SAFETY DATA SHEET

SECTION 1 : IDENTIFICATION

Product identifier used on the label:

Product Name:	**Produced Water**
SDS Manufacturer Number:	787093

Other means of identification:

Synonyms:	Synonyms/ Produced Brine; Produced Water (Alaska)

Recommended use of the chemical and restrictions on use:

Product Use/Restriction:	Waterflood for enhanced oil recovery (EOR)

Chemical manufacturer address and telephone number:

Manufacturer Name:	Conoco Phillips
Address:	600 N. Dairy Ashford Houston, TX 77079-1175
Website:	www.conocophillips.com
General Phone Number:	855-244-0762.....E-mail: SDS@conocophillips.com

Emergency phone number:

Emergency Phone Number:	Chemtrec: 800-424-9300 (24 Hours)

SECTION 2 : HAZARD(S) IDENTIFICATION

Classification of the chemical in accordance with CFR 1910.1200(d)(f):

GHS Pictograms:

Signal Word:	DANGER.
GHS Class:	Carcinogenicity. Category 1B. Hazard not otherwise classified.
Hazard Statements:	H350 - May cause cancer.
Precautionary Statements:	P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P308+P313 - IF exposed or concerned: Get medical advice/attention. P405 - Store locked up. P501 - Dispose of contents/container in accordance with Local, State, Federal and Provincial regulations.

Hazards not otherwise classified that have been identified during the classification process:

OSHA Class:	May contain or release poisonous hydrogen sulfide gas

Crude Oil (Petroleum)

Carcinogenicity:	Chronic application of crude oil to mouse skin resulted in an increased incidence of skin tumors. IARC concluded in its Crude Oil Monograph that there is limited evidence of carcinogenicity in animals, and that crude oil is not classifiable as to its carcinogenicity in humans (Group 3). It has not been listed as a carcinogen by NTP or OSHA.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures:

Chemical Name	CAS#	Ingredient Percent	EC Num.
Crude Oil (Petroleum)	8002-05-9	<1 %	
Water (Process)	7732-18-5	>99 %	
Sodium Chloride	7647-14-5	<1 %	

Hydrogen Sulfide	7783-06-4	<5ppm by weight

Notes : [1] All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 : FIRST AID MEASURES

Description of necessary measures:

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin Contact: First aid is not normally required. However, it is good practice to wash any chemical from the skin.

Inhalation: (Breathing): If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion: (Swallowing): First aid is not normally required; however, if swallowed and symptoms develop, seek medical attention.

Indication of immediate medical attention and special treatment needed:

Note to Physicians: At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Animal studies suggest that nitrites are a useful antidote, however, documentation of the efficacy of nitrites in humans is lacking. If the diagnosis of hydrogen sulfide poisoning is confirmed and if the patient does not respond rapidly to supportive care, the use of nitrites may be an effective antidote if delivered within the first few minutes of exposure. For adults the dose is 10 mL of a 3% $NaNO_2$ solution (0.5 gm $NaNO_2$ in 15 mL water) I.V. over 2-4 minutes. The dosage should be adjusted in children or in the presence of anemia, and methemoglobin levels, arterial blood gases, and electrolytes should be monitored closely.

Notes : Most important symptoms and effects:
None known or anticipated.
None known or anticipated.

Other Comments:
Before attempting rescue, first responders should be alert to the possible presence of hydrogen sulfide, a poisonous gas with the smell of rotten eggs, and should consider the need for respiratory protection (see Section 8). Remove casualty to fresh air as quickly as possible. Immediately begin artificial respiration if breathing has ceased. Consider whether oxygen administration is needed. Obtain medical advice for further treatment.

SECTION 5 : FIRE FIGHTING MEASURES

Suitable and unsuitable extinguishing media:

Suitable Extinguishing Media: Dry chemical, carbon dioxide, foam, or water spray is recommended. Water or foam may cause frothing of materials heated above 212 deg F/100 deg C. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

Specific hazards arising from the chemical:

Hazardous Combustion Byproducts: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

Unusual Fire Hazards: Hazardous combustion/decomposition products, including hydrogen sulfide, may be released by this material when exposed to heat or fire. Use caution and wear protective clothing, including respiratory protection. This material may burn, but will not ignite readily. If container is not properly cooled, it can rupture in the heat of a fire. Liquid hydrocarbons may be present in sufficient quantity to create fire hazard.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely. Avoid spreading burning liquid with water used for cooling purposes.

NFPA Ratings:

NFPA Health:	0
NFPA Flammability:	1
NFPA Reactivity:	0

Notes : NFPA 704 Hazard Class:
(0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Personnel Precautions: This material may burn, but will not ignite readily. Keep all sources of ignition away from spill/release. May contain or release poisonous hydrogen sulfide gas. If the presence of dangerous amounts of H2S around the spilled product is suspected, additional or special actions may be warranted, including access restrictions and use of protective equipment. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental precautions:

Environmental Precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use water sparingly to minimize environmental contamination and reduce disposal requirements. If spill occurs on water notify appropriate authorities and advise shipping of any hazard. Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802). If spill/release in excess of EPA reportable quantity (see Section 15) is made into the environment, immediately notify the National Response Center (phone number 800-424-8802).

