

## 1. Identification

**Product identifier** **Produced Water (Sour)**

**Other means of identification** None.

**Recommended use** Not available.

**Recommended restrictions** None known.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufacturer/Supplier** Devon Energy Production Company, L.P.  
333 W. Sheridan Avenue  
Oklahoma City, OK 73102-5010

**Telephone** (405) 235-3611

**Emergency** CHEMTREC 24 Hour Emergency  
Within the USA (800) 424-9300  
Outside the USA +1 703-527-3887

## 2. Hazard(s) identification

**Physical hazards** Not classified.

**Health hazards** Germ cell mutagenicity Category 1B  
Carcinogenicity Category 1A  
Reproductive toxicity Category 2

**OSHA defined hazards** Not classified.

**Label elements**



**Signal word** Danger

**Hazard statement** May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child.

**Precautionary statement**

**Prevention** Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.

**Response** If exposed or concerned: Get medical advice/attention.

**Storage** Store in a well-ventilated place.

**Disposal** Dispose of contents/container in accordance with local/regional/national/international regulations.

**Hazard(s) not otherwise classified (HNOC)** None known.

**Supplemental information** None.

## 3. Composition/information on ingredients

### Mixtures

Chemical name	CAS number	%
Sodium chloride	7647-14-5	5.0 - 20.0
Calcium chloride	10043-52-4	< 10.0

Potassium chloride	7447-40-7	< 10.0
Benzene	71-43-2	< 1.0
Other components below reportable levels		70.9207

#### Contains

Chemical name	CAS number	%
n-Hexane - may contain small amounts as a contaminate	110-54-3	< 1.0
Hydrogen sulfide	7783-06-4	>= 0.001

\*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

**Composition comments** The balance is non-hazardous.

#### 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Call a physician if symptoms develop or persist.
<b>Skin contact</b>	Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Direct contact with eyes may cause temporary irritation.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

#### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	This product is not flammable; however sufficient hydrocarbon vapors may accumulate from oil or natural gas condensate floating on the surface of the produced water to cause a flash fire. The fire should burn out fairly rapidly depending on the amount of oil and natural gas condensate floating on the surface of the produced water.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted. Bulk of material is water, and will not ignite. However, sufficient hydrocarbon vapor may be present to cause flash fire at normal temperatures.

#### 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	This product is miscible in water. Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Wipe up with absorbent material (e.g. cloth, fleece). Recover by pumping (use an explosion-proof motor or hand pump) or by sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Where feasible and appropriate, remove contaminated soil or flush with fresh water. On water spills utilize absorbent material to remove oil and natural gas liquid from the surface of the water.
<b>Environmental precautions</b>	Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

### Precautions for safe handling

Handle as a flammable liquid. Tank headspaces should always be regarded as potentially flammable and care should be taken to avoid static electrical discharge and all ignition sources during filling, discharging and sampling from storage tanks. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion. Keep away from heat, sparks, and open flame. Electrical equipment should be approved for classified area. Wear appropriate personal protective equipment (see section 8). Special precautions should be taken when entering or handling equipment in this type of produced water service because of possible radioactive contamination. All equipment should be checked for radioactivity or opened to the atmosphere and have forced ventilation applied for at least 4 hours prior to entry or handling. Avoid direct skin contact with any surface. Avoid generation of dust, smoke, fumes, etc. in the work area, or if they cannot be avoided, a tested and certified radionuclide dust respirator should be worn. Smoking, eating or drinking should be prohibited when working with the equipment. Workers should wash thoroughly with soap and water and discard contaminated clothing after entering or handling the equipment. Workers should wash hands and face before eating, drinking and smoking.

### Conditions for safe storage, including any incompatibilities

Keep containers in well-ventilated area away from flame, sparks, excessive temperatures and open flames. Keep the containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition. Do not enter storage areas and confined spaces without adequate ventilation. Use appropriate respiratory protection if there is the potential to exceed the exposure limit(s). Vapors containing benzene may accumulate during storage and transport.

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Contains	Type	Value
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m3 500 ppm

#### US. OSHA Table Z-2 (29 CFR 1910.1000)

Contains	Type	Value
Hydrogen sulfide (CAS 7783-06-4)	Ceiling	20 ppm

#### US. ACGIH Threshold Limit Values

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	2.5 ppm
	TWA	0.5 ppm
Contains	Type	Value
n-Hexane (CAS 110-54-3)	TWA	50 ppm
Hydrogen sulfide (CAS 7783-06-4)	STEL	5 ppm
	TWA	1 ppm

#### US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Contains	Type	Value
n-Hexane (CAS 110-54-3)	TWA	180 mg/m3 50 ppm
	Hydrogen sulfide (CAS 7783-06-4)	Ceiling

### Biological limit values

#### ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*

## ACGIH Biological Exposure Indices

Contains	Value	Determinant	Specimen	Sampling Time
n-Hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedio n, without hydrolysis	Urine	*

\* - For sampling details, please see the source document.

