EPA Region 5 Records Ctr.
334410

CRUDE OIL AND SPCC INSPECTION SAFETY PLAN

ECOLOGY AND ENVIRONMENT, INC.
SAFETY PLAN

Office: Chicago **E & E Job #** KJ5702
TDD 505-9702-006 **PAN #** TF0601P:XX
DATE: 3/05/97

Incident Location:
Clark Oil Refinery, Blue Island, IL

Team Leader: Karen Kydzewski Date: / /
Site Safety Officer: Stephanie Wenning Date: / /
Approved by: [signature] Date: 3/5/97

Incident Type: _ Spill _ Fire _ Hazardous Waste Site ✓ SPCC Insp.
If a hazardous waste site, give name: _____
Status:
Incident Response Objective:
✓ To perform a spill investigation and/or a SPCC Inspection
_ Other, Explain: _____
Background Review: _ Complete ✓ Partial
Documentation/Summary:
Overall Hazard: _ high _ moderate ✓ low _ unknown
Site sketch attached: _ yes ✓ no
Material Type (spill/waste/product) ✓ liquid _ sludge _ solid
_ gas/vapor
Potential Characteristics:
_ corrosive ✓ ignitable _ radioactive ✓ volatile
✓ toxic _ reactive _ biological agent
Dermal Toxicity: low Other: _____
ChemicalName(s): Oil - see haz. evaluation sheets

Quantity Involved: Unknown Source: Unknown
Cause: N/A

INCIDENT/SITE DESCRIPTION: Size of property Unknown
Number of Storage tanks Unknown Buildings Unknown
Tank size _____ gallons, How many _____
Tank size _____ gallons, How many _____
Tank size _____ gallons, How many _____
Tank size _____ gallons, How many _____
Receiving Waters/Tributaries: Cal-Sag Channel

Unusual Features (e.g., Sensitive areas, Endangered Species): _____

History: Facility was previously inspected in 1994.

Personnel Protection:
Level of protection: ___ A ___ B ___ C ✓ D
If downgraded, explain: _____

List specific protective clothing required:

1. Safety Boots 3. Safety glasses 5. _____ 7. _____
2. Hard hat 4. Nomex Coveralls 6. _____ 8. _____

Field monitoring equipment and material required:
1. Camera 3. Measuring wheel 5. _____ 7. _____
2. Tape Measure 4. GPS unit 6. _____ 8. _____

Decontamination Procedures:
Hotline Location: N/A

List of Equipment: (Material and level of protection required)
1. N/A 3. 5. 7.
2. 4. 6. 8.

Site Entry Procedure:

Team Members	Responsibilities
Karen Rutkowski	Team Leader
Stephanie Wenning	SSO

Special Instructions:
Avoid contact with oil. Observe safety protocol of facility and company. Monitor for H2S associated with crude oil when necessary.
Others: Review SPCC plan prior to inspection if available

Emergency Precautions:
Health Hazards: Low direct threat, but avoid contact with oil.

Acute Exposure Symptoms (if known): None known.

First Aide Instructions: Wash with soap and water if exposed.
Others: _____

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Emergency Information Sources:

Fire Department: 911

Police: 911

Ambulance: 911

Hospital: St. Francis Hospital 708.597.2000 12935 S. Gregory St. Blue Island, IL

EPA Contact:
Len Zintak 312.886.4246

Others:
Steve Fargan USEPA 312.353.9351

Route to the hospital: See attached map
Go East on 131st to Vermont. Continue straight on Vermont. Go North on Western. St. Francis Hospital will be on the left.

Emergency Telephone No.:
E & E Office: Chicago
EPA Region V Hotline: (312) 353-2318
Chicago: (312) ~~663-9415~~ 578-9243
~~Buffalo: (716) 632-4491~~
E & E Emergency Response Center: (716) 684-8940
Assist-START PM ~~ATATL~~: Pat Zwilling (Home) 847-587-5934
(Office) 312.578.9243
START PM ~~TATL~~: Tom Kouris (Home) (219) 924-1341
(Office) (312) ~~663-9415~~ 578-9243

Communications:
Nearest Telephone: TBD
Communication Used On-site:

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Hospital Map
page 1 of 1

ST. Francis Hosp.
12935 S. Gregory St.
Blue Island, IL
708-597-2000

CHICAGO CITY LIMITS
Ridge Country Club
Barnard Pig Park
Munroe Pig
McKeman Pig
Mount Greenwood Cemetery
Crescent Park
Prospect Park
Mt Greenwood Park
Mount Olivet Cemetery
Kennedy Park
Bohn Pk
Ada Park
Almond Park
Blackwelder Park
Ever Rest Mernon Cemetery
3W-13S
Mount Hope Cemetery
MERRIONETTE PARK
Morgan Field Park
Cooper Park
Oak Hill Cemetery
4W-14S
Lincoln Cemetery
Beverly Cemetery
25
3W-14S
2W-14S
White Park
CALUMET PARK
Cedar Park Cemetery
BLUE ISLAND
Memorial Park
35
4W-15S
SITE
Calumet Sag Channel
2W-15S
3W-15S
36
ROBBINS
3W-16S
2W-16S
Calumet Grove FOREST PRESERVE
Joe Louis Golf Course
1W-16S
MOTHER OF SORROWS H S

SEE PAGES 74-75

OILS, FUEL: NO. 1

OON

Common Synonyms	Watery liquid	Colorless	Kerosene odor
Kerosene Kerosene Range oil JP-1	Floats on water		

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible.
Extinguish with dry chemical, foam or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS have victim drink water
DO NOT INDUCE VOMITING

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline
May be dangerous if it enters water intakes.

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.3/1223
3.4 DOT ID No.: 1223
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Colorless to light brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION causes irritation of gastrointestinal tract; pulmonary tract irritation secondary to exhalation of vapors. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema, signs of bronchopneumonia and pneumonitis appear later; minimal central nervous system depression.
5.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting; call physician. ASPIRATION: enforce bed rest; administer oxygen; call physician. EYES: wash with plenty of water. SKIN: wipe off and wash with soap and water
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1, LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: 1 ppm
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 100°F C.C.
6.2 Flammable Limits in Air: 0.7%-5%
6.3 Fire Extinguishing Agents: Dry chemical, foam, carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 444°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 2990 ppm/24 hr/bluegill/TL_m/fresh water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): 53%, 5 days
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Light hydrocarbon distillate: 100%
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rating
Fire	2
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	1
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	1
Aesthetic Effect	3
Reactivity	
Other Chemicals	0
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 18°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 360-560°F = 183—293°C = 456—566°K
12.4 Freezing Point: —45 to —55°F = —43 to —48°C = 230 to 225°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: (liquid) 0.81-0.85 at 15°C
12.8 Liquid Surface Tension: 23-32 dynes/cm = 0.023—0.032 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 47—49 dynes/cm = 0.047-0.049 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: 110 Btu/lb = 60 cal/g = 2.5 X 10^5 J/kg
12.13 Heat of Combustion: —18,540 Btu/lb = —10,300 cal/g = —431.24 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 2

OTW

Common Synonyms	Oily liquid	Yellow-brown	Lube or fuel oil odor
Home-heating oil	Floats on water.		

