APPENDIX V

GASOLINE AND ETHANOL SPILL RESPONSE

GENERAL

Gasoline is the highest volume petroleum product transported into Maine ports. Ethanol is also commonly transported by barge or tanker to Maine's marine terminals. Ethanol is added to gasoline at the loading rack to produce various blends of gasoline. The nature of a gasoline and/or ethanol spill response differs in significant ways from a response to a spill of oil. A discharge of gasoline or ethanol will present responders with different challenges and response options than a response to other types of product. This Appendix will outline considerations that must be addressed for all gasoline and/or ethanol releases.

In the case of a gasoline or ethanol spill the foremost priority will be the health and safety of the public and responders due to the flammability of these products. The second priority is the protection of the environment. A gasoline or ethanol spill can be very dangerous and both responders and the general public need to be aware of how hazardous a situation this may be. Maine has many areas that are environmentally sensitive. During a spill, protection of these areas needs to be considered, but only after life and safety considerations have been addressed.

SAFETY OF LIFE AND HEALTH

A Site Safety Officer (SSO) must be established prior to any response operations involving gasoline or ethanol spills. The SSO is responsible for ensuring the safety of the public as well as the responders. In accordance with the Incident Command System (ICS), the SSO reports to the On-Scene Coordinator (OSC, if assigned) or Incident Commander (IC).

RESPONSE CONSIDERATIONS

Responders will utilize the same notification protocols and response management structure outlined in the main body of this Marine Oil Spill Contingency Plan, including use of ICS (Section 3). Roles and responsibilities and response operations will likewise follow protocols outlined in the main plan with further considerations as outlined below.

Public safety will have priority over environmental protection in the strategic response and deployment of resources. Local fire and police representatives will play a leading role as Incident Commander or within a unified command while significant fire or public safety hazards are addressed. The spill area must be isolated. Ignition sources must be removed, secured or protected.

A decision must be made to either evacuate the public, or to have them shelter in place. Roads will be closed by municipal resources and bridges by USCG 1st District. Local emergency personnel would conduct public evacuation. The Captain of the Port will establish safety zones in navigable waters and/or will close the port.

Air monitoring (area and personal) will be performed prior to site entry as well as periodically during the incident, to ensure site personnel are not over-exposed to hazardous substances. Instruments that may be utilized include combustible gas indicators (CGIs), portable gas chromatographs (GCs), photo-ionization detectors (PIDs), detector tubes, organic vapor monitors (OVMs), personal air sampling pumps, personal air monitoring badges and tubes, and radiation detectors.

A hazard analysis shall be conducted to include but not be limited to awareness of: ppm levels, lower explosive limits, benzene levels (for gasoline), and fire/explosion hazards. The exposure route may include: inhalation, absorption, ingestion, and/or eye contact. While gasoline will float on water and quickly evaporate, ethanol is completely miscible in water and presents the possibility of acute toxicity to aquatic organisms, especially in relatively calm or sheltered waters such as coves or marshes.

Personnel should attempt to stay up wind and keep out of low areas. Cold weather will slow the rate of evaporation.

Gasoline: Class IB Flammable Liquid
LEL - 1.4 % (evacuate at 10% of the LEL)
UEL - 7.6 %
OSHA PEL - none

Benzene, a component of gasoline, is a clear, colorless, highly flammable liquid with an odor threshold between 1.5 and 119 ppm. Inhalation exposure can cause acute symptoms such as fatigue, dizziness, dryness of the mouth, headache, nausea, stagger and shortness of breath, and irritation to eyes, nose, and throat.

Odor description:	Aromatic sweet odor
Ionization potential:	9.24 eV
Action level:	0.5 ppm
OSHA PEL/TWA:	1 ppm
OSHA STEL:	5 ppm
OSHA IDLH limit:	500 ppm

Ethanol: Class IB Flammable Liquid
LEL - 3.3% (evacuate at 10% of the LEL)
UEL - 19%
OSHA PEL / NIOSH REL – 1,000 ppm

Most SDSs for gasoline or ethanol (samples attached),recommend the following PPE:

- Splash proof or dust resistant goggles
- Impervious gloves

- Respiratory protection would be determined by air monitoring
- Coveralls or other protective clothing (i.e., exposure suits in winter)

The exact PPE shall be determined by considering the following:

- Is there splash potential?
- Is the concentration in air above the action level?
- Is there potential for high levels of vapor in certain work areas or performing certain tasks?
- Is there potential for falls from heights or into a body of water?

PPE shall be re-evaluated when the degree of hazard or tasks change, whenever additional hazards are identified, or when symptoms occur from inhaling gasoline vapors.

POLLUTION RESPONSE

The evolution of action during a gasoline and/or ethanol spill incident response should follow six basic steps. The steps are Discovery and Notification; Preliminary Assessment or Evaluation; Reconnaissance; Development of Incident Objectives and/or Incident Action Plan; Containment and Control, or Remediation; and Conclusion. These steps have been assigned to separate sections for this document. Each of these steps needs to be addressed and each step will need to be tailored to the specific incident.