### Exposure guidelines

#### US - California OELs: Skin designation

Benzene (CAS 71-43-2)

Can be absorbed through the skin.

n-Hexane (CAS 110-54-3)

Can be absorbed through the skin.

#### US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2)

Can be absorbed through the skin.

n-Hexane (CAS 110-54-3)

Can be absorbed through the skin.

#### Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas.

#### Individual protection measures, such as personal protective equipment

##### Eye/face protection

Chemical respirator with organic vapor cartridge and full facepiece.

##### Skin protection

###### Hand protection

Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

###### Other

Wear suitable protective clothing.

##### Respiratory protection

Wear approved respiratory protection when working with this material unless ventilation is adequate to keep airborne concentrations below recommended exposure standards. Note: If any of the applicable hydrogen sulfide standards are likely to be exceeded, positive supplied-air respiratory protection must be used. The ACGIH TWA for hydrogen sulfide is 10 ppm. The OSHA STEL is 15 ppm.

##### Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

#### General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

### Appearance

#### Physical state

Liquid.

#### Form

Liquid.

#### Color

Clear to brown.

#### Odor

Slight hydrocarbon. Rotten egg.

#### Odor threshold

Not available.

#### pH

5 - 8

#### Melting point/freezing point

30 - 34 °F (-1.11 - 1.11 °C)

#### Initial boiling point and boiling range

200 - 220 °F (93.33 - 104.44 °C)

#### Flash point

> 150.0 °F (> 65.6 °C)

#### Evaporation rate

Not available.

#### Flammability (solid, gas)

Not applicable.

#### Upper/lower flammability or explosive limits

##### Flammability limit - lower (%)

Not available.

##### Flammability limit - upper (%)

Not available.

##### Explosive limit - lower (%)

Not available.

##### Explosive limit - upper (%)

Not available.

#### Vapor pressure

Not available.

#### Vapor density

Not available.

<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Soluble
<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>	Not available.
<b>Other information</b>	
<b>Explosive properties</b>	Not explosive.
<b>Oxidizing properties</b>	Not oxidizing.

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
<b>Incompatible materials</b>	Strong oxidizing agents.
<b>Hazardous decomposition products</b>	Carbon oxides. Metallic oxides. Sulfur oxides (SOx.). Water vapor.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Prolonged inhalation may be harmful.
<b>Skin contact</b>	No adverse effects due to skin contact are expected.
<b>Eye contact</b>	Direct contact with eyes may cause temporary irritation.
<b>Ingestion</b>	Expected to be a low ingestion hazard.

**Symptoms related to the physical, chemical and toxicological characteristics** Direct contact with eyes may cause temporary irritation.

### Information on toxicological effects

#### Acute toxicity

Components	Species	Test Results
Benzene (CAS 71-43-2)		
<b>Acute</b>		
<i>Inhalation</i>		
LC50	Rat	10000 mg/l, 7 Hours
Calcium chloride (CAS 10043-52-4)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg, 24 Hours
<i>Oral</i>		
LD50	Rabbit	1000 mg/kg
Potassium chloride (CAS 7447-40-7)		
<b>Acute</b>		
<i>Oral</i>		
LD50	Rat	3020 mg/kg
Sodium chloride (CAS 7647-14-5)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 10000 mg/kg

Components	Species	Test Results
<i>Inhalation</i> LC50	Rat	> 42 mg/l, 1 Hours
<i>Oral</i> LD50	Rat	3550 mg/kg
Contains	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
<b>Acute</b> <i>Inhalation</i> LC50	Rat	> 0.38 mg/l, 960 Minutes

\* Estimates for product may be based on additional component data not shown.