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible.
Extinguish with dry chemical, foam or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes
If swallowed, will cause nausea, vomiting
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS have victim drink water or milk
DO NOT INDUCE VOMITING

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline
May be dangerous if it enters water intakes.

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.3/1223
3.4 DOT ID No.: 1223
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Like kerosene; characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INHALATION causes headache and slight giddiness. INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression.
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting. ASPIRATION: enforce bed rest; administer oxygen; seek medical attention. EYES: wash with copious quantity of water. SKIN: remove solvent by wiping and wash with soap and water.
5.4 Threshold Limit Value: No single value applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1: LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Slight smarting of eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 136°F C.C.
6.2 Flammable Limits in Air: Data not available
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 494°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity:
200 ppm/24 hr/juvenile American shad/TL_m/fresh water
20 ppm/96 hr/rainbow trout eggs/TL_m/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Commercial
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 540—640°F = 282—338°C = 555—611°K
12.4 Freezing Point: —20°F = —29°C = 244°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.879 at 20°C (liquid)
12.8 Liquid Surface Tension (est.): 25 dynes/cm = 0.025 N/m at 20°C
12.9 Liquid Water Interfacial Tension (est.): 50 dynes/cm = 0.05 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: —19 440 Btu/lb = —10,800 cal/g = —452.17 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, MISCELLANEOUS: MOTOR

OMT

Common Synonyms	Oily liquid	Yellow-brown	Lube oil odor
Crankcase oil Lubricating oil Transmission oil	Floats on water		

[illegible] possible
[illegible] fire department
[illegible] contact with liquid
[illegible] and remove discharged material
[illegible] local health and pollution control agencies

Fire

Combustible.
Extinguish with dry chemical, foam or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

[illegible] MEDICAL AID

LIQUID
Irritating to skin and eyes
Harmful if swallowed
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IN EYES: hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS: have victim drink water
[illegible]
DO NOT INDUCE VOMITING

Water Pollution

Effect of low concentrations on aquatic life is unknown
Floating to shoreline
May be dangerous if it enters water intakes.
Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.3/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Yellow fluorescent
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION: minimal gastrointestinal irritation; increased frequency of bowel passage may occur. ASPIRATION: pulmonary irritation is normally minimal but may become more severe several hours after exposure
5.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays. EYES: wash with copious amounts of water. SKIN: wipe off oil and wash with soap and water
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1. LD_{50} = 5 to 15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 275—600°F C.C.
6.2 Flammable Limits in Air: Data not available
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 325—625°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Various viscosities
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Not listed
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification: Not listed

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: Very high
12.4 Freezing Point: −29.8°F = −34.4°C = 238.8°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.84—0.98 at 15°C (liquid)
12.8 Liquid Surface Tension: 36-37.5 dynes/cm = 0.036—0.0375 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 33—54 dynes/cm = 0.033—0.054 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: −18,486 Btu/lb = −10,270 cal/g = −429.98 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS: CRUDE

Common Synonyms	Oily liquid	Dark	Acrid odor
Petroleum	Floats on water. Flammable vapor may be produced.		

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID

VAPOR
Not irritating to eyes, nose, or throat.

LIQUID
Irritating to skin and eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment.
Should be removed.
Chemical and physical treatment.

2. LABEL

2.1 Category: Flammable liquid
2.2 Class: 3

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1267
3.4 DOT ID No.: 1267
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (at ship pack): Liquid
4.2 Color: Dark
4.3 Odor: Offensive; tarry

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Goggles or face shield; rubber gloves and boots.
5.2 Symptoms Following Exposure: May irritate eyes and skin.
5.3 Treatment of Exposure: EYES: flush with water for at least 15 min. SKIN: wipe off and wash with soap and water.
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Data not available
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Vapors are nonirritating to the eyes and throat.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 20-90°F C.C.
6.2 Flammable Limits in Air: Data not available
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: Data not available
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Water Reactivity (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity:
3 ppm/* /fresh water fish/toxic/fresh water
200 ppm/24 hr/corals: portes/20-60% normal response/salt water
*Time period not specified.
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Wide variety, depending on oil field where produced.
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations:
Flammable liquid

11.2 NAS Hazard Rating for Bulk Water Transportation:

Category	Rate
Fire	1
Health	
Vapor Irritant	0
Liquid or Solid Irritant	1
Poisons	1
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	4
Reactivity	
Other Chemicals	3
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification:

Category	Class
Health Hazard (Blue)	1
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 16°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm:
80—>750°F
= 32—>400°C = 305—>673°K
12.4 Freezing Point: Not pertinent
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity:
0.70-0.98 at 15°C
(liquid)
12.8 Liquid Surface Tension:
24-39 dynes/cm
= 0.024—0.039 N/m at 20°C
12.9 Liquid Water Interfacial Tension: Data not available
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization:
140—160 Btu/lb = 78—89 cal/g
= 3.3—3.6 X 10^5 J/kg
12.13 Heat of Combustion: —18,252 Btu/lb = —18,140 cal/g = —424.54 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Pyrolysis: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: 0.10 psia

NOTES

OILS: DIESEL

ODS

Common Synonyms	Oily liquid	Yellow-brown	Like or fuel oil odor
Fuel oil 1-D Fuel oil 2-D	Floats on water.		

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies.

