

April 20, 1992

92 APR 23 AM 2:23

Mr. Anthony Pettiti
Anthony's Auto Service
19592 Center Street
Castro Valley, CA 94546

RE: Quarterly Groundwater Sampling Report, Estate of John G. Pettiti,
Anthony's Auto Service, 19592 Center Street, Castro Valley, CA

Dear Mr. Pettiti:

The attached updated report describes the materials and procedures used during well sampling for the monitoring wells located at the above referenced site. This work was performed to evaluate the presence or absence or residual hydrocarbon concentrations in groundwater, and to evaluate if further investigation of the groundwater is necessary.

The work performed was based on findings from previous studies performed by Tank Protect Engineering during removal of underground storage tanks, soil excavation and groundwater sampling.

ACC collected groundwater samples from each previously installed monitoring well and submitted them to Chroma Lab Analytical Laboratory for petroleum hydrocarbon analyses. The results of the groundwater sample analyses indicated detectable concentrations of "non-gasoline" components. Two of the components remain above the Department of Health Services and Environmental Protection Agency's California Maximum Contaminants Levels for drinking water. Therefore, the additional investigation as required by the Alameda County Department of Health Services will be required (see letter dated February 13, 1992).

If you have any questions or comments regarding this report or any other comments regarding this project, please call.

Sincerely,


Misty C. Kaltreider
Geologist

ENCL.

cc. Mr. Scott Seery - Alameda County Department of Health Services
Mr. Eddie So - Regional Water Quality Control Board

Mar 1992

QUARTERLY GROUNDWATER SAMPLING

ANTHONY'S AUTO SERVICE
19592 CENTER STREET
CASTRO VALLEY, CA

March 24, 1992

Prepared by:

Misty C. Kaltreider
Misty C. Kaltreider
Project Geologist

Reviewed by:

Susan B. Chubb
Susan B. Chubb, REA, 888
Principal
REGISTERED ENVIRONMENTAL ASSESSOR
SUSAN B. CHUBB
NO. 00668
Expires: June 30, 1992
STATE OF CALIFORNIA

Reviewed by:

Christopher M. French
Christopher M. French, CEG, 4465
Senior Environmental Scientist
REGISTERED GEOLOGIST
CEG 1614
CHRISTOPHER M. FRENCH
E.P. 6-2092
No. 4465
STATE OF CALIFORNIA

Introduction

This report presents the procedures and findings of ACC Environmental Consultants' ("ACC") groundwater investigation at Anthony's Auto Service located at 19592 Center Street in Castro Valley, California (Figure 1). The objectives of this project is to evaluate the presence or absence of petroleum hydrocarbons and/or other volatile organic compounds (VOC's) in the groundwater by obtaining samples from existing monitoring wells.

Removal of three underground gasoline tanks and one waste oil tank was performed on July 20, 1990. Subsequent to the tank removals, monitoring well installation and groundwater sampling was performed by Tank Protect Engineering in 1990 through 1991. Elevated levels of fuel-related and solvent compounds were detected in groundwater during the November 20, 1991 sampling event. In a letter dated February 13, 1992, Mr. Scott Seery of the Alameda County Department of Health Services (ACDHS) - Hazardous Materials Division required that further investigation be performed by installing additional monitoring wells on-site to identify the limit of the dissolved contaminant plume. ACC performed the sampling of the wells to determine whether the additional investigation is required.

