oxidizer as defined by 29 CFR 1910.1200
Hazard Class - DOT hazard classification
Hazardous Ingredients - Names of ingredients which have been identified as health hazards
IDLH- Immediately Dangerous to Life and Health, the airborne concentration below which a person can escape without respiratory protection and exposure up to 30 minutes, and not suffer debilitating or irreversible health effects. Established by NIOSH.
mg/m3 - Milligrams of contaminant per cubic meter of air, a mass to volume ratio
N/A - Not available or no relevant information found
NA - Not applicable
PEL - OSHA permissible exposure limit; an action level of one half this value may be applicable
ppm - Part per million (one volume of vapor or gas in one million volumes of air)
Pressure Hazard - A material that poses a physical hazard due to the potential of a sudden release of pressure such as explosive or a compressed gas as defined by 29 CFR 1910.1200
Reactive Hazard - A material that poses a physical hazard due to the potential to become unstable reactive, water reactive or that is an organic peroxide as defined by 29 CFR 1910.1200.
STEL - The ACGIH Short-Term Exposure Limit, a 15-minute Time-Weighted Average exposure which should not be exceeded at any time during a workday, even if the 8-hour TWA is less than the TLV.
TLV - ACGIH Threshold Limit Value, represented herein as an 8-hour TWA concentration.
8-hour TWA - The time weighted average 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.
LD50 – Single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of the defined animal population.
LC50 - The concentration of a substance in air that, when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50% of a defined animal population.

MATERIAL SAFETY DATA SHEET

Crude Oil

VALERO MARKETING & SUPPLY COMPANY
and Affiliates
P.O. Box 696000
San Antonio, TX 78269-6000

Emergency Phone Numbers
24 Hour Emergency: 866-565-5220
Chemtrec Emergency: 800-424-9300

General Assistance
General Assistance: 210-345-4593

BRAND NAMES: Valero, Diamond Shamrock, Shamrock, Ultramar, Beacon, Total

Section 1. Chemical Product and Company Identification

Common / Trade name : Crude Oil

Synonym : Petroleum - Crude Oil, Petroleum Crude Oil Condensate.
Crude oil is a complex combination of hydrocarbons. It consists predominantly of paraffins, cyclic paraffins, and cyclic aromatic hydrocarbons having carbon numbers predominantly greater than C1. May also contain small amounts of benzene hydrocarbons, sulfur, and oxygenated compounds.

SYNONYMS/COMMON NAMES: This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Material uses : This product is intended for use as a refinery feedstock, fuel, or for use in engineered processes. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

MSDS # : 501

CAS # : 8002-05-9

Section 2. Composition, information on ingredients

Name	CAS number	Concentration (%)
Petroleum Crude Oil	8002-05-9	95 - 100
n-Hexane	110-54-3	2 - 8
n-Butane	106-97-8	1 - 7
Pentane	109-66-0	1 - 6
n-Heptane	142-82-5	1 - 5
Hexane (Other Isomers)	Mixture	1 - 5
Octane (All Isomers)	111-65-9	1 - 5
Benzene	71-43-2	0.2 - 5
Cyclohexane	110-82-7	1 - 4
Methylcyclohexane	108-87-2	1 - 4
n-Nonane	111-84-2	1 - 4
Propane	74-98-6	1 - 4
Cyclopentane	287-92-3	1 - 3
Ethylbenzene	100-41-4	1 - 3

Continued on next page

Xylene (o,m,p isomers)	1330-20-7	1 - 3
Hydrogen Sulfide	7783-06-4	0.1 - 3
Sulfur	7704-34-9	0.1 - 3
Toluene	108-88-3	1 - 2

Section 3. Hazards Identification

Danger! Contains Benzene. Cancer Hazard. Can cause kidney, liver and blood disorders. May cause irritation to eyes, skin and respiratory system. Avoid liquid, mist and vapor contact. Harmful or fatal if swallowed. Aspiration hazard; can enter lungs and cause damage. Product May Contain or Release Hydrogen Sulfide. May cause irritation or be harmful if inhaled or absorbed through the skin. Contains polycyclic aromatic compounds which have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application. Flammable/Combustible liquid. Vapors may explode.

Physical state : Liquid. (A THICK, FLAMMABLE, DARK YELLOW TO BROWN OR GREEN-BLACK LIQUID)

Emergency overview : Danger!

MAY BE FATAL IF INHALED.
CANCER HAZARD.
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
HARMFUL IF SWALLOWED.
CAUSES RESPIRATORY TRACT IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BLOOD, KIDNEYS, LUNGS, NERVOUS SYSTEM, LIVER, PERIPHERAL NERVOUS SYSTEM, GASTROINTESTINAL TRACT, RESPIRATORY TRACT, SKIN, BONE MARROW, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
FLAMMABLE LIQUID AND VAPO R.
VAPOR MAY CAUSE FLASH FIRE.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Do not ingest. Avoid prolonged contact with eyes, skin and clothing. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.

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

Potential acute health effects

Eyes : May cause severe irritation, redness, tearing, blurred vision and conjunctivitis.

Skin : Prolonged or repeated contact may cause moderate irritation, defatting (cracking), redness, itching, inflammation, dermatitis and possible secondary infection. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Injury may not appear serious at first. Within a few hours, tissues will become swollen, discolored and extremely painful.

Inhalation : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest and sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm. Repeated or prolonged exposure may cause behavioral changes.

Ingestion : Toxic if swallowed. This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Medical conditions aggravated by over-exposure : Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs. Preexisting eye, skin, heart, central nervous system and respiratory disorders may be aggravated by exposure to this product. Impaired kidney, liver and blood disorders may be aggravated by exposure to this product.

Continued on next page

Over-exposure signs/symptoms : Nasal and respiratory tract irritation, central nervous system effects including excitation, euphoria, contracted eye pupils, dizziness, drowsiness, blurred vision, fatigue, nausea, headache, loss of reflexes, tremors, convulsions, seizures, loss of consciousness, coma, respiratory arrest or sudden death could occur as a result of long term and/or high concentration exposure to vapors. May also cause anemia and irregular heart rhythm.

See toxicological information (section 11)

Section 4. First Aid Measures

Eye contact : Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness continues.

Skin contact : Remove contaminated clothing and shoes. Wash exposed area thoroughly with soap and water. Remove contaminated clothing promptly and launder before reuse. Contaminated leather goods should be discarded. If irritation persists or symptoms described in the MSDS develop, seek medical attention. High pressure skin injections are SERIOUS MEDICAL EMERGENCIES. Get immediate medical attention.

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion : This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. DO NOT INDUCE VOMITING. Aspiration into the lungs can cause severe chemical pneumonitis or pulmonary edema/hemorrhage, which can be fatal. May cause gastrointestinal disturbances. Symptoms may include irritation, depression, vomiting and diarrhea. May cause harmful central nervous system effects, similar to those listed under "inhalation".

Notes to physician : In case of ingestion, gastric lavage with activated charcoal can be used promptly to prevent absorption. Consideration should be given to the use of an intratracheal tube, to prevent aspiration. Irregular heart beat may occur, use of adrenalin is not advisable. Individuals intoxicated by the product should be hospitalized immediately, with acute and continuing attention to neurological and cardiopulmonary function. Positive pressure ventilation may be necessary. After the initial episode, individuals should be monitored for changes in blood variables and the delayed appearance of pulmonary edema and chemical pneumonitis. Such patients should be monitored for several days or weeks for delayed effects, including bone marrow toxicity, hepatic and renal impairment. Individuals with chronic pulmonary disease will be more seriously impaired, and recovery from inhalation exposure may be complicated. In case of skin injection, prompt debridement of the wound is necessary to minimize necrosis and tissue loss.

Section 5. Fire Fighting Measures

Flammability of the product : Flammable.

Auto-ignition temperature : 260°C (500°F)

Flash point : Closed cup: -40.15 to 65.15°C (-40.3 to 149.3°F).

Flammable limits : Lower: 0.4% Upper: 15%

Products of combustion : These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_X, SO_X), particulate matter, VOC's.

Fire hazards in the presence of various substances : Extremely flammable in the presence of open flames, sparks and static discharge.

Explosion hazards in the presence of various substances : Explosive in the presence of open flames, sparks and static discharge.

Fire-fighting media and instructions : Flammable Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. Water can be used to cool fire-exposed containers, structures and to protect personnel. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers.

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Collect contaminated fire-fighting water separately. It must not enter the sewage system. Dike area of fire to prevent runoff. Decontaminate emergency personnel and equipment with soap and water.

Highly flammable liquid and vapor. Vapor may cause flash fire. 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.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards : Dangerous when exposed to heat or flame. Vapors form flammable or explosive mixtures with air at room temperature. Vapor or gas may spread to distant ignition sources (pilot lights, welding equipment, electrical equipment, etc.) and flash back. Vapors may accumulate in low areas. Vapors may concentrate in confined areas. Flowing product can be ignited by self generated static electricity. Use adequate bonding and grounding to prevent static buildup. Runoff to sewer may cause fire or explosion hazard. Containers may explode in heat of fire. Irritating or toxic substances may be emitted upon thermal decomposition. For fires involving this material, do not enter any enclosed or confined space without proper protective equipment, which should include NIOSH approved self-contained breathing apparatus with full face mask. Clothing, rags or similar organic material contaminated with this product and stored in a closed space may undergo spontaneous combustion. Transfer to and from commonly bonded and grounded containers.

Special remarks on explosion hazards : No additional remark.

Section 6. Accidental Release Measures

Personal precautions : Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic,flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Gasoline may contain oxygenated blend products (Ethanol, MTBE, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424- 8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

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Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

Handling : Do not ingest. Avoid prolonged contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. Use only in well ventilated locations. Keep away from heat, spark and flames. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire.
Use good personal hygiene practices. After handling this product, wash hands before eating, drinking, or using toilet facilities.
Keep out of reach of children. Failure to use caution may cause serious injury or illness. Never siphon by mouth. For use as a motor fuel only. Do not use as a cleaning solvent or for other non-motor fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers.

Storage : Store in tightly closed containers in cool, dry, isolated and well ventilated area away from heat, sources of ignition and incompatible materials. Use non-sparking tools and explosion proof equipment. Ground lines, containers, and other equipment used during product transfer to reduce the possibility of a static induced spark. Do not "switch load" because of possible accumulation of a static charge resulting in a source of ignition. Use good personal hygiene practices.

Section 8. Exposure controls, personal protection

Engineering controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Keep away from eyes. Eye contact can be avoided by wearing safety glasses or chemical splash goggles.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Keep away from skin. Skin contact can be minimized by wearing protective gloves such as neoprene, nitrile-butadiene rubber, etc. and, where necessary, impervious clothing and boots. Leather goods contaminated with this product should be discarded. A source of clean water should be available in the work area for flushing eyes and skin. Flame Retardant Clothing is recommended.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

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Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protective equipment (Pictograms) : Consult your Supervisor or S.O.P. for special handling directions.

Personal protection in case of a large spill : Splash goggles. Full suit. Vapor respirator. Boots. 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.