Discovery and Notification - This step involves identification, the associated hazards, and the degree of hazard. The reporting agency or person will normally conduct this initial step. THIS STEP DOES NOT INCLUDE RECONNAISSANCE. Recognition should be general in nature and include the nature of the incident (e.g., damaged barge or overturned rail car in a river) and what material is involved (e.g., placard UN# 1203 for gasoline, or UN# 1170 for ethanol). Once on-scene, the OSC/IC shall identify what hazards may exist (e.g., physical hazard of the tank, chemical hazards, need to evacuate). The OSC/IC shall establish a "Hot Zone", ensure all required agencies (e.g., USCG, NOAA Scientific Support Coordinator) and persons are notified, and designate the personnel or agency to make the initial site reconnaissance and designate the level of PPE for those responders.

Preliminary Assessment, or Evaluation - This step includes assessing the risks that the situation poses to the public, response personnel, and the environment. This is the step in which initial entry or approach to the site occurs. Response personnel will use analytical techniques to determine the level of contamination and identify the existence of any hazards. The Site Safety Officer will use the information gathered by on-site personnel to identify the level of risk to the public, responders, and the environment. The On-Scene Coordinator, if assigned, will re-evaluate the evacuation policy and set PPE limits for all responders.

Reconnaissance - This step includes identifying the source of the spill, the extent of the area affected by the spill, and the amount spilled. Personnel tasked with reconnaissance shall be provided the proper air monitoring equipment and shall have been properly trained to utilize the equipment.

Development of Incident Objectives and/or an Incident Action Plan - This step includes identifying methods to reduce or eliminate the hazard. This step will be conducted by the Incident Commander or the On-Scene Coordinator as described in Section 5.3 of this Marine Oil Spill Contingency plan.

Containment and Control, or Remediation - This step is the physical work of shoring, diking, berming, absorption of material, stabilization of physical hazards, preventive hazing of wildlife, etc. Public health and safety will have priority over environmental protection in the strategic response and deployment of resources.

Remediation is the long-term clean up of a site and may involve such activities as soil removal, dredging, and ground water clean up or other long-term projects. The OSC will ensure the site has been properly cleaned up and taken over by a remediation agency or contractor.

The DEP's policy is to not implement containment booming of a gasoline discharge. An exception would be the containment booming of debris associated with a spill such as degraded Styrofoam from floating docks. Containment booming will increase the concentration of vapors and increase the probability of creating an explosive atmosphere. The solubility of ethanol renders booming for containment ineffective since ethanol is miscible with water. The use of diversion boom may be considered in some circumstances.

In open water, the product should be allowed to spread out and explosive vapors to evaporate. Booming shall be limited to preventing product from drifting under piers, protecting water intakes and diversion from the public and sensitive areas, and containment of debris as needed.

Strategies most commonly implemented include:

- Continuous air monitoring.
- Evacuation/access restriction - A decision must be made to either evacuate the public, or to have them shelter in place.
- Isolation - People and ignition sources must be kept away from the spill.
- Dispersing - Using water from fire hoses to push gasoline away from the shore.
- Aeration - In relatively contained areas (coves, lakes), aeration of the water may help to avoid toxicity to fish and other aquatic organisms from ethanol dissolved into the water.

- Suppression - Applying AFFF[1] on gasoline to suppress the vapors. Gasoline blends (e.g., E-10, E-15, E-85) or ethanol will require alcohol resistant AR-AFFF.
- Exclusion/protection booming - For protection of water intakes, diversion from ignition sources, to prevent gasoline from drifting under docks and to implement geographic response plans that protect environmentally sensitive areas.
- Evaporation - Allowing product to evaporate so explosive vapors dissipate and the slick naturally disperses and degrades.
- Containment booming - Not the policy of the DEP, however, it may be considered in some circumstances such as debris management as determined by the OSC.
- Monitoring of the harbor for slicks.
- Monitoring of wharf areas to locate areas of pooling.
- Staying in advance of spill - evacuate/remove equipment/protect (as determined) possible downwind hazard areas.

In cold weather ice conditions, where product is trapped beneath or on ice, possible methods include:

- Collecting contaminated ice for proper handling and disposal.
- Breaking up ice to allow evaporation.

Conclusion - Once the On-Scene Coordinator or Incident Commander has decided that the site is as clean as reasonably possible, that a hazard no longer exists, or that a proper remediation is underway, they will conclude the incident, ensure the proper funding and legal documentation is completed, and debrief the responders.

FURTHER RESOURCES

Section 8000 of the Maine and New Hampshire Area Contingency Plan contains a complete Marine Firefighting Plan.

The Massachusetts Department of Environmental Protection has published an extensive document containing information on emergency response techniques for large volume ethanol spills: https://www.mass.gov/doc/large-volume-ethanol-spills-environmental-impacts-response-options/download

[1] If AFFF needs to be used at a marine oil spill site, the selection and application of a fluorine-free product is highly recommended.