Background

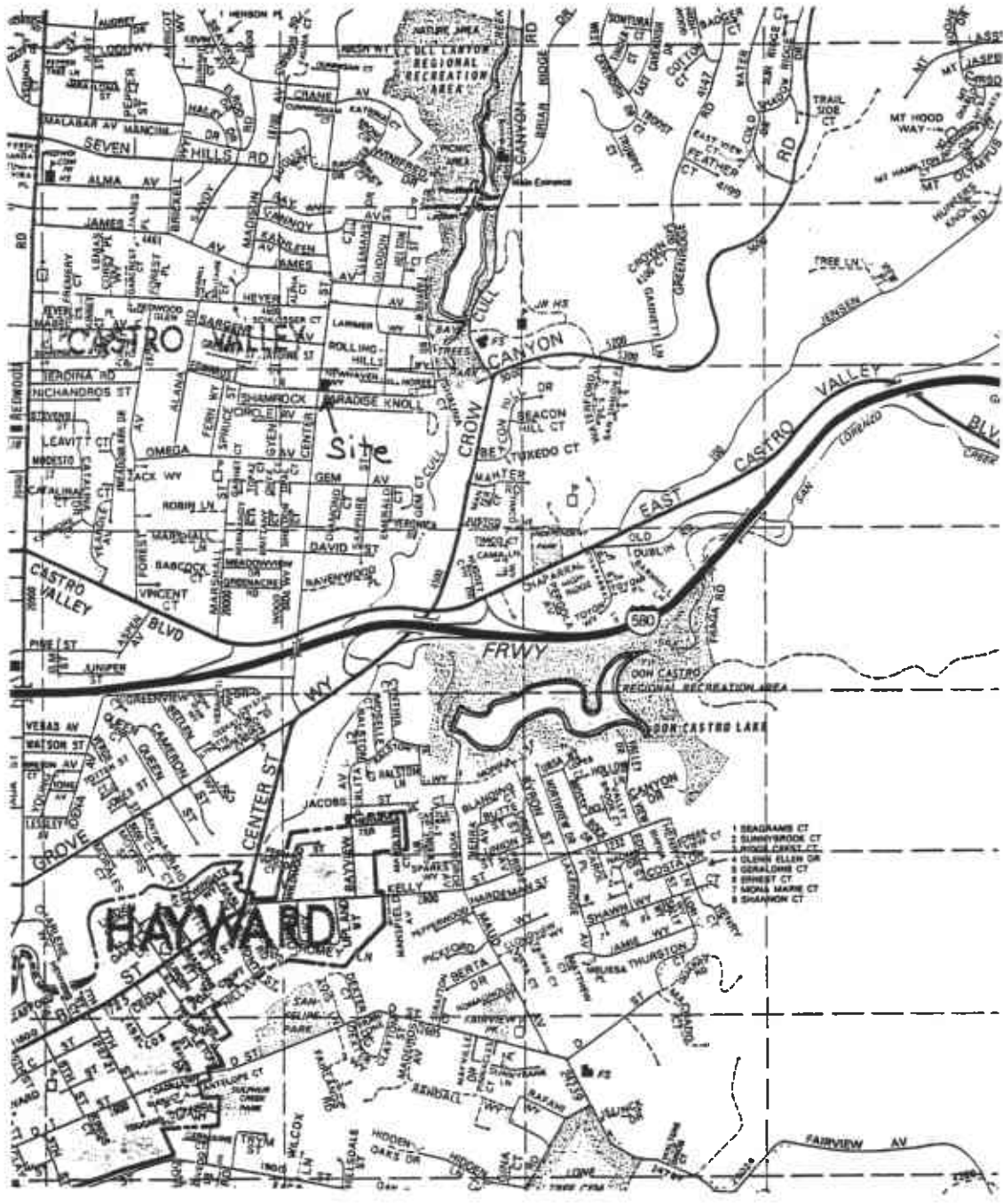
According to previous studies performed by Tank Protect Engineering, soil contamination was discovered during the removal of three underground gasoline tanks and one waste oil tank. The contaminated soil was removed and remediated on-site by chemical oxidation method. The remediated soil was returned to the excavation when analytical results indicated levels below action limits. Three groundwater monitoring wells were installed around the excavation limits. Quarterly monitoring indicated elevated levels of non-gasoline components in monitoring wells MW-1 and MW-3 for three of the four quarters sampled.

