Camp Fuel Spill Contingency Plan for University of Calgary's "Arctic Carbonates, Sandstones and Volcanic Rocks, NW Ellesmere Island" project

Prepared by

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and completed on March 15, 2011

This plan will be effective on June 20, 2011

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Introduction

A small team, comprised of one university professor and two graduate students from the University of Calgary will conduct geological research on NW Ellesmere Island, between June 20, 2011 to August 06, 2011.

Project Background

The team will investigate different rock units of carbonate, sandstone and volcanic rocks that have recorded important interplay between large forces some 280 million years ago in the area now occupied by the Canadian Arctic. We will focus on an area of the Sverdrup Basin centered on NW Ellesmere Island, where this phenomenon is well displayed in outcrops.

The project will address four aspects of importance in the Sverdrup Basin:

1. **Carbonate units.** The focus of this project is to examine outcrops of large ancient reefs and surrounding rocks on NW Ellesmere Island.
2. **Sandstone units**. The focus of this project is to examine outcrops of sandstones on NW Ellesmere Island.
3. **Volcanic units.** The focus of this project is to examine outcrops of volcanic rocks on NW Ellesmere Island.
4. **Mapping.** The focus of this project is to map the various rock units and their structure on NW Ellesmere Island.

In the short term, the data will be used in support of the work of the researchers and the graduate students. The data will then be published in peer-reviewed journals, after which it will be made publicly available to anyone who wishes to use it. Five to ten peer-reviewed papers will result from this project.
The results that are relevant to Arctic Institute of North America's outreach initiative. A Research Licence from the Nunavut Research Insitute has been applied for this project.

Researchers names and affiliations

Leader: Benoit Beauchamp, University of Calgary, Calgary, Alberta
Bernard Guest, University of Calgary, Calgary, Alberta
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Aline Labrie, University of Calgary, Calgary, Alberta
Veronique Fau, University of Calgary, Calgary, Alberta

NB. Not all researchers will be there at the same time.

Logistics aspect of project

The research team will set up to five temporary field camps south of Hare Fiord and north of Borup Fiord of Blind Fiord, on NW Ellesmere Island. Each camp will be used for no more than five to six consecutive days.

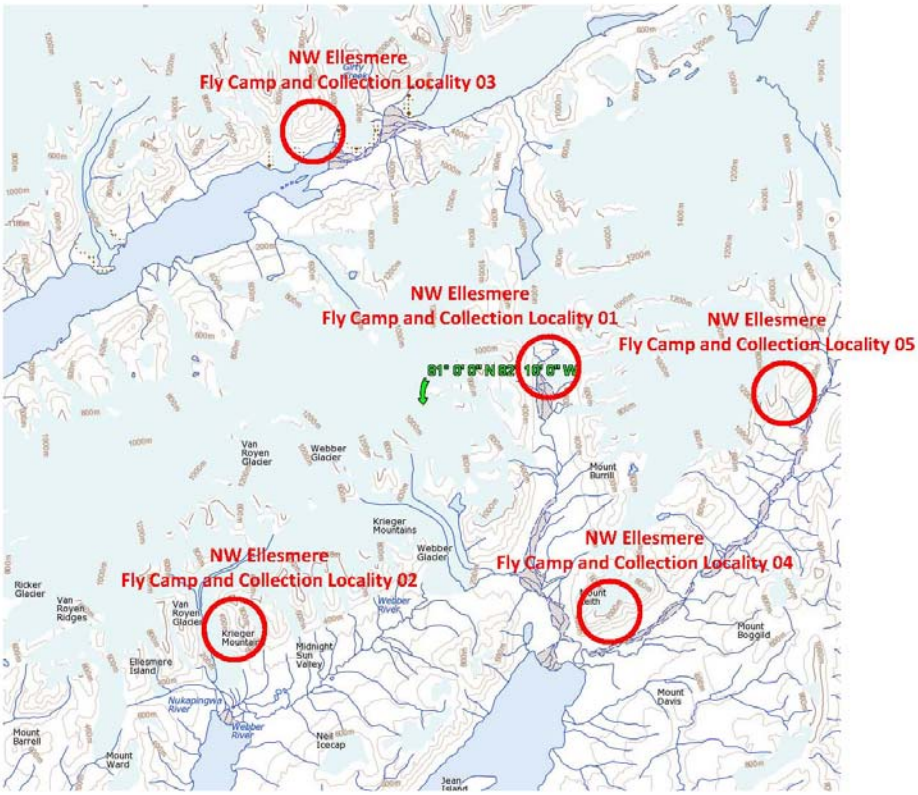

Figure 01: Approximate locations of camp sites to visited

The locations are listed in the table below and shown in Figure 01.