Fire	Combustible. Extinguish with dry chemical, foam, or carbon dioxide Water may be ineffective on fire Cool exposed containers with water
Exposure	CALL FOR MEDICAL AID **LIQUID** Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes Flush affected areas with plenty of water IF IN EYES hold eyelids open and flush with plenty of water IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk DO NOT INDUCE VOMITING
Water Pollution	Dangerous to aquatic life in high concentrations. Fouling to shorelines. May be dangerous if it enters water intakes. Notify local health and wildlife officials Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Like fuel oil

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Goggles or face shield.
5.2 Symptoms Following Exposure: If liquid is ingested, an increased frequency of bowel movements will occur.
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting. SKIN: wipe off, wash with soap and water. EYES: wash with copious amounts of water for at least 15 min.
5.4 Threshold Limit Value: No single TLV applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1: LD_{50} = 5 to 15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard, if spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: (1-D) 100°F C.C., (2-D) 125°F C.C.
6.2 Flammable Limits in Air: 1.3-6.0 vol.%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: (1-D) 350-625°F (2-D) 490-545°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 204 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: > 20 ml/kg /LD_{50}/material
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Diesel Fuel 1-D (ASTM); Diesel Fuel 2-D (ASTM)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 16°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 550—640°F = 288—338°C = 561—612°K
12.4 Freezing Point: 0 to —30°F = —18 to —34°C = 255 to 239°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.841 at 16°C (liquid)
12.8 Liquid Surface Tension: (est.) 25 dynes/cm = 0.025 N/m at 20°C
12.9 Liquid Water Interfacial Tension: (est.) 50 dynes/cm = 0.05 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: —18,400 Btu/lb = —10,200 cal/g = 429 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Varies

NOTES

OILS, MISCELLANEOUS: ROAD

ORD

Common Synonyms			
Slow curing asphalt Petroleum asphalt Liquid asphalt	Oily liquid Floats on water.	Black	Tar odor

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible.
Extinguish with foam, dry chemical, or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES, hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk
DO NOT INDUCE VOMITING

Water Pollution

Effect of low concentrations on aquatic life is unknown.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.2/1999; 3.3/1999
3.4 DOT ID No.: 1999
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Dark brown to black
4.3 Odor: Tarry

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective clothing for hot asphalt; face and eye protection when hot.
5.2 Symptoms Following Exposure: Contact with skin may cause dermatosis. Inhalation of vapors may cause moderate irritation of nose and throat. Hot liquid burns skin.
5.3 Treatment of Exposure: Severe burns may result from hot liquid. Cool the skin at once with water. Cover burn with sterile dressing and seek medical attention.
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 2; LD_{50} = 0.5 to 5 g/kg
5.7 Late Toxicity: None observed
5.8 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 300—550°F
6.2 Flammable Limits in Air: Not pertinent
6.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 400—700°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: Data not available
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: SC-0 to SC-5
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (Flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Not listed
11.2 NAS Hazard Rating for Bulk Water

Transportation: Category	Rating
Fire	1
Health	
Vapor Irritant	1
Liquid or Solid Irritant	2
Poisons	1
Water Pollution	
Human Toxicity	0
Aquatic Toxicity	1
Aesthetic Effect	4
Reactivity	
Other Chemicals	0
Water	0
Self Reaction	0

11.3 NFPA Hazard Classification

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	1
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: Very high
12.4 Freezing Point: Not pertinent
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 1.0—1.2 at 25°C (liquid)
12.8 Liquid Surface Tension: (est.) 25 dynes/cm = 0.025 N/m at 20°C
12.9 Liquid Water Interfacial Tension: (est.) 50 dynes/cm = 0.05 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: (est.) —18,000 Btu/lb = —10,000 cal/g = —420 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 1-D

OOD

Common Synonyms	Oily liquid	Yellow-brown	Like or fuel oil odor
Diesel oil (light)	Floats on water.		

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible
Extinguish with dry chemical, foam or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes.
Harmful if swallowed
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS have victim drink water or milk
DO NOT INDUCE VOMITING

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shorelines
May be dangerous if it enters water intakes

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INHALATION causes headache and slight giddiness. INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema, later, signs of bronchopneumonia and pneumonitis; acute onset of central nervous system excitement followed by depression
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting; seek medical attention. ASPIRATION: enforce bed rest; administer oxygen. EYES: wash with copious quantity of water SKIN: remove solvent by wiping and wash with soap and water
5.4 Threshold Limit Value: No single value applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1, LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Slight smarting of eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.
5.10 Odor Threshold: 0.7 ppm
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 100°F C.C
6.2 Flammable Limits in Air: 1.3%-6%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 350—625°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 204 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: 20 mg/kg LD_{50} (mallard)
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Diesel fuel 1-D (ASTM)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 380—560°F = 193—293°C = 466—566°K
12.4 Freezing Point: −30°F = −34°C = 240°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.81—0.85 at 15°C (liquid)
12.8 Liquid Surface Tension: 23—32 dynes/cm = 0.023—0.032 N/m at 20°C
12.9 Liquid Water Interfacial Tension: 47—49 dynes/cm = 0.047—0.049 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: 110 Btu/lb = 60 cal/g = 2.5 X 10^5 J/kg
12.13 Heat of Combustion: −18,540 Btu/lb = −10,300 cal/g = −431.24 X 10^5 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 2-D

OTD

Common Synonyms			
Diesel oil medium	Oily liquid Floats on water	Yellow-brown	Like or fuel oil odor

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible
Extinguish with dry chemical, foam, carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes
Harmful if swallowed
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS have victim drink water (2 glass)
DO NOT INDUCE VOMITING

Water Pollution

Dangerous to aquatic life in high concentrations
Fouling to shoreline
May be dangerous if it enters water intakes

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)
Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.1/1270
3.4 DOT ID No.: 1270
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Light brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION causes nausea, vomiting, and cramping; depression of central nervous system ranging from mild headache to anesthesia, coma, and death; pulmonary irritation secondary to exhalation of solvent; signs of kidney and liver damage may be delayed. ASPIRATION causes severe lung irritation with coughing, gagging, dyspnea, substernal distress, and rapidly developing pulmonary edema; later, signs of bronchopneumonia and pneumonitis, acute onset of central nervous system excitement followed by depression.
5.3 Treatment of Exposure: INGESTION: do NOT induce vomiting. ASPIRATION: enforce bed rest; administer oxygen; seek medical attention. EYES: wash with copious quantity of water. SKIN: remove solvent by wiping and wash with soap and water
5.4 Threshold Limit Value: No single TLV applicable.
5.5 Short Term Inhalation Limits: Data not available
5.6 Toxicity by Ingestion: Grade 1, LD_{50} = 5-15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: Slight smarting of eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 *Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of skin.*
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: 125°F C.C.
6.2 Flammable Limits in Air: 1.3%-6.0%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 *Special Hazards of Combustion Products:* Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 490—545°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: 204 mg/l/24 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Diesel fuel 2-D (ASTM)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)
A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 16°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 540—640°F = 282—338°C = 555—611°K
12.4 Freezing Point: 0°F = 18°C = 255°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.87—0.90 at 20°C (liquid)
12.8 Liquid Surface Tension: Data not available
12.9 Liquid Water Interfacial Tension: Data not available
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: —19,440 Btu/lb = —10,800 cal/g = —452.17 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.35 Heat of Fusion: Data not available
12.36 Limiting Value: Data not available
12.37 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 4

OFR

Common Synonyms	Oily liquid	Dark	Lube or fuel oil odor
Residual fuel oil No. 4	Floats on water.		

