



Material Safety Data Sheet (Canada) Produced Water (Sweet)

Section 1 – Material Identification and Use

Material Name: PRODUCED WATER (SWEET)
Use: Process stream, waste
WHMIS Classification: Class B, Div. 2; Class D, Div. 2, Sub-Div. A and B
TDG: UN: 1267 **Class:** 3 **Packing Group:** II (Boiling Point >35°C)
Shipping Name: PETROLEUM CRUDE OIL **Technical Name:** (produced water, sweet)
Manufacturer/Supplier: ENCANNA CORPORATION
500 Centre Street SE
CALGARY, ALBERTA, T2P 2S5
Emergency Telephone: CANUTEC: 1-613-996-6666
Chemical Family: Water with C5+ aliphatic and aromatic hydrocarbons and methanol

Section 2 – Hazardous Ingredients of Materials

Hazardous Ingredients	Approximate Concentrations %	C.A.S. Nos.	LD50/LC50 Specify Species & Route	Exposure Limits
Sodium chloride	5-20	7647-14-05	N.Av.	N.Av.
Methanol	<1-20 (seasonal)	67-56-1	LC50, rat, 6 hrs, 87.5 mg/l LD50, rat, 5628 mg/kg	200 & 250 ppm (STEL) (AB, TLV, & BC)
Natural Gas Condensates	<1	68919-39-1	LC50, rat, >5610 mg/m ³	300 & 500 ppm (STEL) (AB, TLV & BC)
Crude oil	<1	8002-05-9	LD50, rat, skin, >2 g/kg	N.Av.
n-Hexane	<1	110-54-3	LD50, rat, oral, 28.7 g/kg	50 ppm/ 20 ppm (AB & TLV/ BC)
Toluene	<1	108-88-3	LC50, rat, 4 hrs, 49000 mg/m ³	50 ppm/ 20 ppm (AB/ TLV & BC)
Benzene	<0.1-1	71-43-2	LD50, rat, oral, 930 mg/kg LC50, rat, 4 hrs, 13200 ppm	0.5 & 2.5 ppm (STEL) (AB, TLV & BC)

This product may contain trace quantities of Naturally Occurring Radioactive Material (NORM). All exposure levels are 8-hour time-weighted exposure limits unless otherwise indicated. STEL is a short-term exposure limit over a 15 minute time-weighted average. Gasoline exposure levels presented for Natural Gas Condensates.

Section 3 – Physical Data for Material

Physical State: Liquid
Specific Gravity: 0.8 - 1.1 @ 20 degrees C
Vapour Density (air=1): 2.5-3.0
Percent Volatiles, by volume: 100
pH: N.Av.
Coefficient of Water/Oil Distribution: >100
(N.A.V. = not available N.App. = not applicable)

Vapour Pressure (mmHg): 20 @ 20 deg. C.
Odour Threshold (ppm): N.Av.
Evaporation Rate: N.Av.
Boiling Pt. (deg.C): >35
Freezing Pt. (deg.C): -10 to 0 (est.)
Odour & Appearance: colorless/straw coloured liquid, hydrocarbon odour

Section 4 – Fire and Explosion

Flammability: Yes **Conditions:** Bulk of product is water and will not ignite. However, sufficient hydrocarbon and/or methanol vapour may be present to cause flash fire at normal temperatures.
Means of Extinction: Foam, CO₂, dry chemical. Explosive accumulations can build up in areas of poor ventilation.
Special Procedures: Use water spray to cool fire-exposed containers, and to disperse vapors if spill has not ignited. If safe to do so, cut off supply and allow flame to burn out.
Flash Point (deg.C): <-40 (TCC) (hydrocarbons)
Upper Explosive Limit (% by vol.): 36.5
Lower Explosive Limit (% by vol.): 1
Auto Ignition Temp. (deg.C): 260
Hazardous Combustion Products: Carbon monoxide, carbon dioxide and formaldehyde.