SAFETY DATA SHEET

Section 1. Identification

CHS Inc.
P.O. Box 64089
Mail station 525
St. Paul, MN 55164-0089

Transportation Emergency (CHEMTREC) : **1-800-424-9300**
Technical Information : **1-651-355-8443**
SDS Information : **1-651-355-8445**

Product name	:	Regular, Midgrade & Premium Unleaded Gasoline	**SDS no.**	:	0147- M6A0
Common name	:	Unleaded Gasoline, Premium Unleaded Gasoline	**Revision date**	:	11/15/2013
Chemical name	:	Light Petroleum Distillate	**Chemical formula**	:	Mixture
Chemical family	:	Mixed Petroleum Hydrocarbon			

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

Not available.

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture :
FLAMMABLE LIQUIDS - Category 1
SKIN CORROSION/IRRITATION - Category 2
GERM CELL MUTAGENICITY - Category 1B
CARCINOGENICITY - Category 1A
TOXIC TO REPRODUCTION (Fertility) - Category 2
TOXIC TO REPRODUCTION (Unborn child) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
ASPIRATION HAZARD - Category 1
AQUATIC HAZARD (ACUTE) - Category 3
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :
Extremely flammable liquid and vapor.
Causes skin irritation.
May cause genetic defects.
May cause cancer.
Suspected of damaging fertility or the unborn child.
May be fatal if swallowed and enters airways.
May cause drowsiness and dizziness.
Causes damage to organs through prolonged or repeated exposure.
Harmful to aquatic life with long lasting effects.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Hazardous Material Information System (U.S.A.)	**Health :**	2	*	**Flammability :**	4	**Physical hazards :**	0
National Fire Protection Association (U.S.A.)	**Health :**	2		**Flammability :**	4	**Instability :**	0

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Chemical name : Light Petroleum Distillate

Other means of identification : Unleaded Gasoline, Premium Unleaded Gasoline

Ingredient name	%	CAS number
Toluene	10 - 30	108-88-3
Xylene	10 - 30	1330-20-7
Tert-butyl methyl ether	10 - 30	1634-04-4
Benzene	1 - 5	71-43-2
1,2,4-Trimethylbenzene	1 - 5	95-63-6
Ethylbenzene	1 - 5	100-41-4
n-Hexane	1 - 5	110-54-3
Butyl ethyl ether	0.1 - 1	628-81-9
Naphthalene	0.1 - 1	91-20-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : If material comes in contact with the eyes, immediately wash the eyes with large amounts of water for 15 minutes, occasionally lifting the lower and upper lids. Get medical attention.

Inhalation : If person breathes in large amounts of material, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the person warm and at rest. Get medical attention as soon as possible.

Skin contact : If the material comes in contact with the skin, wash the contaminated skin with soap and water promptly. If the material penetrates through clothing, remove the clothing and wash the skin with soap and water promptly. If irritation persists after washing, get medical attention immediately.

Ingestion : If material has been swallowed, do not induce vomiting. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness.

Skin contact : Causes skin irritation.

Ingestion : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation : Adverse symptoms may include the following: respiratory tract irritation, coughing.

Skin contact : Adverse symptoms may include the following: irritation, redness.

Ingestion : No known significant effects or critical hazards.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet or water-based fire extinguishers.

Specific hazards arising from the chemical : Highly volatile material. Flowing gasoline can be ignited by self-generated static electricity; containers should be bonded and grounded. Vapors may travel along the ground to a source of ignition (pilot light, heater, electric motor) some distance away. Containers, drums (even empty) can explode when heat (welding, cutting, etc.) is applied.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Water may be ineffective on flames, but should be used to keep fire-exposed containers cool. Large fires, such as tank fires, should be fought with caution. If possible, pump the contents from the tank and keep adjoining structures cool and protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Do not flush down public sewers. The use of a self-contained breathing apparatus and protective clothing is recommended for fire fighters. Avoid inhalation of vapors.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Keep unnecessary and unprotected personnel from entering. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Methods and materials for containment and cleaning up

Spill : Contain with dikes or absorbent to prevent migration to sewers/streams. Take up small spill with dry chemical absorbent; large spills may require pump or vacuum prior to absorbent. May require excavation of severely contaminated soil.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking.

Conditions for safe storage, including any incompatibilities : Do not store above the following temperature: 113°C (235.4°F). Odorous and toxic fumes may form from the decomposition of this product if stored at excessive temperatures for extended periods of time. Store in accordance with local regulations. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Toluene	**NIOSH REL (United States, 6/2009).** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL Z2 (United States, 11/2006).** AMP: 500 ppm 10 minutes. CEIL: 300 ppm TWA: 200 ppm 8 hours. **ACGIH TLV (United States, 3/2012).** TWA: 20 ppm 8 hours.
Xylene	**ACGIH TLV (United States, 3/2012).** STEL: 651 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 434 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL (United States, 6/2010).** TWA: 100 ppm 8 hours.

