

APPENDIX III

MARINE SITE SAFETY PLAN (GENERIC)

TABLE OF CONTENTS

EMERGENCY INFORMATION	3
1.0 SCOPE AND APPLICABILITY OF THE SSP	4
1.1 Site Background/Description	4
1.2 Entry/Exit Procedures	5
2.0 PERSONNEL	5
2.1 Site Safety Briefing	5
3.0 SITE CONTROL	6
4.0 HEALTH RISK ANALYSIS	6
5.0 TASK RISK ANALYSIS	6
5.1 General Safety Precautions	8
5.2 Heat-related Illness	8
5.3 Cold-related Illness	9
5.4 Confined Space Entry	9
5.5 Excavation Protection	10
6.0 TRAINING	10
7.0 PERSONAL PROTECTION FROM HAZARDS	10
8.0 MEDICAL SURVEILLANCE	10
9.0 DECONTAMINATION PLAN	11
10.0 SITE COMMUNICATION PLAN	11
11.0 ACCIDENTS AND EMERGENCIES	12
11.1 Evacuation and Emergency Response	12
11.2 Medical Assistance/Emergency Contacts	12
11.3 Reporting	12
11.4 Emergency Medical Treatment Procedures	13
11.5 Fire or Explosion	13
11.6 Spills and Leaks	13
11.7 Emergency Equipment and Facilities	13
Appendix A - Acknowledgement page	14
Appendix B - Attach Site Map	15
Appendix C - Attach Safety Data Sheets	16
Appendix D - Attach directions to hospital	17
Appendix E - use, selection and maintenance of personal flotation devices and anti- exposure clothing (6/3/2013)	18

EMERGENCY INFORMATION

(fill all spaces)

Ambulance	911 or _____
Fire	911 or _____
Police	911 or _____
Local Hospital _____	_____
Department of Environmental Protection Oil Spill Hotline	(800) 482-0777
Department of Environmental Protection Hazardous Material Spill Hotline	(800) 452-4664
Poison Control Center	(800) 442-6305
National Response Center	(800) 424-8802
U. S. Coast Guard (Search & Rescue)	_____
Maine Marine Patrol ME/NH Border of the West Bank of the Kennebec River	(800) 482-0730
Maine Marine Patrol East Bank of the Kennebec River to the West Bank of the Penobscot River	(800) 452-4664
Maine Marine Patrol East Bank of the Penobscot River to the Canadian Border	(800) 432-7381
Site Safety Officer: Name: _____	_____
Contractor: Name: _____	_____
Name: _____	_____
Name: _____	_____
BRWM Emergency Response Training Coordinator (ERTC) Andi Lasselle	(207) 620-4456

1.0 SCOPE AND APPLICABILITY OF THE SSP

The scope of this generic Site Safety Plan (SSP) is to identify, evaluate, and control potential safety and health hazards, as well as provide limited emergency response to accidents during field operations during the initial phase of an oil spill response. A site-specific safety plan will be developed during larger or complex spills and/or when an Incident Command System (ICS) has been established.

Objectives of this SSP include:

1. Identification and evaluation of potential hazards.
2. Definition of levels of protection required for certain work activities.
3. Establishment and implementation of work zones.
4. Evaluation and implementation of worker protective measures.
5. Formation of emergency action plans for Hazardous Waste Operations sites.
6. Ensuring of medical surveillance.
7. Ensuring personnel training.
8. Design and implementation of decontamination procedures.
9. Enforcement of appropriate record keeping.

The personnel covered by this SSP include Maine Department of Environmental Protection (DEP) Bureau of Remediation and Waste Management (BRWM) employees working on a SARA Title I mitigation site as defined by BRWM SOP Classification of Work Sites Paragraph 5.1.2, including marine oil spills. When a site-specific safety plan has been developed such as a plan developed within ICS it will replace this generic plan. Other contractors involved with this project may be covered by their own SSPs. This SSP complies with the requirements of the Occupational Safety and Health Administration standards as stated in 29 CFR §1910 with emphasis on subsection §1910.120 (Hazardous Waste Operations and Emergency Response), the applicable portion of 40 CFR §1926 (Safety and Health Regulations for Construction) and any other federal or state statutes or regulations. Amendments to this plan will be made as the contaminant profile information is updated, a change in work status or task is made, or as regulatory requirements dictate. Any changes to the SSP will be brought to the attention of those covered under the plan through additional training by the BRWM Emergency Response Training Coordinator or qualified designee.