<b>Skin corrosion/irritation</b>	Prolonged skin contact may cause temporary irritation.
<b>Serious eye damage/eye irritation</b>	Not applicable.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Not a respiratory sensitizer.
<b>Skin sensitization</b>	This product is not expected to cause skin sensitization.
<b>Germ cell mutagenicity</b>	May cause genetic defects.
<b>Carcinogenicity</b>	May cause cancer. Contains benzene, a known human carcinogen, which may cause leukemia.
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>	
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
<b>NTP Report on Carcinogens</b>	
Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.
<b>OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</b>	
Benzene (CAS 71-43-2)	Cancer
<b>Reproductive toxicity</b>	Suspected of damaging fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	Not classified.
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not an aspiration hazard.
<b>Chronic effects</b>	Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Benzene (CAS 71-43-2)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea (Daphnia magna) 8.76 - 15.6 mg/l, 48 Hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 5 mg/l, 96 Hours
Calcium chloride (CAS 10043-52-4)		
<b>Aquatic</b>		
<i>Acute</i>		
Crustacea	EC50	Daphnia magna 1062 mg/l, 48 hours
Fish	LC50	Pimephales promelas 4630 mg/l, 96 hours
<i>Chronic</i>		
Crustacea	EC50	Daphnia magna 610 mg/l, 21 days
Potassium chloride (CAS 7447-40-7)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea (Daphnia magna) 149 mg/l, 48 hours

Components	Species	Test Results
Fish	LC50	Western mosquitofish ( <i>Gambusia affinis</i> ) 435 mg/l, 96 hours
Sodium chloride (CAS 7647-14-5)		
<b>Aquatic</b>		
Crustacea	EC50	Water flea ( <i>Daphnia magna</i> ) 340.7 - 469.2 mg/l, 48 hours
Fish	LC50	Bluegill ( <i>Lepomis macrochirus</i> ) 1294.6 mg/l, 96 hours
Contains	Species	Test Results
Hydrogen sulfide (CAS 7783-06-4)		
<b>Aquatic</b>		
Fish	LC50	Lake whitefish ( <i>Coregonus clupeaformis</i> ) 0.002 mg/l, 96 hours

\* Estimates for product may be based on additional component data not shown.

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential**

**Partition coefficient n-octanol / water (log Kow)**

Benzene (CAS 71-43-2) 2.13

**Mobility in soil** This product is water soluble and may disperse in soil.

**Other adverse effects** No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

**13. Disposal considerations**

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of in accordance with federal, provincial and local regulations.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. "Empty" containers retain residue and can 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 and/or death. "Empty" containers should be completely drained and properly sealed. Recycle or discard plastic liner, pail or drum in accordance with local, state, and federal regulations.

**14. Transport information**

**DOT**

Not regulated as dangerous goods.

**IATA**

Not regulated as dangerous goods.

**IMDG**

Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

**General information** This material is not subject to the requirements of 49CFR HMR per Section 173.150(f) (2) The requirements in this subchapter do not apply to a material classed as a combustible liquid in a non-bulk packaging unless the combustible liquid is a hazardous substance, a hazardous waste, or a marine pollutant.

**15. Regulatory information**

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. The exception in 29 CFR § 1910.1028 in paragraphs (a)(2) and (a)(3) for specific application of the benzene applies.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Benzene (CAS 71-43-2)	LISTED
Hydrogen sulfide (CAS 7783-06-4)	LISTED
n-Hexane (CAS 110-54-3)	LISTED

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

<b>Hazard categories</b>	Immediate Hazard - No
	Delayed Hazard - Yes
	Fire Hazard - No
	Pressure Hazard - No
	Reactivity Hazard - No

**SARA 302 Extremely hazardous substance**

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Hydrogen sulfide	7783-06-4	100	500		

**SARA 311/312 Hazardous chemical** No**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
Benzene	71-43-2	< 1.0
n-Hexane	110-54-3	< 1.0

**Other federal regulations****Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Benzene (CAS 71-43-2)  
n-Hexane (CAS 110-54-3)

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Hydrogen sulfide (CAS 7783-06-4)

**Safe Drinking Water Act (SDWA)** Not regulated.**US state regulations****US. Massachusetts RTK - Substance List**

Benzene (CAS 71-43-2)  
Hydrogen sulfide (CAS 7783-06-4)  
n-Hexane (CAS 110-54-3)

**US. New Jersey Worker and Community Right-to-Know Act**

Benzene (CAS 71-43-2)  
Hydrogen sulfide (CAS 7783-06-4)  
n-Hexane (CAS 110-54-3)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Benzene (CAS 71-43-2)  
Hydrogen sulfide (CAS 7783-06-4)  
n-Hexane (CAS 110-54-3)

**US. Rhode Island RTK**

Benzene (CAS 71-43-2)  
Hydrogen sulfide (CAS 7783-06-4)  
n-Hexane (CAS 110-54-3)

**US. California Proposition 65**

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Benzene (CAS 71-43-2)



## International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

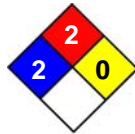
\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information, including date of preparation or last revision

Issue date	21-August-2015
Revision date	21-August-2015
Version #	02
HMIS® ratings	Health: 2* Flammability: 2 Physical hazard: 0

### NFPA ratings



### Disclaimer

Devon US Operations cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.