	TWA: 435 mg/m³ 8 hours.
Tert-butyl methyl ether	**ACGIH TLV (United States, 1/2005).** TWA: 50 ppm 8 hours. Form: All forms. **ACGIH TLV (United States, 2/2010).** TWA: 50 ppm 8 hours.
Benzene	**ACGIH TLV (United States, 3/2012). Absorbed through skin.** STEL: 8 mg/m³ 15 minutes. STEL: 2.5 ppm 15 minutes. TWA: 1.6 mg/m³ 8 hours. TWA: 0.5 ppm 8 hours. **NIOSH REL (United States, 6/2009).** STEL: 1 ppm 15 minutes. TWA: 0.1 ppm 10 hours. **OSHA PEL (United States, 6/2010).** STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. **OSHA PEL Z2 (United States, 11/2006).** AMP: 50 ppm 10 minutes. CEIL: 25 ppm TWA: 10 ppm 8 hours.
1,2,4-Trimethylbenzene	**ACGIH TLV (United States, 3/2012).** TWA: 123 mg/m³ 8 hours. TWA: 25 ppm 8 hours. **NIOSH REL (United States, 1/2013).** TWA: 125 mg/m³ 10 hours. TWA: 25 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 25 ppm 8 hours. TWA: 125 mg/m³ 8 hours.
Ethylbenzene	**ACGIH TLV (United States, 3/2012).** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 6/2009).** STEL: 545 mg/m³ 15 minutes. STEL: 125 ppm 15 minutes. TWA: 435 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 435 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
n-Hexane	**ACGIH TLV (United States, 3/2012). Absorbed through skin.** TWA: 50 ppm 8 hours. **NIOSH REL (United States, 6/2009).** TWA: 180 mg/m³ 10 hours. TWA: 50 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 1800 mg/m³ 8 hours. TWA: 500 ppm 8 hours.
Naphthalene	**ACGIH TLV (United States, 3/2012). Absorbed through skin.** STEL: 79 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 52 mg/m³ 8 hours. TWA: 10 ppm 8 hours. **NIOSH REL (United States, 1/2013).** STEL: 75 mg/m³ 15 minutes. STEL: 15 ppm 15 minutes. TWA: 50 mg/m³ 10 hours. TWA: 10 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 50 mg/m³ 8 hours. TWA: 10 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Recommended: Splash goggles and a face shield, where splash hazard exists.

Skin protection

Hand protection : 4 - 8 hours (breakthrough time): Nitrile gloves.

Body protection : Recommended: Long sleeved coveralls.

Other skin protection : Recommended: Impervious boots.

Respiratory protection : If ventilation is inadequate, use a NIOSH-certified respirator with an organic vapor cartridge and P95 particulate filter.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Reddish golden brown.

Odor : Gasoline

Odor threshold : 10 ppm

pH : Not available.

Melting point : Not available.

Boiling point : 26.66°C (80°F)

Flash point : Closed cup: -40°C (-40°F) [Pensky-Martens.]

Flammability : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.4%
Upper: 7.6%

Relative density : 0.72

Evaporation rate : Slower.

Solubility : Insoluble in the following materials: cold water and hot water.

Solubility in water : Negligible.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : 257.22 to 454.44°C (495 to 850°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Not available.

Vapor pressure : 53.3 kPa (400 mm Hg) (68°F)

Vapor density : 4 [Air = 1]

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatible materials : Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Toluene	LC50 Inhalation Vapor	Rat	49 g/m³	4 hours
	LD50 Oral	Rat	636 mg/kg	-
Xylene	LC50 Inhalation Gas.	Rat	5000 ppm	4 hours
	LD50 Oral	Rat	4300 mg/kg	-
Tert-butyl methyl ether	LC50 Inhalation Gas.	Rat	23576 ppm	4 hours
	LC50 Inhalation Vapor	Rat	41000 mg/m³	4 hours
	LD50 Oral	Rat	>4 g/kg	-
Benzene	LD50 Oral	Rat	930 mg/kg	-
1,2,4-Trimethylbenzene	LC50 Inhalation Vapor	Rat	18000 mg/m³	4 hours
	LD50 Oral	Rat	5 g/kg	-
Ethylbenzene	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
n-Hexane	LC50 Inhalation Gas.	Rat	48000 ppm	4 hours
	LD50 Oral	Rat	15840 mg/kg	-
Butyl ethyl ether	LD50 Oral	Rat	1870 mg/kg	-
Naphthalene	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	490 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes 100 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Mild irritant	Rabbit	-	870 µg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Pig	-	24 hours 250 µL	-
	Skin - Mild irritant	Rabbit	-	435 mg	-
	Skin - Moderate irritant	Rabbit	-	500 mg	-
Xylene	Eyes - Mild irritant	Rabbit	-	87 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 5 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 µL	-
	Skin - Moderate irritant	Rabbit	-	24 hours 500 mg	-
	Skin - Moderate irritant	Rabbit	-	100%	-
Benzene	Eyes - Moderate irritant	Rabbit	-	88 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Mild irritant	Rat	-	8 hours 60 µL	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
Ethylbenzene	Eyes - Severe irritant	Rabbit	-	500 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
n-Hexane	Eyes - Mild irritant	Rabbit	-	10 mg	-
Naphthalene	Skin - Mild irritant	Rabbit	-	495 mg	-
	Skin - Severe irritant	Rabbit	-	24 hours 0.05 mL	-

Sensitization

Skin : There is no data available.