Stop discharge if possible
Call fire department
Avoid contact with liquid
Isolate and remove discharged material
Notify local health and pollution control agencies

Fire

Combustible
Extinguish with dry chemical, foam or carbon dioxide
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes
Harmful if swallowed
Remove contaminated clothing and shoes
Flush affected areas with plenty of water
IF IN EYES: hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS: have victim drink water

DO NOT INDUCE VOMITING

Water Pollution

Effect of low concentrations on aquatic life is unknown.
Fouling to shorelines
May be dangerous if it enters water intakes.

Notify local health and wildlife officials
Notify operators of nearby water intakes

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.3/1223
3.4 DOT ID No.: 1223
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION: gastrointestinal irritation. ASPIRATION: pulmonary irritation is normally minimal but may become more severe several hours after exposure.
5.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays; consider prophylactic antibiotic regime if condition warrants. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water.
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Not pertinent
5.6 Toxicity by Ingestion: Grade 1; LD_{50} = 5 to 15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: None
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: >130°F C.C.
6.2 Flammable Limits in Air: 1.0%-5%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective.
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 505°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Commercial
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 214 to >1092°F = 101 to >588°C = 374 to 861°K
12.4 Freezing Point: −20 to +15°F = −29 to −9°C = 244 to 264°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: 0.904 at 15°C (liquid)
12.8 Liquid Surface Tension: Data not available
12.9 Liquid Water Interfacial Tension: Data not available
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: −17,480 Btu/lb = −9,700 cal/g = −40.6 X 10^6 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 5

OFV

Common Synonyms	Oily liquid	Dark	Strong tube oil odor
Residual fuel oil No. 5	Usually floats on water.		

Stop discharge if possible.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible
Extinguish with dry chemical, foam or carbon dioxide.
Water may be ineffective on fire
Cool exposed containers with water

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water
IF IN EYES hold eyelids open and flush with plenty of water
IF SWALLOWED and victim is CONSCIOUS have victim drink water or milk.
DO NOT INDUCE VOMITING

Water Pollution

Effect of low concentrations on aquatic life is unknown
Fouling to shoreline
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon Mixtures
3.2 Formula: Not applicable
3.3 IMO/UN Designation: 3.3/1223
3.4 DOT ID No.: 1223
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (as shipped): Liquid
4.2 Color: Brown
4.3 Odor: Characteristic

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION: gastrointestinal irritation. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays; consider prophylactic antibiotic regime if condition warrants. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water
5.3 Treatment of Exposure: Data not available
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Not pertinent
5.6 Toxicity by Ingestion: Grade 1: LD_{50} = 5 to 15 g/kg
5.7 Less Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: None
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: >130°F C.C
6.2 Flammable Limits in Air: 1%-5%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: Data not available
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity: Data not available
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: None

9. SHIPPING INFORMATION

9.1 Grades of Purity: Fuel oil No. 5 (heavy); Fuel oil No. 5 (light)
9.2 Storage Temperature: Ambient
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm: 426—>1062°F = 218—>570°C = 491—>843°K
12.4 Freezing Point: 0°F = —18°C = 255°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity: (liquid) 0.936 at 16°C
12.8 Liquid Surface Tension: Data not available
12.9 Liquid Water Interfacial Tension: Data not available
12.10 Vapor (Gas) Specific Gravity: Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: —18,000 Btu/lb = —10,000 cal/g = —418.68 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

OILS, FUEL: 6

OSX

Common Synonyms			
Bunker C oil Residual fuel oil No. 6	Thick liquid	Black	Tar odor
	Usually floats on water.		

Stop discharge if possible.
Call fire department.
Avoid contact with liquid.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
Extinguish with dry chemical, foam or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook)

Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

2.1 Category: None
2.2 Class: Not pertinent

3. CHEMICAL DESIGNATIONS

3.1 CG Compatibility Class: Miscellaneous Hydrocarbon mixture
3.2 Formula: Not listed
3.3 IMO/UN Designation: 3.3/1223
3.4 DOT ID No.: 1223
3.5 CAS Registry No.: Data not available

4. OBSERVABLE CHARACTERISTICS

4.1 Physical State (at shipped): Liquid
4.2 Color: Dark
4.3 Odor: Tarry, like kerosene

5. HEALTH HAZARDS

5.1 Personal Protective Equipment: Protective gloves; goggles or face shield.
5.2 Symptoms Following Exposure: INGESTION: gastrointestinal irritation. ASPIRATION: pulmonary irritation is normally minimal but may become more severe several hours after exposure.
5.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays; consider prophylactic antibiotic regime if condition warrants. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water.
5.4 Threshold Limit Value: Data not available
5.5 Short Term Inhalation Limits: Not pertinent
5.6 Toxicity by Ingestion: Grade 1; LD_{50} = 5 to 15 g/kg
5.7 Late Toxicity: Data not available
5.8 Vapor (Gas) Irritant Characteristics: None
5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 Odor Threshold: Data not available
5.11 IDLH Value: Data not available

6. FIRE HAZARDS

6.1 Flash Point: >150°F C.C.
6.2 Flammable Limits in Air: 1%-5%
6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide
6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective
6.5 Special Hazards of Combustion Products: Not pertinent
6.6 Behavior in Fire: Not pertinent
6.7 Ignition Temperature: 765°F
6.8 Electrical Hazard: Not pertinent
6.9 Burning Rate: 4 mm/min.
6.10 Adiabatic Flame Temperature: Data not available
6.11 Stoichiometric Air to Fuel Ratio: Data not available
6.12 Flame Temperature: Data not available

7. CHEMICAL REACTIVITY

7.1 Reactivity With Water: No reaction
7.2 Reactivity with Common Materials: No reaction
7.3 Stability During Transport: Stable
7.4 Neutralizing Agents for Acids and Caustics: Not pertinent
7.5 Polymerization: Not pertinent
7.6 Inhibitor of Polymerization: Not pertinent
7.7 Molar Ratio (Reactant to Product): Data not available
7.8 Reactivity Group: 33