During the November 20, 1991 sampling event performed by Tank Protect Engineering, EPA Test Method 8240 & "Open Scan" was run on samples from monitoring well MW-3 when test results indicated non-gasoline components. The following non-gasoline components and levels were reported:

2-Methoxy-2-Methyl Propane (MTBE)	750 ppb*	<i>methyl-tert-butyl-ether ->></i>
2,2,3,3-Tetramethyl Butane	110 ppb	
1,2-Dichloroethane	4.2 ppb	
2,3,4-Tetramethyl Hexane	9.6 ppb	

* Parts Per Billion (ppb)

Of the four constituents discovered, only 1,2-Dichloroethane was listed as being above the Department of Health Services (DHS) and Environmental Protection Agency's (EPA) California Maximum Contaminant Levels (MCL) for drinking water (MCL = 0.5 ppb). This chemical is described in the Merck Index, as being mainly used as a solvent for fats, oils, waxes, gums, resins, and rubber; also used in manufacturing acetyl cellulose, as a



- 1 BEAGRAMS CT
- 2 SLIMYBROCK CT
- 3 LINDSEY DRIVE CT
- 4 OLSON ELLAN DR
- 5 GERALDINE CT
- 6 BRIST CT
- 7 NICOLA MARIE CT
- 8 SHAWNON CT

ACC Environmental Consultants
1000 Atlantic Avenue, Suite 110
Alameda, CA 94501

Job No.: 6032-1

Date: 1/4/92

SITE PLAN

Figure No.: 1

tobacco extract, etc., and fumigant.

According to Tank Protect Engineering, they were informed by a representative of the DHS that an "interim action level" of 35 ppb has been established for MTBE. Both constituents detected in the groundwater in monitoring well MW-3 exceed DHS levels. The Merck Index and Hawley's Condensed Chemical Dictionary respectively describes MTBE and 2,2,4-Tetramethyl Hexane used as octane booster in gasoline and as a motor fuel additive. Uses for 2,2,3,3-Tetramethyl Butane could not be determined.

Field Procedures

Groundwater samples were taken on February 26, 1992 from monitoring wells MW-1, MW-2 and MW-3. Prior to groundwater sampling, the depth to the surface of the water table was measured from the top of the PVC casing using a Solinst Water Level Meter. Information regarding depths of wells, well elevations and groundwater level measurements are summarized in Table 1 below:

Table 1 - Well Information

<u>Well Name</u>	<u>Well Elevation</u>	<u>Date Sampled</u>	<u>Static Water level</u>	<u>GW Elevation</u>
MW-1	249.72	02/26/92	34.40	215.32
MW-2	250.18	02/26/92	30.86	219.32
MW-3	250.11	02/26/92	35.00	215.11

After water-level measurements were taken, each well was purged by hand using a dedicated Teflon bailer. Groundwater pH, temperature and electrical conductivity were monitored during well purging. Each well was considered to be purged when these parameters stabilized. Approximately four well volumes were removed to purge each well. Groundwater Monitoring/Purge records for the individual well sampling events are provided in Appendix A.

After the groundwater had recovered to a minimum of approximately 80 percent of its static level, water samples were obtained using a disposable Teflon bailer for each well. Two (2) 40 ml VOA vials, without head space, and one (1) one-litre amber bottle were filled with water from each well using the Teflon bailer. These samples were preserved on ice and submitted to Chroma Lab analytical laboratory under chain of custody protocol. Forms are provided in Appendix A.

Findings

One groundwater sample from each groundwater monitoring well was submitted to Chroma Lab for analysis of Total Petroleum Hydrocarbons as gasoline with benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Test Method 602. Specific instructions were given to the laboratory to perform additional analysis of EPA Method 624/8240 & "Open Scan" on those samples

that indicated non-gasoline components. The results of the groundwater analysis indicated elevated non-gasoline components in monitoring wells MW-1 and MW-3. Results of subsequent analysis of 624/8240 & "Open Scan" run on samples from monitoring wells MW-1 and MW-3 indicated the following:

	<u>MW-1</u>	<u>MW-3</u>
2-Methoxy-2-Methyl Propane	140 ppb	120 ppb
2,2,3,3-Tetramethyl Butane	81 ppb	68 ppb
1,1-Dichlorocyclohexane	62 ppb	55 ppb
1-(2-Methoxypropoxy)-2-Propane	150 ppb	130 ppb

Analytical results from 2/26/92 sampling are provided in Appendix A.