Sensitivity to Impact: No
Sensitivity to Static Discharge: Yes, may ignite
TDG Flammability Classification: Class 3

Section 5 – Reactivity Data

Chemical Stability: Yes **Conditions:** Heat
Incompatibility: Yes **Substances:** Chlorine and other strong oxidizing agents.
Reactivity: Yes **Conditions:** Heat, strong sunlight
Hazardous Decomposition Products: Carbon monoxide and carbon dioxide



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Section 6 – Toxicological Properties of Product

Routes of Entry:

Skin Absorption: Yes

Skin Contact: Yes (liquid)

Eye Contact: Yes

Inhalation: Acute: Yes

Chronic: Yes

Ingestion: Yes

Effects of Acute Exposure: Vapour may cause irritation of eyes, nose and throat, dizziness, blurred vision and drowsiness. Contact with skin may cause irritation and possibly dermatitis. Hydrocarbons and methanol may be absorbed through intact skin. Contact of liquid with eyes may cause severe irritation.

Effects of Chronic Exposure: Due to presence of benzene and n-hexane, long term or high dose rate exposures may increase the risk of anemia, leukemia and nervous system damage.

Sensitization to Product: N.Av.

Irritancy: Yes

Synergistic Materials: None reported

Carcinogenicity: Yes **Reproductive Effects:** Possibly **Teratogenicity:** Possibly **Mutagenicity:** Possibly

Section 7 – Preventative Measures

Personal Protective Equipment: Use a NIOSH approved positive pressure self-contained breathing apparatus, supplied air breathing apparatus or cartridge air purifying respirator equipped with combination organic vapour and P100 cartridges when concentrations may exceed exposure limits. A cartridge respirator is not suitable for oxygen deficiency or IDLH situations. Use approved gas detectors; however, note that combustible gas detection will likely not offer warning against overexposure to this product.

Gloves: Viton for full hand immersion, nitrile adequate for incidental contact.

Respiratory: SCBA, SABA or cartridge respirator approved for organic vapours. **Eye:** Chemical splash goggles

Footwear: Covered footwear such as steel-toed boots. **Clothing:** Fire retardant garments that meet NFPA 2112.

Engineering Controls: Use only in well ventilated areas. Mechanical ventilation required in confined areas. Equipment must be explosion proof.

Leaks & Spills: Stop leak if safe to do so. Use personal protective equipment. Use water spray to cool containers. Remove all ignition sources. Provide explosion-proof clearing ventilation, if possible. Prevent from entering confined spaces, or from contaminating land and water courses. Dyke and pump into containers for recycling or disposal. Notify appropriate regulatory authorities.

Waste Disposal: Contact appropriate regulatory authorities for disposal requirements.

Handling Procedures & Equipment: Avoid contact with liquid. Avoid inhalation. Bond and ground all transfers. Avoid sparking conditions. Examples of when concentrations may exceed exposure limits, but not limited to, include handling product in reduced ventilation environments like indoor settings, when face is in close proximity to source (<2 feet) or when quantities such as numerous gallons or more of product are in use in well ventilated outdoor environments. Higher benzene content dictates a proportionally lower handling volume. These examples are for general guidance only to brief task-based exposures in relation to the benzene STEL and are not a replacement for proper risk assessment that includes industrial hygiene monitoring. In general, if exposure limits are exceeded it will likely be benzene that is the driving hazard and this can be controlled with an air purifying respirator; however, with more elevated exposures methanol exposure may be a factor that would require supplied air breathing apparatus. Industrial hygiene monitoring such as that detailed in NIOSH Methodology 1501 is required when handling or working near this material. The potential presence of NORM may result in the deposition of radioisotopes such as Radium-226 in the form of scale or sludge. NORM measurement is recommended. Special controls to prevent the ingestion or inhalation of these radioisotopes may be required.

Storage Requirements: Store in a cool, dry, well ventilated area away from heat, strong sunlight, and ignition sources.

Special Shipping Information: N.Av.



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Section 8 – First aid Measures

- Skin:** Flush skin with water, removing contaminated clothing. Get medical attention if irritation persists or large areas of contact.
- Eye:** Immediately flush with large amounts of luke warm water for 15 minutes, lifting upper and lower lids at intervals. Get medical attention if irritation persists.
- Inhalation:** Ensure own safety. Remove victim to fresh air. Give oxygen, artificial respiration, or CPR if needed. Get immediate medical attention.
- Ingestion:** Give 2-3 glasses of milk or water to drink. DO NOT INDUCE VOMITING. Keep warm and at rest. Get immediate medical attention.

Section 9 – Preparation Date of MSDS

Prepared By: Encana Environment, Health and Safety (EHS)
Phone Number: (403) 645-2000 Preparation Date: July 1, 2014 Expiry Date: July 1, 2017