

11. Toxicological Information

Exposure Route	Acute Health Effects	Symptoms of Exposure
Inhalation:	<p>May cause respiratory irritation and affect the nervous system and the Central Nervous System CNS.</p> <p>See also effects of benzene and n-hexane under chronic exposure.</p>	Coughing, itchy throat, dizziness, drowsiness.
Skin:	<p>Causes irritation.</p> <p>See also effects of benzene and n-hexane under chronic exposure.</p>	Itchiness, redness.
Eye:	<p>slightly irritating to the eyes and could cause prolonged (days) impairment of your vision.</p> <p>The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment.</p>	Pain, tears, swelling, redness, and blurred vision. Eye contact with the vapors, fumes or spray mist from this substance could also cause similar signs and symptoms.
Ingestion:	<p>Because of the low viscosity of this substance, it can directly enter the lungs if it is swallowed (this is called aspiration). This can occur during the act of swallowing or when vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death.</p>	Signs and symptoms of aspiration may include coughing, difficulty breathing, "gurgling" lung sounds when breathing, coughing up phlegm (sputum) that is yellow or green in color or bad smelling, change in voice (hoarseness), skin turning bluish due to lack of oxygen.

Chronic Exposure:

Inhalation:

Repeated or prolonged exposure cause damage to the central nervous system (CNS), and the nervous system.

Benzene may cause cancer (leukemia).

n-Hexane may be toxic to the reproductive system.

Skin:

Not known to be a skin-sensitizer. Chronic exposure may cause skin dryness and cracking.

Benzene may cause cancer (leukemia).

n-Hexane may be toxic to the reproductive system.

Medical Conditions Aggravated by Exposure:

Possibly asthma.

Sensitization: No	Reproductive Toxicology: Yes (n-hexane component) Suspected of damaging fertility or the unborn child.	Teratogenicity: No	Mutagenicity: No	Irritancy: Yes
Carcinogenicity: Yes: benzene ACGIH: A1 – confirmed human carcinogen IARC: Group 1 – carcinogenic to human NIOSH: potential occupational carcinogen NTP: Known human carcinogen		Target Organs: Single exposure: eye, skin, respiratory system. Repeated exposure: CNS, nervous system, reproductive system.		

Lethality Tests:

Chemical Name	CAS No.	LD50	LC50
Isobutane	75-28-5	Not available	Rat, inhalation: 658 mg/L 4 hr Rat, inhalation: 570,000 ppm 15 mins Mouse, inhalation: 52 mg/L 1 hr
n-Butane	106-97-8	Not available	Rat, inhalation: 658 mg/L 4 hr Mouse, inhalation: 680 mg/L 2 hr
iso-Pentane	78-78-4	Not available	Rat, inhalation: 280 g/m ³ 4 hr
n-Pentane	109-66-0	Rabbit, dermal: 3000 mg/kg Mouse, oral: 5000 mg/kg	Rat, inhalation: 364 mg/L 4hr
Neopentane	463-82-1	Not available	Not available
n-Hexane	110-54-3	Adult rats 29700 mg/kg	Rat & Mice, inhalation: 48000 ppm 4 hr
Benzene	71-43-2	Rabbit, dermal:>8200 mg/kg Rat, oral: 810 mg/kg	Rat, inhalation: 44.66 mg/L 4 hr
Xylene (o-,m-,p-Isomers)	1330-20-7	Rabbit, dermal: >4350 mg/kg Rat, oral: 3500 mg/kg	Rat, inhalation, vapor: 29.08 mg/L 4 hr

12. Ecological Information

<p>Persistence & Degradability: Both n-pentane and isopentane are biodegradable.</p>	<p>Bioaccumulative Potential: No.</p>
<p>Mobility: No data available.</p>	<p>Other Adverse Effects: See below.</p>

Terrestrial Fate:

- Photolysis and hydrolysis are not expected to be important in soil.
- Not expected to bioaccumulate.
- The lighter, volatile butanes will evaporate leaving heavier components behind. Both n-pentane and isopentane will undergo biodegradation in the soil.
- Spills may contaminate groundwater depending on the level of groundwater table and local geology.

Aquatic Fate:

- Spills will spread on the water surface and the majority from C2-C5 will evaporate. The heavier components C6, C7+ being only slightly soluble in water and with specific gravity <1, will remain/float on the water surface.
- Hydrolysis is not expected to be an important environmental fate process since the alkanes lack functional groups that hydrolyze under environmental conditions.
- Isopentane, n-pentane, and neopentane have been identified as hazardous to the aquatic environment under GHS (Globally Harmonized System): Chronic Hazard category 2, as toxic to aquatic life with long-lasting effects.

Atmospheric Fate:

- If released to air, butanes (n-butane and isobutane) will exist solely as gas in the atmosphere.
- The Volatile Organic Compound (VOC) components such as butanes and pentanes have the potential to partake in photochemical reactions to produce ozone pollutant.