Groundwater Gradient

The groundwater gradient at the site was evaluated by triangulation using the elevations of the tops of the well casings measured with respect to Mean Sea Level datum. As shown on Figure 2, the estimated groundwater gradient direction at the time of measurement was to the west/southwest.

Conclusion

Due to the elevated levels of fuel-related and solvent compounds found in the November 20, 1991 sampling event, a letter dated February 13, 1992 from Mr. Scott Seery of the Department of Environmental Health - Hazardous Materials Division required that further investigation be performed by installing additional monitoring wells on-site to identify the limit of the dissolved contaminant plume. The sample results obtained by ACC support the need for additional investigation.

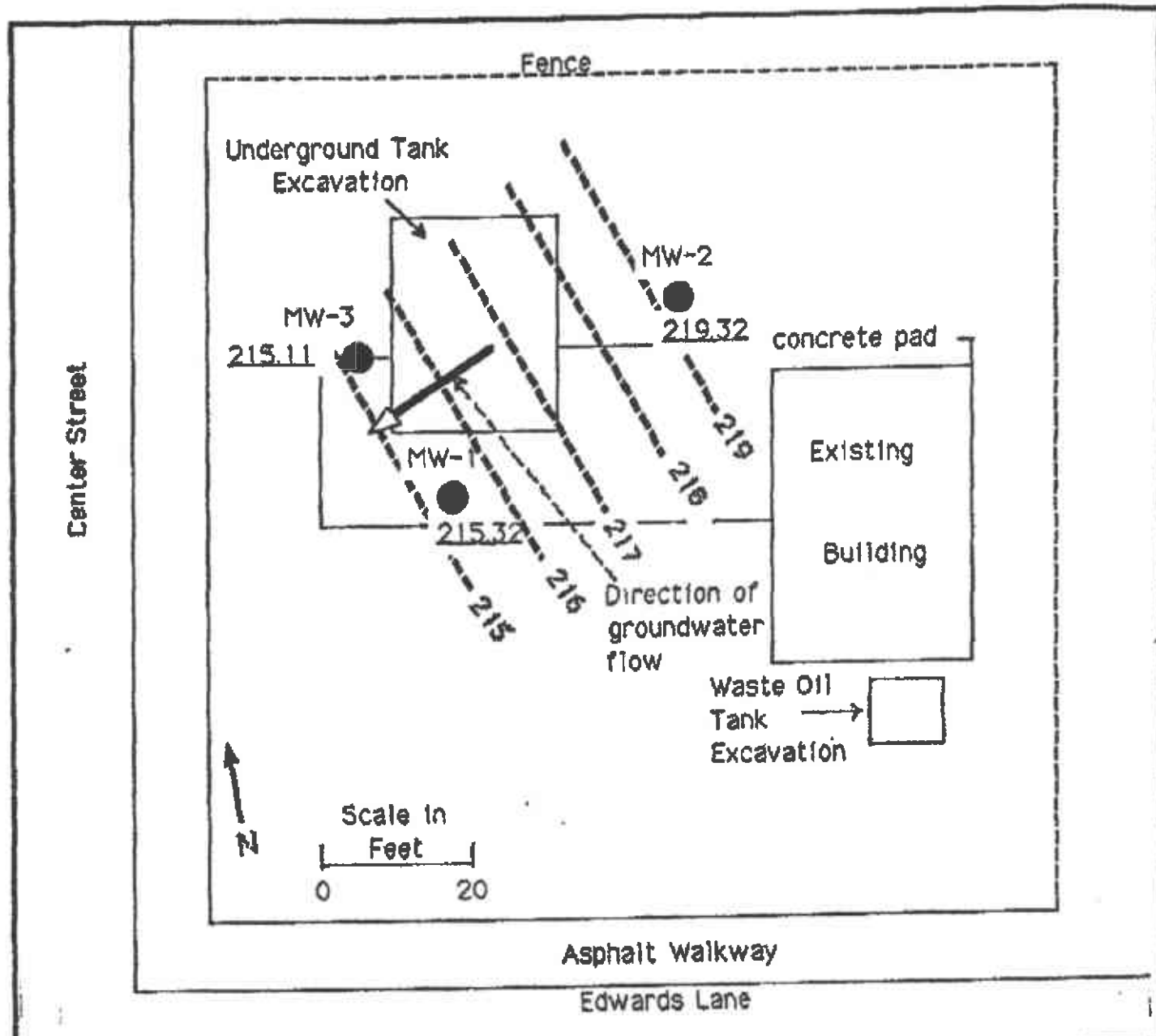
The data and observations provided herein allow the technical evaluation that an impact to groundwater has occurred from the unauthorized release of hydrocarbons. The corrective action work performed by Tank Protect Engineering, consisting of removal and on-site remediation of 450 cubic yards of contaminated soil, is likely to have minimized the impact to groundwater, as evidenced by the general declining level of contamination.