Component	Exposure limits
Petroleum Crude Oil	**NIOSH REL (United States, 12/2001).** CEIL: 1800 mg/m³ 15 minute/minutes. Form: All forms TWA: 350 mg/m³ 10 hour/hours. Form: All forms
n-Hexane	**OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour/hours. Form: All forms **ACGIH TLV (United States, 9/2004). Skin** TWA: 50 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 50 ppm 10 hour/hours. Form: All forms
n-Butane	**ACGIH TLV (United States, 1/2004). Notes: ACGIH 2004 Adoption** TWA: 1000 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 800 ppm 10 hour/hours. Form: All forms
Pentane	**ACGIH TLV (United States, 9/2004). Notes: 1998 Adoption.** TWA: 600 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** CEIL: 610 ppm 15 minute/minutes. Form: All forms TWA: 120 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 1000 ppm 8 hour/hours. Form: All forms
n-Heptane	**ACGIH TLV (United States, 9/2004).** STEL: 500 ppm 15 minute/minutes. Form: All forms TWA: 400 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 350 mg/m³ 10 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour/hours. Form: All forms
Hexane (Other Isomers)	**ACGIH TLV (United States, 9/2004).** STEL: 1000 ppm 15 minute/minutes. Form: All forms TWA: 500 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** CEIL: 510 ppm 15 minute/minutes. Form: All forms
Octane (All Isomers)	**NIOSH REL (United States, 6/2001).** CEIL: 385 ppm 15 minute/minutes. Form: All forms TWA: 75 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 500 ppm 8 hour/hours. Form: All forms **ACGIH TLV (United States, 3/2004). Notes: 1999 Adoption.** TWA: 300 ppm 8 hour/hours. Form: All forms
Benzene	**NIOSH REL (United States, 6/2001). Notes: See Appendix A - NIOSH Potential Occupational Carcinogen** STEL: 1 ppm 15 minute/minutes. Form: All forms TWA: 0.1 ppm 10 hour/hours. Form: All forms

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	ACGIH TLV (United States, 1/2005). Skin STEL: 2.5 ppm 15 minute/minutes. Form: All forms TWA: 0.5 ppm 8 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** STEL: 5 ppm 15 minute/minutes. Form: All forms TWA: 1 ppm 8 hour/hours. Form: All forms
Cyclohexane	**ACGIH TLV (United States, 1/2004).** TWA: 100 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 300 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 300 ppm 8 hour/hours. Form: All forms
Methylcyclohexane	**ACGIH TLV (United States, 1/2005).** TWA: 400 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 12/2001).** TWA: 400 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 8/1997).** TWA: 500 ppm 8 hour/hours. Form: All forms
n-Nonane	**NIOSH REL (United States, 6/2001).** TWA: 200 ppm 10 hour/hours. Form: All forms **ACGIH TLV (United States, 9/2004).** TWA: 200 ppm 8 hour/hours. Form: All forms
Propane	**ACGIH TLV (United States, 1/2004). Notes: ACGIH 2004 Adoption** TWA: 1000 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** TWA: 1000 ppm 10 hour/hours. Form: All forms
Cyclopentane	**ACGIH TLV (United States, 1/2005).** TWA: 600 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 12/2001).** TWA: 600 ppm 10 hour/hours. Form: All forms
Ethylbenzene	**ACGIH TLV (United States, 1/2004).** STEL: 125 ppm 15 minute/minutes. Form: All forms TWA: 100 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 125 ppm 15 minute/minutes. Form: All forms TWA: 100 ppm 10 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 100 ppm 8 hour/hours. Form: All forms
Xylene (o,m,p isomers)	**ACGIH TLV (United States, 5/2004).** STEL: 150 ppm 15 minute/minutes. Form: All forms TWA: 100 ppm 8 hour/hours. Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 100 ppm 8 hour/hours. Form: All forms
Hydrogen Sulfide	**ACGIH TLV (United States, 9/2004).** TWA: 10 ppm 8 hour/hours. Form: All forms STEL: 15 ppm 15 minute/minutes. Form: All forms **NIOSH REL (United States, 12/2001).** CEIL: 10 ppm 10 minute/minutes. Form: All forms **OSHA PEL Z2 (United States, 8/1997).** CEIL: 20 ppm Form: All forms AMP: 50 ppm 10 minute/minutes. Form: All forms
Toluene	**ACGIH TLV (United States, 5/2004). Skin Notes: 1996 Adoption Refers to Appendix A -- Carcinogens.** TWA: 50 ppm 8 hour/hours. Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 150 ppm 15 minute/minutes. Form: All forms TWA: 100 ppm 10 hour/hours. Form: All forms **OSHA PEL Z2 (United States, 6/2002).** AMP: 500 ppm 10 minute/minutes. Form: All forms

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CEIL: 300 ppm Form: All forms
TWA: 200 ppm 8 hour/hours. Form: All forms

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical state	:	Liquid. (A THICK, FLAMMABLE, DARK YELLOW TO BROWN OR GREEN-BLACK LIQUID)
Color	:	BLACK, BROWN, GREEN, YELLOW (Dark.)
Odor	:	Petroleum odor.
Boiling point	:	30 to 537.8°C (86 to 1000°F)
Melting/freezing point	:	-72.78°C (-99°F)
Specific gravity	:	0.63 to 1.1 (Water = 1) (@ 60 °F)
Vapor pressure	:	0 to 96.5 kPa (0 to 724 mm Hg) (at 20°C)
Vapor density	:	The highest known value is 4.4 (Air = 1) (n-Nonane). Weighted average: 3.23 (Air = 1)
Volatility	:	Essentially 100%
Evaporation rate	:	10 to 11 compared with Butyl acetate.
Solubility	:	Very slightly soluble in cold water, hot water.

Section 10. Stability and reactivity data

Stability and reactivity	:	The product is stable.
Incompatibility with various substances	:	Reactive with oxidizing agents, reducing agents, acids, alkalis.
Hazardous decomposition products	:	These products are carbon oxides (CO, CO_2), nitrogen and sulfur oxides (NO_X, SO_X), particulate matter, VOC's.
Hazardous polymerization	:	Will not occur.

Section 11. Toxicological Information

Toxicity data

CRUDE OIL - Lifetime skin painting studies in animals with crude oil fractions have produced weak to moderate carcinogenic activity following prolonged and repeated exposure. Washing the animals' skin with soap and water between applications greatly reduces tumor formation. Repeated dermal application of two different crude oils in rats produced systemic toxicity in blood, liver, thymus and bone marrow. Repeated dermal application to pregnant rats produced maternal toxicity and fetal developmental toxicity.

BENZENE is considered to be a carcinogen to humans, and may cause adverse health effects following exposure via inhalation, ingestion or dermal or eye contact. Acute inhalation of benzene by rats, mice or rabbits caused narcosis, spontaneous heart contractions (ventricular fibrillation) and death due to respiratory paralysis. Subchronic inhalation of benzene by rats produced decreased white blood cell counts, decreased bone marrow cell activity, increased red blood cell activity and cataracts. In rats, chronic inhalation or oral administration of benzene produced cancers of the liver, mouth and Zymbal gland. Acute inhalation exposure of benzene in humans has caused nerve inflammation (polyneuritis), central nervous system depression and cardiac sensitization. Chronic exposure to benzene has produced anorexia and irreversible injury to the blood forming organs. Effects include aplastic anemia and leukemia. Animal studies have demonstrated testicular effects, alterations in reproductive cycles, chromosomal aberrations, and embryo/fetotoxicity. No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother.

n-HEXANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Hexane vapor is a narcotic and a mild upper respiratory irritant. Polyneuropathy (peripheral nerve damage) has been reported to occur in workers exposed to hexane vapors, characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity. Recovery ranges from no recovery to complete recovery depending upon the duration of exposure and severity of nerve damage. Concentrations of 30,000 ppm produced narcosis in mice within 30 to 60 minutes, convulsions and death occurred at 35,000 to 40,000 ppm, and at 64,000 ppm respiratory arrest was produced in 2.5 to 4.5 minutes from the start of exposure. Concentrations up to 8000 ppm produced no anesthesia. In human subjects, 2000 ppm for 10 minutes produced no effects, but 5000 ppm resulted in dizziness and a sensation of giddiness. Other investigators reported slight nausea, headache and irritation of the eyes and throat at 1400 to 1500 ppm. In industrial practice, mild narcotic symptoms such as dizziness have been observed when concentrations exceeded 1000 ppm, but not below 500 ppm.

HEXANE ISOMERS are three times as toxic to mice as is pentane. Narcosis was produced in mice within 30-60 minutes at concentrations of 30,000 ppm. In man, concentrations for 10 minutes at 2000 ppm produced no effects, but 5000 ppm caused dizziness and a sense of giddiness. Concentrations of 1400-1500 ppm produced slight nausea, headache, eye, and throat irritation.

HEPTANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. Heptane vapor is a narcotic. Concentrations of 10,000 to 15,000 ppm produced narcosis in mice within 30 to 60 minutes, while 15,000 to 20,000 ppm caused convulsions and death. At 48,000 ppm, respiratory arrest was produced in mice in 3 to 4 minutes from the start of exposure. Human subjects exposed to 1,000 ppm for 6 minutes, or to 2,000

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ppm for 4 minutes, reported slight vertigo. At 5,000 ppm for 4 minutes, there was marked vertigo, inability to walk a straight line, hilarity, and incoordination, but no complaints of eye and upper respiratory tract or mucous membrane irritation. A 15-minute exposure at 5,000 ppm produced in some subjects a state of stupor lasting for 30 minutes after exposure. These subjects also reported loss of appetite, slight nausea, and a taste resembling gasoline for several hours after exposure. Although chronic nervous system affects have not been attributed to heptane, polyneuritis has been reported following prolonged exposure to a petroleum fraction with boiling range between 70C and 100C, and this fraction would normally contain various isomers of heptane as major ingredients.

PENTANE can affect the body if it is inhaled, comes in contact with the eyes or skin, or is swallowed. The chief effects of inhalation are narcosis and irritation of the respiratory passages. Exposures of 90,000 to 120,000 ppm resulted in narcosis in animals in 5 to 6 minutes, 130,000 ppm was fatal with respiratory arrest occurring within 5 minutes of exposure. Pentane injected subcutaneously in rats produced temporary impairment of liver function and moderate neutropenia. While other aliphatic hydrocarbons produce drowsiness and mild irritation of the eyes and nose in human subjects, no symptoms resulted from exposure to pentane vapor for 10 minutes at 5000 ppm. Chronic exposure to high concentrations may lead to polyneuropathy (peripheral nerve damage), characterized by progressive weakness and numbness in the extremities, loss of deep tendon reflexes and reduction of motor nerve conduction velocity.

METHYLCYCLOHEXANE may cause light-headedness and drowsiness. It may also cause a slight irritation of the eyes, nose, and throat. At high concentrations, it may cause unconsciousness and death. Prolonged exposure to the liquid may cause skin irritation. Vapors produce a mild narcotic effect. Concentrations of 10,000 to 12,500 ppm were fatal to mice. Rabbits exposed to 3300 ppm for 300 hours showed mild evidence of liver and kidney injury, while 1200 ppm was innocuous for rabbits, and prolonged exposure at 370 ppm was harmless to monkeys. No toxic effects from industrial exposure have been reported. Prolonged or repeated skin contact may produce drying and irritation due to defatting action.

CYCLOHEXANE can affect the body if it is inhaled, swallowed, or comes in contact with the eyes or skin. It is primarily a local irritant and central nervous system depressant. The depressant effect is from exposure to concentrations above 12,000 ppm, while prolonged or repeated exposure to concentrations above 300 ppm produces a mild irritation of the eyes and upper respiratory tract.

CYCLOPENTANE is a central nervous system depressant. Symptoms involving a high level acute exposure are excitement, loss of equilibrium, stupor, coma, and rarely, respiratory failure. Toxicological data is limited, and available documentation is based on the effects of n-pentane demonstrated in animal studies.