Methods and materials for containment and cleaning up:

Spill Cleanup Measures: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal. If spilled on water remove with appropriate methods (e.g. skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken. See Section 13 for information on appropriate disposal.

SECTION 7 : HANDLING and STORAGE

Precautions for safe handling:

Handling: Precautions for safe handling: Keep away from flames and hot surfaces. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. May contain or release dangerous levels of hydrogen sulfide. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes.

Conditions for safe storage, including any incompatibilities:

Storage: Conditions for safe storage: Keep container(s) tightly closed and properly labeled. This material may contain or release poisonous hydrogen sulfide gas. In a tank, barge, or other closed container, the vapor space above this material may accumulate hazardous concentrations of hydrogen sulfide. Check atmosphere for oxygen content, H2S, and flammability prior to entry. Use and store this material in cool, dry, well-ventilated area away from heat and all sources of ignition. Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Hydrogen Sulfide :

Guideline Info: TWA: 5 ppm 8hr TWA: 2.5 ppm 12hr STEL: 15 ppm (ConocoPhillips Guidelines)

Guideline ACGIH: STEL: 5 ppm TWA: 1 ppm

Guideline OSHA: Ceiling: 20 ppm

Appropriate engineering controls:

Engineering Controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Individual protection measures:

Eye/Face Protection: The use of eye/face protection is not normally required; however, good industrial hygiene practice suggests the use of eye protection that meets or exceeds ANSI Z.87.1 whenever working with chemicals.

Skin Protection Description: The use of skin protection is not normally required; however, good industrial hygiene practice suggests the use of gloves or other appropriate skin protection whenever working with chemicals.

Respiratory Protection: Where there is potential for airborne exposure to hydrogen sulfide (H2S) above exposure limits, a NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used. Under conditions where hydrogen sulfide (H2S) is NOT detected, a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturer's instructions), in oxygen deficient (less than 19.5 percent oxygen) situations, or under conditions that are immediately dangerous to life and health (IDLH).

Notes : Suggestions provided in this section for exposure control and specific types of protective equipment are

based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

State, local or other agencies or advisory groups may have established more stringent limits. Consult and industrial hygienist or similar professional, or your local agencies, for further information.

SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES:

Physical State:	Appearance: Clear to cloudy Form: Liquid
Odor:	Petroleum; Rotten egg/sulfurous
Odor Threshold:	No Data
Boiling Point:	212 deg F/100 deg C
Melting Point:	No Data
Density:	Bulk Density: 8.33 lbs/gal
Specific Gravity:	(water=1): 1.018-1.02 @ 68 deg F/20 deg C
Solubility:	Complete except for possible crude component
Vapor Density:	(AIR=1): > 1
Vapor Pressure:	17.5 mm Hg
Evaporation Rate:	(nBuAc=1): No data
pH:	No Data
Coefficient of Water/Oil Distribution:	Partition Coefficient (n-octanol/water) (Kow): No data
Flash Point:	Aqueous solution, may release flammable gases
Flash Point Method:	Not Applicable
Lower Flammable/Explosive Limit:	(vol % in air): No data
Upper Flammable/Explosive Limit:	(vol % in air): No data
Auto Ignition Temperature:	No Data

9.2. Other information:

Notes :	Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

SECTION 10 : STABILITY and REACTIVITY

Chemical Stability:

Chemical Stability:	Stable under normal ambient and anticipated conditions of use.

Possibility of hazardous reactions:

Hazardous Polymerization:	Not known to occur.

Conditions To Avoid:

Conditions to Avoid:	Avoid all possible sources of ignition.

Incompatible Materials:

Incompatible Materials:	Materials to Avoid: Avoid contact with strong oxidizing agents and strong reducing agents.

Hazardous Decomposition Products:

Special Decomposition Products:	Not anticipated under normal conditions of use.

SECTION 11 : TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

Crude Oil (Petroleum) :

Carcinogenicity:	Chronic application of crude oil to mouse skin resulted in an increased incidence of skin tumors. IARC concluded in its Crude Oil Monograph that there is limited evidence of carcinogenicity in animals, and that crude oil is not classifiable as to its carcinogenicity in humans (Group 3). It has not been listed as a carcinogen by NTP or OSHA.
Reproductive Toxicity:	Dermal exposure to crude oil during pregnancy resulted in limited evidence of developmental toxicity in laboratory animals. Decreased fetal weight and increased resorptions were noted at maternally toxic doses. No significant effects on pup growth or other developmental landmarks were observed postnatally.
Target Organ Repeated Exposures:	Laboratory animal studies of crude oil by the dermal and inhalation exposure routes have demonstrated toxicity to the liver, blood, spleen and thymus.