Eco Toxicity Tests:

Chemical Name	CAS No.		
n-Pentane	109-66-0	Fish	Oncorhynchus mykiss LC50: 9.87 mg/L 96 hr. Pimephales promelas LC50: 11.59 mg/L 96 hrs. Lepomis macrochirus LC50: 9.99 mg/L 96 hrs.
		Invertebrate	Daphnia magna EC50: 9.74 mg/L 48 hrs.
iso-Pentane	78-78-4	Invertebrate	Daphnia magna EC50: 2.3 mg/L 48 hrs.
Benzene	71-43-2	Fish	Oncorhynchus mykiss LC50: 5.3 mg/L 96 hr. flow-through
			Pimephales promelas LC50: 10.7-14.7 mg/L 96 hrs. flow-through
		Lepomis macrochirus LC50: 22.4 mg/L 96 hrs. static Lepomis macrochirus LC50: 70000-142000 ug/L 96 hrs. static Precilla reticulata LC50: 28.6 mg/L 96 hrs. static	
		Algae	Pseudokirchneriella subcapitata EC50: 29 mg/L 72 hrs.
		Invertebrate	Daphnia magna EC50: 8.76-15.6 mg/L 48 hrs. static Daphnia magna EC50: 10 mg/L 48 hrs.
Xylene (o-,m-,p-Isomers)	1330-20-7	Fish	Oncorhynchus mykiss LC50: 13.5-17.3 mg/L 96 hr. Oncorhynchus mykiss LC50: 2.661-4.093 mg/L 96 hr. static
			Pimephales promelas LC50: 13.4 mg/L 96 hrs. flow-through Pimephales promelas LC50: 23.53-29.97 mg/L 96 hrs. static
			Lepomis macrochirus LC50: 13.1-16.5 mg/L 96 hrs. flow-through Lepomis macrochirus LC50: 19 mg/L 96 hrs. Lepomis macrochirus LC50: 7.711-9.591 mg/L 96 hrs. static
			Cyprinus carpio LC50: 780 mg/L 96 hrs. semi-static Cyprinus carpio LC50: >780 mg/L 96 hrs. Precilla reticulata LC50: 30.26-40.75 mg/L 96 hrs. static
		Invertebrate	Water flea EC50: 3.82 mg/L 48 hrs. Gammarus lacustris LC50: 0.6 mg/L 48 hrs.

13. Disposal Considerations

Waste Disposal:

- Dispose of waste material at an approved waste treatment/disposal facility in accordance with applicable local, provincial, and federal regulations.
- Excess/waste pentane can be disposed by incineration in an incinerator or flare.
- Pentane can be reused as solvent or for fuel-blending.

14. Transport Information

TDG (CANADA) CLASSIFICATION

PROPER SHIPPING NAME: Pentanes, Liquid

CLASS: 3

PACKING GROUP: I

SPECIAL PROVISION: None

UN NUMBER: UN1265

LABEL/PLACARD:



MARINE POLLUTANT: Yes.

15. Regulatory Information

CANADA

	iButane	nButane	iPentane	nPentane	neoPentane	nHexane	Benzene	Xylenes
CAS	75-28-5	106-97-8	78-78-4	109-66-0	463-82-1	110-54-3	71-43-2	1330-20-7
DSL	yes	yes	yes	yes	yes	yes	yes	yes
NPRI	yes	yes	yes	yes	yes	yes	yes	yes
E2	yes	yes	yes	yes	yes	no	yes	yes

16. Other Information

Prepared for: Keyera Health and Safety
 Issue Date/ Revision No: August 31, 2015/ Revision #8

Revisions:	Dates:	Main Changes
• Original:	December 12, 1996	
• 1 st - 5 th revision:	July 16, 2005 – July 1, 2012	Minor changes
• 6 th revision:	November 15, 2013	Alberta Envirofuels to Keyera AEF Facility
• 7 th revision	July 31, 2015	GHS/WHMIS-2015 format
• 8 th revision	August 31, 2015	Changed emergency contact number
• 9 th revision	September 28, 2017	Updated Sec. 3 & Sec. 9
• 10th revision	August 17, 2021	Updated phone numbers and address

Glossary

ACGIH – American Conference of Governmental Industrial Hygiene
DOT – US Department of Transportation
DSL – Domestic Substance List (Canada)
E2 – Environmental Emergencies (Canada)
GHS – Globally Harmonized System
IARC – International Agency for Research on Cancer
IDLH – Immediately Dangerous to Life and Health
NIOSH – National Institute for Occupational Safety & Health
NPRI – National Pollutant Release Inventory (Canada)
NTP – National Toxicology Program
OSHA – Occupational Safety & Health Administration of the US Dept of Labour
PEL – Permissible Exposure Limit
SARA – Superfund Amendments and Reauthorization Act of 1986
STEL – Short Term Exposure Limit
TRI – US Toxic Release Inventory
TSCA – Toxic Substance Control Act
TWA – Time Weighed Average

Disclaimer of Expressed and Implied Warranties

The information presented in the Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. However, neither Keyera nor its affiliates assumes any liability whatsoever for the accuracy or completeness of the information contained herein. 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.

~ End of Safety Data Sheet ~