ETHYLBENZENE can affect the body if it is inhaled, swallowed or comes in contact with the eyes or skin. It is primarily an irritant of skin, and to some degree, of eyes and upper respiratory tract. Systemic absorption causes depression of the central nervous system with narcosis at very high concentrations. On the eyes and nose, the vapor at 5000 ppm causes intolerable irritation, eye irritation and lacrimation are immediate and severe at 2000 ppm, irritation and tearing occur at 1000 ppm although tolerance develops rapidly, and the vapor is a transient irritant on human eyes at 200 ppm. Aspiration of small amounts causes extensive edema and hemorrhage of lung tissue.
A draft report on a study conducted by the National Toxicology program states that lifetime inhalation exposure of rats and mice to concentrations of ethylbenzene(750 ppm) resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations of ethlybenzene (75 ppm or 250 ppm). The draft report does not address the relevance of these results to humans.

NONANE causes a four hour LC50 in rats at concentrations of 3200 ppm, or at about the same level as VM&P Naphtha. This level is markedly lower than the lethal concentrations reported in earlier mice studies involving octane (13,500 ppm) and heptane (16,000 ppm), supporting the lower limit for nonane.

OCTANE can affect the body if it is inhaled, comes in contact with the skin or eyes or is swallowed. Octane vapor is a mild narcotic and mucous membrane irritant. Concentrations of 6600 to 13,700 ppm produced narcosis in mice in 30 to 90 minutes, the fatal concentration for animals is near 13,500 ppm. No chronic systemic effects have been reported in humans.

TOLUENE can affect the body if it is inhaled, comes in contact with the eyes or skin or it is swallowed. It may also enter the body through the skin. Toluene vapors cause narcosis. Controlled exposures of human subjects to 200 ppm for 8 hours produced mild fatigue, weakness, confusion, lacrimation and paresthesia. At 600 ppm for 8 hours, there was euphoria, headache, dizziness, dilated pupils and nausea. At 800 ppm for 8 hours, symptoms were more pronounced, and after effects included nervousness, muscular fatigue and insomnia persisting for several days. In workers exposed for many years to concentrations in the range of 80 to 300 ppm, there was no clinical or laboratory evidence of altered liver function. Toluene exposure does not result in the same chronic injury to bone marrow caused by benzene. Liquid splashed in the eyes of workers has caused transient corneal damage and conjunctival irritation, complete recovery occurred within 48 hours. Animal studies have shown that inhalation of high levels of toluene produced cardiac sensitization. Such sensitization may cause fatal changes in heart rhythms. This later effect was shown to be enhanced by hypoxia or the injection of adrenalin-like agents. Workers exposed at less than 200 ppm have complained of headache, lassitude and nausea, but physical findings were essentially negative. At concentrations between 200 and 500 ppm, impairment of coordination, momentary loss of memory and anorexia were present. Between 500 and 1500 ppm, palpitation, extreme weakness, pronounced loss of coordination and impairment of reaction time were noted. The red cell count fell in many instances and there were cases of aplastic anemia in which recovery followed intensive hospital treatment (although some of the effects may have been due to benzene impurity). Toluene has been reported to decrease immunological responses and cause recordable hearing loss in test animals. Damages genetic material in mammalian test systems. May cause adverse reproductive effects based on animal testing.

XYLENE can affect the body if it is inhaled, comes in contact with the eyes or skin or it is swallowed. It may also enter the body through the skin. Xylene vapor irritates the eyes, mucous membranes and skin. At high concentrations it causes narcosis. In animals, xylene causes blood changes reflecting mild toxicity to the hematopoietic system. Laboratory animals exposed by various routes to high does of xylene showed evidence of effects in the liver, kidneys, lungs, spleen, heart and adrenals. Rats exposed to xylene vapor during pregnancy showed embryo/fetotoxic effects. Mice exposed orally to doses producing maternal toxicity also showed embryo or fetotoxic effects. Laboratory rats exposed to high concentrations of toluene experienced recordable hearing loss. In humans, exposure to high concentrations can cause dizziness, excitement, drowsiness, incoordination and a staggering gait. Workers exposed to concentrations above 200 ppm complain of anorexia, nausea, vomiting and abdominal pain. Brief exposures of humans to 200 ppm caused irritation of the eyes, nose and throat. There are reports of reversible corneal vacuolation in workers exposed to xylene, or to xylene plus other volatile solvents.

HYDROGEN SULFIDE can affect the body if it is inhaled or if it comes into contact with the eyes, skin, nose or throat. It can also affect the body if it is swallowed. It is colorless and has the odor of rotten eggs. However, its odor cannot be used as an indication of its presence since one of the first effects of H2S exposure is the loss of the sense of smell. Inhalation of high concentrations of hydrogen sulfide, 1000 to 2000 ppm, may cause coma after a single

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breath and may be rapidly fatal, convulsions can also occur. Hydrogen sulfide gas is a rapidly acting systemic poison which causes respiratory paralysis with consequent asphyxia at high concentrations (500 to 1000 ppm). A case of polyneuritis and encephalopathy from one day's exposure to a concentration insufficient to cause loss of consciousness has been reported. It irritates the eyes and respiratory tract at lower concentrations (50 to 500 ppm). Pulmonary edema and bronchial pneumonia may follow prolonged exposure at concentrations exceeding 250 ppm. Exposure to concentrations of hydrogen sulfide around 50 ppm for one hour may produce rhinitis, pharyngitis, bronchitis, pneumonitis, acute conjunctivitis with pain, lacrimation and photophobia, in severe form this may progress to keratoconjunctivitis and vesiculation of the corneal epithelium. In lower concentrations, hydrogen sulfide may cause headache, fatigue, irritability, insomnia, and gastrointestinal disturbances, as well as central nervous system disturbances, causing excitation and dizziness. Repeated exposure to hydrogen sulfide results in increased susceptibility, so that eye irritation, cough and systemic effects may result from concentrations previously tolerated without any effect.

Skin painting studies in laboratory animals with products containing **POLYCYCLIC AROMATIC COMPOUNDS** have resulted in severe irritation and systemic toxicity, including cancers. Polycyclic aromatic compounds have been shown to cause anemia, disorders of the liver, bone marrow and lymphoid tissues in rats following dermal application.

Ingredient name	Test	Result	Route	Species
Petroleum Crude Oil	LD50	>4300 mg/kg	Oral	Rat
	LD50	>4300 mg/kg	Oral	Mouse
Pentane	LD50	400 mg/kg	Oral	Rat
Benzene	LD50	930 mg/kg	Oral	Rat
	LD50	4700 mg/kg	Oral	Mouse
	LD50	5700 mg/kg	Oral	Mammal
	LD50	48 mg/kg	Dermal	Mouse
	LDLo	50 mg/kg	Oral	man
Cyclohexane	LD50	12705 mg/kg	Oral	Rat
	LD50	813 mg/kg	Oral	Mouse
	LDLo	5500 mg/kg	Oral	Rabbit
Methylcyclohexane	LD50	>3200 mg/kg	Oral	Rat
	LD50	2250 mg/kg	Oral	Mouse
Cyclopentane	LD50	11400 mg/kg	Oral	Rat
	LD50	12800 mg/kg	Oral	Mouse
Ethylbenzene	LD50	3500 mg/kg	Oral	Rat
Xylene (o,m,p isomers)	LD50	4300 mg/kg	Oral	Rat
	LD50	2119 mg/kg	Oral	Mouse
	LD50	4300 mg/kg	Oral	Mammal
	LD50	>1700 mg/kg	Dermal	Rabbit
	LDLo	50 mg/kg	Oral	human
Hydrogen Sulfide	LC50	444 ppm (1 hour/hours)	Inhalation	Rat
	LC50	673 ppm (1 hour/hours)	Inhalation	Mouse
Sulfur	LDLo	175 mg/kg	Oral	Rabbit
Toluene	LD50	636 mg/kg	Oral	Rat
	LDLo	50 mg/kg	Oral	human

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified 2 (Suspected for humans.) by European Union [Petroleum Crude Oil]. Classified A1 (Confirmed for humans.) by ACGIH, 1 (Proven for humans.) by IARC, 1 (Known to be human carcinogens.) by NTP, + (Proven.) by OSHA, + (Proven.) by NIOSH, 1 (Proven for humans.) by European Union [Benzene]. Classified A3 (Proven for animals.) by ACGIH, 2B (Possible for humans.) by IARC [Ethylbenzene]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Xylene (o,m,p isomers)]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Toluene].
Contains material which causes damage to the following organs: blood, kidneys, lungs, the nervous system, liver, peripheral nervous system, gastrointestinal tract, upper respiratory tract, skin, bone marrow, central nervous system (CNS), eye, lens or cornea.

Other toxic effects on humans : Extremely hazardous in case of ingestion.
Very hazardous in case of eye contact (irritant), .
Hazardous in case of skin contact (irritant).
Slightly hazardous in case of inhalation (lung irritant).

Special remarks on toxicity to animals : No additional remark.

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Special remarks on chronic effects on humans : No additional remark.

Special remarks on other toxic effects on humans : No additional remark.

Specific effects

Carcinogenic effects : Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure.

Target organs : Contains material which causes damage to the following organs: blood, kidneys, lungs, the nervous system, liver, peripheral nervous system, gastrointestinal tract, upper respiratory tract, skin, bone marrow, central nervous system (CNS), eye, lens or cornea.

Section 12. Ecological Information

Ecotoxicity data

Ingredient name	Species	Period	Result
n-Hexane	Pimephales promelas (LC50)	96 hour/hours	2.5 mg/l
Benzene	Daphnia magna (EC50)	48 hour/hours	9.23 mg/l
	Daphnia magna (EC50)	48 hour/hours	10 mg/l
	Daphnia magna (EC50)	48 hour/hours	11.73 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	5.3 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	5.9 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	9.2 mg/l
Cyclohexane	Pimephales promelas (LC50)	96 hour/hours	4.53 mg/l
	Pimephales promelas (LC50)	96 hour/hours	32.71 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	34.72 mg/l
	Pimephales promelas (LC50)	96 hour/hours	42.33 mg/l
	Poecilia reticulata (LC50)	96 hour/hours	57.68 mg/l
	Pimephales promelas (LC50)	96 hour/hours	93 mg/l
Ethylbenzene	Daphnia magna (EC50)	48 hour/hours	2.93 mg/l
	Daphnia magna (EC50)	48 hour/hours	2.97 mg/l
	Selenastrum capricornutum (EC50)	48 hour/hours	7.2 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	4.2 mg/l
	Pimephales promelas (LC50)	96 hour/hours	9.09 mg/l
	Poecilia reticulata (LC50)	96 hour/hours	9.6 mg/l
Xylene (o,m,p isomers)	Oncorhynchus mykiss (LC50)	96 hour/hours	3.3 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	8.2 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	8.6 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	12 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	13.3 mg/l
	Pimephales promelas (LC50)	96 hour/hours	13.4 mg/l
Hydrogen Sulfide	Pimephales promelas (LC50)	96 hour/hours	0.007 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.007 mg/l
	Pimephales promelas (LC50)	96 hour/hours	0.0071 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	0.009 mg/l
	Pimephales promelas (LC50)	96 hour/hours	0.0107 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	0.012 mg/l
Sulfur	Daphnia magna (EC50)	48 hour/hours	>5000 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	<14 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	>180 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	>180 mg/l
Toluene	Daphnia magna (EC50)	48 hour/hours	6 mg/l
	Daphnia magna (EC50)	48 hour/hours	6.56 mg/l
	Oncorhynchus mykiss (EC50)	48 hour/hours	6.78 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	5.8 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	6.78 mg/l

Continued on next page

Pimephales promelas (LC50) 96 hour/hours 12.6 mg/l

Products of degradation : These products are carbon oxides (CO, CO_2) and water.

Toxicity of the products of biodegradation : The products of biodegradation are as toxic as the original product.

Special remarks on the products of biodegradation : No additional remark.

