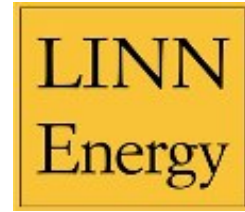


Safety Data Sheet



Section 1: Identification

Product identifier

Product Name

- **Produced Water**

Synonyms

- Lease Water; Salt Water

Relevant identified uses of the substance or mixture and uses advised against

Recommended use

- Industrial Use

Details of the supplier of the safety data sheet

Manufacturer

- Linn Operating, Inc.
600 Travis
Suite 5100 Houston, TX 77002
United States
www.linnenergy.com

Telephone (General) • 281-840-4000 - EHS Telephone No.

Emergency telephone number

Manufacturer

- 1-866-951-9825 - Company Emergency Telephone No. (3E)

Section 2: Hazard Identification

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012

- Germ Cell Mutagenicity 1B - H340
Carcinogenicity 1A - H350
Reproductive Toxicity 2 - H361

Label elements

OSHA HCS 2012

DANGER



Hazard statements

- May cause genetic defects. - H340
May cause cancer. - H350
Suspected of damaging fertility or the unborn child. - H361

Precautionary statements

- **Prevention** • Obtain special instructions before use. - P201

Do not handle until all safety precautions have been read and understood. - P202
Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response • IF exposed or concerned: Get medical advice/attention. - P308+P313

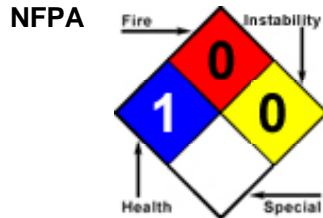
Storage/Disposal • Store locked up. - P405
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Other information



Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Petroleum	CAS:8002-05-9	< 1%	Ingestion/Oral-Rat LD50 • >4300 mg/kg	OSHA HCS 2012: Flam Liq. 1; Eye Irrit. 2B; STOT SE 3: Narc.; Repr. 2; Asp. Tox. 1	NDA
Hydrogen sulfide	CAS:7783-06-4	< 1%	Inhalation-Rat LC50 • 470 mg/m ³ 6 Hour(s)	OSHA HCS 2012: Flam. Gas 2; Press. Gas - Comp.; Eye Irrit. 2A, STOT SE 3: Resp. Irrit.; Acute Tox. 2 (Inhalation)	NDA
Benzene	CAS:71-43-2	< 1%	Ingestion/Oral-Rat LD50 • 930 mg/kg Inhalation-Rat LC50 • 10000 ppm 7 Hour(s) Skin-Rabbit LD50 • >9400 µL/kg	OSHA HCS 2012: Flam Liq. 2; Eye Irrit. 2A; Skin Irrit. 2; Muta. 1B; Carc. 1A; Asp. Tox 1; STOT RE 1 (Blood, Bone marrow); Repr. 2; STOT SE 3: Narc.; Acute Tox 4 (Oral)	NDA

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Get medical attention immediately.

Skin

- Wash skin with soap and water. Get medical attention if symptoms occur.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion

- First aid is normally not required. However, if greater than 1/2 liter (pint) ingested, seek medical attention.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed**Notes to Physician**

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures**Extinguishing media**

Suitable Extinguishing Media • In case of fire use media as appropriate for surrounding fire.

Unsuitable Extinguishing Media • No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards • None known.

Hazardous Combustion Products • Carbon Oxides, Hydrogen Sulfide.

Advice for firefighters

- Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

Section 6 - Accidental Release Measures**Personal precautions, protective equipment and emergency procedures**

Personal Precautions • Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures • Keep unauthorized personnel away. Ventilate enclosed areas.

Environmental precautions

- Avoid run off to waterways and sewers.

Methods and material for containment and cleaning up

Containment/Clean-up Measures • Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
LARGE SPILLS: Dike far ahead of spill for later disposal.
Flush spill area with water spray.

Section 7 - Handling and Storage**Precautions for safe handling****Handling**

- Use only with adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing mist or vapor. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Conditions for safe storage, including any incompatibilities**Storage**

- Store in a well-ventilated place. Keep container tightly closed. Keep away from incompatible materials.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines				
	Result	ACGIH	NIOSH	OSHA
Hydrogen sulfide (7783-06-4)	Ceilings	Not established	10 ppm Ceiling (10 min); 15 mg/m ³ Ceiling (10 min)	20 ppm Ceiling
	STELs	5 ppm STEL	Not established	Not established
	TWAs	1 ppm TWA	Not established	Not established
Benzene (71-43-2)	Ceilings	Not established	Not established	25 ppm Ceiling
	STELs	2.5 ppm STEL	1 ppm STEL	5 ppm STEL (see 29 CFR 1910.1028)
	TWAs	0.5 ppm TWA	0.1 ppm TWA	10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA
Petroleum (8002-05-9)	Ceilings	Not established	1800 mg/m ³ Ceiling (15 min)	Not established
	TWAs	Not established	350 mg/m ³ TWA	Not established

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

Skin/Body

- Wear appropriate gloves.

Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Clear liquid with a hydrocarbon or maybe rotten egg odor.
Color	Clear	Odor	Hydrocarbon, may have rotten egg odor.
Odor Threshold	No data available		
General Properties			

Boiling Point	100 C(212 F)	Melting Point	< 0 C(< 32 F)
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	> 1 Water=1 @ 4 C(39.2 F)	Water Solubility	No data available
Viscosity	No data available		
Volatility			
Vapor Pressure	0.11 mmHg (torr) @ 60 C(140 F)	Vapor Density	No data available
Evaporation Rate	No data available		
Flammability			
Flash Point	No data available	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	No data available		
Environmental			
Octanol/Water Partition coefficient	No data available		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- None known.

Incompatible materials

- Strong oxidizing agents.

Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

Information on toxicological effects

Component Name	CAS	Data
Benzene (< 1%)	71-43-2	Acute Toxicity: Ingestion/Oral-Rat LD50 • 930 mg/kg; ihl-rat LC50:10000 ppm/7H; ihl-hmn TCLo:100 ppm; Irritation: eye-rbt 88 mg MOD; skn-rbt 20 mg/24H MOD; Multi-dose Toxicity: ihl-mus TCLo:25 ppm/6H/5D-I; Mutagen: dlt-mus-ork 1 mg/kg; sce-mus-ihl 10 ppm/6H; Reproductive: ihl-rat TCLo:50 ppm/24H (7-14D preg); Tumorigen/Carcinogen: orl-rat TDLo:52 gm/kg/52W-I
Hydrogen sulfide (< 1%)	7783-06-4	Acute Toxicity: ihl-rat LC50:700 mg/m ³ /4H; ihl-hmn TCLo:140 mg/m ³ ; ihl-hmn TCLo:2800 mg/m ³ ; Irritation: eye-hmn 0.000125 ppm/5H; Reproductive: ihl-rat TCLo:10 mg/m ³ (48D pre/1-22D preg)
Petroleum (< 1%)	8002-05-9	Acute Toxicity: orl-rat LD50:>4300 mg/kg; Irritation: eye-rbt 100 mg MLD; skn-rbt 500 mg/24H MOD
GHS Properties		Classification

Acute toxicity	OSHA HCS 2012 • No data available
Aspiration Hazard	OSHA HCS 2012 • No data available
Carcinogenicity	OSHA HCS 2012 • Carcinogenicity 1A
Germ Cell Mutagenicity	OSHA HCS 2012 • Germ Cell Mutagenicity 1B
Skin corrosion/Irritation	OSHA HCS 2012 • No data available
Skin sensitization	OSHA HCS 2012 • No data available
STOT-RE	OSHA HCS 2012 • No data available
STOT-SE	OSHA HCS 2012 • No data available
Toxicity for Reproduction	OSHA HCS 2012 • Toxic to Reproduction 2
Respiratory sensitization	OSHA HCS 2012 • No data available
Serious eye damage/Irritation	OSHA HCS 2012 • No data available

Route(s) of entry/exposure • Inhalation, Skin, Eye, Ingestion

Potential Health Effects

Inhalation

- Acute (Immediate)** • Vapor may irritate the respiratory tract.
- Chronic (Delayed)** • No data available

Skin

- Acute (Immediate)** • Under normal conditions of use, no health effects are expected.
- Chronic (Delayed)** • No data available

Eye

- Acute (Immediate)** • May cause irritation.
- Chronic (Delayed)** • No data available

Ingestion

- Acute (Immediate)** • No harmful effects expected in amounts likely to be ingested by accident.
- Chronic (Delayed)** • No data available

Mutagenic Effects

- Exposure to benzene may cause mutagenic effects.

Carcinogenic Effects

- Prolonged and repeated exposure to benzene may lead to the development of acute myelogenous leukemia (AML).

Carcinogenic Effects				
	CAS	OSHA	IARC	NTP
Benzene	71-43-2	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen

Reproductive Effects • May cause reproductive effects based on studies in animals for benzene.

Key to abbreviations

- LC = Lethal Concentration MOD = Moderate
- LD = Lethal Dose TC = Toxic Concentration
- MLD = Mild TD = Toxic Dose

Section 12 - Ecological Information

Toxicity

- Material data lacking.

Persistence and degradability

- Material data lacking.

Bioaccumulative potential

- Material data lacking.

Mobility in Soil

- Material data lacking.

Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations**Waste treatment methods****Product waste**

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN3082	Environmentally Hazardous Substances, Liquid, n.o.s. (Benzene)	9	III	NDA

Special precautions for user

- None known.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

Section 15 - Regulatory Information**Safety, health and environmental regulations/legislation specific for the substance or mixture**

SARA Hazard Classifications • Chronic

Other Information

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

Section 16 - Other Information**Last Revision Date**

- 24/March/2014

Preparation Date

- 24/March/2014

Disclaimer/Statement of Liability

- This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Key to abbreviations

NDA = No data available