Respiratory : There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Toluene	-	3	-
Xylene	-	3	-
Tert-butyl methyl ether	-	3	-
Benzene	+	1	Known to be a human carcinogen.
Ethylbenzene	-	2B	-
Naphthalene	-	2B	Reasonably anticipated to be a human carcinogen.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 3	Not applicable.	Narcotic effects
1,2,4-Trimethylbenzene	Category 3	Not applicable.	Respiratory tract irritation
n-Hexane	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
Toluene	Category 2	Not determined	Not determined
Benzene	Category 1	Not determined	Not determined
n-Hexane	Category 2	Not determined	Not determined

Aspiration hazard

Name	Result
Toluene	ASPIRATION HAZARD - Category 1
Benzene	ASPIRATION HAZARD - Category 1
n-Hexane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Toluene	Acute EC50 433 ppm Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 12500 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 11600 µg/l Fresh water	Crustaceans - Gammarus pseudolimnaeus - Adult	48 hours
	Acute EC50 6000 µg/l Fresh water	Daphnia - Daphnia magna - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 5500 µg/l Fresh water	Fish - Oncorhynchus kisutch - Fry	96 hours
	Chronic NOEC 500000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days
Xylene	Acute IC50 10 mg/L	Algae	72 hours
	Acute LC50 8500 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 13400 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Tert-butyl methyl ether	Acute LC50 672000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1360000 µg/l Fresh water	Algae - Scenedesmus abundans	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
1,2,4-Trimethylbenzene	Acute LC50 4910 µg/l Marine water	Crustaceans - Elasmopus pectenicrus - Adult	48 hours
	Acute LC50 22.4 mg/L Fresh water	Fish - Tilapia zillii	96 hours
Ethylbenzene	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 2970 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
n-Hexane	Acute LC50 113000 µg/l Fresh water	Fish - Oreochromis mossambicus	96 hours
Naphthalene	Acute EC50 1600 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 2350 µg/l Marine water	Crustaceans - Palaemonetes pugio	48 hours
	Acute LC50 213 µg/l Fresh water	Fish - Melanotaenia fluviatilis - Larvae	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Toluene	2.73	90	low
Xylene	3.12	8.1 to 25.9	low
Tert-butyl methyl ether	1.04	1.5	low
Benzene	2.13	11	low
1,2,4-Trimethylbenzene	3.63	243	low
Ethylbenzene	3.6	-	low
n-Hexane	4	501.187	high
Butyl ethyl ether	2.03	-	low
Naphthalene	3.4	36.5 to 168	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Section 14. Transport information

DOT IDENTIFICATION NUMBER UN1203 **DOT proper shipping name** GASOLINE (Toluene, Xylene) RQ (Benzene, Xylene)

DOT Hazard Class(es) 3 **PG** I **DOT EMER. RESPONSE GUIDE NO.** 128

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) PAIR**: Naphthalene
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 307: Toluene; Benzene; Ethylbenzene; Naphthalene
Clean Water Act (CWA) 311: Toluene; Xylene; Benzene; Ethylbenzene; Naphthalene

Clean Air Act Section 602 Class I Substances : Not listed
Clean Air Act Section 602 Class II Substances : Not listed
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Listed

DEA List I Chemicals (Precursor Chemicals) : Not listed
DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Toluene	10 - 30	Yes.	No.	No.	Yes.	Yes.
Xylene	10 - 30	Yes.	No.	No.	Yes.	No.
Tert-butyl methyl ether	10 - 30	Yes.	No.	No.	Yes.	No.
Benzene	1 - 5	Yes.	No.	No.	Yes.	Yes.
1,2,4-Trimethylbenzene	1 - 5	Yes.	No.	No.	Yes.	No.
Ethylbenzene	1 - 5	Yes.	No.	No.	Yes.	Yes.
n-Hexane	1 - 5	Yes.	No.	No.	Yes.	Yes.
Butyl ethyl ether	0.1 - 1	Yes.	No.	No.	Yes.	No.
Naphthalene	0.1 - 1	No.	No.	No.	Yes.	Yes.