8. WATER POLLUTION

8.1 Aquatic Toxicity:
2400 ppm/48 hr/juvenile American shad/TL_m/fresh water
2417 mg/l/48 hr/juvenile American shad/TL_m/salt water
8.2 Waterfowl Toxicity: Data not available
8.3 Biological Oxygen Demand (BOD): Data not available
8.4 Food Chain Concentration Potential: Data not available

9. SHIPPING INFORMATION

9.1 Grades of Purity: Commercial
9.2 Storage Temperature: Elevated
9.3 Inert Atmosphere: No requirement
9.4 Venting: Open (flame arrester)

10. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook)

A-T-U

11. HAZARD CLASSIFICATIONS

11.1 Code of Federal Regulations: Combustible liquid
11.2 NAS Hazard Rating for Bulk Water Transportation: Not listed
11.3 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	2
Reactivity (Yellow)	0

12. PHYSICAL AND CHEMICAL PROPERTIES

12.1 Physical State at 15°C and 1 atm: Liquid
12.2 Molecular Weight: Not pertinent
12.3 Boiling Point at 1 atm:
415—>>1000°F
= 212—>>538°C = 485—>>811°K
12.4 Freezing Point:
25 to 55°F
= −4 to +13°C = 269 to 286°K
12.5 Critical Temperature: Not pertinent
12.6 Critical Pressure: Not pertinent
12.7 Specific Gravity:
0.95 (approx.) at 20°C (liquid)
12.8 Liquid Surface Tension: (est.)
25 dynes/cm = 0.025 N/m at 20°C
12.9 Liquid Water Interfacial Tension: (est.)
50 dynes/cm = 0.05 N/m at 20°C
12.10 Vapor (Gas) Specific Gravity:
Not pertinent
12.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
12.12 Latent Heat of Vaporization: Not pertinent
12.13 Heat of Combustion: −18,000 Btu/lb = −10,000 cal/g = −418.68 X 10^3 J/kg
12.14 Heat of Decomposition: Not pertinent
12.15 Heat of Solution: Not pertinent
12.16 Heat of Polymerization: Not pertinent
12.25 Heat of Fusion: Data not available
12.26 Limiting Value: Data not available
12.27 Reid Vapor Pressure: Data not available

NOTES

REVIEWER _____ FACILITY _____

DATE _____ LOCATION _____

CASE NO. _____

ATTACHMENT A

VIOLATIONS OF THE SPCC REGULATIONS FOUND DURING INSPECTION

The following violations were discovered when your facility was inspected to determine compliance with the SPCC regulations located at 40 C.F.R. Part 112:

_____ Failure to Implement SPCC Plan (40 C.F.R. § 112.3(a)).

_____ Failure to Have Plan Certified by a Registered Professional Engineer (40 C.F.R. § 112.3(d))

_____ Failure to Make SPCC Plan Available During Inspection (40 C.F.R. § 112.3(e))

_____ Failure to Maintain SPCC Plan at the Facility (40 C.F.R. § 112.3(e))

_____ Failure to Amend SPCC Plan (40 C.F.R. § 112.5).

_____ Failure to Review SPCC Plan at least Every Three Years (40 C.F.R. § 112.5(b))

_____ Inadequate SPCC Plan (40 C.F.R. § 112.7).

ATTACHMENT B

SPECIFIC INFORMATION WHICH FACILITY MUST SUBMIT FOR EACH VIOLATION IDENTIFIED IN ATTACHMENT A

[1] **For Failure to Implement the Facility's SPCC Plan**: A statement certifying that the provisions listed below have been implemented, provided that your facility has implemented these provisions. If your facility has not implemented these provisions, submit a schedule, signed by an authorized official from your facility, which indicates when the provisions will be implemented and when a certification will be submitted to U.S. EPA.

[2] **For Failure to Have Plan Certified by a Registered Professional Engineer**: An SPCC plan which is properly certified by a registered professional engineer in accordance with 40 CFR 112.3(d), which requires a certification statement, signed by the registered professional engineer with the registration number, state of registration and affixed with the engineer's seal.

[3] **For Failure to Make SPCC Plan Available During Inspection**: An adequate SPCC Plan for the facility which fully complies with the requirements of 40 C.F.R. Part 112 (enclosed), and photographic evidence that your SPCC Plan has been fully implemented along with a statement from an authorized representative of your facility identifying and authenticating the photographs and certifying the date on which the facility fully implemented its SPCC Plan. If your facility is unable to provide an adequate SPCC Plan within the required time period, then your facility should submit, within thirty days of receipt of this letter, a detailed schedule which indicates when the facility's SPCC Plan will be complete and when implementation will occur. Within the timeframe set forth in that schedule, your facility will then submit the above-requested information.

[4] **For Failure to Maintain SPCC Plan at the Facility**: A copy of the SPCC Plan and a certification signed by an authorized official of your facility that the SPCC Plan shall be available at your facility.

[5] **For Failure to Amend SPCC Plan**: An amended SPCC Plan, certified by a Registered Professional Engineer, approved by management at a level with authority to commit the necessary resources, and photographic evidence that your SPCC Plan has been fully implemented along with a statement from an authorized representative of your facility identifying and authenticating the photographs and certifying the date on which the facility amended and fully implemented its SPCC Plan. If your facility is unable to provide an adequate SPCC Plan within the required time period, then your facility should submit, within thirty days of receipt of this letter, a detailed schedule which indicates when

the facility's SPCC Plan will be complete and when implementation will occur. Within the timeframe set forth in that schedule, your facility will then submit the above-requested information.

[6] **For Failure to Review SPCC Plan at least Every Three Years**: An SPCC Plan which indicates the date on which a review of the Plan was conducted, along with the signature and title of an authorized official of the facility, if an amendment to the SPCC Plan is unnecessary. An amendment is necessary whenever there is a change in facility design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil into or upon the navigable waters of the United States or adjoining shore lines. If an amendment to the SPCC Plan is necessary, the required changes must be made, certified by a Professional Engineer and the amended SPCC Plan must be submitted along with the date of review, and the signature and title of an authorized official of the facility.

[7] **For Inadequate SPCC Plan**: An adequate SPCC Plan, certified by a Registered Professional Engineer, approved by management at a level with authority to commit the necessary resources, and photographic evidence that your SPCC Plan has been fully implemented along with a statement from an authorized representative of your facility identifying and authenticating the photographs and certifying the date on which the facility fully implemented its SPCC Plan. If your facility is unable to provide an adequate SPCC Plan within the required time period, then your facility should submit, within thirty days of receipt of this letter, a detailed schedule which indicates when the facility's SPCC Plan will be complete and when implementation will occur. Within the timeframe set forth in that schedule, your facility will then submit the above-requested information.

