

**Section 1: IDENTIFICATION**

**Product Name:** Crude Oil - LLK to Enbridge

**Synonyms:** Not available.

**Product Use:** Refinery feedstock.

**Restrictions on Use:** Not available.

**Manufacturer/Supplier:** Plains Midstream Canada ULC, and Affiliates  
Suite 1400, 607 – 8th Avenue SW  
Calgary, Alberta  
T2P 0A7

**Phone Number:** 1-866-875-2554

**Emergency Phone:** USA - CHEMTREC 1-800-424-9300 / CANADA - CANUTEC 1-888-CAN-UTEC (226-8832), 613-996-6666 or \*666 on a cellular phone

**Date of Preparation of SDS:** April 11, 2016

**Section 2: HAZARD(S) IDENTIFICATION**

**GHS INFORMATION**

**Classification:** Flammable Liquids, Category 2  
Skin Irritation, Category 2  
Germ Cell Mutagenicity, Category 1B  
Carcinogenicity, Category 1A  
Toxic to Reproduction, Category 2  
Specific Target Organ Toxicity (Single Exposure), Category 3 - Narcotic Effects  
Specific Target Organ Toxicity (Repeated Exposure), Category 2

**LABEL ELEMENTS**

**Hazard Pictogram(s):** 

**Signal Word:** Danger

**Hazard Statements:** Highly flammable liquid and vapor.  
Causes skin irritation.  
May cause genetic defects.  
May cause cancer.  
Suspected of damaging fertility or the unborn child.  
May cause drowsiness or dizziness.  
May cause damage to organs through prolonged or repeated exposure.

**Precautionary Statements**

**Prevention:** Obtain special instructions before use.  
Do not handle until all safety precautions have been read and understood.  
Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.  
Keep container tightly closed.  
Ground/bond container and receiving equipment.

Use explosion-proof electrical, ventilating, and lighting equipment.  
 Use only non-sparking tools.  
 Take precautionary measures against static discharge.  
 Do not breathe mist, vapours, or spray.  
 Wash thoroughly after handling.  
 Use only outdoors or in a well-ventilated area.  
 Wear protective gloves, protective clothing and eye protection.

**Response:** If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 If inhaled: Remove person to fresh air and keep comfortable for breathing.  
 Call a poison center or doctor if you feel unwell.  
 If skin irritation occurs: Get medical advice/attention.  
 Wash contaminated clothing before reuse.  
 In case of fire: Use dry chemical, CO<sub>2</sub>, water spray or regular foam to extinguish.

**Storage:** Store in a well-ventilated place. Keep container tightly closed.  
 Keep cool.  
 Store locked up.

**Disposal:** Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients with Unknown Toxicity:** 5% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200). This material is considered hazardous by the Hazardous Products Regulations.

**Section 3: COMPOSITION / INFORMATION ON INGREDIENTS**

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Petroleum	Not available.	8002-05-9	100
Pentane	Not available.	109-66-0	3 - 7
Hexane	Not available.	110-54-3	1 - 5
Butane, 2-methyl-	Isopentane	78-78-4	1 - 5
Heptane	Not available.	142-82-5	1 - 5
Octane	Not available.	111-65-9	1 - 5
Decane	Not available.	124-18-5	1 - 5
Butane	Not available.	106-97-8	1 - 5
Nonane	Not available.	111-84-2	1 - 5
Benzene	Not available.	71-43-2	0.1 - 1
Benzene, methyl-	Toluene	108-88-3	0.1 - 1
Benzene, ethyl-	Ethylbenzene	100-41-4	0.1 - 1
Benzene, dimethyl-	Xylene	1330-20-7	0.1 - 1
Benzene, 1,2,4-trimethyl-	1,2,4-Trimethylbenzene	95-63-6	0.1 - 1
Hydrogen sulfide (H <sub>2</sub> S)	Not available.	7783-06-4	< 0.0001

**Section 4: FIRST-AID MEASURES**

**Inhalation:** If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

**Acute and delayed symptoms and effects:** May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Inhalation of Toluene may result in peculiar skin sensations (e. g. pins and needles) or numbness. This product contains small amounts of Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