SARA 313 : This product (does/not) contain toxic chemicals subject to the reporting requirements of SARA Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

Product name	CAS number	%
Toluene	108-88-3	Up to 18.1
Xylene	1330-20-7	Up to 15.3
Benzene	71-43-2	Up to 5.3
1,2,4-Trimethylbenzene	95-63-6	Up to 4.8
Ethylbenzene	100-41-4	Up to 2.6
n-Hexane	110-54-3	Up to 4
Naphthalene	91-20-3	Up to 1

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: Toluene; Xylene; Tert-butyl methyl ether; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; n-Hexane; Butyl ethyl ether

New York : The following components are listed: Toluene; Xylene; Tert-butyl methyl ether; Benzene; Ethylbenzene; n-Hexane; Naphthalene

New Jersey : The following components are listed: Toluene; Xylene; Tert-butyl methyl ether; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; n-Hexane; Butyl ethyl ether; Naphthalene

Pennsylvania : The following components are listed: Toluene; Xylene; Tert-butyl methyl ether; Benzene; 1,2,4-Trimethylbenzene; Ethylbenzene; n-Hexane; Butyl ethyl ether; Naphthalene

California Prop. 65 : **WARNING:** This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Toluene	No.	Yes.	No.	7000 µg/day (ingestion) 13000 µg/day (inhalation)
Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)
Ethylbenzene	Yes.	No.	41 µg/day (ingestion) 54 µg/day (inhalation)	No.
Naphthalene	Yes.	No.	Yes.	No.

Section 16. Other information

Revision date : 11/15/2013 **Supersedes** : 01/23/2013

Revised Section(s) : 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16. **Prepared by** : KMK Regulatory Services Inc.

CENEX®
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SAFETY DATA SHEET

Your Logo

Date:

Section 1: Identification

Product Name: **Denatured Fuel Ethanol**

Other names: E98, Fuel Ethanol, Denatured Ethyl Alcohol

Intended Use / Restriction: Automotive Spark Ignition Engine Fuel, Motor Fuel Additive

Manufactured by: Company XYZ, Company **Address**, Company **Phone Number**

24-hour Emergency Phone Number: *a knowledgeable individual that can handle responding to the emergency with proper information. Some use the Chemtrec service for this.*

CHEMTREC Phone (24HR Emergency Telephone): 1-800-424-9300 (Within U.S.A)
International CHEMTREC Call: 1-703-527-3887

Section 2: Hazard(s) Identification

GHS Pictograms:

Signal Word: **Danger**

OSHA HCS 2012 (GHS) Classification:

Physical	Health	Environment
Flammable Liquids- Hazard Category 2	**Acute Toxicity (oral) - 4** **Skin corrosion / irritation - 3** **Serious eye damage / eye irritation - 2A** **Specific Target Organ Toxicity Single Exposure - 3**	**Acute hazards to the aquatic environment - 3**

Hazard Statements:

H225 - Highly Flammable liquid and vapor
H302 - Harmful if swallowed
H312 - Harmful if contact with the skin
H316 - Causes mild skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H402 - Harmful to aquatic life

Precautionary statements:

Prevention	Response
P201: **Obtain special instructions before use.** P202: **Do not handle until all safety precautions have been read and understood.** P210: **Keep away from heat / sparks / open flames / hot surfaces. No Smoking.** P233: **Keep container tightly closed**. P235: **Keep cool.** P240: **Ground / bond container and receiving equipment.** P241: **Use explosion-proof electrical / ventilating / lighting equipment.** P242: **Use only non-sparking tools.** P243: **Take precautionary measures against static discharge.** P261: **Avoid breathing fumes / gas / mist / vapors / spray.** P264: **Wash hands thoroughly after handling.** P270: **Do not eat, drink or smoke when using this product.** P273: **Avoid release to the environment.** P280: **Wear protective gloves and eye and face protection.**	P301 [P311]: **IF SWALLOWED: Call a Poison Center or Doctor** P303 [P361/ P353]: **IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.** P304 [P312]: **IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.** P305 [P351/ P338]: **IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing**. P308 [P313]: **If exposed or concerned: Get medical advice or attention.** P332 [P313]: **If skin irritation occurs; Get medical advice or attention.** P337 [P313]: **If eye irritation persists; Get medical advice or attention.** P370 [P380 / P376 / P378]: **In case of fire: Evacuate area, stop leak if safe to do so, use proper fire-extinguishers (alcohol-resistant foam, dry powder, or CO2) to extinguish.**

Storage	Disposal
P403 [P233 / P235]: **Store in a well ventilated place. Keep container tightly closed. Keep cool.** P405: **Store locked up**	P501: **Dispose of contents / container in accordance with local and national regulations.**

Hazards not otherwise classified: Vapors can be explosive.

Section 3: Composition / Informantion on Ingredients

Ingredient	CAS #	EC #	% Volume
Ethanol	64-17-5	200-578-6	95 -98
Natural Gasoline	68425-31-0	232-349-1	2 - 5
Gasoline	86290-81-5	289-220-8	2 - 5
Benzene	71-43-2	200-753-7	<0.1

This product consists primarily of ethanol (ethyl alcohol). Either natural gasoline or gasoline is added as a denaturing ingredient per United States federal regulations to render the ethanol unfit for human consumption.