Location	Latitude	Longitude
01 NW Ellesmere	**81° 01’ 00” N**	**81° 33’ 00” W**
02 NW Ellesmere	**80° 53’ 00” N**	**83° 06’ 00” W**
03 NW Ellesmere	**81° 09’ 00” N**	**82° 56’ 00” W**
04 NW Ellesmere	**80° 50’ 00” N**	**81° 31’ 00” W**
05 NW Ellesmere	**80° 57’ 00 ” N**	**80° 44’ 00” W**

Only four to six temporary personal tents will be erected at five different camp sites. Twin Otter transportation from Resolute Bay to Eureka or to strips designated by PCSP. Helicopter transportation to study area. Walk from camp site to outcrops.

Our small 4 to 6 person research camps will be using a single 5 gallon jerry can of gasoline to operate a small generator to recharge our computers during our field season, which is scheduled to take place for a four week period, between June 20 and August 06 2011 (see attached MSDS for technical and safety information). As required in the Nunavut Water Board application process, below are guidelines we will be following to first and foremost prevent a fuel spill and if a fuel spill were to occur the actions we would follow to reduce the risk of endangering the safety of camp researchers and the minimize the impacts of the spill on the environment.

Camp procedures to minimize risk of spill

Arrival at Camp

To ensure that there is no fuel leakage during the transportation of camp equipment and researchers, upon arrival at the camp we will inspect the 5 gallon jerry can to ensure there is no fuel leakage or damage to the container. In the event that we find a leak or damage to the jerry can, we will transfer the fuel to an empty vessel.

Preventative Measures

While response plans are necessary in the event a fuel spill occurs, all involved with fuel handling and storage will strive to take all necessary feasible precautions to ensure fuel spills do not occur. To minimize the risk of a fuel spill many preventative measures and standard operating procedures should be implemented. Some key preventive measures include:

Following federal and territorial requirements affiliated with storing fuel based on the amounts, type of storage container and location. One such document that we will be adapting in regards to fuel storage is the Indian and Northern Affairs Canada's (INAC) "Recommended Best Practices for the Storage and Handling of Petroleum and Allied Petroleum Products on Federal Crown Lands in Nunavut" (2009).

To minimize the risk of a fuel leak or spill we will ensure that:

- All fuel will be stored and transported in approved sealed containers.
- Our portable fuel container (jerry can) will not be placed within 30m of the ordinary high water mark of any water body.
- No fuelling or servicing of equipment will be done within 30m of a water body.
- No fuelling or servicing of equipment will be done within 30m of a water body.
- No fuelling or servicing of equipment will be done on ice.
- Precautions will be taken in the transportation and handling of fuels to prevent contamination of soil or water.
- Our portable fuel container will be inspected regularly to detect leaks and overall condition.

Transferring Fuel

Fuel transfers are often the primary causes of fuel contamination, thus all individuals at our research camp will undertake reasonable measures to ensure that fuel transfers are done properly to avoid spills and contamination. In particular our research camp will be aware of the following:

- Safe operation of the generator;
- Fuel transfers will be stored and transferred in such a manner as to prevent all spillage into a watercourse or on the surrounding land.
- The jerry can will be closed immediately after use.
- Containers will not be overfilled, allowing for sufficient space for product expansion.
- Drip pans and/or other sufficient equipment will be used during a fuel transfer
- All individuals involved with fuelling will be made aware of proper fuel handling, and instructed to regularly scan the area for evidence of possible leaks or spills.