Groundwater monitoring wells installed in February of 1991 detected "non-gasoline" hydrocarbons in monitoring well MW-3 during the sampling events on November 20, 1991 and in monitoring wells MW-1 and MW-3 in February 26, 1992. Only constituents 2-Methoxy-2-Methyl Propane (MTBE) and 2,2,3,3-Tetramethyl Butane were found in both sampling events. A reduction in levels of these two constituents was observed in the more recent sampling. However, levels of MTBE are still above DHS verbal interim levels of 35 ppb.

As required by Mr. Seery, Material Safety Data Sheets (MSDS) were acquired from VP Racing Fuels and Phillips Petroleum Company for the three types of racing fuel used on site. These were C-12 Leaded from VP Racing Fuel and B35 and B32 from Phillips Petroleum Company. A copy of these MSDS are included in Appendix A.

Recommendation

ACC recommends the intallation of at least one additional monitoring well at the site for evaluation of the lateral extent of groundwater contamination. Further mandatory and corrective action, if any, should be consistent with the requirements of CCR Title 23, Article 11, that such Corrective Action shall enure to the beneficial uses of waters of the state, taking into consideration technical practicality and cost. Monitoring frequency and reportage shall be consistent with the requirements of the Porter Cologne Water Quality Control Act, Section 13267 (b), that the burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.



LEGEND

- MW-1 Name and location of Groundwater Monitoring Well
- 219 ----- Potentiometric Contour (2/26/92)
- 215.32 Potentiometric Elevation (Feet-MSL)

ACC Environmental Consultants 1000 Atlantic Avenue, Suite 110 Alameda, CA 94501	Job No.: 6032-1	GROUNDWATER GRADIENT
	Date: 2/26/92	Figure No.: 2

CHROMALAB, INC.

5 DAYS TURNAROUND

Analytical Laboratory (E694)

March 6, 1992

ChromaLab No.: 0292224

ACC ENVIRONMENTAL

Attn: Misty Kaltreider

RE: Three water samples for Gasoline/BTEX analysis

Project Name: ANTHONY'S AUTO

Date Sampled: Feb. 26, 1992

Date Submitted: Feb. 27, 1992

Date Extracted: Mar. 3, 1992

Date Analyzed: Mar. 3, 1992

RESULTS:

Sample I.D.	Gasoline ($\mu\text{g/L}$)	Benzene ($\mu\text{g/L}$)	Toluene ($\mu\text{g/L}$)	Ethyl Benzene ($\mu\text{g/L}$)	Total Xylenes ($\mu\text{g/L}$)
MW 1	220*	N.D.	N.D.	N.D.	N.D.
MW 2	N.D.	N.D.	N.D.	N.D.	N.D.
MW 3	200*	N.D.	N.D.	N.D.	N.D.