Information related to product mixture :

Eye:	Not expected to be irritating.
Skin:	Hazard: Unlikely to be harmful

	LD50: > 2 g/kg (estimated) Not expected to be irritating
Inhalation:	Unlikely to be harmful LC50: > 5 g/L (mist, estimated) May contain or release poisonous hydrogen sulfide gas - See Other Comments
Ingestion:	(Swallowing) Unlikely to be harmful LD50: > g/kg (estimated)
Sensitization:	Skin Sensitization: Not expected to be a skin sensitizer Respiratory Sensitization: No information available on the mixture, however, none of the components have been classified for respiratory sensitization (or are below the concentration threshold for classification).
Carcinogenicity:	May cause cancer.
Mutagenicity:	Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.
Reproductive Toxicity:	Not expected to cause reproductive toxicity.
Other Toxicological Information:	Signs & Symptoms: No known effects of overexposure. Other Comments: This material may contain or liberate hydrogen sulfide, a poisonous gas with the smell of rotten eggs. The smell disappears rapidly because of olfactory fatigue so odor may not be a reliable indicator of exposure. Effects of overexposure include irritation of the eyes, nose, throat and respiratory tract, blurred vision, photophobia (sensitivity to light), and pulmonary edema (fluid accumulation in the lungs). Severe exposures can result in nausea, vomiting, muscle weakness or cramps, headache, disorientation and other signs of nervous system depression, irregular heartbeats, convulsions, respiratory failure, and death.
Target Organ Single Exposures:	Not expected to cause organ effects from single exposure.
Target Organ Repeated Exposures:	Not expected to cause organ effects from repeated exposure.
Aspiration:	Not expected to be an aspiration hazard.

SECTION 12 : ECOLOGICAL INFORMATION

Crude Oil (Petroleum) :

Ecotoxicity:

Ecotoxicity:	Not evaluated.

Persistence and degradability:

Biodegradation:	Not evaluated.

Bioaccumulative potential:

Bioaccumulation:	Not evaluated.

Mobility in soil:

Mobility In Environmental Media:	Not evaluated.
Other Adverse Effects:	None anticipated

SECTION 13 : DISPOSAL CONSIDERATIONS

Description of waste:

Information related to product mixture :

Waste Disposal:	The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider the state and local requirements in addition to federal regulations. The material, if discarded as produced, would not be federally regulated RCRA listed hazardous waste and is not believed to exhibit characteristics of hazardous waste. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed on the SDS but could affect the hazardous waste determination. Additionally, use which results chemical or physical change of this material could subject it to regulation as a hazardous waste. Container contents should be completely used and containers should be emptied prior to discard.

SECTION 14 : TRANSPORT INFORMATION

DOT Shipping Name:	Shipping Description: Not regulated
IATA Shipping Name:	UN/ID : Not regulated
IMDG Shipping Name :	Shipping Description: Not regulated Note: Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable
ICAO Shipping Name:	UN/ID : Not regulated

SECTION 15 : REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product:

Information related to product mixture :

TSCA Inventory Status:	All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
TSCA 12(b) Export Notification:	U.S. Export Control Classification Number: EAR99
CERCLA Section 302:	Extremely Hazardous Substances and TPQs (in pounds): This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372: Hydrogen sulfide: TPQ - 500 lb; EPCRA - 100 lb.
Section 311/312 Hazard Categories:	(Title III Hazard Categories) Acute Health: No Chronic Health: Yes Fire Hazard: No Pressure Hazard: No Reactive Hazard: No
Section 313:	CERCLA/SARA Section 313 and 40 CFR 372: This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372 EPA (CERCLA) Reportable Quanity (in pounds): This material contains the following chemicals subject to the reporting requirements of 40 CFR 302.4: Hydrogen sulfide: RQ - 100 lb.
California PROP 65:	Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm , and which may be subject to the warning requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5): Ethyl Benzene : Type of Toxicity - Cancer Toluene : Type of Toxicity - Developmental Toxicant, Female Reproductive Toxicant Benzene : Type of Toxicity - Cancer, Developmental Toxicant, Male Reproductive Toxicant Various Polycyclic Aromatic Hydrocarbons : Type of Toxicity - Skin Cancer
Canada DSL:	All components are either on the DSL, or are exempt from DSL listing requirement
Canada WHMIS:	WHMIS Hazard Class: D2A
International Hazard Classification	GHS Classification H350 -- Carcinogenicity -- Category 1B

SECTION 16 : ADDITIONAL INFORMATION

Other Information:	SDS Number: 787093
SDS Revision Date:	October 08, 2015
MSDS Revision Notes:	Supersedes: 02-Apr-2012 Format change
Guide to Abbreviations:	ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)
Disclaimer:	The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.