1.1 Site Background/Description

Any specific background information for this site will be added to the Appendices.

- Complete Acknowledgement page Appendix A
- Attach map to Appendix B
- Attach SDS to Appendix C
- Attach directions to hospital to Appendix D

1.2 Entry/Exit Procedures

Personnel working on site must follow entry/exit procedures as described in Section 3, Site Control. To enter the exclusion or contamination reduction zones, all personnel, including regulatory personnel, must be able to show proof of satisfactory medical screening and surveillance, show proof of 40-hour HAZWOPER training and appropriate refreshers, show proof of clearance to wear a respirator (where appropriate), read and sign the SSP, and use the personal protective equipment required by this plan.

2.0 PERSONNEL

Safety is affected by the actions of all site personnel. Any site safety concerns should be referred to the Site Safety Officer or the DEP BRWM Emergency Response Training Coordinator (ERTC), who will also oversee compliance with applicable health and safety regulations that BRWM personnel covered under this SSP must follow.

The following personnel will be available for consultation at the DEP employee's request:

Office	Name	Phone #
BRWM ERTC	Andi Lasselle	(207) 620-4456
DEP Presque Isle	Jesse Clark	(207) 446-9907
DEP Bangor	Darian Higgins	(207) 446-9902
DEP Portland	John Luongo	(207) 446-9801
DEP Augusta	Nate Thompson	(207) 707-2114

2.1 Site Safety Briefing

Before any work begins, personnel covered under this SSP must attend a safety briefing. This briefing will be presented by the Site Safety Officer. Additional training may occur on a daily basis relative to planned tasks and as events and circumstances arise which require revision of the SSP.

Training topics may include:

- Site characterization
- Chemical and physical hazards present
- Medical surveillance requirements
- Symptoms of overexposure to hazards
- Site control

- Training requirements

DEP personnel must attend this training if they need to perform relevant tasks for which they have not been previously or currently trained.

3.0 SITE CONTROL

Personnel entering or leaving the site must sign-in and sign-out at the entrance with the Site Safety Officer or with logistics if an incident command system has been established. During normal operations, the exclusion or "hot" zone will be designated with a line of hazard tape for shore operations. If upgrade to Level C PPE is required, the contamination reduction zone will be identified with yellow caution tape and the decon area will be designated within this zone. Only authorized personnel who meet the training, medical surveillance, and respiratory requirements may enter these zones. All personnel working in these areas must also read and sign the SSP.

For off-shore operations, a Safety Zone will be determined by the U. S. Coast Guard (USCG) and relayed by a "Local Notice to Mariners". The Safety Zone will be enforced by USCG boats.

Whenever possible, the contamination reduction and support zones should be located upwind from the hot zone. If unable to locate these zones upwind, monitoring for chemicals of concern should be continuous or other provisions, subject to approval of the Site Safety Officer or qualified designee, made to ensure minimal exposure.

4.0 HEALTH RISK ANALYSIS

The chemicals of concern at a marine oil spill are expected to be petroleum products. Potential hazards for petroleum products have been determined based on previous sampling results from and general knowledge of these materials at a marine oil spill site. Dispersants, surface washing agents, bioremediation agents and other marine oil spill control agents may also contain chemicals of concern that should be evaluated on a spill-specific basis. See the [National Contingency Plan Product Schedule](#) for additional information on these products.

Since petroleum products are highly volatile, the primary route of entry into the body is inhalation. Petroleum products are highly flammable. Skin absorption and ingestion may be of concern if handling contaminated debris or handling pure product. Safety Data Sheets (SDSs) shall be attached in Appendix C.

5.0 TASK RISK ANALYSIS

A risk analysis for each field task identified by the SSP has been conducted.

Tasks include: Inspection for regulatory compliance; Safety and environmental sampling; Instrument use; Surveying & Mapping; Trenching through contaminated soil; Beach assessment; Small boat operation; Boom deployment; and Skimmer operation.

Hazards include: Exposure to contaminated soil/water/air; Excavating equipment; Exposure to cold water environment; Injury from ropes/cables; and Lifting as well as the usual slips trips and falls.