**Eye Contact:** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center or doctor if you feel unwell.

**Acute and delayed symptoms and effects:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H<sub>2</sub>S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

**Skin Contact:** If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

**Acute and delayed symptoms and effects:** Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

**Ingestion:** If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

**Acute and delayed symptoms and effects:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

**General Advice:** In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

**Note to Physicians:** Symptoms may not appear immediately. For inhalation of Hydrogen Sulphide, consider oxygen.

### Section 5: FIRE-FIGHTING MEASURES

#### FLAMMABILITY AND EXPLOSION INFORMATION

Highly flammable liquid and vapor. Will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Vapor explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Many liquids are lighter than water. When heated, this material may evolve toxic and flammable Hydrogen sulphide.

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.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**Sensitivity to Mechanical Impact:** This material is not sensitive to mechanical impact.

**Sensitivity to Static Discharge:** Take precautionary measures against static discharge. This material is sensitive to static discharge.

#### MEANS OF EXTINCTION

**Suitable Extinguishing Media:** Small Fire: Dry chemical, CO<sub>2</sub>, water spray or regular foam.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

**Unsuitable Extinguishing Media:** Do not use straight streams. CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

**Products of Combustion:** Oxides of carbon. Oxides of sulphur. Aldehydes.

**Protection of Firefighters:** 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. Hydrogen sulphide is heavier than air and may collect in low lying areas and confined spaces. Wear positive pressure self-

contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

#### **Section 6: ACCIDENTAL RELEASE MEASURES**

- Emergency Procedures:** As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded.
- Personal Precautions:** Do not touch or walk through spilled material. Use personal protection recommended in Section 8. Don full-face, positive pressure, self-contained breathing apparatus.
- Environmental Precautions:** Prevent entry into waterways, sewers, basements or confined areas.
- Methods for Containment:** Stop leak if you can do it without risk. A vapor suppressing foam may be used to reduce vapors.
- Methods for Clean-Up:** Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.
- Other Information:** See Section 13 for disposal considerations.

#### **Section 7: HANDLING AND STORAGE**

**Handling:**

Do not swallow. Do not breathe mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks, open flames, and hot surfaces. – No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. See Section 8 for information on Personal Protective Equipment.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children. Head spaces in storage containers may contain toxic hydrogen sulphide gas. Structural materials and lighting and ventilation systems should be corrosion resistant.

#### **Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines  
Component**

Petroleum [CAS No. 8002-05-9]

**ACGIH:** No TLV established.

**OSHA:** 500 ppm (TWA), 2000 mg/m<sup>3</sup> (TWA);  
400 ppm (TWA) [Vacated];

Pentane [CAS No. 109-66-0]

**ACGIH:** 1000 ppm (TWA); (2013)

**OSHA:** 1000 ppm (TWA), 2950 mg/m<sup>3</sup> (TWA);  
600 ppm (TWA); 750 ppm (STEL) [Vacated];

Hexane [CAS No. 110-54-3]

**ACGIH:** 50 ppm (TWA); Skin, BEI (1996)

**OSHA:** 500 ppm (TWA), 1800 mg/m<sup>3</sup> (TWA); Skin.  
50 ppm (TWA) [Vacated];

Isopentane [CAS No. 78-78-4]

**ACGIH:** 1000 ppm (TWA); (2013)

**OSHA:** No PEL established.

Heptane [CAS No. 142-82-5]

**ACGIH:** 400 ppm (TWA); 500 ppm (STEL); (1979)

**OSHA:** 500 ppm (TWA), 2000 mg/m<sup>3</sup> (TWA);  
400 ppm (TWA); 500 ppm (STEL) [Vacated];

Octane [CAS No. 111-65-9]

**ACGIH:** 300 ppm (TWA); (1979)

**OSHA:** 500 ppm (TWA), 2350 mg/m<sup>3</sup> (TWA);  
300 ppm (TWA); 375 ppm (STEL) [Vacated];

Decane [CAS No. 124-18-5]

**ACGIH:** No TLV established.

**OSHA:** No PEL established.

Butane [CAS No. 106-97-8]

**ACGIH:** 1000 ppm (TWA); (2012)

**OSHA:** 800 ppm (TWA) [Vacated];

Nonane [CAS No. 111-84-2]