40 CFR 112.3 - Requirements for preparation and implementation of Spill Prevention Control and Countermeasure Plans.

(b) **Failure to prepare a plan within 6-months after facility became operational and implement same plan within one year after facility became operational.**

40 CFR 112.4 - Amendment of SPCC Plans by Regional Administrator

(a) **Failure to amend SPCC Plan and submit same to Regional Administrator after discharge of 1,000 gallons of oil to navigable waters or having two reportable spills within 12 months.**

40 CFR 112.7 - Guidelines for the preparation and implementation of a Spill Prevention Control and Countermeasure Plan

Failure to provide full approval of management at a level with authority to commit the necessary resources.

Failure to provide complete discussion and implementation schedule of items to be installed.

Failure to follow the sequence of §112.7.

(a) **Failure to provide a complete description of spill events including corrective actions.**

(b) **Failure to predict the direction, rate of flow,and total quantity of oil which could be discharged from the facility as a result of each major type of equipment failure.**

(c) **Failure to provide adequate secondary containment and/or diversionary structures if practicable; including sorbent materials.**

(d) **Failure to clearly demonstrate impracticability of secondary containment or diversionary structures.**

(d)(1) **Failure to provide strong contingency plan.**

(d)(2) **Failure to provide a written commitment of manpower, equipment and materials required to handle any quantity of oil discharged.**

(e)(1) **Failure to provide complete discussion and/or implement requirements pertaining to Facility Drainage.**

(i) Failure to provide positive means to prevent an oil spill into the drainage system of the diked storage areas.

(ii) Failure to provide manual, open-and-closed designed valves. Failure to inspect retained stormwater from diked areas before drainage (as provided in e(2)(iii)(B,C, & D).

(iii) Failure to provide appropriate plant drainage systems from undiked areas that flow into ponds, lagoons or catchment basins, designed to retain oil or return it to the facility; **or**

(iv) Failure to provide a diversion system at the final discharge of all in-plant ditches that could return the oil to the plant.

(v) Failure to provide natural hydraulic flow or two "lift" pumps with at least one permanently installed for the transfer of drainage water when more than one drainage water treatment unit is used.

Failure to provide other means of adequate drainage systems.

* **(e)(2) Failure to provide complete discussions and/or implement requirements pertaining to Bulk Storage Tanks**

* (i) Tank material/construction is not compatible with fluid stored. (NOT STATED IN PLAN)

(ii) Failure to provide secondary containment for the largest single tank plus an allowance for precipitation.

Dike walls and floor are not "sufficiently impervious".

(iii) Failure to provide discussion on drainage of rainwater from diked areas which by-passes treatment, according to the following:

(A) Normally sealing the by-pass valve closed;

(B) The rainwater is inspected;

(C) The by-pass valve is opened/closed under supervision; and

(D) Records are kept of bypassing and drainage events.

(iv) Failure to either wrap or coat new buried metallic storage tanks to reduce corrosion (or other effective method compatible with local soil conditions); **or**

Failure to pressure test such tanks on a regularly scheduled basis.

(v) Failure to adequately coat the buried section of a partially buried metallic tank.

(vi) Failure to test aboveground tanks by hydrostatic testing, or visual inspection or shell thickness testing (with comparison records maintained);

Failure to inspect all bulk storage tanks periodically.

(vii) Failure to control internal heating coil leakage by:

(A) Monitoring the stream return or exhaust lines for oil or passing the steam lines through a separation system.
(B) Installing external heating system.

(viii) Failure to implement fail-safe engineering techniques on the tanks with one of the following:

(A) High liquid level alarms with an audible or visual signal;
(B) High liquid level pump cutoff devices;
(C) Direct audible or code signal between the tank gauge and pumping station;
(D) A fast response system to detect oil level such as digital computers or direct vision gauges.
(E) Sensing devices should be inspected/tested periodically.

(ix) Failure to observe disposal facility systems which discharge into navigable waters on a frequent basis.

(x) Failure to promptly correct visual oil leaks from tanks and related equipment.

(xi) Failure to properly locate portable or mobile oil storage tanks to prevent oil from reaching navigable waters.

Failure to provide secondary containment for the single largest compartment or tank.

(e)(3) Failure to provide complete discussions and/or implement requirements pertaining to Facility Transfer Operations.

(i) Failure to wrap/coat buried pipelines to reduce corrosion.

(ii) Failure to cap or blank flange the terminal connection at the transfer point of a pipeline when not in service or on standby for an extended time.

(iii) Failure to provide pipe supports which are designed to minimize abrasion and corrosion and allow for expansion and contraction.

(iv) Failure to regularly assess all aboveground valves and pipelines by operating personnel.

Failure to conduct periodic pressure testing for piping in areas where facility drainage is such that a failure may lead to a spill event.

(v) Failure to warn large vehicles verbally or by appropriate signs to be cautious of aboveground piping.

(e)(4) Failure to provide complete discussions and/or implement requirements pertaining to Facility Tank Truck Loading/Unloading Rack.

(i) Failure to meet the minimum requirements and regulation established by the Department of Transportation regarding tank car and tank truck loading and unloading procedures.

(ii) Failure to provide a quick drainage system with a containment volume greater than the largest compartment of any tank car or truck where drainage does not flow into a catchment basin or a treatment facility.

(iii) Failure to provide an interlocked warning light or physical barrier system or warning signs in loading/unloading areas to prevent vehicular departure before complete disconnect of flexible or fixed transfer lines.

(iv) Failure to inspect drains and outlets on tank cars and tank trucks are inspected for leakage prior to filling and departure.

(e)(5) Oil production facilities (onshore)

(ii) (A) Failure to close and lock secondary containment drains.

Failure to inspect rain water before discharge.

Failure to dispose of accumulated oil by approved methods.

(B) Failure to regularly inspect field drainage ditches, road ditches and oil traps, sumps or skimmers for accumulation of oil.

(iii) (A) Tank material/construction is not compatible with fluid stored.

(B) Failure to provide secondary containment for the largest single tank plus an allowance for precipitation.

Failure to provide catchment basin or holding pond for drainage from undiked areas.

(C) Failure to visually inspect and correct defects on tanks.