Protective measures and operating procedures to prevent injury:

- Review site safety plan, including any daily revisions to the site safety plan.
- Review SDS, and know ionization potential (IP) of suspected chemicals.
- Wear appropriate floatation device, and rubber soled safety boots.
- Wear appropriate chemical protective PPE to prevent direct contact exposure and as dictated by splash potential and vaporization of chemicals (gloves, boots, chemical resistant clothing, and respirators).
- Avoid breathing vapors.
- Remain upwind when possible.
- Perform vapor checks with combustible gas indicator and PID. For PID use, use lamp that is above the IP for the suspected chemicals.
- Calibrate and check working order of equipment daily before use.
- Review progress at end of shift.
- Observe excavation from a distance of 5 feet or more, and do not enter excavation.
- Work in pairs or small groups.
- Observe USCG rules of the road. Boat operator should wear kill switch to ignition when appropriate.
- Keep extremities clear of ropes and cables.
- Wear back support when lifting.

If contamination exists above permissible exposure limits (PELs) or short-term exposure limits (STELs) as identified by air monitoring instruments, inhalation exposure will be prevented with the use of appropriate respiratory protection.

Precautions will also be taken to avoid hazards such as electrical exposure, mechanical exposure, fire/explosion, noise exposure, and thermal stress.

Levels of petroleum vapors above a pre-determined flammability limit or action level will result in evacuation from the area to prevent a fire/explosion hazard. Responders should avoid noisy environments above 85 dbA as an eight-hour time-weighted average (TWA). When avoidance is not possible, appropriate hearing protection devices must be worn.

5.1 General Safety Precautions

The following general safety rules must be followed by all project personnel:

- Specified use of Flotation and Anti Exposure Clothing as determined by Maine DEP BRWM SOP – Guidance for Selection, Use, and Maintenance of Personal Protective Equipment, will be worn according to the procedure. See Appendix E of this document.
- Avoid unnecessary contact with contaminated, or potentially contaminated surfaces.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the exclusion and contamination reduction zones.
- Some medicines may increase the effects of toxic chemicals in exposure situations. Personnel who are taking medication are advised to discuss their job duties and potential job hazards with their primary care physician, health monitoring physician or supervisor prior to beginning work on site to assess whether the potential exists for any increased effects during exposure situations.
- The use of alcohol or drugs, as defined in the State of Maine’s Drug-Free Workplace Policy, during the work day will not be tolerated. Any employee whose work performance is impaired from alcohol or drugs, both legal and illegal, will be removed from the site.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, performing bathroom functions or other activities.
- If a water source is not available on site, use waterless cleaner and dispose of paper towels in plastic bags.
- Personnel should shower as soon as possible after protective clothing is removed and the activity for the day has ended. Regional offices or other facilities per special arrangement will be available for showering. **Employees should not wait to shower at home.**

5.2 Heat-related Illness

When chemical resistant clothing is worn, body ventilation and evaporation are greatly reduced. Additional breaks will be scheduled for personnel wearing coveralls in hot weather. Employees and the Site Safety Officer should be aware

of the effects of heat stress, and personnel should be provided with adequate liquids, and instructed to observe each other for signs of heat stress during hot weather.

Signs of heat stress are summarized as follows:

- *Heat exhaustion:* clammy skin, confusion, dizziness, fainting, fatigue, heat rash, light-headedness, nausea, profuse sweating, slurred speech, and weak pulse.
- *Heat Stroke:* confusion, convulsion, hot dry skin, high temperature (yet may feel chilled), incoherent speech, staggering gait, cessation of sweating, and unconsciousness.

These signs can be distinguished with those associated with chemical hazards which are characterized by behavioral changes, breathing difficulties, changes in complexion or skin color, coordination difficulties, coughing, dizziness, drooling, diarrhea, fatigue and irritability. Pulse rates should also be monitored when working in protective clothing.

5.3 Cold-related Illness

Decreased ventilation and evaporation are also concerns in cold weather as undergarments may become soaked and add to the cold. Employees and the Site Safety Officer should be aware of the effects of hypothermia, and personnel should be provided with frequent breaks and instructed to observe each other for signs of hypothermia and frostbite.

Signs of cold stress are summarized as follows:

- *Frostbite:* skin changes to white or grayish-yellow; usually affects nose, ears, cheeks, fingers and toes. Blisters may appear later and affected part feels intensely cold or numb. The victim frequently is not aware of frostbite until a pale glossy skin is observed.
- *Mild hypothermia:* abnormal drowsiness, slurred speech, memory lapses, incoherence, and fumbling hands.