In the event that fuelling procedures must be done on ice or snow additional precautions will be used because of the dangers or falling or slipping which may potentially cause a fuel spill. In this scenario we will prior to fuelling assess the situation and determine if fuelling must be conducted on the ice or if it can be moved to a more appropriate and safe location. Additionally, appropriate footwear (e.g. boots with good grips) will also be used to ensure maximum traction, thus reducing the chances of a fall and spill. It should be mentioned however, that we do not anticipate having to work on the ice, whether sea or lake ice or pond ice at any given time during our field season.

Leaving Camp

Upon completion of our research we will ensure that any remaining fuel either in the generator or jerry can will be properly transported out of the camp location. A visual inspection of the area will also be done to make sure no fuel spills have occurred.

Camp procedures to respond to a spill

In the event that a fuel spill does occur we propose a list of procedures outlining our intended course of actions to maximize the safety of the researchers and minimize the impacts of the spill to reduce damage to the environment.

Our suggested protocol is to:

1. Be alert and consider your safety first.
2. Assess the hazards to persons in the vicinity of the spill and alert or take appropriate measures (e.g. eliminate sources of ignition);
3. Determining the origin of the spill
4. Bring the spill under control and try to stop the spill or leak (manoeuvre the jerry can or transfer fuel to another vessel (if needed).
5. Immediately initiate the steps associated with usinf the camp's spill kit (the type of spill kit to be used can be seen at ***http://www.absorbentsonline.com/spillkits.htm)***
6. Absorb the free fuel before it is allowed to seep into the surrounding ground or runoff. This may involve using camp equipment to dig a small trench to divert the spill from entering a water body.
7. Continue to monitor the site to ensure no subsequent or new spills have occurred
8. Safely and properly dispose of any material used during the containment and clean up of the spill.
9. Where required by Territorial Land Use Regulations report the spill to the 24 Hour Spill Report Line at (867) 920 – 8130.

If a fuel spill were to occur on or near snow or ice additional protocols may be followed depending on the scenario. Snow by its nature, snow is an absorbent, and fuel spilled on snow should be easily collected using camp equipment (scoop or shovel). In the event that the spill poses a danger to the environment of running off, compacted snow berms may be used to contain the spill. While spills on ice can be handled in a similar fashion as those on snow, ice presents the added danger of immediate access to water, thus care will be taken to respond quickly to such spills.

A copy of our fuel prevention and spill response guidelines will be at the camp for our reference and to ensure all camp researchers have easy access to the document in the event it is need for a spill.

Reporting Procedures

All spills or potential spills of petroleum products or other hazardous materials must be reported to the 24 hour spill report line to ensure that an investigation may be undertaken by the appropriate government authority. Consult Spill Contingency Planning and Reporting Regulations for details on reporting a spill. In the event that a spill occurs it will be reported to the Nunavut 24 hour spill report line by phone (867) 920– 8130 or by fax (867) 873 – 6924. A subsequent spill report form will also be completed as possible and submitted to the spill line. Attached to this fuel contingency plan is a copy of the Nunavut Spill report form that will be filled out in the event of a spill.

Prevention and Response Contacts

In the event that fuel spills were to occur or if assistance would be required the following contacts may be contacted depending on the severity of the situation and location of the fuel spill or leak. These contacts include:

Department of the Environment (Nunavut):	(867) 975-5900
Environment Canada (Federal):	(867) 669-4710
Qikiqtani Inuit Association:	(867) 975-8400
Indian and Northern Affairs Canada	(867) 975-4285
Polar Continental Shelf Program	(867) 252-3872
Nunavut 24 hour spill report line (phone)	(867) 920-8130
Nunavut 24 hour spill report line (FAX)	(867) 873-6924

NT-NU Spill Report Form

Northwest Territories | Nunavut | Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR	REPORT NUMBER
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME	☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	____-_____
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			

L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC	SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN	FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

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Materials Safety Data Sheet (MSDS)

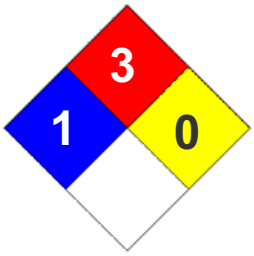
Section 1: Product Identification

Name: Unleaded Gasoline
Synonyms: Regular/Midgrade/Premium Gasoline, Motor Fuel, Reformulated Gasoline, RFG, Conventional Gasoline.
CAS No.: 86290-81-5
MSDS No.: PEG-UNL
Use: Motor fuel