Section 13. Disposal Considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

Consult your local or regional authorities.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1267	PETROLEUM CRUDE OIL	3	I (IBP equal to or less than 95 degrees F) II (IBP greater than 95 degrees F; Flash Point less than 73 degrees F) III (IBP greater than 95 degrees F; Flash Pont greater than or equal to 73 degrees F & less than or equal to 141 degrees		**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 1 L **Cargo aircraft** Quantity limitation: 30 L **Special provisions** T11, TP1, TP8
TDG Classification	UN1267	PETROLEUM CRUDE OIL	3	I (IBP equal to or less than 95 degrees F) II (IBP greater than 95 degrees F; Flash Point less than 73 degrees F) III (IBP greater than 95 degrees F; Flash Pont greater than or equal to 73 degrees F & less than or equal to 141 degrees		-

Continued on next page

Section 15. Regulatory Information

United States

U.S. Federal regulations : TSCA 4(a) final test rules: n-Hexane; Hexane (Other Isomers)
TSCA 8(a) PAIR: Cyclopentane; n-Heptane; Methylcyclohexane; n-Nonane; Pentane
TSCA 8(b) inventory: Petroleum Crude Oil; Benzene; n-Butane; Cyclohexane; Cyclopentane; Ethylbenzene; n-Heptane; n-Hexane; Hexane (Other Isomers); Hydrogen Sulfide; Methylcyclohexane; n-Nonane; Octane (All Isomers); Pentane; Propane; Sulfur ; Toluene; Xylene (o,m,p isomers)

SARA 302/304/311/312 extremely hazardous substances: Hydrogen Sulfide
SARA 302/304 emergency planning and notification: Hydrogen Sulfide
SARA 302/304/311/312 hazardous chemicals: Petroleum Crude Oil; Benzene; n-Butane; Cyclohexane; Cyclopentane; Ethylbenzene; n-Heptane; n-Hexane; Hexane (Other Isomers); Hydrogen Sulfide; Methylcyclohexane; n-Nonane; Octane (All Isomers); Pentane; Propane; Sulfur ; Toluene; Xylene (o,m,p isomers)
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Petroleum Crude Oil: Fire hazard, Immediate (acute) health hazard; Benzene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; n-Butane: Fire hazard, Immediate (acute) health hazard; Cyclohexane: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Cyclopentane: Fire hazard; Ethylbenzene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; n-Heptane: Fire hazard; n-Hexane: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Hexane (Other Isomers): Fire hazard, Immediate (acute) health hazard; Hydrogen Sulfide: Fire hazard, Sudden release of pressure, Immediate (acute) health hazard, Delayed (chronic) health hazard; Methylcyclohexane: Fire hazard, Immediate (acute) health hazard; n-Nonane: Fire hazard, Immediate (acute) health hazard; Octane (All Isomers): Fire hazard; Pentane: Fire hazard, Immediate (acute) health hazard; Propane: Fire hazard, Sudden release of pressure; Sulfur : Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Toluene: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Xylene (o,m,p isomers): Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: Benzene; Ethylbenzene; Toluene

Clean Water Act (CWA) 311: Benzene; Cyclohexane; Ethylbenzene; Toluene; Xylene (o,m,p isomers)

Clean Air Act (CAA) 112 accidental release prevention: Hydrogen Sulfide; Pentane; Propane

Clean Air Act (CAA) 112 regulated flammable substances: Pentane; Propane

Clean Air Act (CAA) 112 regulated toxic substances: Hydrogen Sulfide

SARA 313

Form R - Reporting requirements :

Product name	CAS number	Concentration
n-Hexane	110-54-3	2 - 8
Benzene	71-43-2	0.2 - 5
Cyclohexane	110-82-7	1 - 4
Ethylbenzene	100-41-4	1 - 3
Xylene (o,m,p isomers)	1330-20-7	1 - 3
Hydrogen Sulfide	7783-06-4	0.1 - 3
Toluene	108-88-3	1 - 2

Supplier notification :

n-Hexane	110-54-3	2 - 8
Benzene	71-43-2	0.2 - 5
Cyclohexane	110-82-7	1 - 4
Ethylbenzene	100-41-4	1 - 3
Xylene (o,m,p isomers)	1330-20-7	1 - 3
Hydrogen Sulfide	7783-06-4	0.1 - 3
Toluene	108-88-3	1 - 2

Continued on next page

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Connecticut carcinogen reporting list.: Benzene
Connecticut hazardous material survey.: Benzene; n-Hexane; Toluene; Xylene (o,m,p isomers)
Illinois toxic substances disclosure to employee act: Benzene; n-Hexane; Toluene; Xylene (o,m,p isomers)
Rhode Island RTK hazardous substances: Benzene; n-Hexane; Toluene; Xylene (o,m,p isomers)
Pennsylvania RTK: Petroleum Crude Oil: (generic environmental hazard); Benzene: (special hazard, environmental hazard, generic environmental hazard); n-Butane: (generic environmental hazard); Cyclohexane: (environmental hazard, generic environmental hazard); Cyclopentane: (generic environmental hazard); Ethylbenzene: (environmental hazard, generic environmental hazard); n-Heptane: (generic environmental hazard); n-Hexane: (generic environmental hazard); Hexane (Other Isomers): (generic environmental hazard); Hydrogen Sulfide: (environmental hazard, generic environmental hazard); Methylcyclohexane: (generic environmental hazard); n-Nonane: (generic environmental hazard); Octane (All Isomers): (generic environmental hazard); Pentane: (generic environmental hazard); Propane: (generic environmental hazard); Sulfur : (generic environmental hazard); Toluene: (environmental hazard, generic environmental hazard); Xylene (o,m,p isomers): (environmental hazard, generic environmental hazard)
Florida: Benzene; n-Hexane; Toluene; Xylene (o,m,p isomers)
Michigan critical material: Benzene; Toluene; Xylene (o,m,p isomers)
Massachusetts RTK: Petroleum Crude Oil; Benzene; n-Butane; Cyclohexane; Cyclopentane; Ethylbenzene; n-Heptane; n-Hexane; Hexane (Other Isomers); Hydrogen Sulfide; Methylcyclohexane; n-Nonane; Octane (All Isomers); Pentane; Propane; Sulfur ; Toluene; Xylene (o,m,p isomers)
New Jersey: Petroleum Crude Oil; Benzene; n-Butane; Cyclohexane; Cyclopentane; Ethylbenzene; n-Heptane; n-Hexane; Hydrogen Sulfide; Methylcyclohexane; n-Nonane; Octane (All Isomers); Pentane; Propane; Sulfur ; Toluene; Xylene (o,m,p isomers)

WARNING: This product contains chemical/chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.: Benzene; Ethylbenzene; Toluene
WARNING: This product contains chemical/chemicals known to the state of California to cause reproductive harm (female).: No products were found.
WARNING: This product contains chemical/chemicals known to the state of California to cause reproductive harm (male).: Benzene
California prop. 65 (no significant risk level): Benzene: 6.4 µg/day (ingestion), 13 µg/day (inhalation)
California prop. 65 (Maximum Acceptable Dosage Level): Benzene: 24 µg/day (ingestion), 49 µg/day (inhalation); Toluene: 7000 µg/day (ingestion), 13000 µg/day (inhalation)
WARNING: This product contains chemical/chemicals known to the state of California to cause birth defects or other reproductive harm.: Benzene; Toluene
WARNING: This product contains chemical/chemicals known to the state of California to cause cancer.: Benzene; Ethylbenzene

Canada

WHMIS (Canada) : Class B-2: Flammable liquid
Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA DSL: Petroleum Crude Oil; Benzene; n-Butane; Cyclohexane; Cyclopentane; Ethylbenzene; n-Heptane; n-Hexane; Hexane (Other Isomers); Hydrogen Sulfide; Methylcyclohexane; n-Nonane; Octane (All Isomers); Pentane; Propane; Sulfur ; Toluene; Xylene (o,m,p isomers)

Continued on next page

Section 16. Other Information

Label requirements : MAY BE FATAL IF INHALED.
CANCER HAZARD.
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
HARMFUL IF SWALLOWED.
CAUSES RESPIRATORY TRACT IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS: BLOOD, KIDNEYS, LUNGS, NERVOUS SYSTEM, LIVER, PERIPHERAL NERVOUS SYSTEM, GASTROINTESTINAL TRACT, RESPIRATORY TRACT, SKIN, BONE MARROW, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
FLAMMABLE LIQUID AND VAPO R.
VAPOR MAY CAUSE FLASH FIRE.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Hazardous Material Information System (U.S.A.) :

National Fire Protection Association (U.S.A.) :

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Disclaimer

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Definitions of Material Safety Data Sheet Terminology

GOVERNMENT AGENCIES AND PRIVATE ASSOCIATIONS

ACGIH - American Conference of Governmental Industrial Hygienists, (private association)
DOT - United States Department of Transportation
EPA - United States Environmental Protection Agency
IARC - International Agency for Research on Cancer, (private association)
NFPA - National Fire Protection Association, (private association)
MSHA - Mine Safety and Health Administration, U.S. Department of Labor
NIOSH - National Institute of Occupational Safety and Health, U.S. Department of Health and Human Services
NTP - National Toxicology Program, (private association)
OSHA - Occupational Safety and Health Administration, U.S. Department of Labor
WHMIS- Workplace Hazardous Material Information System

Continued on next page

CSA- Canadian Standards Association

HAZARD AND EXPOSURE INFORMATION

Acute Hazard - An adverse health effect which occurs rapidly as a result of short term exposure.
CAS # - American Chemical Society's Chemical Abstract service registry number which identifies the product and/or ingredients.
Ceiling - The concentration that should not be exceeded during any part of the working exposure
Chronic Hazard - An adverse health effect which generally occurs as a result of long term exposure or short term exposure with delayed health effects and is of long duration
Fire Hazard - A material that poses a physical hazard by being flammable, combustible, phyrophoric or an oxidizer as defined by 29 CFR 1910.1200
Hazard Class - DOT hazard classification
Hazardous Ingredients - Names of ingredients which have been identified as health hazards
IDLH- Immediately Dangerous to Life and Health, the airborne concentration below which a person can escape without respiratory protection and exposure up to 30 minutes, and not suffer debilitating or irreversible health effects. Established by NIOSH.
mg/m3 - Milligrams of contaminant per cubic meter of air, a mass to volume ratio
N/A - Not available or no relevant information found
NA - Not applicable
PEL - OSHA permissible exposure limit; an action level of one half this value may be applicable
ppm - Part per million (one volume of vapor or gas in one million volumes of air)
Pressure Hazard - A material that poses a physical hazard due to the potential of a sudden release of pressure such as explosive or a compressed gas as defined by 29 CFR 1910.1200
Reactive Hazard - A material that poses a physical hazard due to the potential to become unstable reactive, water reactive or that is an organic peroxide as defined by 29 CFR 1910.1200.
STEL - The ACGIH Short-Term Exposure Limit, a 15-minute Time-Weighted Average exposure which should not be exceeded at any time during a workday, even if the 8-hour TWA is less than the TLV.
TLV - ACGIH Threshold Limit Value, represented herein as an 8-hour TWA concentration.
8-hour TWA - The time weighted average 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.
LD50 – Single dose of a substance that, when administered by a defined route in an animal assay, is expected to cause the death of 50% of the defined animal population.
LC50 - The concentration of a substance in air that, when administered by means of inhalation over a specified length of time in an animal assay, is expected to cause the death of 50% of a defined animal population.