(D) Failure to implement fail-safe engineering techniques

on the tanks with one of the following:

(1) Adequate tank capacity;

(2) Overflow equalizing lines between tanks;

(3) Adequate vacuum protection to prevent tank collapse;

or

(4) A fast response system to detect oil level such as digital computers;

(iv) (A) Failure to examine all aboveground valves and pipelines periodically on a scheduled basis.

(B) Failure to conduct frequent inspections of salt water (oil field brine) disposal facilities to detect possible system malfunctions.

(C) Failure to utilize preventive maintenance programs and to maintain adequate facility inspection records.

(e)(6) Oil drilling and facilities (onshore)

(i) Failure to position mobile drilling or workover equipment so as to prevent spilled oil from reaching navigable waters.

(ii) Failure to provide catchment basins or diversion structures as necessary to intercept and contain oil spills.

(iii) Failure to install a blowout prevention (BOP) assembly and well control system should by installed as necessary to prevent release of oil.

(e)(8) Failure to include written procedures for required inspection and records of same inspections in the SPCC Plan for a period of three years.

(e)(9) Security (excluding oil production facilities)

(i) Failure to fully fence all plants handling, storing, and processing oil.

Failure to lock entrance gate or guard the facility when not in production or unattended.

(ii) Failure to securely lock master flow and drain valves in the closed position or any other valves that will permit direct outward flow of the tanks contents to the surface when in non-operating or non-standby status.

(iii) Failure to lock in the off position or make accessible only to authorized personnel starter controls on all oil pumps in a non-operating or non-standby status.

(iv) Failure to securely cap or blank-flange loading/unloading connections of oil pipelines when not in service or on standby status for an extended time period.

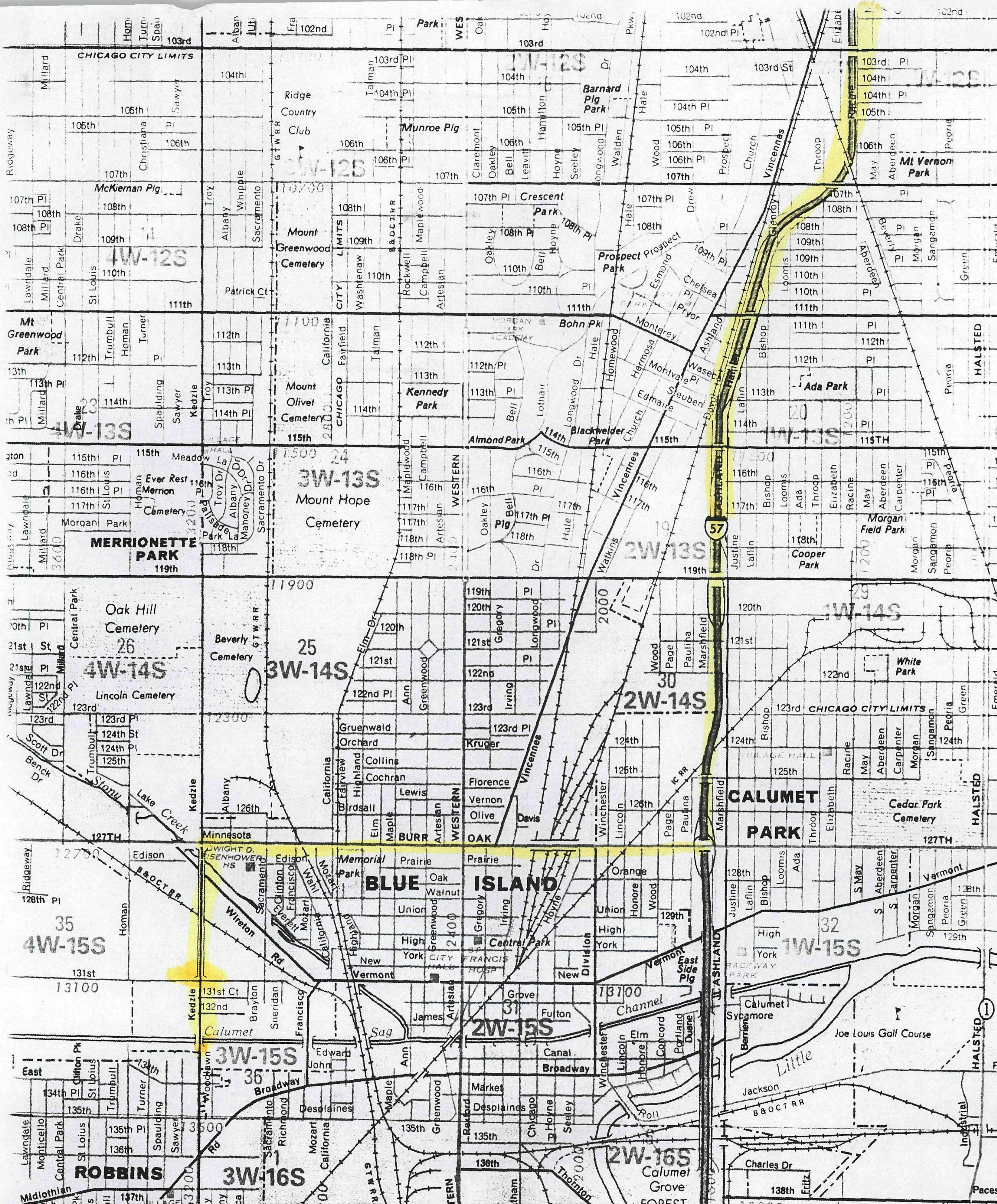
(v) Failure to provide facility lighting which is appropriate with the type and location of the facility and is adequate to discover spills and to prevent acts of vandalism.

(e)(10) Personnel, training and spill prevention procedures.

(i) Failure to properly instruct personnel in the operation and maintenance of equipment used to prevent oil discharges and in the pollution control laws, rules and regulations.

(ii) Failure to designate a person accountable for oil spill prevention who reports to line management within the SPCC Plan.

(iii) Failure to schedule and conduct on a regularly scheduled basis spill prevention briefings for operating personnel of the SPCC Plan for that facility.



SEE PAGES 74-75

ecology and environment, Inc.

EXISTING SITE SAFETY PLAN ADDENDUM FORM

Site Name: CLARK OIL SPCC

TDD/Pan/Project Number: KJ5102 S05-9702-006/7F0641IXX

Date of original SSP: 3-5-97

Date of amendment: 3-7-97

Date of proposed new work: 3-7-97

Added activities and hazard evaluations: Collect water and sludge samples from outdoor sump (slip/trip/fall; splash; cold stress).

Added monitoring activities: Air monitor for LEL (reading of 40% registered prior) in sump area.