Section 2: Product Composition

Component	CAS Number	Amount (%)
Gasoline	86290-81-5	0 – 100
Benzene	71-43-2	0 – 5
Toluene	108-88-3	0 – 30
Xylene (all isomers)	1330-20-7	0 – 25
Hexane (other isomers)	Mixture	5 – 25
n-Hexane	110-54-3	0 – 3
Cyclohexane	110-82-7	0 – 3
Octanes (all isomers)	Mixture	0 – 20
Heptane (all isomers)	142-82-5	0 – 15
Ethanol	64-17-5	0 – 10
Pentanes (all isomers)	Mixture	0 – 20
Trimethylbenzenes (all isomers)	95-63-6	0 – 5
Ethylbenzene	100-41-4	0 – 5
Cumene	98-82-8	0 – 5
Methyl Tertiary Butyl Ether (MTBE)	1634-04-4	0 – 16
Tertiary Amyl Methyl Ether (TAME)	994-05-8	0 – 6

Section 3: Hazards Identification

Emergency Overview	Hazard Rankings
DANGER! Extremely Flammable liquid and vapor Harmful if swallowed Skin Irritant May cause eye and respiratory irritation Cancer Hazard – Contains material which can cause cancer	**NFPA** 

Physical form: Liquid
Appearance: Clear to amber
Odor: Strong, Gasoline

Potential Health Effects

Eyes: Contact with eyes may cause irritation, redness, tearing, stinging, watering and blurred vision.

Skin: Contact with skin may cause irritation, itching, redness and skin damage. Prolonged or repeated contact may cause drying and cracking of the skin, and may also cause dermatitis and inflammation. (See also section 11).

Inhalation: Breathing high concentration can be harmful. Throat and lung irritation may occur. Central nervous system effects including nausea, euphoria, dizziness, headache, fatigue, drowsiness or unconsciousness may occur due to long term or high concentration exposure to vapors.

Ingestion: Toxic if swallowed. This product may cause nausea, vomiting, dizziness, drowsiness, diarrhea if swallowed. Central nervous system effects may be caused. Swallowing this product can result in severe lung damage and/or death.

Signs / Symptoms: When overexposed to this product effects such as nausea, vomiting, blurred vision, respiratory failure, central nervous system depression, unconsciousness, tremor, death may occur.

See toxicological Information (section 11)

Section 4: First Aid Measures

Eye contact: Flush eyes immediately with fresh, cool water for at least 15 minutes. If irritation or redness or any symptoms persist, seek medical attention.

Skin contact: Remove contaminated clothes and shoes. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, wash affected area thoroughly with soap and water. If irritation or redness develops, seek medical attention.

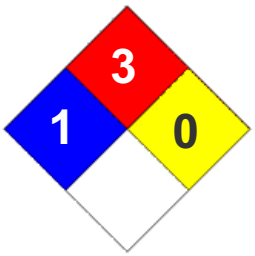
Inhalation (Breathing): If inhaled, immediately move person to fresh air. If there is difficulty breathing, give oxygen. If not breathing, immediately give artificial respiration. Seek medical attention.

Ingestion (Swallowing): This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. Do not induce vomiting. Do not give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is unconscious or drowsy, place on the left side with the head down. Seek immediate medical attention.

Notes to Physician: This material sensitizes the heart to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material.
Inhalation overexposure can produce toxic effects. Monitor respiratory distress. If difficulty in breathing evaluate upper respiratory tract inflammation, bronchitis and pneumonitis. Administer supplemental oxygen as required.
If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Cinsuder activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubtion or by placement of the body in a Trendelenburg and left lateral decubitus position.

Section 5: Fire Fighting Measures

NFPA Hazard Class: Health = 1 ; Flammability = 3 ; Instability = 0
(0 – Minimal ; 1 – Slight ; 2 – Moderate ; 3 – Serious ; 4 – Severe)



Auto – ignition temperature : >260 ˚C (500 ˚F)

Flash point : Closed cup: -43 ˚C (-45 ˚F)

Flammable limits : Lower: approximately 1.4%
Upper: approximately 7.6%

Products of combustion : Carbon monoxide, carbon dioxide, nitrogen and sulfur oxides, smoke, fumes, unburned hydrocarbons and other products of incomplete combustion.