**ACGIH:** 200 ppm (TWA); (2011)

**OSHA:** 200 ppm (TWA) [Vacated];

Benzene [CAS No. 71-43-2]

**ACGIH:** 0.5 ppm (TWA); 2.5 ppm (STEL); Skin; A1; BEI (1996)

**OSHA:** 1 ppm (TWA); 5 ppm (STEL);

Toluene [CAS No. 108-88-3]

**ACGIH:** 20 ppm (TWA); A4; BEI (2006)

**OSHA:** 200 ppm (TWA); 300 ppm (C); 500 ppm (Peak) (Maximum duration: 10 minutes.)  
100 ppm (TWA); 150 ppm (STEL) [Vacated];

Ethylbenzene [CAS No. 100-41-4]

**ACGIH:** 20 ppm (TWA); A3; BEI (2010)

**OSHA:** 100 ppm (TWA), 435 mg/m<sup>3</sup> (TWA);  
125 ppm (STEL) [Vacated];



Xylene [CAS No. 1330-20-7]

**ACGIH:** 100 ppm (TWA); 150 ppm (STEL); A4; BEI (1992)

**OSHA:** 100 ppm (TWA), 435 mg/m<sup>3</sup> (TWA);  
150 ppm (STEL) [Vacated];

1,2,4-Trimethylbenzene [CAS No. 95-63-6]

**ACGIH:** 25 ppm (TWA); (1970)

**OSHA:** No PEL established.

Hydrogen sulphide [CAS No. 7783-06-4]

**ACGIH:** 1 ppm (TWA); 5 ppm (STEL); (2009);

**OSHA:** 20 ppm (C); 50 ppm (Peak) (Maximum duration: 10 mins. once only if no other meas. exp. occurs.)

10 ppm (TWA); 15 ppm (STEL) [Vacated];

**PEL:** Permissible Exposure Limit

**TLV:** Threshold Limit Value

**TWA:** Time-Weighted Average

**STEL:** Short-Term Exposure Limit

**C:** Ceiling

**Engineering Controls:**

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. Use explosion-proof electrical, ventilating, and lighting equipment.

**PERSONAL PROTECTIVE EQUIPMENT (PPE)**



**Eye/Face Protection:**

Wear safety glasses. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

**Hand Protection:**

Wear protective gloves. Consult manufacturer specifications for further information.

**Skin and Body Protection:**

Wear protective clothing. Flame resistant clothing that meets the NFPA 2112 and CAN/CGSB 155.20 standards is recommended in areas where material is stored or handled.

**Respiratory Protection:**

If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapor cartridge, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are

low or if airborne concentrations exceed the limits of the air-purifying respirators.

**General Hygiene Considerations:** Handle according to established industrial hygiene and safety practices.

**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Brown liquid.
<b>Colour:</b>	Brown.
<b>Odour:</b>	Petroleum. Rotten Eggs.
<b>Odour Threshold:</b>	0.0047 ppm, (Hydrogen sulphide)
<b>Physical State:</b>	Liquid.
<b>pH:</b>	Not available.
<b>Melting Point / Freezing Point:</b>	Not available.
<b>Initial Boiling Point:</b>	39.6 °C (103.3 °F) (ASTM D86)
<b>Boiling Range:</b>	Not available.
<b>Flash Point:</b>	< -35 °C (-31 °F) (ASTM D93)
<b>Evaporation Rate:</b>	Not available.
<b>Flammability (solid, gas):</b>	Not applicable.
<b>Lower Flammability Limit:</b>	Not available.
<b>Upper Flammability Limit:</b>	Not available.
<b>Vapor Pressure:</b>	Not available.
<b>Vapor Density:</b>	Not available.
<b>Relative Density:</b>	0.896 (Water = 1) at 15 °C (59 °F)
<b>Solubilities:</b>	Insoluble in water.
<b>Partition Coefficient: n-Octanol/Water:</b>	Not available.
<b>Auto-ignition Temperature:</b>	Not available.
<b>Decomposition Temperature:</b>	Not available.
<b>Viscosity:</b>	71.6 cSt at 40 °C (104 °F) (ASTM D7042)
<b>Percent Volatile, wt. %:</b>	Not available.
<b>VOC content, wt. %:</b>	Not available.
<b>Density:</b>	895.2 kg/m <sup>3</sup> at 15°C (59 °F)
<b>Coefficient of Water/Oil Distribution:</b>	Not available.