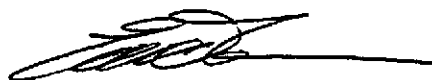
BLANK	N.D.	N.D.	N.D.	N.D.	N.D.
SPIKE RECOVERY	98%	110%	115%	102%	97%
DETECTION LIMIT	50	0.5	0.5	0.5	0.5
METHOD OF ANALYSIS	5030/8015	602	602	602	602

*Unknown hydrocarbons found in gasoline range.

ChromaLab, Inc.



Yiu Tam
Analytical Chemist



Eric Tam
Laboratory Director

CHROMALAB, INC.

5 DAYS TURNAROUND

Analytical Laboratory (E694)

March 6, 1992

ChromaLab No.: 0292224 C

ACC ENVIRONMENTAL

Attn: Misty Kaltreider

RE: Two water sample for identification of unknown compounds

Project Name: ANTHONY'S AUTO

Date Sampled: Feb. 26, 1992

Date Extracted: Mar. 3, 1992

Date Submitted: Feb. 27, 1992

Date Analyzed: Mar. 5, 1992

RESULTS:

SAMPLE I.D.: MW 3

<u>COMPOUNDS</u>	<u>CONCENTRATION ($\mu\text{g}/\text{l}$)</u>
2-METHOXY-2-METHYL PROPANE	120
2,2,3,3-TETRAMETHYL BUTANE	68
1,1-DICHLOROCYCLOHEXANE	55
1-(2-METHOXYPROPOXY)-2-PROPANE	130
BLANK	N.D.
DETECTION LIMIT	2.0
METHOD OF ANALYSIS	624

ChromaLab, Inc.



Yiu Tam
Analytical Chemist



Eric Tam
Laboratory Director

Well Sampling Well Development

check one

Well Number: MW-1

TOC = 249.72' MBL

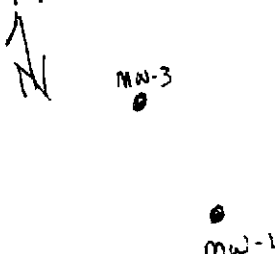
MW-2

Job Number: _____

Job Name: Anthony Aceto

Date: 2/24/92

Sampler: mck



Elevation
249.72'

Depth to Water (measured from TOC): 34.40 = 215.32 msl

Inside Diameter of Casing: 2"

Depth of Boring: 49.5'

Method of well development/purging: bailing

Amount of Water (Bailed/Pumped from well): 10 gallons

Depth to Water after well development: —

Depth to water prior to sampling: 39.25

Bailed water stored on-site? How? Drums

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope? yes

Water Appearance:

	yes	no
froth		
irridescence		
oil		
smell		
product		
other, describe		

x1000 Muddy

Gallons Removed	pH	EC	Temp
5	6.66	2500	76°
10	6.61	2.47	72°
15	6.57	2.44	71.9°
20			
25			
30			
35			
40			
45			
50			

Samples Obtained:

- TPH (gasoline)
- TPH (diesel)
- TPH (motor oil)
- BTXE
- EPA 624
- EPA 625
- EPA 608
- PCBs only
- Metals
- Other, specify
- Field Blank

Well Sampling

Well Development

check one

Well Number: MW-2, TOC = 250.18' MSL

Job Number: _____

Job Name: Anthony, Davis

Date: 2/26/92

Sampler: MCK

Depth to Water (measured from TOC): 30.96' = 219.32 MSL

Elevation
= 250.19

Inside Diameter of Casing: 2"

Depth of Boring: 39.5'

Method of well development/purging: bailing

Amount of Water Bailed/Pumped from well: 10 gal

Depth to Water after well development: _____

Depth to water prior to sampling: 32.31'