Special properties : Flammable liquid! This material can be ignited by heat, sparks, flames or other sources of ignition. Vapors may travel long distances to a source where they can ignite and flash back, or explode. A mixture of vapor and air can create an explosion hazard in confined spaces. If container is not properly cooled, it can rupture n the heat of a fire.

Extinguishing media : Use of dry chemical, carbon dioxide, or foam is recommended to extinguish fire. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may not extinguish the fire, unless it is used by experienced fire fighters and under favorable conditions.

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: This material is extremely flammable. Eliminate all ignition sources. Keep all hot metal surfaces away from spill/release. All equipment used when handling this material must be grounded.

Spill precautions: Stay upwind and away from spill. Notify persons down wind of the spill, isolate spill area and keep unauthorized personnel out. If it can be done with minimal risk, try to stop spill. Always wear protective equipment, including respiratory protection. Contact emergency personnel.

Environmental precautions: Prevent spilled material from entering sewers, drains, soil, and natural waterways. Use foam or spills to minimize vapors (section 5). Spilled material may be absorbed into an appropriate absorbent material.

Methods for cleaning up: Notify fire authorities and appropriate federal, state and local agencies. Immediate cleanup is recommended.

Section 7: Handling and Storage

Handling: Flammable liquid and vapor. To be used only as a motor fuel. Avoid inhalation of vapors and contact with skin. Wash hands thoroughly after handling this material. Use in a well ventilated area away from all ignition sources. Use product with caution around heat, sparks, static electricity and open flames. Static electricity may ignite vapors and cause fire.

Empty containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks or other ignition sources. The may explode and cause injury and/or death. Empty drums should be completely drained, properly bunged, and returned promptly to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Storage: Store in approved containers only. Keep in tightly closed containers in cool, dry, well ventilated areas. Keep isolated away from heat, sources of ignition and hot metal surfaces.

Section 8: Exposure Controls / Personal Protection

Engineering controls: Provide ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below their occupational exposure limits. Eyewash stations and safety showers should be located near the work-station.

Personal Protection

Eye Protection: Keep away from eyes. Safety glasses complying with approved standards should be worn. Chemical type goggles should be worn.

Skin Protection: Keep away from skin. Skin protection should be worn. Chemical resistant, impervious gloves should be worn. Always follow good personal hygiene practices after handling the material.

Respiratory Protection: Approved respiratory equipment must be used if a risk assessment indicates it is necessary. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn.

General Protection: Use this material in well ventilated areas. Ventilation equipment should be explosion proof also.

Component	Applicable Workplace Exposure Limits
Gasoline	ACGIH – TWA: 300 ppm (8 hours) STEL: 500 ppm (15 minutes)
Benzene	ACGIH – TWA: 0.5 ppm (8 hours) STEL: 2.5 ppm (15 minutes) OSHA – TWA: 1 ppm (8 hours) STEL: 5 ppm (15 minutes)
Toluene	ACGIH – TWA: 20 ppm (8 hours) OSHA – TWA: 200 ppm (8 hours) CEIL: 300 ppm PEAK: 500 ppm (10 minutes)
Xylene (all isomers)	ACGIH – TWA: 100 ppm (8 hours) STEL: 150 ppm (15 minutes) OSHA – TWA: 100 ppm (8 hours)
Hexane (other isomers)	ACGIH – TWA: 500 ppm (8 hours) STEL: 1000 ppm (15 minutes)
n-Hexane	ACGIH – TWA: 50 ppm (8 hours) OSHA – TWA: 500 ppm (8 hours)
Cyclohexane	ACGIH – TWA: 100 ppm (8 hours) OSHA – TWA: 300 ppm (8 hours)
Octanes (all isomers)	ACGIH – TWA: 300 ppm (8 hours) OSHA – TWA: 500 ppm (8 hours)
Heptane (all isomers)	ACGIH – TWA: 400 ppm (8 hours) STEL: 5000 ppm (15 minutes) OSHA – TWA: 500 ppm (8 hours)
Ethanol	ACGIH – TWA: 1000 ppm (8 hours) OSHA – TWA: 1000 ppm (8 hours)
Pentanes (all isomers)	ACGIH – TWA: 600 ppm (8 hours) OSHA – TWA: 1000 ppm (8 hours)
Trimethylbenzenes (all isomers)	ACGIH – TWA: 25 ppm (8 hours)
Ethylbenzene	ACGIH – TWA: 100 ppm (8 hours) STEL: 125 ppm (15 minutes) OSHA – TWA: 100 ppm (8 hours)
Cumene	ACGIH – TWA: 50 ppm (8 hours) OSHA – TWA: 50 ppm (8 hours)
Methyl Tertiary Butyl Ether (MTBE)	ACGIH – TWA: 50 ppm (8 hours)
Tertiary Amyl Methyl Ether (TAME)	ACGIH – TWA: 20 ppm (8 hours)