**Section 10: STABILITY AND REACTIVITY**

**Reactivity:** Contact with incompatible materials. Sources of ignition. Exposure to heat.

**Chemical Stability:** Stable under normal storage conditions.

**Possibility of Hazardous Reactions:** None known.

**Conditions to Avoid:** Contact with incompatible materials. Sources of ignition. Exposure to heat.

**Incompatible Materials:** Strong oxidizers.

**Hazardous Decomposition Products:** Hazardous sulphur dioxide, and related oxides of sulphur may be generated upon combustion.

**Section 11: TOXICOLOGICAL INFORMATION**

**EFFECTS OF ACUTE EXPOSURE**

**Product Toxicity**

**Oral:** Not available.

**Dermal:** Not available.

**Inhalation:** Not available.

**Component Toxicity**

Component	CAS No.	LD <sub>50</sub> oral	LD <sub>50</sub> dermal	LC <sub>50</sub>
Petroleum	8002-05-9	4300 mg/kg (rat)	Not available.	Not available.
Pentane	109-66-0	400 mg/kg (rat)	Not available.	364000 mg/m <sup>3</sup> (rat); 4H
Hexane	110-54-3	25000 mg/kg (rat)	Not available.	48000 ppm (rat); 4H
Isopentane	78-78-4	Not available.	Not available.	Not available.
Heptane	142-82-5	Not available.	Not available.	103000 mg/m <sup>3</sup> (rat); 4H
Octane	111-65-9	Not available.	Not available.	118000 mg/m <sup>3</sup> (rat); 4H
Decane	124-18-5	Not available.	Not available.	> 1369 ppm (rat); 8H
Butane	106-97-8	Not available.	Not available.	658000 mg/m <sup>3</sup> (rat); 4H
Nonane	111-84-2	Not available.	Not available.	3200 ppm (rat); 4H
Benzene	71-43-2	930 mg/kg (rat)	> 9400 µl/kg (rabbit)	10000 ppm (rat); 7H
Toluene	108-88-3	600 mg/kg (rat)	14.1 mL/kg (rabbit)	49000 mg/m <sup>3</sup> (rat); 4H
Ethylbenzene	100-41-4	3500 mg/kg (rat)	17800 µl/kg (rabbit)	Not available.
Xylene	1330-20-7	4300 mg/kg (rat)	> 1700 mg/kg (rabbit)	5000 ppm (rat); 4H
1,2,4-Trimethylbenzene	95-63-6	5000 mg/kg (rat)	Not available.	18000 mg/m <sup>3</sup> (rat); 4H
Hydrogen sulphide	7783-06-4	Not available.	Not available.	444 ppm (rat); 4H

**Likely Routes of Exposure:** Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

**Target Organs:** Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Cardiovascular system. Bone marrow. Liver. Kidneys. Reproductive system. Nervous system.

**Symptoms (including delayed and immediate effects)**

**Inhalation:** May cause drowsiness or dizziness. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Excessive inhalation may cause headache, dizziness, confusion, loss of appetite and/or loss of consciousness. Inhalation of Toluene may result in peculiar skin sensations (e. g. pins and needles) or numbness. This product contains small amounts of Hydrogen sulphide which may accumulate in confined spaces. Inhalation of Hydrogen sulphide may cause loss of sense of smell, major irritation of the respiratory tract, headache, nausea, vomiting, dizziness, and fluid buildup in the lungs (pulmonary edema), which can be fatal. At 300 ppm unconsciousness may occur after 20 minutes. From 300 to 500 ppm, death can occur within 1 to 4 hours of continuous exposure. At 500 ppm the respiratory system is paralyzed, the victim collapses almost instantaneously, and death can occur after exposure of only 30 to 60 minutes. Above 500 ppm Hydrogen sulphide may cause immediate loss of consciousness; death is rapid, and possibly immediate.

**Eye:** May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hydrogen sulphide may cause eye irritation at 1-20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H<sub>2</sub>S, eye irritation may include symptoms of redness, severe swelling, tearing, sensitivity to light and the appearance of 'Halos' around lights.