5.4 Confined Space Entry

All confined space entries will be planned as outlined in Maine DEP BRWM SOP for Confined Space Entry. NOTE: Oil & Hazardous Materials Responders (OHMRs) are the only personnel allowed to enter a permit-required confined space.

5.5 Excavation Protection

The excavation contractor will be responsible for providing protection against falling into open holes. All excavation will be enclosed and or covered before the end of each work shift in accordance with state and federal laws. Maine DEP personnel should remain upwind, at least 5 feet from the excavation, have the equipment operator bring soil to the surface and sample from the bucket. Do not ride on a backhoe bucket. *NOTE: Any trench over 4 feet deep is a confined space.*

6.0 TRAINING

Maine DEP personnel working in the exclusion or contamination reduction zones shall be trained pursuant to 29 CFR §1310.120(e). All workers will have 40 hours of training, 24 hours of supervised field experience, annual refreshers, and Maine DEP required training. Documentation of classroom training and alternative training experience must be made available upon entering the site.

7.0 PERSONAL PROTECTION FROM HAZARDS

Personal Protective Equipment (PPE) will be used to minimize potential exposures. Specified safety equipment and protective clothing will be worn in the exclusion zone at all times. PPE to be determined by Maine DEP BRWM SOP's – Guidance for Selection, Use, and Maintenance of Personal Protective equipment, and Site Monitoring.

DEP personnel working on site will be medically approved for site work. Those using respiratory protection will be medically approved for respirator use and be fit-tested annually.

The level of protection provided by PPE selected will be upgraded or downgraded based upon a change in site conditions or later findings. When a significant change occurs, the hazards will be reassessed.

If PID > 750 ppm or LEL > 10 %, evacuate DEP personnel as specified in Section 11, Accidents and Emergencies.

8.0 MEDICAL SURVEILLANCE

All applicable DEP personnel working on the site have had medical screening and surveillance according to BRWM SOP - Respiratory Protection Program, paragraphs 5.2 - 5.2.2.3.

All personnel covered by this SSP must report accidents, injuries, and/or possible exposures to their supervisors as soon as possible. The employee or Site Safety Officer will call for medical support as necessary.

9.0 DECONTAMINATION PLAN

Decontamination (decon) is the removal of contaminants from PPE or site equipment. Decon will be carried out in accordance with Maine DEP BRWM SOP – Decontamination Program.

Should immediate medical attention be required to prevent severe injury or save a life, decon should be delayed until the victim is stabilized. However, if decon can be performed without interfering with first aid or life-saving techniques, or should a worker be contaminated with an extremely toxic or corrosive material that has the potential to cause severe injury or loss of life, decon must be performed immediately. If an emergency due to heat-related illness develops, protective clothing should be removed. During an emergency, provisions should also be made for protecting medical personnel and properly disposing of contaminated clothing and equipment.

10.0 SITE COMMUNICATION PLAN

Successful communication between field teams and contact with personnel in the Support zone is essential. The following system will be used to supplement radio and cell phone communications within the exclusion zone:

Normal verbal communication

Hand signals:

Hands clutching throat	Choking or out of air, cannot breathe
Hand drawn across throat	Kill the engine
Clenched fist held above shoulder level	Stop
Hands on top of head	Need assistance
Arms waving upright	Send back-up support
Two fingers pointed at eyes, then at someone else	I want to see you
Grip partner's wrist	Leave area immediately
Waving arms up and down	Leave area immediately
Two thumbs up	OK or yes; I understand; I'm alright
Two thumbs down	No, negative, I don't understand
Upraised thumb	One

11.0 ACCIDENTS AND EMERGENCIES

In the event of an exposure, accident, injury or fire, the following general accident and emergency response procedures are to be followed by all personnel working under the SSP.

11.1 Evacuation and Emergency Response

In the event of an emergency, personnel on the scene shall notify the Site Safety Officer as soon as possible. All personnel must evacuate the area to a location established by the Site Safety Officer. These locations will be situated upwind of the exclusion zone and be designated on a daily basis. All locations will be a safe distance from the area where the emergency occurred and will be explained during the initial site safety briefing. Following evacuation, the Site Safety Officer will initiate a head count to ensure that all personnel who entered the site have been accounted for.

11.2 Medical Assistance/Emergency Contacts

The Site Safety Officer will contact Police/Fire/Rescue, as necessary. See the Emergency Information at the beginning of this Appendix for a list of emergency numbers.