Section 9: Physical and Chemical Properties

Physical State:	Liquid.
Color:	Transparent, clear to amber liquid.
Odor:	Strong. Characteristic gasoline odor.
pH:	Not applicable
Boiling Point:	>26 ˚C (>78 ˚F)
Melting Point:	Not applicable.
Specific gravity:	0.66 to 0.75 (Water = 1)
Vapor density:	3 to 4 (Air = 1)
Vapor pressure:	220-450 mm Hg at 20˚C (68˚F) / 6-15 Reid-psia at 37.8˚C (100˚F)
Volatility:	720 – 770 g/l VOC (w/v)
Viscosity (at 40 ˚C):	< 1
Flash Point:	< -45 ˚F / < 43˚C
Bulk Density:	6.0 – 6.4 lbs/gal
Solubility in water:	Negligible

Section 10: Stability and Reactivity

Stability:	Stable. Extremely flammable liquid and vapor. Vapor can cause fire.
Conditions to avoid:	Keep away from heat, flame and all other possible sources of ignition.
Materials to avoid:	Keep away from strong oxidizing agents such as acids, chlorine, hydrogen peroxide and oxygen.
Hazardous decomposition products:	Please refer to the combustion products identified in Section 5 of this MSDS.
Hazardous Polymerization:	Not expected to occur.

Section 11: Toxicological Information

Toxicology Information

Oral toxicity:	Almost non-toxic. LD 50: > 2000 mg/kg (species: rats)
Dermal toxicity:	Almost non-toxic. LD 50: > 2000 mg/kg (species: rabbits)
Inhalation toxicity:	Almost non-toxic. LD 50: > 5 mg/l (species: rats)
Eye irritation:	Almost non-irritating. Draize score: > 6 and < 15 (species: rabbits)
Skin irritation:	Irritant. Primary irritation index: > 3 and < 5 (species: rabbits)
Other data:	Inhalation of high concentrations of vapors or mists may cause respiratory system irritation and damage. It may also result in the damage and depression of the central nervous system and may cause death. Prolonged contact with the material may cause severe skin irritation.
Subchronic toxicity:	Dermal studies resulted in significant irritation but not systematic toxicity (species: rabbits). Inhalation exposures (90 day, approximately 1500 ppm vapor) produced light hydrocarbon nephropathy but no significant systemic toxicity (species: rats).
Neurotoxicity:	Repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments. However, no persistent neurotoxic effects were observed in subchronic inhalation studies of gasoline.
Reproductive toxicity:	An inhalation study with rats exposed to 0, 400 and 1600 ppm of wholly vaporized unleaded gasoline, 6 hours per day on day 6 through 16 of gestation, showed no teratogenic effects nor indication of toxicity to either the mother or the fetus. Another inhalation study in rats exposed to 3000, 6000, or 9000 ppm of gasoline vapor, 6 hours per day on day 6 through 20 of gestation, also showed no teratogenic effects nor indications of toxicity to either the mother or the fetus.
Chronic toxicity:	A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three time weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. Lifetime inhalation of wholly vaporized unleaded gasoline over 2000 ppm has caused increased liver tumors in female mice and increased kidney tumors in male rats. The EPA has concluded that mechanism by which wholly vaporzied unleaded gasoline causes kidney damage is unque to the male rat. The effects in that species (kidney damage and cancer) should not be used in human risk assessment.