REGULATORY CROSS REFERENCE

DOT/PHMSA 49 CFR Part 194 Cross Reference

DOT/PHMSA 49 CFR PART 194		
§ 194.105	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	... determine the worst case discharge ... provide methodology, including calculations, used to arrive at the volume.	App B
(b)	The worst case discharge is the largest volume, in barrels, of the following:	-----
(b)(1)	... maximum release time in hours, plus the maximum shutdown response time in hours, multiplied by the maximum flow rate expressed in barrels per hour, plus the largest line drainage volume after shutdown of the line section(s) ...; or	App B
(b)(2)	The largest foreseeable discharge for the line section(s) within a response zone, expressed in barrels, based on the maximum historic discharge, if one exists, adjusted for any subsequent corrective or preventative action taken; or	App B
(b)(3)	If the response zone contains one or more breakout tanks, the capacity of the single largest tank or battery of tanks within a single secondary containment system, adjusted for the capacity or size of the secondary containment system, expressed in barrels.	App B
(b)(4)	Operators may claim prevention credits for breakout tank secondary containment and other specific spill prevention measures as follows:…	App B
§ 194.107	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each response plan must plan for resources for responding, to the maximum extent practicable, to a worst case discharge, and to a substantial threat of such a discharge.	App A
(b)	An operator must certify in the plan … reviewed NCP and each applicable ACP…	Foreword
(b)(1)	As a minimum to be consistent with the NCP as a facility response plan must:	-----
(b)(1)(i)	Demonstrate an operator's clear understanding of the function of the Federal response structure…	§ 4.0
(b)(1)(ii)	Establish provisions to ensure the protection of safety at the response site; and	§ 4.0 (Command), § 5.0
(b)(1)(iii)	Identify the procedures to obtain any required Federal and State permissions for using alternative response strategies such as in-situ burning and dispersants…	§ 6.7, App. E
(b)(2)	As a minimum, to be consistent with the applicable ACP the plan must:	-----
(b)(2)(i)	Address the removal of a worst case discharge and the mitigation or prevention of a substantial threat of a worst case discharge;	§ 3, App B
(b)(2)(ii)	Identify environmentally and economically sensitive areas;	§ 6.0
(b)(2)(iii)	Describe the responsibilities of the operator and of Federal, State and local agencies in removing a discharge and in mitigating or preventing a substantial threat of a discharge; and	§4.0
(b)(2)(iv)	Establish the procedures for obtaining an expedited decision on use of dispersants or other chemicals.	§ 6.7
(c)	Each response plan must include:	-----
(c)(1)	A core plan consisting of …	-----
(c)(1)(i)	An information summary as required in § 194.113,	Fig 1.1
(c)(1)(ii)	Immediate notification procedures,	§ 2.0
(c)(1)(iii)	Spill detection and mitigation procedures,	§ 3.0
(c)(1)(iv)	The name, address, and telephone number of the oil spill response organization, if appropriate,	Fig 2.5, App A
(c)(1)(v)	Response activities and response resources,	§ 3.0, App A

DOT/PHMSA 49 CFR PART 194		
§ 194.107	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(c)(1)(vi)	Names and telephone numbers of Federal, State, and local agencies which the operator expects to have pollution control responsibilities or support,	Fig 2.5
(c)(1)(viii)	Equipment testing,	App D.2
(c)(1)(ix)	Drill program - an operator will satisfy the requirement for a drill program by following the National Preparedness for Response Exercise Program (PREP) guidelines. An operator choosing not to follow PREP guidelines must have a drill program that is equivalent to PREP. The operator must describe the drill program in the response plan and PHMSA will determine if the program is equivalent to PREP.	App D.2
(c)(1)(x)	Plan review and update procedures;	§ 1.4
(c)(2)	An appendix for each response zone that includes the information required in paragraph (c)(1)(i)-(ix) of this section and the worst case discharge calculations that are specific to that response zone. An operator submitting a response plan for a single response zone does not need to have a core plan and a response zone appendix. The operator of a single response zone onshore pipeline shall have a single summary in the plan that contains the required information in § 194.113.7; and.	Response Zone Annexes, App. B
(c)(3)	A description of the operator's response management system including the functional areas of finance, logistics, operations, planning, and command. The plan must demonstrate that the operator's response management system uses common terminology and has a manageable span of control, a clearly defined chain of command, and sufficient trained personnel to fill each position.	§ 4.0
§ 194.111	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each operator shall maintain relevant portions of its response plan at the operator's headquarters and at other locations from which response activities may be conducted, for example, in field offices, supervisor's vehicles, or spill response trailers.	Foreword Distribution List
(b)	Each operator shall provide a copy of its response plan to each qualified individual	Foreword Distribution List
§ 194.113	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	The information summary for the core plan, required by § 194.107, must include:	-----
(a)(1)	The name and address of the operator.	Fig 1.1
(a)(2)	For each response zone which contains one or more line sections that meet the criteria for determining significant and substantial harm as described in § 194.103, a listing and description of the response zones, including county(s) and state(s).	Fig 1.1, Response Zone Annexes
(b)	The information summary for the response zone appendix, required in § 194.107, must include:	-----
(b)(1)	The information summary for the core plan.	Fig 1.1
(b)(2)	The names or titles and 24-hour telephone numbers of the qualified individual(s) and at least one alternate qualified individual(s);	Fig 1.1, Fig 2.2
(b)(3)	The description of the response zone, including county(s) and state(s), for those zones in which a worst case discharge could cause substantial harm to the environment.	Fig 1.1, Response Zone Annexes
(b)(4)	A list of line sections for each pipeline contained in the response zone, identified by milepost or survey station number, or other operator designation.	Fig 1.1
(b)(5)	The basis for the operator's determination of significant and substantial harm.	Foreword
(b)(6)	The type of oil and volume of the worst case discharge.	App B

DOT/PHMSA 49 CFR PART 194		
§ 194.115	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each operator shall identify and ensure, by contract or other approved means, the resources necessary to remove, to the maximum extent practicable, a worst case discharge and to mitigate or prevent a substantial threat of a worst case discharge.	App A
(b)	An operator shall identify in the response plan the response resources which are available to respond within the time specified, after discovery of a worst case discharge, or to mitigate the substantial threat of such a discharge.	App A
§ 194.117	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each operator shall conduct training to ensure that:	-----
(a)(1)	All personnel know --	-----
(a)(1)(i)	Their responsibilities under the response plan	
(a)(1)(ii)	The name and address of, and the procedure for contacting, the operator on a 24-hour basis	§ 4.0
(a)(1)(iii)	The name of, and procedures for contacting, the qualified individual on a 24-hour basis	§ 2.0, Fig 2.2
(a)(2)	Reporting personnel know --	-----
(a)(2)(i)	The content of the information summary of the response plan.	Fig 1.1
(a)(2)(ii)	The toll-free telephone number of the National Response Center	Fig 2.5
(a)(2)(iii)	The notification process	§ 2.0, Fig 2.5
(a)(3)	Personnel engaged in response activities know --	-----
(a)(3)(I)	The characteristics and hazards of the oil discharged	Fig 3.2
(a)(3)(ii)	The conditions that are likely to worsen emergencies, including the consequences of facility malfunctions or failures, and the appropriate corrective actions.	§ 3.0
(a)(3)(iii)	The steps necessary to control any accidental discharge of oil and to minimize the potential for fire, explosion, toxicity, or environmental damage	§ 3.0
(a)(3)(iv)	The proper firefighting procedures and use of equipment, fire suits, and breathing apparatus	§ 3.0
(b)	Each operator shall maintain a training record for each individual that has been trained as required by this section. Theses records must be maintained in the following manner as long as the individual is assigned duties under the response plan	App D.1
(b)(1)	Records for operator personnel must be maintained at the operator's headquarters	App D.1
(b)(2)	Records for personnel engaged in response, other than operator personnel, shall be maintained as determined by the operator.	App D.1
(b)(3)	Nothing in this section relieves an operator from the responsibility to ensure that all response personnel are trained to meet the OSHA standards for emergency response operations in 29 CFR 1910.120 ...	App D.1
§ 194.119	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each owner shall submit two copies...	Distribution List
(b)	...PHMSA will notify the operator of any alleged deficiencies...	-----
(c)	The operator...may petition PHMSA for reconsideration within 30 days...	-----
(d)	...PHMSA will approve the Response Plan...	-----
(e)	...The operator may submit a certification to PHMSA...that the operator has obtained, through contract or other approved means, the necessary private personnel and equipment to record, to the maximum extent practicable, to a worst case discharge...	Foreword (Operator's Statement)
(f)	...PHMSA may require an operator to provide a copy of the response plan to the OSC...	-----

DOT/PHMSA 49 CFR PART 194		
§ 194.121	**BRIEF DESCRIPTION**	**LOCATION IN PLAN**
(a)	Each operator shall update its response plan to address new or different operating conditions or information. In addition, each operator shall review its response plan in full at least every 5 years from the date of the last submission or the last approval as follows:	§ 1.5
(a)(1)	For substantial harm plans, an operator shall resubmit every 5 years from the last approval date.	§ 1.5
(a)(2)	For significant and substantial harm plans, an operator shall resubmit every 5 years form the last approval date.	§ 1.5
(b)	If a new or different operating condition or information would substantially affect the implementation of a response plan, the operator must immediately modify its response plan to address such a change…	§ 1.4
(b)(1)	An extension of the existing pipeline or construction of a new pipeline in a response zone not covered by the previously approved plan;	§ 1.4
(b)(2)	Relocation or replacement of the pipeline in a way that substantially affects the information included in the response plan, such as a change to the worst case discharge volume;	§ 1.4
(b)(3)	The type of oil transported, if the type affects the required response resources, such as a change from crude oil to gasoline;	§ 1.4
(b)(4)	The name of the spill removal organization;	§ 1.4
(b)(5)	Emergency response procedures;	§ 1.4
(b)(6)	The qualified individual;	§ 1.4
(b)(7)	A change in the NCP or an ACP that has significant impact on the equipment appropriate for response activities; and	§ 1.4
(b)(8)	Any other information relating to circumstances that may affect full implementation of the plan.	§ 1.4
(c)	If PHMSA determines that a change to a response plan does not meet the requirements of this part, PHMSA will notify the operator of any alleged deficiencies, and provide operator…opportunity to correct deficiencies.	-----
(d)	An operator who disagrees with a determination that proposed revisions to a plan are deficient may petition PHMSA for reconsideration, within 30 days from the date of receipt of PHMSA's notice…	-----

GLOSSARY OF TERMS AND ACRONYMS

GLOSSARY OF TERMS

This glossary contains definitions of terms that will be used frequently during the course of response operations.

Activate: The process of mobilizing personnel and/or equipment within the response organization to engage in response operations.

Activator: An individual in the response organization whose responsibilities include notifying other individuals or groups within the organization to mobilize personnel and/or equipment.

Adverse Weather: The weather conditions that will be considered when identifying response systems and equipment in a response plan for the applicable operating environment. Factors to consider include significant wave height, ice, temperature, weather - related visibility, and currents within the Captain of the Port (COTP) zone in which the systems or equipment are intended to function.

Agency Representative: Individual assigned to an incident from an agency who has been delegated full authority to make decisions on all matters affecting that agency's participation in response operations.

Area Committee: As defined by Sections 311(a)(18) and (j)(4) of CWA, as amended by OPA, means the entity appointed by the President consisting of members from Federal, State, and local agencies with responsibilities that include preparing an Area Contingency Plan for the area designated by the President. The Area Committee may include ex-officio (i.e., non-voting) members (e.g., industry and local interest groups).

Area Contingency Plan: As defined by Sections 311(a)(19) and (j)(4) of CWA, as amended by OPA, means the plan prepared by an Area Committee, that in conjunction with the NCP, shall address the removal of a discharge including a worst-case discharge and the mitigation or prevention of a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near an area designated by the President.