11.3 Reporting

Following an accident or emergency, a report will be completed by DEP personnel at the scene. Information in the report will include, at minimum, the following:

- Name(s) of individuals involved
- Name(s) of witnesses
- Date and time
- Exact location
- Description of incident
- Type of exposure or nature of injury
- Nature of emergency response
- Corrective measure taken to prevent repeat of the incident

All incident reports will be filed with the DEP Emergency Response Training Coordinator.

In the event of a hazardous materials spill or chemical release, the Site Safety Officer will make appropriate notifications.

11.4 Emergency Medical Treatment Procedures

Any individual who becomes ill or injured while working within the exclusion zone must be decontaminated to the maximum extent possible. Injured or ill personnel must be transported by ambulance to a medical facility. DEP personnel should not transport ill/injured employees in a personal vehicle unless the illness/injury is minor or no other help is available.

11.5 Fire or Explosion

In the event of fire or explosion, the Fire Department and the Site Safety Officer must be notified immediately. Fire extinguishers may then be used for small incipient stage fires. **OTHERWISE EVACUATE!**

11.6 Spills and Leaks

Personnel will report any spills or leaks to the Site Safety Officer. Should a spill or leak occur that is a threat to human health or a release to the environment, the person observing the spill will:

Evacuate or request evacuation of all persons at risk and inform the Site Safety Officer.

11.7 Emergency Equipment and Facilities

The following equipment will be available:

- First aid kit
- Fire extinguisher
- Fire blanket
- Emergency Flares
- Life ring

APPENDIX A - ACKNOWLEDGMENT PAGE

Location: _____

I have read and understood the Site Safety Plan. I agree to abide by these safety rules and understand that any violation will result in my removal from the site. I have also completed the required 40-hour training, appropriate refreshers, and am medically approved for hazardous waste site work.

Name:

Date:

APPENDIX B - ATTACH SITE MAP

APPENDIX C - ATTACH SAFETY DATA SHEETS

APPENDIX D - ATTACH DIRECTIONS TO HOSPITAL

APPENDIX E - USE, SELECTION AND MAINTENANCE OF PERSONAL FLOTATION DEVICES AND ANTI-EXPOSURE CLOTHING (6/3/2013)

1. **INTRODUCTION.** Field staff persons in the Department perform a number of job tasks that require them to work in, on or near water bodies of sufficient depth and breadth to present a drowning hazard. This document sets the policy and procedures for managers and staff to use in the selection and use of PFDs.
2. **APPLICABILITY.** It shall be the policy of the Department that all staff persons wear approved flotation devices while in any boat, vessel, or when working where drowning may be a hazard.
3. **PURPOSE.** This document establishes basic guidance for the use, selection and maintenance of personal flotation devices and anti-exposure clothing to be used by Department personnel for protection from drowning while working on, in or near water bodies.
4. **DEFINITIONS.**
 - a. **ANTI-EXPOSURE COVERALLS.** Anti-exposure coveralls are U.S. Coast Guard (USCG) approved Special Use Type V Personal Flotation Device coveralls made of urethane coated nylon external fabric covering a closed-cell foam interlining to provide thermal protection.
 - b. **DEPARTMENT.** Department refers to the Department of Environmental Protection.
 - c. **FULL IMMERSION OR SURVIVAL (“GUMBY”) SUIT.** A Full Immersion or Survival (“Gumby”) Suit refers to a dry suit manufactured from neoprene fabric that provides buoyancy and warmth in cold water. It is donned and used only when a boat or vessel needs to be abandoned in an emergency and rescue help is not immediately available.
 - d. **PERSONAL FLOTATION DEVICE (PFD).** A Personal Flotation Device (PFD) is a buoyant device designed to keep a person afloat in water.
 - i. **Type I PFD:** Offshore use in open-ocean, rough or remote waters when rescue may be slow in coming.
 - ii. **Type II PFD:** Near shore use and general use for calm, inland waters.
 - iii. **Type III PFD:** General and recreational use on inland waters and specific recreational activities.
 - iv. **Type IV PFD:** Throwable rescue flotation device; not meant for wearing. Required to be carried on boats of 16 foot or greater length.

- v. **Type V PFD:** Various constructions – inflatable, hybrid inflatable and buoyant foam devices for special uses or conditions. May be acceptable for use on marine waters. Must be worn for the purpose specified on the individual PFD.