Level of Protection ____ A ____ B X C ____ D

Reason for up/downgrading: N/A

PPE: Double tyvex, APR; latex booties; neoprene gloves

Decons: Bag and leave on-site

TEAM MEMBERS	RESPONSIBILITY
K. Rydzewski	Team Leader
NEIC Personnel	Assistant

EQUIPMENT	QUANTITY	EQUIPMENT	QUANTITY
CGI-Passport	1		

THE TERMS OF THE ORIGINAL SSP SHALL BE IN EFFECT EXCEPT AS NOTED ON THIS FORM.

Prepared by: P. Zwilling for K. Rydzewski (by phone 3/7/97 0930) Date: 3/7/97

Reviewed by: [signature] Date: 3/7/97

INSTRUCTIONS: This form to be approved through normal channels and attached to original plan. Form SSP-A

4/92

SSP92A.DOC ecology and environment, inc. 4/92

EMERGENCY RESPONSE
SITE SAFETY PLAN

A. INTRODUCTION

This plan has been prepared solely for implementation by E & E employees, using operating procedures for which they are specifically trained. Any use of this plan by other parties is at their own risk.

B. GENERAL INFORMATION

Job No: KJS102 TDD: _____ PAN: _____ Date: 11/2/97

Prepared by: C. OTTINGER Office: Chicago

Approved by: _____

Incident Location: Clark Refinery Blue Island, IL

Incident Description: 66,000 gallons of gasoline spilled in river, most contained w/in dikes, START to air monitor, PRP doing clean-up

Hazard Summary:

Overall Chemical Hazard: __ Serious __ Moderate ✓ Low __ Unknown

Overall Physical Hazard: __ Serious __ Moderate ✓ Low __ Unknown

C. RESPONSE TEAM

Team Members*	Responsibilities
Kendra Meyer	ICS Officer
Christianne Ottinger	Team Leader
	Site Safety Officer

D. CHEMICAL/SITE CHARACTERISTICS

Contaminant(S) of Concern: gasoline - BTEX cmpds, petroleum product

Physical State: ✓ Liquid __ Solid __ Sludge ✓ Gas/Vapor

Characteristics:

✓ Flammable ✓ Combustible __ Corrosive __ Poison __ Explosive

__ Reactive ✓ Volatile __ Biological __ Radioactive ✓ Carcinogen

Other: _____

Physical Hazards of Site:

__ Overhead __ Confined Space __ Below Grade ✓ Trip/Fall __ Burn

__ Puncture __ Noise __ Cut ✓ Splash __ Heat Stress ✓ Cold Stress

Other: _____

E: HAZARD EVALUATION

Physical Hazards:

NO	TASK	PHYSICAL HAZARDS
1	AIR MONITORING	SLIP, TRIP, FALL, COLD STRESS

Chemical Hazard Evaluation: See attached Hazard Evaluation Sheets for data on individual chemicals.

Chemical Hazards:

NO	TASK	CHEMICAL HAZARDS	PROTECTION
1	AIR MONITORING	ORGANIC VAPORS	D

All entries into an exclusion zone require the Buddy System. All E & E field staff participate in a medical monitoring program and have completed applicable training per 29 CFR 1910.120. E. & E's Respiratory protection program meets the requirements of 29 CFR 1910.134.

Modification of Standard Levels of Protection:

(Confined spaces must be screened in at least level B prior to downgrade. Adequate resources must be available before confinded space entry is initiated.)

Explain: AIR MONITORING WILL INDICATE SAFE DISTANCE

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Action levels for evacuation of work zone pending reassessment of conditions:

- o Level D: O_2 <19.5% or >25%; explosive atmosphere >20%LEL; organic vapors above background levels;particulates >_____ mg/m^3; other 5 ppm on PID, FID
- o Level C: O_2 <19.5% or >25%; explosive atmosphere >20%LEL; unknown organic vapor (in breathing zone) >5ppm; particulates >_____ mg/m^3; other _____
- o Level B: O_2 <19.5% or >25%; explosive atmosphere >20%LEL; unknown organic vapors (in breathing zone) >500 ppm; particulates >_____ mg/m^3; other _____
- o Level A: O_2 <19.5% or >25%; explosive atmosphere>20% LEL; unknown organic vapors >500ppm; particulates >_____ mg/m^3; other _____

Air Monitoring:

Contaminant	Type of Sample (Area/Personal)	Monitoring Equipment	Frequency of Sampling	Odor Threshold
BTEX	AREA	PID, FID		

Decontamination Procedure/Solutions*:

Personnel: alconox soap + DI if exposed to liquid hazard

Equipment: _____

Instruments: PID, FID - wipe down

* Investigation derived materials may not be left on-scene without the written permission of the property owner and/or State and Federal agencies.

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G. EMERGENCY INFORMATION

EMERGENCY CONTACTS

EMERGENCY OPERATIONS CENTER (BUFFALO)	(716) 684-8940 (HOTLINE)
	(716) 684-8060
MEDTOX (DR. HARBISON)	(501) 370-8263 (24-HOUR)
ECOLOGY AND ENVIRONMENT, INC. SAFETY DIRECTOR	
DR. PAUL JONMAIRE	(716) 684-8060 (OFFICE)
	(716) 655-1260 (HOME)

H. SITE RESOURCES

NOTE: To Be Completed Prior To Start Of Field Work

	NAME/CONTACT	TELEPHONE #
Ambulance		___/___-911
Hospital		___/___-911
Poison Control Center		___/___-911
Police		___/___-911
Fire Department		___/___-911
Client		___/___-___
Site		___/___-___
E & E Mobile Telephone		___/___-___
	Roamer	___/___-___

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F. EQUIPMENT CHECKLIST

Item	Number
Self-contained Breathing Apparatus	_____
Spare SCBA Air Tanks	_____
5-Minute Escape Mask	_____
Air Purifying Respirators (GMC-H Cartridges unless otherwise noted)	_____
Clothing Expendables Kit	_____
Sampling Kit	_____
Camera Kit	_____
Organic Vapor Analyzer	_____
PID (Hnu or other)	_____
Oxygen Combustable Gas Meter	_____
Monitox (cyanide)	_____
(other)	_____
Mercury Vapor Analyzer	_____
Draeger Pump	_____
Draeger Tubes (types) (Check Expiration Date)	_____
	_____
	_____
	_____
	_____
Mercury Vacuum Cleaner	_____
Computer Work Station	_____
Computer Video Transmission System	_____
Other Equipment:	_____
	_____
	_____
	_____
	_____
	_____

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