**Skin:** Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

**Ingestion:** May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

**Skin Sensitization:** Not available.

**Respiratory Sensitization:** Not available.

**Medical Conditions** Not available.

**Aggravated By Exposure:**

**EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)**

**Target Organs:** Skin. Eyes. Gastrointestinal tract. Respiratory system. Cardiovascular system. Lungs. Blood. Bone marrow. Liver. Kidneys. Reproductive system. Nervous system.

**Chronic Effects:** Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. High vapour concentrations, generally greater than 10% by volume, may sensitize the heart and lead to lethal cardiac arrhythmias. Repeated dermal application of crude oils in rats produced systemic toxicity in

blood, liver, thymus and bone marrow. Chronic inhalation of n-Hexane may cause peripheral nerve disorders and central nervous system effects. Prolonged or repeated inhalation of Isopentane may cause dizziness, weakness, weight loss, anemia, nervousness, pains in the limbs and peripheral numbness. Prolonged or repeated skin contact with Nonane may cause liver and kidney damage and cause blood effects. Reports of chronic poisoning with Benzene, Toluene, Ethylbenzene or Xylene describe anemia, decreased blood cell count and bone marrow hypoplasia. Liver and kidney damage may occur. Repeated exposure of the eyes to high concentrations of Xylenes vapour may cause reversible eye damage. Chronic inhalation exposure to xylene causes mid-frequency hearing loss in laboratory animals. Xylene reacts synergistically with n-hexane to enhance hearing loss. 1,2,4-Trimethylbenzene may cause CNS changes, asthmatic bronchitis, and changes in the blood such as anemia or thrombocytopenia (i.e. low thrombocyte count that may affect the blood's ability to clot). Hydrogen sulphide may reduce lung function; cause neurological effects such as headaches, nausea, depression and personality changes; eye and mucous membrane irritation: damage to cardiovascular system.

**Carcinogenicity:** May cause cancer. Lifetime skin painting studies in animals with whole crude oils and crude oil fractions have produced tumours in animals following prolonged and repeated skin contact. Chronic exposure to benzene has been associated with an increased incidence of leukemia and multiple myeloma (tumour composed of cells of the type normally found in the bone marrow).

**Component Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Petroleum	Not listed.	Group 3	Not listed.	OSHA Carcinogen.	Not listed.
Benzene	A1	Group 1	List 1	OSHA Carcinogen.	Listed.
Toluene	A4	Group 3	Not listed.	Not listed.	Not listed.
Ethylbenzene	A3	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Xylene	A4	Group 3	Not listed.	Not listed.	Not listed.

**Mutagenicity:** May cause genetic defects.

**Reproductive Effects:** Suspected of damaging fertility or the unborn child. Studies exist which report a link to crude oil and reproductive effects including menstrual disorders.

**Developmental Effects**

**Teratogenicity:** Not available.

**Embryotoxicity:** Possible risk of harm to the unborn child. Repeated dermal application of crude oils to pregnant rats produced maternal toxicity and fetal developmental toxicity and fetal tumours. Benzene and Xylene have caused adverse fetal effects in laboratory animals. Exposure to Toluene may affect the developing fetus.

**Toxicologically Synergistic Materials:** Xylene reacts synergistically with n-hexane to enhance hearing loss.

**Section 12: ECOLOGICAL INFORMATION**

**Ecotoxicity:** Petroleum: 21 and 41 mg/l, 96 hr., Rainbow trout;  
 Petroleum: 2.7 and 4.1 mg/l, 96 hr., Mysid;  
 Petroleum: 122 and 528 ml/kg, 96 hr., Algae.

**Persistence / Degradability:** Not available.

**Bioaccumulation / Accumulation:** Not available.

**Mobility in Environment:** Not available.

**Other Adverse Effects:** Not available.

**Section 13: DISPOSAL CONSIDERATIONS**

**Disposal Instructions:** Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

**Section 14: TRANSPORT INFORMATION**

**U.S. Department of Transportation (DOT)**

**Proper Shipping Name:** UN1267, PETROLEUM CRUDE OIL, 3, PG II

**Class:** 3

**UN Number:** UN1267

**Packing Group:** II

**Label Code:**



**Canada Transportation of Dangerous Goods (TDG)**

**Proper Shipping Name:** UN1267, PETROLEUM CRUDE OIL, 3, PG II

**Class:** 3

**UN Number:** UN1267

**Packing Group:** II

**Label Code:**



**Section 15: REGULATORY INFORMATION**

**Chemical Inventories**

**US (TSCA)**

The components of this product are in compliance with the chemical notification requirements of TSCA.