Other toxic effects on humans
Extremely hazardous in case of ingestion.
Very hazardous in case of eye contact.
Hazardous in case of skin contact.
Slightly hazardous in case of inhalation.

Carcinogenic effects:
Contains material that may cause cancer depending on the level and duration of exposure.

Target organs:
Contains material that may cause damage to humans organs such as (but not limited to) blood, kidneys, lungs, liver, eye, skin, nervous system and upper respiratory tract.

Section 12: Ecological Information

Ecotoxicity:
This material may be toxic to aquatic organisms such as algae and daphnia. It has also shown to be toxic to fish.

Environmental fate:
The material is expected to be readily biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photo degraded in the atmosphere. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions, photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

Section 13: Disposal Considerations

Waste disposal:
Avoid disposal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product and any of its by products should always comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.
This material would likely be identified as a federally regulated RCRA hazardous waste. See sections 7 and 8 for further information on handling, storage and personal protection. See section 9 for the material's physical and chemical properties.

Section 14: Transportation Information

This material is U.S Department of Transportation (DOT) regulated material.

Shipping name: Gasoline, 3, UN 1203, PG II
Gasohol, 3, NA 1203, PG II (for gasoline blended with less than 20% ethanol).

Hazard class: 3 DOT Class: Flammable liquid

Packing Group: II

UN / NA Number: UN1203 / NA1203

Emergency Response Code: 128

Label:

Section 15: Regulatory Information

TSCA Inventory: This product and/or its components are listed on the Toxic Substances Control Act (TSCA)

SARA 302 / 304: Emergency planning and notification The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for “Extremely Hazardous Substances” listed in 40 CFR 302.4 and CFR 355. No components were identified.

SARA 311 / 312: Hazard identification SARA Title III requires facilities subject to this subpart to submit aggregate information on chemicals by “Hazard Category” as defined in 40 CFR 370.2. This material would be classified under: Fire, Acute (immediate) Health Hazard, Chronic (Delayed) Health Hazard.

CERCLA / SARA 313: Toxic and chemical notification and release reporting

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372

Component	CAS Number	Amount (%)
Benzene	71-43-2	0 – 5
Toluene	108-88-3	0 – 30
Xylene (o, m, p isomers)	1330-20-7	0 – 25
n-Hexane	110-54-3	0 – 3
Cyclohexane	110-82-7	0 – 3
1, 2, 4 Trimethylbenzenes	95-63-6	0 – 5
Ethylbenzene	100-41-4	0 – 5
Cumene	98-82-8	0 – 5
Methyl Tertiary Butyl Ether (MTBE)	1634-04-4	0 – 16

California Proposition 65: This material may contain detectable quantities of the following chemicals known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):
Benzene (CAS NO. 71-43-3)
Toluene (CAS No. 108-88-3)
Ethylbenzene (CAS No. 100-41-4)
Naphthalene (CAS No. 91-20-3)

Canadian Regulations: WHMIS Hazard Class: B2 – Flammable Liquids
D2A – Very Toxic Material

Section 16: Other Information

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Legend:
ACGIH = American Conference of Governmental Industrial Hygienists
CAS = Chemical Abstracts Service Registry
CEIL = Ceiling Limit
CERCLA = The Comprehensive Environmental Response, Compensation and Liability Act
EPA = Environmental Protection Agency
NFPA = National Fire Protection Association
OSHA = Occupational Safety and Health Administration
SARA = Superfund Amendments and Reauthorization Act
STEL = Short Term Exposure Limit (15 minutes)
TWA = Time Weighted Average (8 hours)
WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer:
The information presented in this Material Safety Data Sheet (MSDS) d on data believed to be accurate as of the issuance date of this MSDS. No warranty is expressed or implied for the accuracy or completeness of the above provided information. Petrocom Energy Group, LLC does not assume any liability for any damage or injury arising out of product use by others. The end user of the product has the responsibility for evaluating the accuracy of the data, and determining the safety, toxicity and suitability of the product under any conditions.