Average Most Probable Discharge: A discharge of the lesser of 50 barrels or 1% of the volume of the worst case discharge.

Barrel (bbl): Measure of space occupied by 42 U.S. gallons at 60 degrees Fahrenheit.

Bioremediation Agents: Means microbiological cultures, enzyme additives, or nutrient additives that are deliberately introduced into an oil discharge and that will significantly increase the rate of biodegradation to mitigate the effects of the discharge.

Boom: A piece of equipment or a strategy used to either contain free floating oil to a confined area or protect an uncontaminated area from intrusion by oil.

Booming Strategies: Strategic techniques which identify the location and quantity of boom required to protect certain areas. These techniques are generated by identifying a potential spill source and assuming certain conditions which would affect spill movement on water.

Bulk: Material that is stored or transported in a loose, unpackaged liquid, powder, or granular form capable of being conveyed by a pipe, bucket, chute, or belt system.

Chemical Agents: Means those elements, compounds, or mixtures that coagulate, disperse, dissolve, emulsify, foam, neutralize, precipitate, reduce, solubilize, oxidize, concentrate, congeal, entrap, fix, make the pollutant mass more rigid or viscous, or otherwise facilitate the mitigation of deleterious effects or the removal of the oil pollutant from the water. Chemical agents include biological additives, dispersants, sinking agents, miscellaneous oil spill control agents, and burning agents, but do not include solvents.

Clean-up Contractor: Persons contracted to undertake a response action to clean up a spill.

Cleanup: For the purposes of this document, cleanup refers to the removal and/or treatment of oil, hazardous substances, and/or the waste or contaminated materials generated by the incident. Cleanup includes restoration of the site and its natural resources.

Coastal Waters: For the purpose of classifying the size of discharges, means the waters of the coastal zone except for the Great Lakes and specified ports and harbors on inland rivers.

Coastal Zone: As defined for the purpose of the NCP, means all United States waters subject to the tide, United States waters of the Great Lakes, specified ports and harbors on inland rivers, waters of the contiguous zone, other waters of the high seas subject to the NCP, and the land surface or land substrata, ground waters, and ambient air proximal to those waters. The term coastal zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Coast Guard District Response Group (DRG): As provided for by CWA sections 311(a)(20) and (j)(3), means the entity established by the Secretary of the department in which the USCG is operating within each USCG district and shall consist of: the combined USCG personnel and equipment, including firefighting equipment, of each port within the district; additional prepositioned response equipment; and a district response advisory team.

Command: The act of controlling manpower and equipment resources by virtue of explicit or delegated authority.

Command Post: A site located at a safe distance from the spill site where response decisions are made, equipment and manpower deployed, and communications handled. The Incident Commander and the On-Scene Coordinators may direct the on-scene response from this location.

Communications Equipment: Equipment that will be utilized during response operations to maintain communication between the Company employees, contractors, Federal/State/Local agencies. (Radio/ telephone equipment and links)

Containment Boom: A flotation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to entrap and contain the product for recovery.

Contingency Plan: A document used by (1) federal, state, and local agencies to guide their planning and response procedures regarding spills of oil, hazardous substances, or other emergencies; (2) a document used by industry as a response plan to spills of oil, hazardous substances, or other emergencies occurring upon their vessels or at their facilities.

Contract or Other Approved Means: For OPA 90, a written contract with a response contractor; certification by the facility owner or operator that personnel and equipment are owned, operated, or under the direct control of the facility, and available within the stipulated times; active membership in a local or regional oil spill removal organization; and/or the facility's own equipment.

Critical Areas to Monitor: Areas which if impacted by spilled oil may result in threats to public safety or health.

Cultural Resources: Current, historic, prehistoric and archaeological resources which include deposits, structures, ruins, sites, buildings, graves, artifacts, fossils, or other objects of antiquity which provide information pertaining to the historical or prehistorical culture of people in the state as well as to the natural history of the state.

Damage Assessment: The process of determining and measuring damages and injury to the human environment and natural resources, including cultural resources. Damages include differences between the conditions and use of natural resources and the human environment that would have occurred without the incident, and the conditions and use that ensued following the incident. Damage assessment includes planning for restoration and determining the costs of restoration.

Decontamination: The removal of hazardous substances from personnel and their equipment necessary to prevent adverse health effects.

Discharge: Any spilling, leaking, pumping, pouring, emitting, emptying, or dumping.

Dispersants: Means those chemical agents that emulsify, disperse, or solubilize oil into the water column or promote the surface spreading of oil slicks to facilitate dispersal of the oil into the water column.

Diversion Boom: A floatation/freeboard device, made with a skirt/curtain, longitudinal strength member, and ballast unit/weight designed to deflect or divert the product towards a pick up point, or away from certain areas.

Drinking Water Supply: As defined by Section 101(7) of CERCLA, means any raw or finished water source that is or may be used by a public water system (as defined in the Safe Drinking Water Act) or as drinking water by one or more individuals.

EM: Emergency Management. Serves as the focal point for senior management support of an incident.

Economically Sensitive Areas: Those areas of explicit economic importance to the public that due to their proximity to potential spill sources may require special protection and include, but are not limited to: potable and industrial water intakes; locks and dams; and public and private marinas.

Emergency Management: The personnel identified to staff the organizational structure identified in a response plan to manage response plan implementation.

Emergency Service: Those activities provided by state and local government to prepare for and carry out any activity to prevent, minimize, respond to, or recover from an emergency.

Environmentally Sensitive Areas: Streams and water bodies, aquifer recharge zones, springs, wetlands, agricultural areas, bird rookeries, endangered or threatened species (flora and fauna) habitat, wildlife preserves or conservation areas, parks, beaches, dunes, or other areas protected or managed for its natural resource value.

Facility: Either an onshore facility or an offshore facility and includes, but is not limited to structures, equipment, and appurtenances thereto, used or capable of being used to transfer oil to or from a vessel or a public vessel. A facility includes federal, state, municipal, and private facilities.

Facility Operator: The person who owns, operates, or is responsible for the operation of the facility.

Federal Fund: The spill liability trust fund established under OPA.

Federal Regional Response Team: The federal response organization (consisting of representatives from selected federal and state agencies) which acts as a regional body responsible for planning and preparedness before an oil spill occurs and providing advice to the FOSC in the event of a major or substantial spill.

Federal Response Plan (FRP): Means the agreement signed by 25 federal departments and agencies in April 1987 and developed under the authorities of the Earthquake Hazards Reduction Act of 1977 and the Disaster Relief Act of 1974, as amended by the Stafford Disaster Relief Act of 1988.

First Responders, First Response Agency: A public health or safety agency (e.g., fire service or police department) charged with responding to a spill during the emergency phase and alleviating immediate danger to human life, health, safety, or property.

Handle: To transfer, transport, pump, treat, process, store, dispose of, drill for, or produce.

Harmful Quantity Of Oil: The presence of oil from an unauthorized discharge in a quantity sufficient either to create a visible film or sheen upon or discoloration of the surface of the water or a shoreline, tidal flat, beach, or marsh, or to cause a sludge or emulsion to be deposited beneath the surface of the water or on a shoreline, tidal flat, beach, or marsh.

Hazardous Material: Any nonradioactive solid, liquid, or gaseous substance which, when uncontrolled, may be harmful to humans, animals, or the environment. Including but not limited to substances otherwise defined as hazardous wastes, dangerous wastes, extremely hazardous wastes, oil, or pollutants.

Hazardous Substance: Any substance designed as such by the Administrator of the EPA pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act; regulated pursuant to Section 311 of the Federal Water Pollution Control Act, or discharged by the SERC.

Hazardous Waste: Any solid waste identified or listed as a hazardous waste by the Administrator of the EPA pursuant to the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA), 42 U.S.C., Section 6901,et seq as amended. The EPA Administrator has identified the characteristics of hazardous wastes and listed certain wastes as hazardous in Title 40 of the Code of Federal Regulations, Part 261, Subparts C and D respectively.

HAZMAT: Hazardous materials or hazardous substances, exposure to which may result in adverse effects on health or safety of employees.

HAZWOPER: Hazardous Waste Operations and Emergency Response Regulations published by OSHA to cover worker safety and health aspects of response operations.

Heat Stress: Dangerous physical condition caused by over exposure to extremely high temperatures.

Hypothermia: Dangerous physical condition caused by over exposure to freezing temperatures.

Incident: Any event that results in a spill or release of oil or hazardous materials. Action by emergency service personnel may be required to prevent or minimize loss of life or damage to property and/or natural resources.

Incident Briefing Meeting: Held to develop a comprehensive, accurate, and up-to-date understanding of the incident, nature of status of control operations, and nature and status of response operations; ensure the adequacy of control and response operations; begin to organize control and response operations; and prepare for interactions with outside world.

Incident Command Post (ICP): That location at which all primary command functions are executed.

Incident Command System (ICS): The combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, with responsibility for the management of assigned resources at an incident.

Incident Commander (IC): The one individual in charge at any given time of an incident. The Incident Commander will be responsible for establishing a unified command with all on-scene coordinators.

Indian Tribe: As defined in OPA section 1001, means any Indian tribe, band, nation, or other organized group or community, but not including any Alaska Native regional or village corporation, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians and has governmental authority over lands belonging to or controlled by the Tribe.

Initial Cleanup: Remedial action at a site to eliminate acute hazards associated with a spill. An initial clean-up action is implemented at a site when a spill of material is an actual or potentially imminent threat to public health or the environment, or difficulty of cleanup increases significantly without timely remedial action. All sites must be evaluated to determine whether initial cleanup is total cleanup, however, this will not be possible in all cases due to site conditions (i.e., a site where overland transport or flooding may occur).

Initial Notification: The process of notifying necessary the Company personnel and Federal/ State/Local agencies that a spill has occurred, including all pertinent available information surrounding the incident.

Initial Response Actions: The immediate actions that are to be taken by the spill observer after detection of a spill.

Inland Area: The area shoreward of the boundary lines defined in 46 CFR part 7, except that in the Gulf of Mexico, it means the area shoreward of the lines of demarcation (COLREG lines) as defined in §80.740 through 80.850 of this chapter. The inland area does not include the Great Lakes.

Inland Waters: State waters not considered coastal waters; lakes, rivers, ponds, streams, underground water, et. al.

Inland Zone: Means the environment inland of the coastal zone excluding the Great Lakes, and specified ports and harbors on inland rivers. The term inland zone delineates an area of federal responsibility for response action. Precise boundaries are determined by EPA/USCG agreements and identified in federal regional contingency plans.

Interim Storage Site: A site used to temporarily store recovered oil or oily waste until the recovered oil or oily waste is disposed of at a permanent disposal site. Interim storage sites include trucks, barges, and other vehicles, used to store waste until the transport begins.

Lead Agency: The government agency that assumes the lead for directing response activities.

Lead Federal Agency: The agency which coordinates the federal response to incident on navigable waters. The lead federal agencies are:

- **U.S. Coast Guard:** Oil and chemically hazardous materials incidents on navigable waters.
- **Environmental Protection Agency:** Oil and chemically hazardous materials incidents on inland waters.

Lead State Agency: The agency which coordinates state support to federal and/or local governments or assumes the lead in the absence of federal response.

Loading: Transfer from Facility to vehicle.

Local Emergency Planning Committee (LEPC): A group of local representatives appointed by the State Emergency Response Commission (SERC) to prepare a comprehensive emergency plan for the local emergency planning district, as required by the Emergency Planning and Community Right-to-know Act (EPCRA).