5. **SCOPE.** This SOP shall apply to all Department staff persons and governs the selection, purchase, use and maintenance of PFDs by Department personnel.

6. **EXEMPTION TO THIS STANDARD.**

- 6.1. Department staff persons traveling in commercial vessels such as State Ferries are exempt from this policy. Staff persons are expected to follow any safety procedures set forth by the owner/operator of the boat or vessel.
- 6.2. Department staff persons engaged in diving and snorkeling operations, and while wearing the required wet suits, are not required to wear PFDs when so suited. When unsuited and in transit to the diving/snorkeling site, Department staff persons must wear the PFD appropriate for the conditions.

7. **INSTRUCTION.**

- 7.1 A Type I, Type III or Type V USCG approved PFD will be worn whenever any Department staff person is working or traveling in or on a boat, vessel or worksite where there is a real or potential risk of falling into the water where one could drown.
- 7.2 A Type I PFD, Type III PFD or Type V PFD is required for use on marine waters for commercial vessels and recommended for use on recreational vessels. Government-owned and operated vessels are considered commercial class.
- 7.3 PFD identifications: All PFDs shall be marked with the minimal identification of “DEP” in either black or white block letters against the safety orange, approximately 2 ½ inches tall, and located on the backside of the PFD. Additional identification may be added as required, such as designating a PFD to an individual or to a particular vessel. Each PFD must have Type I retro-reflective material: at least 200 square centimeters (31 square inches) on the front and at least 200 square centimeters (31 square inches) on the back. If the PFD is reversible, the reversible side must also have the same.
- 7.4 The use of anti-exposure coveralls is required:
 - When working or traveling in a boat or vessel when the water temperature is 50 degrees F (20 degrees C) or less; or when the combined water/air temperature is less than 120 degrees F (49 degrees C).

- When performing dockside or shoreline operations when temperature conditions exceed those listed above.
- 7.5 The most qualified person on site, the lead person, or the functional supervisor may provide an exception to the use of Anti-exposure coveralls. An alternate PFD is still required. Considerations include:
- Scope of work
 - Location of work
 - Distance to shore or rescue
 - Rescue time
 - Weather and/or sea conditions
- 7.6 A full immersion or survival suit (Gumby suit) must be available for all operations in a boat or vessel operated in ocean waters or waters below 50 degrees F (10 degrees C) where rescue or movement to a place of warming, in the event of the boat or vessel becoming incapacitated through sinking or overturning, may be delayed more than 15 minutes.
- 7.7 Staff persons whose tasks may require them to work in conditions requiring the use of PFDs must be instructed annually in this guidance and be able to demonstrate competency in their ability to don, doff and care for any PFD they may be required to use. Selection of the PFDs shall be by appropriate type from a State-recognized and approved vendor and in accordance with U.S. Coast Guard requirements. Care of the PFDs shall be according to the manufacturer's directions.

8. REFERENCES.

- 8.1 Requirements for lifesaving equipment: [Title 46 CFR, Part 25, Subpart 25.25 Life Preservers and Other Lifesaving Equipment.](#)
- 8.2 Good explanation of PFD types and requirements: [USCG Rescue and Survival Systems Manual.](#)



SAFETY DATA SHEET

Section 1. Identification

CHS Inc.	Transportation Emergency (CHEMTREC)	:	1-800-424-9300
P.O. Box 64089	Technical Information	:	1-651-355-8443
Mail station 525	SDS Information	:	1-651-355-8445
St. Paul, MN 55164-0089			

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
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National Fire Protection Association (U.S.A.)	Health :	2	Flammability :	4	Instability :	0
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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, CO₂, 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/m ³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m ³ 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/m ³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 434 mg/m ³ 8 hours. TWA: 100 ppm 8 hours. OSHA PEL (United States, 6/2010). TWA: 100 ppm 8 hours.