Section 4: First Aid Measures

Skin: If product has contacted clothing, remove the contaminated clothing as quickly as possible.
Wash skin thoroughly with soap or a mild detergent. Apply a skin cream with lanolin. If irritation occurs seek medical attention. Wash contaminated clothing before reusing.
Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lens. Do not use an eye ointment. Seek medical attention if irritation persists after flushing eyes.
Inhalation: Move exposed person to fresh air. If not breathing give artificial respiration. In cases of inhalation of IDHL levels, evacuate the victim to a safe area as soon as possible. Loosen tight fitting clothing. Get medical attention immediately.
Ingestion: IF SWALLOWED DO NOT INDUCE VOMITTING. If the victim is conscious, give person one to two glasses of water. If vomiting occurs, keep head below waist level to avoid aspiration into the lungs. Get medical attention immediately

Section 5: Fire Fighting Measures

HMIS Classification

Denatured Fuel Ethanol	
HEALTH	**2**
FLAMMABILITY	**3**
PHYSICAL HAZARD	**0**
PERSONAL PROTECTION	**H**
eye protection / gloves /protective clothing	

Health - 1
Flammability - 3
Reactivity – 0

NFPA 704 Rating

Flash Point (ASTM D3278, Closed Cup)	19.4 °F (- 7°C)
Auto Ignition Temperature	709°F (376°C)
Explosive Limits (In Air)	LFL; 3.5% UFL; 16.8%

Extinguishing Media: Alcohol resistant foam, dry chemical or carbon dioxide
Fire Fighting Procedures: Use alcohol compatible foam (AR-AFFF). Water may be ineffective on flames but may be used to cool fire exposed containers. Wear self-contained breathing apparatus with a full face piece operated in the positive pressure demand mode when fighting fires.
Hazardous Decomposition Products: May form toxic materials, carbon dioxide and carbon monoxide.
Special Fire and Explosion Hazards: Flames are invisible in daylight. Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by pilot lights or other flames, sparks, heaters, smoking, electric motors, static discharge, or other ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum, even empty, because product residue can ignite explosively.

Section 6: Accidental Release Measures

Personal Precautions: Wear eye protection, gloves, boots and protective clothing while cleaning up spills. Take precautionary measures to avoid direct contact with material. Respiratory protective equipment may be necessary in a closed environment. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
Environmental Precautions: Prevent run-off to sewers, streams or other bodies of water. If run-off occurs notify proper authorities as required that a spill has occurred.
Methods and Materials for Containment and Cleanup:
Small Spill: Absorb liquid on paper, vermiculite, floor absorbent, or other absorbent material and transfer to hood.
Large Spill: Due to flammability of this product eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source, dike area or spill to prevent spreading. Pump liquid to salvage tank. Remaining liquid may be taken up on sand, clay, earth, floor absorbent, or other absorbent material and shoveled into containers.

Section 7: Handling and Storage

Precautions for Safe Handling: Wear personal protective equipment. Use only spark resistant tools. Ensure adequate ventilation. After handling use good hygiene practices.
Conditions for Safe Storage: Store this material away from heat, sparks and flames. Containers of this material may be hazardous when empty since emptied containers retain product residues (vapor or liquid). It is good practice to triple rinse with water empty drums. Above ground storage must meet applicable codes. Ground and cross bond all containers when pouring or transferring. All hazard precautions given in this datasheet must be observed.

Section 8: Exposure Controls / Personal Protection

Exposure Limits:

Ingredient	OSHA PEL / STEL	ACGIH TLV / STEL
Ethanol	1000 ppm	1000 ppm
Natural Gasoline	300 ppm / 500 ppm	300 ppm / 500 ppm
Gasoline	300 ppm / 500 ppm	300 ppm / 500 ppm
Benzene	1 ppm	10 ppm

Engineering Controls: Provide sufficient mechanical or general ventilation to maintain exposure below limits. Provide eye wash stations. Provide proper respiratory PPE when necessary.
Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded, (Section II) a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators, air purifying respirator with cartridges for organic vapor under specified conditions. Engineering or administrative controls should be implemented to reduce exposure.
Protective Gloves: Wear resistant gloves such as neoprene.
Eye Protection: Chemical splash goggles in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. Consult your safety supplier.
Other Protective Equipment: To prevent repeated or prolonged skin contact, wear impervious clothing/boots. Eye wash baths and safety showers are recommended. Also check atmosphere for explosiveness and oxygen deficiency when necessary.
Signs and Symptoms of Exposure: Central nervous system reactions including nausea, dizziness, headaches and stupor of speech associated with difficulty in walking. Overexposure to this material has been suggested as a cause of the following effects in humans: liver abnormalities and eye damage. Material can cause dermatitis of the skin on prolonged or repeated exposure. Single large doses taken into the body through ingestion may lead to alcohol poisoning.