Local Response Team: Designated Facility individuals who will fulfill the roles determined in the oil spill response plan in the event of an oil or hazardous substance spill. They will supervise and control all response and clean-up operations.

Lower Explosive Limit: Air measurement utilized to determine the lowest concentration of vapors that support combustion. This measurement must be made prior to entry into a spill area.

Marinas: Small harbors with docks, services, etc. for pleasure craft.

Medium Discharge: Means a discharge greater than 2,100 gallons (50 Bbls) and less than or equal to 36,000 gallons (85+ Bbls) or 10% of the capacity of the largest tank, whichever is less and not to exceed the WCD.

National Contingency Plan: The plan prepared under the Federal Water Pollution Control Act (33 United State Code §1321 et seq) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 United State Code § 9601 et seq), as revised from time to time.

National Pollution Funds Center (NPFC): Means the entity established by the Secretary of Transportation whose function is the administration of the Oil Spill Liability Trust Fund (OSLTF). Among the NPFC's duties are: providing appropriate access to the OSLTF for federal agencies and states for removal actions and for federal trustees to initiate the assessment of natural resource damages; providing appropriate access to the OSLTF for claims; and coordinating cost recovery efforts.

National Response System (NRS): Is the mechanism for coordinating response actions by all levels of government in support of the OSC. The NRS is composed of the NRT, RRTs, OSC, Area Committees, and Special Teams and related support entities.

National Strike Force (NSF): Is a special team established by the USCG, including the three USCG Strike Teams, the Public Information Assist Team (PIAT), and the National Strike Force Coordination Center. The NSF is available to assist OSCs in their preparedness and response duties.

National Strike Force Coordination Center (NSFCC): Authorized as the National Response Unit by CWA section 311(a)(23) and (j)(2), means the entity established by the Secretary of the department in which the USCG is operating at Elizabeth City, North Carolina, with responsibilities that include administration of the USCG Strike Teams, maintenance of response equipment inventories and logistic networks, and conducting a national exercise program.

Natural Resource: Land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to or otherwise controlled by the state, federal government, private parties, or a municipality.

Navigable Waters: As defined by 40 CFR 110.1 means the waters of the United States, including the territorial seas. The term includes:

All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide;

Interstate waters, including interstate wetlands;

All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, and wetlands, the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

- that are or could be used by interstate or foreign travelers for recreational or other purposes;
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; and
- that are used or could be used for industrial purposes by industries in interstate commerce.

All impoundments of waters otherwise defined as navigable waters under this section;

Tributaries of waters identified in paragraphs (a) through (d) of this definition, including adjacent wetlands; and

Wetlands adjacent to waters identified in paragraphs (a) through (e) of this definition: Provided, that waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act jurisdiction remains with EPA.

Nearshore Area: For OPA 90, the area extending seaward 12 miles from the boundary lines defined in 46 CFR Part 7, except in the Gulf of Mexico. In the Gulf of Mexico, it means the area extending seaward 12 miles from the line of demarcation defined in §80.740 - 80.850 of title 33 of the CFR.

Non-persistent or Group I Oil: A petroleum-based oil that, at the time of shipment, consists of hydrocarbon fractions:

1. At least 50% of which by volume, distill at a temperature of 340 degrees C (645 degrees F);
2. At least 95% of which volume, distill at a temperature of 370 degrees C (700 degrees F).

Ocean: The open ocean, offshore area, and nearshore area as defined in this subpart.

Offshore area: The area up to 38 nautical miles seaward of the outer boundary of the nearshore area.

Oil or Oils: Naturally occurring liquid hydrocarbons at atmospheric temperature and pressure coming from the earth, including condensate and natural gasoline, and any fractionation thereof, including, but not limited to, crude oil, petroleum gasoline, fuel oil, diesel oil, oil sludge, oil refuse, and oil mixed with wastes other than dredged spoil. Oil does not include any substance listed in Table 302.4 of 40 CFR Part 302 adopted August 14, 1989, under Section 101(14) of the federal comprehensive environmental response, compensation, and liability act of 1980, as amended by P. L. 99-499.

Oil Spill Liability Trust Fund: Means the fund established under section 9509 of the Internal Revenue Code of 1986 (26 U.S.C. 9509).

Oily Waste: Product contaminated waste resulting from a spill or spill response operations.

On-Scene Coordinator (OSC): Means the federal official predesignated by the EPA or the USCG to coordinate and direct response under subpart D.

On-site: Means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of a response action.

Open Ocean: Means the area from 38 nautical miles seaward of the outer boundary of the nearshore area, to the seaward boundary of the exclusive economic zone.

Owner or Operator: Any person, individual, partnership, corporation, association, governmental unit, or public or private organization of any character.

Persistent Oil: A petroleum-based oil that does not meet the distillation criteria for a non-persistent oil. For the purposes of this Appendix, persistent oils are further classified based on specific gravity as follows:
1. Group II specific gravity less than .85
2. Group III specific gravity between .85 and less than .95
3. Group IV specific gravity .95 and including 1.0
4. Group V specific gravity greater than 1.0

Plan Holder: The plan holder is the industry transportation related facility for which a response plan is required by federal regulation to be submitted by a vessel or facility's owner or operator.

Post Emergency Response: The portion of a response performed after the immediate threat of a release has been stabilized or eliminated and cleanup of the sites has begun.

Post Emergency: The phase of response operations conducted after the immediate threat of the release has been stabilized, and cleanup operations have begun.

Primary Response Contractors or Contractors: An individual, company, or cooperative that has contracted directly with the plan holder to provide equipment and/or personnel for the containment or cleanup of spilled oil.

Qualified Individual (QI): That person or entity who has authority to activate a spill cleanup contractors, act as liaison with the "On-Scene Coordinator" and obligate funds required to effectuate response activities.

Recreation Areas: Publicly accessible locations where social/sporting events take place.

Regional Response Team (RRT): The Federal response organization (consisting of representatives from selected Federal and State agencies) which acts as a regional body responsible for overall planning and preparedness for oil and hazardous materials releases and for providing advice to the OSC in the event of a major or substantial spill.

Remove or Removal: As defined by section 311(a)(8) of the CWA, refers to containment and removal of oil or hazardous substances from the water and shorelines or the taking of such other actions as may be necessary to minimize or mitigate damage to the public health or welfare (including, but not limited to, fish, shellfish, wildlife, public and private property, and shorelines and beaches) or to the environment. For the purpose of the NCP, the term also includes monitoring of action to remove discharge.

Response Activities: The containment and removal of oil from the water and shorelines, the temporary storage and disposal of recovered oil, or the taking of other actions as necessary to minimize or mitigate damage to public health or welfare, or the environment.

Response Contractors: Persons/companies contracted to undertake a response action to contain and/or clean up a spill.

Response Guidelines: Guidelines for initial response that are based on the type of product involved in the spill, these guidelines are utilized to determine clean-up methods and equipment.

Response Plan: A practical manual used by industry for responding to a spill. Its features include: (1) identifying the notifications sequence, responsibilities, response techniques, etc. in an easy to use format; (2) using decision trees, flowcharts, and checklists to insure the proper response for spills with varying characteristics; and (3) segregating information needed during the response from data required by regulatory agencies to prevent confusion during a spill incident.

Response Priorities: Mechanism used to maximize the effective use of manpower and equipment resources based upon their availability during an operational period.

Response Resources: All personnel and major items of equipment available, or potentially available, for assignment to incident tasks on which status is maintained.

Responsible Party: Any person, owner/operator, or facility that has control over an oil or hazardous substance immediately before entry of the oil or hazardous substance into the atmosphere or in or upon the water, surface, or subsurface land of the state.

Restoration: The actions involved in returning a site to its former condition.

Rivers and Canals: A body of water confined within the inland area that has a project depth of 12 feet or less, including the Intracoastal Waterway and other waterways artificially created for navigation.

Securing the Source: Steps that must be taken to stop discharge of oil at the source of the spill.

Sinking Agents: Means those additives applied to oil discharges to sink floating pollutants below the water surface.

Site Characterization: An evaluation of a cleanup site to determine the appropriate safety and health procedures needed to protect employees from identified hazards.

Site Conditions: Details of the area surrounding the facility, including shoreline descriptions, typical weather conditions, socioeconomic breakdowns, etc.

Site Safety and Health Plan: A site specific plan developed at the time of an incident that addresses:

- Safety and health hazard analysis for each operation.
- Personal protective equipment to be used.
- Training requirements for site workers.
- Medical surveillance requirements.
- Air monitoring requirements.
- Site control measures.
- Decontamination procedures.
- Emergency response procedures.
- Confined space entry procedures.

Site Security and Control: Steps that must be taken to provide safeguards needed to protect personnel and property, as well as the general public, to ensure an efficient clean-up operation.

Skimmers: Mechanical devices used to skim the surface of the water and recover floating oil. Skimmers fall into four basic categories (suction heads, floating weirs, oleophilic surface units, and hydrodynamic devices) which vary in efficiency depending on the type of oil and size of spill.

Snare Boom: Oil will adhere to the material of which this boom is made of and thus collect it.

Sorbents: Materials ranging from natural products to synthetic polymeric foams placed in confined areas to soak up small quantities of oil. Sorbents are very effective in protecting walkways, boat decks, working areas, and previously uncontaminated or cleaned areas.

Spill: An unauthorized discharge of oil or hazardous substance into the waters of the state.

Spill Observer: The first Facility individual who discovers a spill. This individual must function as the first responder and person-in-charge until relieved by an authorized supervisor.

Spill of National Significance (SONS): Means a spill which due to its severity, size, location, actual or potential impact on the public health and welfare or the environment, or the necessary response effort, is so complex that it requires extraordinary coordination of federal, state, local, and responsible party resources to contain and cleanup the discharge.

Spill Management Team: The personnel identified to staff the organizational structure identified in a response plan to manage response plan implementation.

Spill Response: All actions taken in responding to spills of oil and hazardous materials, e.g.: receiving and making notifications; information gathering and technical advisory phone calls; preparation for and travel to and from spill sites; direction of clean-up activities; damage assessments; report writing, enforcement investigations and actions; cost recovery; and program development.

Spill Response Personnel: Federal, state, local agency, and industry personnel responsible for participating in or otherwise involved in spill response. All spill response personnel will be pre-approved on a list maintained in each region.

Staging Areas: Designated areas near the spill site accessible for gathering and deploying equipment and/or personnel.

State Emergency Response Commission(SERC): A group of officials appointed by the Governor to implement the provisions of Title III of the Federal Superfund Amendments and Re-authorization Act of 1986 (SARA). The SERC approves the State Oil and Hazardous Substance Discharge Prevention and Contingency Plan and Local Emergency Response Plans.

Surface Collecting Agents: Means those chemical agents that form a surface film to control the layer thickness of oil.

Surface Washing Agent: Is any product that removes oil from solid surfaces, such as beaches and rocks, through a detergency mechanism and does not involve dispersing or solubilizing the oil into the water column.

Tanker: A self-propelled tank vessel constructed or adapted primarily to carry or hazardous material in bulk in the cargo spaces.

Tidal Current Tables: Tables which contain the predicted times and heights of the high and low waters for each day of the year for designated areas.

Trajectory Analysis: Estimates made concerning spill size, location, and movement through aerial surveillance or computer models.

Transfer: Any movement of oil to, from, or within a vessel by means of pumping, gravitation, or displacement.

Trustee: Means an official of a federal natural resources management agency designated in subpart G of the NCP or a designated state official or Indian tribe or, in the case of discharges covered by the OPA, a foreign government official, who may pursue claims for damages under section 1006 of the OPA.

Underwriter: An insurer, a surety company, a guarantor, or any other person, other than an owner or operator of a vessel or facility, that undertakes to pay all or part of the liability of an owner or operator.