Tert-butyl methyl ether	<p>TWA: 435 mg/m³ 8 hours. 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.</p>
Benzene	<p>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.</p>
1,2,4-Trimethylbenzene	<p>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.</p>
Ethylbenzene	<p>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.</p>
n-Hexane	<p>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.</p>
Naphthalene	<p>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.</p>

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		Relative density	: 0.72
Physical state	: Liquid.	Evaporation rate	: Slower.
Color	: Reddish golden brown.	Solubility	: Insoluble in the following materials: cold water and hot water.
Odor	: Gasoline	Solubility in water	: Negligible.
Odor threshold	: 10 ppm	Partition coefficient: n-octanol/water	: Not available.
pH	: Not available.	Auto-ignition temperature	: 257.22 to 454.44°C (495 to 850°F)
Melting point	: Not available.	Decomposition temperature	: Not available.
Boiling point	: 26.66°C (80°F)	SADT	: Not available.
Flash point	: Closed cup: -40°C (-40°F) [Pensky-Martens.]	Viscosity	: Not available.
Flammability	: Not available.	Vapor pressure	: 53.3 kPa (400 mm Hg) (68°F)
Lower and upper explosive (flammable) limits	Lower: 1.4% Upper: 7.6%	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/m ³	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/m ³	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/m ³	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	-
Xylene	Skin - Moderate irritant	Rabbit	-	500 mg	-
	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	-
Ethylbenzene	Skin - Mild irritant	Rabbit	-	24 hours 15 mg	-
	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		
Xylene	Chronic NOEC 500000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours		
	Chronic NOEC 1000 µg/l Fresh water	Daphnia - Daphnia magna	21 days		
	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		
	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		
Benzene	Acute LC50 5.28 µl/l Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours		
	Chronic NOEC 1.5 to 5.4 µl/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	
		Ethylbenzene	Acute LC50 22.4 mg/L Fresh water	Fish - Tilapia zillii	96 hours
			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		
n-Hexane	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours		
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours		
	Acute LC50 113000 µg/l Fresh water	Fish - Oreochromis mossambicus	96 hours		
	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		
Naphthalene	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 DEA List I Chemicals (Precursor Chemicals) : Not listed
 Clean Air Act Section 602 Class II Substances : Not listed DEA List II Chemicals (Essential Chemicals) : Listed
 Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Listed

SARA 302/304Composition/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.

Notice to reader

THE INFORMATION CONTAINED IN THIS SDS RELATES ONLY TO THE SPECIFIC MATERIAL IDENTIFIED. IT DOES NOT COVER USE OF THAT MATERIAL IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PARTICULAR PROCESS. IN COMPLIANCE WITH 29 C.F.R. 1910.1200(g), CHS HAS PREPARED THIS SDS IN SEGMENTS, WITH THE INTENT THAT THOSE SEGMENTS BE READ TOGETHER AS A WHOLE WITHOUT TEXTUAL OMISSIONS OR ALTERATIONS. CHS BELIEVES THE INFORMATION CONTAINED HEREIN TO BE ACCURATE, BUT MAKES NO REPRESENTATION, GUARANTEE, OR WARRANTY, EXPRESS OR IMPLIED, ABOUT THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THE INFORMATION OR ABOUT THE FITNESS OF CONTENTS HEREIN FOR EITHER GENERAL OR PARTICULAR PURPOSES. PERSONS REVIEWING THIS SDS SHOULD MAKE THEIR OWN DETERMINATION AS TO THE MATERIAL'S SUITABILITY AND COMPLETENESS FOR USE IN THEIR PARTICULAR APPLICATIONS.



OUR ENERGY COMES THROUGH®



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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.	P301 [P311]: IF SWALLOWED: Call a Poison Center or Doctor
P202: Do not handle until all safety precautions have been read and understood.	P303 [P361/ P353]: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P210: Keep away from heat / sparks / open flames / hot surfaces. No Smoking.	P304 [P312]: IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
P233: Keep container tightly closed.	P305 [P351/ P338]: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P235: Keep cool.	P308 [P313]: If exposed or concerned: Get medical advice or attention.
P240: Ground / bond container and receiving equipment.	P332 [P313]: If skin irritation occurs; Get medical advice or attention.
P241: Use explosion-proof electrical / ventilating / lighting equipment.	P337 [P313]: If eye irritation persists; Get medical advice or attention.
P242: Use only non-sparking tools.	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.
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.	

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

Hazards not otherwise classified: Vapors can be explosive.

Section 3: Composition / Information on Ingredients

<u>Ingredient</u>	<u>CAS #</u>	<u>EC #</u>	<u>% Volume</u>
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)
Auto Ignition Temperature
Explosive Limits (In Air)

19.4 °F (- 7°C)
709°F (376°C)
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:

<u>Ingredient</u>	<u>OSHA PEL / STEL</u>	<u>ACGIH TLV / STEL</u>
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.