**Canada (DSL)**

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.



**SAFETY DATA SHEET**

**Federal Regulations**

**United States**

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**SARA Title III**

<b>Component</b>	<b>Section 302 (EHS) TPQ (lbs.)</b>	<b>Section 304 EHS RQ (lbs.)</b>	<b>CERCLA RQ (lbs.)</b>	<b>Section 313</b>	<b>RCRA CODE</b>	<b>CAA 112(r) TQ (lbs.)</b>
Pentane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Hexane	Not listed.	Not listed.	5000	313	Not listed.	Not listed.
Isopentane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Benzene	Not listed.	Not listed.	10	313	U019	Not listed.
Toluene	Not listed.	Not listed.	1000	313	U220	Not listed.
Ethylbenzene	Not listed.	Not listed.	1000	313	Not listed.	Not listed.
Xylene	Not listed.	Not listed.	100	313	U239	Not listed.
1,2,4-Trimethylbenzene	Not listed.	Not listed.	Not listed.	313	Not listed.	Not listed.
Hydrogen sulphide	500	100	100	313s	U135	10000

**State Regulations**

**Massachusetts**

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	Listed.
Pentane	109-66-0	Listed.
Hexane	110-54-3	Listed.
Isopentane	78-78-4	Listed.
Heptane	142-82-5	Listed.
Octane	111-65-9	Listed.
Butane	106-97-8	Listed.
Nonane	111-84-2	Listed.
Benzene	71-43-2	E
Toluene	108-88-3	Listed.
Ethylbenzene	100-41-4	Listed.
Xylene	1330-20-7	Listed.
1,2,4-Trimethylbenzene	95-63-6	Listed.
Hydrogen sulphide	7783-06-4	E

**Note:** E = Extraordinarily Hazardous Substance



**Crude Oil - LLK to Enbridge**

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**New Jersey**

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	SHHS
Pentane	109-66-0	SHHS
Hexane	110-54-3	SHHS
Isopentane	78-78-4	SHHS
Heptane	142-82-5	SHHS
Octane	111-65-9	SHHS
Decane	124-18-5	Listed.
Butane	106-97-8	SHHS
Nonane	111-84-2	SHHS
Benzene	71-43-2	SHHS
Toluene	108-88-3	SHHS
Ethylbenzene	100-41-4	SHHS
Xylene	1330-20-7	SHHS
1,2,4-Trimethylbenzene	95-63-6	Listed.
Hydrogen sulphide	7783-06-4	SHHS

**Note:** SHHS = Special Health Hazard Substance

**Pennsylvania**

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

<b>Component</b>	<b>CAS No.</b>	<b>RTK List</b>
Petroleum	8002-05-9	Listed.
Pentane	109-66-0	Listed.
Hexane	110-54-3	Listed.
Isopentane	78-78-4	Listed.
Heptane	142-82-5	Listed.
Octane	111-65-9	Listed.
Decane	124-18-5	Listed.
Butane	106-97-8	Listed.
Nonane	111-84-2	Listed.
Benzene	71-43-2	ES
Toluene	108-88-3	E
Ethylbenzene	100-41-4	E
Xylene	1330-20-7	E
1,2,4-Trimethylbenzene	95-63-6	E
Hydrogen sulphide	7783-06-4	E

**Note:** E = Environmental Hazard; S = Special Hazardous Substance

**California**

**California Prop 65:** WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

<b>Component</b>	<b>Type of Toxicity</b>
Benzene	cancer; developmental, male
Toluene	developmental; female
Ethylbenzene	cancer





SAFETY DATA SHEET

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**Section 16: OTHER INFORMATION**

**Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for their own particular use.

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**GHS SDS Prepared by:** Deerfoot Consulting Inc.

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