Unified Command: The method by which local, state, and federal agencies and the responsible party will work with the Incident Commander to:

- Determine their roles and responsibilities for a given incident.
- Determine their overall objectives for management of an incident.
- Select a strategy to achieve agreed-upon objectives.
- Deploy resources to achieve agreed-upon objectives.

Unified or Coordinated Command Meeting: Held to obtain agreement on strategic objectives and response priorities; review tactical strategies; engage in joint planning, integrate response operations; maximize use of resources; and minimize resolve conflicts.

Volunteers: An individual who donates their services or time without receiving monetary compensation.

Waste: Oil or contaminated soil, debris, and other substances removed from coastal waters and adjacent waters, shorelines, estuaries, tidal flats, beaches, or marshes in response to an unauthorized discharge. Waste means any solid, liquid, or other material intended to be disposed of or discarded and generated as a result of an unauthorized discharge of oil. Waste does not include substances intended to be recycled if they are in fact recycled within 90 days of their generation or if they are brought to a recycling facility within that time.

Waters of the United States: See **Navigable Waters** in this Glossary.

Wetlands: Those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include playa lakes, swamps, marshes, bogs, and similar areas such as sloughs, prairie potholes, wet meadows, prairie river overflows, mudflats, and natural ponds (40 CFR 112.2(y)).

Wildlife Rescue: Efforts made in conjunction with Federal and State agencies to retrieve, clean, and rehabilitate birds and wildlife affected by an oil spill.

Worst Case Discharge: The largest foreseeable discharge under adverse weather conditions. For facilities located above the high water line of coastal waters, a worst case discharge includes those weather conditions most likely to cause oil discharged from the facility to enter coastal waters.

ACRONYMS

AMIO	-	Alien Migration Interdiction Operation
AQI	-	Alternate Qualified Individual
AM	-	Ante Meridiem
ACP	-	Area Contingency Plan
ACP	-	Area Contingency Plans
Avg.	-	Average
bbl/hr	-	Barrel per Hour
Br	-	Branch
BLM	-	Bureau of Land Management
COTP	-	Captain of the Port
Ctr.	-	Center
CAS Number	-	Chemical Abstracts Service
CST	-	Civil Support Team
CG	-	Coast Guard
CFR	-	Code of Federal Regulations
Cont'd	-	Continued
CMT	-	Crisis Management Team
DOA	-	Dead on Arrival
Dept.	-	Department
DOD	-	Department of Defense
DENR	-	Department of Environment and Natural Resources
DHS	-	Department of Homeland Security
DOI	-	Department of Interior
DNR	-	Department of Natural Resources
DOT	-	Department of Transportation
Div.	-	Division
DOCL	-	Documentation Unit Leader
EMS	-	Emergency Management System
EM	-	Emergency Manager
EOC	-	Emergency Operations Center
ESA	-	Endangered Species Act
EET	-	Environmental Emergency Team
EDRC	-	Estimated Daily Recovery Capability
EPA	-	Environmental Protection Agency
ETA	-	Estimated Time of Arrival
etc.	-	Et Cetera
exempli gratia e.g.	-	For Example
FAA	-	Federal Aviation Administration
FBI	-	Federal Bureau of Investigation
FOSC	-	Federal On-Scene Coordinator
Ft./Sec.	-	Feet/Second
FIR	-	Field Investigation Report
FR	-	Fire Retardant
FWD	-	Forward
Freq.	-	Frequency
GRP	-	Group
Gru Sups.	-	Group Supervisors
HAZMAT	-	Hazardous Material
HAZWOPER	-	Hazardous Waste Operations and Emergency Response Standard
HVAC	-	Heating, Ventilating, and Air Conditioning
HEPA	-	High Efficiency Particle Air Device
HF ERW	-	High Frequency Electric-Resistance Weld
HLS	-	Homeland Security
Hrs.	-	Hours
ID NO.	-	Identification Number
IAW	-	In Accordance With

IAP	-	Incident Action Plan
ICS	-	Incident Command System
ICS	-	Incident Command System
IC	-	Incident Commander
IMH	-	Incident Management Handbook
IMS	-	Incident Management System
Info.	-	Information
KM	-	Kilometer
KP	-	Kilometer Point
LE	-	Law Enforcement
LO	-	Liaison Officer
LPG	-	Liquefied Petroleum Gas
LEPC	-	Local Emergency Planning Committee
LRT	-	Local Response Team
LSC	-	Logistics Section Chief
LF ERW	-	Low Frequency Electric-Resistance Weld
LEL	-	Lower Explosive Limit
MSDS	-	Material Safety Data Sheets
MEDEVAC'D	-	Medical Evacuation
NCP	-	National Contingency Plan
NEECP (CA)	-	National Environmental Emergencies Contingency Plan
NFPA	-	National Fire Protection Association
NIMS	-	National Incident Management System
NOAA	-	National Oceanographic Atmospheric Administration
NCP (U.S.)	-	National Oil and Hazardous Substances Contingency Plan
NRC	-	National Response Center
NRDAR	-	Natural Resource Damage Assessment and Restoration
N	-	No
NW	-	North West
N/A	-	Not Available
OSHA	-	Occupational Safety & Health Administration
OSRO	-	Oil Spill Removal Organization
OSRP	-	Oil Spill Response Plan
OSRV	-	Oil Spill Response Vessel
OSC	-	On-Scene Coordinate
OSC	-	Operation Section Chief
OP	-	Operational Period
Op.	-	Operations
OPS	-	Operations
O&M	-	Operations and Maintenance
OCC	-	Operations Coordination Center
OV	-	Organic Vapor
PPM	-	Parts Per Million
PFD	-	Personal Floatation Device
PPE	-	Personal Protective Equipment
PHMSA	-	Pipeline and Hazardous Materials Safety Administration
PSC	-	Planning Section Chief
PSC	-	Planning Section Chief
POC	-	Point of Contact
PVC	-	Polyvinyl Chloride
P.M.	-	Post Meridiem
PREP	-	Preparedness for Response Exercise Program
Prot.	-	Protection
PWSD	-	Public Water Supply District
QI	-	Qualified Individual
RPT	-	Regional Preparedness Team
Req.	-	Required
RCRA	-	Resource Conservation and Recovery Act

RESL	-	Resource Leader
RP	-	Responsible Party
RPIC	-	Responsible Party Incident Commander
Rev.	-	Revision
R/W	-	Right-of-Way
RWD	-	Rural Water District
SAR	-	Search and Rescue
SART	-	Search and Rescue Transporter
SI	-	Security Incident
SO	-	Security Officer
SCBA	-	Self Contained Breathing Apparatus
SSPs	-	Site Safety Plans
SITL	-	Situation Unit Leader
Spec.	-	Special
SPCC	-	Spill Prevention, Control, and Countermeasure
SORS	-	Spilled oil Recovery System
Sq. Ft.	-	Square Foot
STAM	-	Staging Area Manager
SERC	-	State Emergency Response Center
SERC	-	State Emergency Response Commission
SOSC	-	State On-Scene Coordinator
SOR	-	Statutory Orders and Regulations
SCADA	-	Supervisory Control and Data Acquisition
TOC	-	Table of Contents
TSD	-	Temporary Storage and Disposal
TSC	-	Temporary Storage Capacity
id est, I.E.	-	That is
TBA	-	To be Assigned
TSB	-	Transportation Safety Board
TWIC	-	Transportation Worker Identification Credential
UC	-	Unified Command
UN Number	-	United Nations
US	-	United States
USCG	-	United States Coast Guard
USN	-	US Navy Supervisor Salvage
Vsl.	-	Vessel
VOSS	-	Vessel of Opportunity Skimmer System
VOC	-	Volatile Organic Compound
Vol.	-	Volume
W	-	West
WCD	-	Worst Case Discharge
Y	-	Yes

RESPONSE ZONE INFORMATION

Jefferson County Response Zone

RESPONSE ZONE CONTACT INFORMATION

Owner Name:	Valero Terminaling and Distribution Company
Addresses:	Physical Address One Valero Way San Antonio, Texas 78249
24 Hour Emergency Contact Phone Numbers:	(866) 382-5376 (24 Hours)
Telephone/Fax:	Telephone references, including 24 hour numbers, for the Facility, Owner, and Qualified Individual/Alternate Qualified Individual are provided in Figure 2.2.
States Traversed:	Texas
Areas/Counties Traversed:	Jefferson

INFORMATION SUMMARY

Determination of Significant and Substantial Harm (United States Department of Transportation/Pipeline and Hazardous Materials Safety Administration):

This Response Zone has been determined to meet the significant and substantial harm classification because at least one (1) line section within the response zone has met at least one of the criteria listed in 49CFR194.103(c)(1).

Worst Case Discharge(Refer to Appendix B for calculations):

Potential Oil Group:

United States Department of Transportation/Pipeline and Hazardous Materials Safety Administration Planning Volume:

(b) (7)(F) [redacted]

RESPONSE ZONE COMPANY CONTACTS				
POSTION/TITLE	**NAME**	**OFFICE**	**HOME**	**CELL**
Lead HSE Specialist	Massoud Modarres	(409) 839-3513	(b) (6)	(409) 554-5914 CELL
Manager Terminal	Stephen Gunter	(409) 839-3518		----
Maintenance Technician III (RC)	Jody Lambright	(409) 794-9765		(409) 673-7612 CELL
Maintenance Technician III (RC)	Chadrick Traver	(409) 839-3527		----
Terminal Operator III (RC) (12hr)	Eric Chapman	(409) 839-6507		----
Terminal Operator III (RC) (12hr)	Kent Aguillard	(409) 839-3507		----
Maintenance Technician III	David Leach	(409) 839-3511		----
Maintenance Technician III (RC)	Marion Rothrock	(409) 839-3503		----
Maintenance Technician III (RC)	David Broussard	(409) 839-3521		----
Sr. I & E Technician	Perlo Gernale	(409) 839-3514		----
I & E Technician III (RC)	Todd Grymes	(409) 839-3522		----
Terminal Operator III (RC) (12hr)	Howard Greathouse	(409) 794-2350		(409) 553-1080 CELL
Maintenance Technician III (RC)	Bruce Jennings	(409) 794-2356		----
Operations Associate	Jessica M. Harber	(409) 839-3508		----
Terminal Operator III (RC) (12hr)	Robert W. Lyons	(409) 794-2356		(409) 749-0706 CELL
Supervisor Pipeline Control Center	Rick Hatton	(210) 346-5250		----

Area: Jefferson County Response Area

Qualified Individuals			
NAME	**OFFICE**	**HOME**	**CELL**
Stephen Gunter	(409) 839-3518	(b) (6)	(409) 504-9352

Alternate Qualified Individuals			
NAME	**OFFICE**	**HOME**	**CELL**
Jody Lambright	(409) 794-9765	(b) (6)	(409) 673-7612

Pipeline Specifications			
Location	**Type of Oil**	**State**	**County**
Port Arthur to Lucas	Crude	Texas	Jefferson

Company Owned Response Equipment		
NAME	LOCATION	DESCRIPTION
	NONE	

Breakout Tanks			
FACILITY NAME	TANK NUMBER	CAPACITY	TYPE OF OIL
(b) (7)(F)			

EXTERNAL NOTIFICATION REFERENCES
Texas

LOCAL EMERGENCY SERVICES NOTIFICATIONS			
COUNTY	**AGENCY**	**LOCATION**	**OFFICE/ ALTERNATE**
**** Additional reporting information may be contained in the Document Library under Other Documents.***			
Jefferson	Jefferson County (LEPC)	Beaumont,Texas	(409) 835-8757 / (409) 835-8411