Bailed water stored on-site ? How ? 55 gal drum

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? y

Water Appearance:

	yes	no
froth		X
iridescence		X
oil		X
smell		X
product		X
other, describe		X

Samples Obtained:

TPH (gasoline)	X
TPH (diesel)	
TPH (motor oil)	
BTXE	X
EPA 624	
EPA 625	
EPA 608	
PCBs only	
Metals	
Other, specify	
Field Blank	

Gallons Removed	pH	EC	Temp
5	6.96	2.17	68.6
10	6.76	2.30	67.1
15	6.76	2.33	67.0
20			
25			
30			
35			
40			
45			
50			

Well Sampling Well Development check one

Well Number: MW-3 TOC = 250.11' MSL

Job Number: _____

Job Name: Anthony Radio

Date: 2/26/92

Sampler: rock

Depth to Water (measured from TOC): 35.00 250.11 MSL

Inside Diameter of Casing: 2"

Depth of Boring: 49.5'

Method of well development/purging: bailing

Amount of Water Bailed/Pumped from well: 9 gallons

Depth to Water after well development: -

Depth to water prior to sampling: 35.54'

Bailed water stored on-site ? How ? 30 min

Number of well volumes removed: 4

TSP wash, distilled rinse, new rope ? Yes

Elevation = 250.11

Water Appearance:

	yes	no
froth		
irridescence		
oil		
smell		
product		
other, describe		<u>X</u>

Gallons Removed	pH	EC	Temp
5	6.76	2.89	71.2
10	6.53	2.69	68.9
15	6.58	2.65	68.1
20	6.57	2.64	68.1
25			
30			
35			
40			
45			
50			

Samples Obtained:

TPH (gasoline)	<u>X</u>
TPH (diesel)	
TPH (motor oil)	
BTXE	<u>X</u>
EPA 624	
EPA 625	
EPA 608	
PCBs only	
Metals	
Other, specify	
Field Blank	



MATERIAL SAFETY DATA SHEET

MSDS NUMBER: M4039
PRODUCT NAME: LEADED RACING GASOLINE
MSDS DATE: September 1, 1991
EMERGENCY RESPONSE NUMBER:
1-800-424-9300 CHEMTREC

PRODUCT IDENTIFICATION

2 HEALTH, 3 FLAMMABILITY, REACTIVITY, INSTABILITY
Based on "Standard System for the Identification of the Fire Hazards of Materials,
NFPA No. 704, 1980 Edition"

MANUFACTURER'S NAME AND ADDRESS: VP Racing Fuels, Inc.,
20846 Lamm Road
Elmendorf, TX 78112
Phone #: 512-621-2244
Fax #: 512-621-2661

CAS NUMBER: 8006-61-5

CHEMICAL NAME: Petroleum Distillate
SYNONYMS/Common Names: Petroleum Hydrocarbon
CHEMICAL FORMULA: C4 - C6 Hydrocarbons

DOT PROPER SHIPPING NAME: Petroleum Distillate
DOT HAZARD CLASS: Flammable Liquid
DOT I.D. NUMBER: UN1268

HAZARD SUBSTANCE: NA

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	HAZARD DATA	CAS NUMBER	%
Aliphatic hydrocarbons with aromatics and proprietary additives	PEL = None established TLV = 300ppm 8hr TWA	800-61-9	100
Hexane	PEL = 500ppm 8hr TWA TLV = 50ppm 8hr TWA	110-54-3	(0-3)
Benzene	PEL = 10ppm 8hr TWA TLV = 10ppm 8hr TWA	71-43-2	
Alkyl Lead Compound	PEL = 0.075mg Pb/m3 8 hr TWA (skin) TLV = 0.1mg Pb/m3 8hr TWA (skin)	78-00-2	(-0.1)

Benzene concentration maintained to [3.25% (0.2 to 3.25%)]
Composition varies slightly according to specifications to meet ambient temperature
and barometric pressure performance criteria.
The materials in this product are listed in the TSCA Inventory.