Section 9: Physical and Chemical Properties

Appearance and Odor	Clear, colorless volatile liquid with alcohol odor
Odor Threshold	not applicable
Physical State	Liquid
pH	6 – 9 (typically)
Freezing Point (ethanol)	- 173°F (- 114°C)
Initial Boiling Point (ASTM D86)	162.5°F (72.5°C) @ 760 mm Hg
Flash Point (ASTM D3278, Closed Cup)	19.4 °F (- 7°C)
Evaporation Rate (n-butyl acetate = 1)	1.9
Flammability Explosive Limits (In Air)	LFL; 3.5% UFL; 16.8%
Vapor Pressure (DVPE)	3.17 psi
Vapor Density (Air = 1) (ethanol)	1.6
Specific Gravity	0.787 – 0.797 @ 60°F (15.55°C)
Solubility in Water	Complete
Partition Coefficient: n-octanol/water	not applicable
Auto Ignition Temperature	709°F (376°C)
Viscosity (ethanol) 25°C	1.08 centipoises
Decomposition Temperature	not applicable

Notes: Data provided for product is supported by laboratory analyses performed in 2014 provided by the Renewable Fuels Association. Exceptions are freezing point, vapor density and viscosity which were found in references for pure ethanol (ethyl alcohol).

Section 10: Stability and Reactivity

Stability	Stable
Conditions to Avoid	High heat, sparks and hot metal surfaces
Incompatibility (Materials to Avoid)	Strong oxidizing agents and strong inorganic acids
Hazardous decomposition products	Under normal storage does not decompose. If fire may form toxic materials, carbon dioxide and carbon monoxide
Hazardous Polymerization	Will not occur

Section 11: Toxicological Information

Health effects testing on this product have been ongoing. The reports are being completed and will be forwarded to the U.S. EPA for review**.** The information included was found in references for ethanol (ethyl alcohol).

LD50 - Ethanol	Acute Oral	7060 mg/kg (Rat)
LD50 - Ethanol	Acute Oral	3450 mg/kg (Mouse)
LD50 - Ethanol	Acute Dermal	20000 mg/kg (Rabbit)

Effects of Acute Overexposure:
Eyes: Can cause moderate irritation, redness, tearing.
Skin: Can cause slight irritation, redness and dryness.
Breathing: Excessive inhalation of vapors can cause nasal and respiratory irritation. When inhaled or absorbed in harmful quantities may produce central nervous system depression characterized by irritation, headaches, nausea, dizziness, lack of concentration, fatigue, and stupor.
Swallowing: Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Introduction of solvents, as in aspiration of vomit fluid, may produce chemical pneumonia.
Effects of Chronic Overexposure:
Overexposure to this material has been suggested as a cause of the following effects in humans: liver abnormalities and eye damage. Material can cause dermatitis of the skin on prolonged or repeated exposure. Single large doses taken into the body through ingestion may lead to alcohol poisoning.
Signs and Symptoms of Exposure: Central nervous system reactions including nausea, dizziness, headaches and stupor of speech associated with difficulty in walking.
Medical conditions Generally Aggravated by Exposure: Existing respiratory disorders and skin diseases may be aggravated by exposure.
Carcinogenicity: NTP – No IARC Monographs – No OSHA Regulated – No
Other: IARC Monographs – Benzene; Carcinogen and Natural Gasoline; Possible Carcinogen

Section 12: Ecological Information

Toxicity: Fish, acute	LC50: 96 hours (fathead minnows)	14,200 mg/l
	LC50: 96 hours (daphnia, ceriodaphnia)	5,000 mg/l
Toxicity Aquatic Plants growth inhibition	Chlorella vulgaris (fresh water algae)	1,000 mg/l
Persistence and degradability	Biodegrades rapidly	
Bio-accumulative potential	No	
Mobility in soil	Yes	

Section 13: Disposal Considerations

Spill: Reclaim if Possible. Destroy by liquid incineration. Follow all applicable local, state and federal laws. Contaminated absorbent may be deposited in a landfill in accordance with local, state and federal regulations.

Section 14: Transport Information

DOT Classification: FLAMMABLE LIQUID, Hazard Class 3, Packing Group II
Placard Identification: UN1987 Alcohols, n.o.s. (ethanol, gasoline); *or* UN3475, Ethanol and gasoline mixture

Section 15: Regulatory Information

SARA Section 302 (Extremely Hazardous Substance): Not Applicable
SARA Section 311/312 (Hazard Categories): Acute and Chronic Health Hazards and Fire Hazard
SARA Section 313 (Toxic Chemicals): Not Applicable for ethanol. Benzene is reportable.
CERCLA: Not Applicable
CAA 112 (r): Not Applicable
RCRA: Not Applicable

Section 16: Other Information

Date of Preparation: September 30, 2015

Date of Current Revision: September 30, 2015

The information accumulated herein is believed to be accurate, but is furnished without warranty of any kind. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances in order to assure proper use of this material and the safety and health of employees.