III. PHYSICAL DATA

BOILING POINT @ 760 mm Hg: 37-40 degrees Celsius
EVAPORATION RATE (BuAc=1): N/A
DENSITY at 20 degrees Celsius: 0.7 - 0.8
SPECIFIC GRAVITY (H2O=1): 0.73-0.76 @ 60 degrees Fahrenheit

VAPOR DENSITY (Air=1): 3.4
MELTING POINT: N/A
VAPOR PRESSURE: -400 @ 20degr. C



SPECIFICATION SHEET

C-12 LEADED RACING FUEL
TYPICAL VALUES

A P I GRAVITY 68.7

SPECIFIC GRAVITY .7086

DISTILLATION

INITIAL BP 98

10% 129

50% 196

90% 218

END POINT 240

COLOR GREEN

CORROSION 3 HRS. @ 122 F 1A

GUM, MG./100 ML <1

LEAD GMS/GAL 4.2

PHOSPHOROUS, THEORIES 0

OXIDATION STABILITY, MINUTES 1440 +

SULPHUR WT % <.001

TEMPERATURES @ V/L = 20. F 136

REID VAPOR PRESSURE, LBS 7.75

B T U's PER POUND 18,834

MOTOR OCTANE NUMBER 108

RESEARCH OCTANE NUMBER 110

$\frac{R + M}{2}$ 109

MSDS NUMBER: M4039

PRODUCT NAME: LEADED RACING GASOLINE

SOLUBILITY IN H₂O % BY WT: Negligible

pH: N/A

% VOLATILES BY VOL.: Essentially 100

APPEARANCES AND ODOR: Colored liquid, pungent odor; odor threshold -0.1ppm and is not an index of exposure

IV. FIRE AND EXPLOSION DATA

FLASH POINT: Less than 28 degrees Fahrenheit

AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS IN AIR, % BY VOLUME-UPPER:

-1 varies slightly

-LOWER:

-8 with exact specification

EXTINGUISHING MEDIA: Dry chemical, foam or carbon dioxide; water may be ineffective on burning product.

UNUSUAL FIRE AND EXPLOSION HAZARD: Clothing, rags or similar organic material contaminated with the product and stored in a closed space may undergo spontaneous combustion. Transfer product to and from commonly grounded containers. Product spreads easily and can flash back along vapor trails.

V. HEALTH HAZARD INFORMATION**HEALTH HAZARD DATA:**

1. The major effect of exposure to this product is central nervous system depression.

2. Studies have shown that repeated exposure of laboratory animals to high concentrations of whole gasoline vapors at 67, 262 and 2056ppm has caused kidney damage and cancer of the kidney in rats and liver cancer in mice. ACGIH lists Benzene as a human carcinogen with an assigned TLV of 10ppm 8hr TWA. IARC shows sufficient evidence for classifying Benzene as a human carcinogen.

ROUTES OF EXPOSURE

INHALATION: Irritation of the upper respiratory tract with central nervous system stimulation possibly followed by depression, dizziness, headache, incoordination, anesthesia, coma and respiratory arrest.

SKIN CONTACT: Defatting may occur with continued or prolonged contact. Irritation and burning sensation may occur on exposure to liquid or vapor phase.

SKIN ABSORPTION: Not significant for major components; alkyl lead compounds are absorbed through the intact skin.

EYE CONTACT: Severe burning sensation with temporary irritation and swelling of lids.

INGESTION: Irritation of mucous membranes of throat, esophagus and stomach which may result in nausea and vomiting; depression may occur if absorbed. (See Inhalation above.)

EFFECTS OF OVEREXPOSURE

ACUTE: Central nervous system depression with extreme overexposure; effects may include anesthesia, coma, respiratory arrest, and irregular heart rate. Oxygen deprivation is possible if working in confined spaces.

CHRONIC: Experience has shown no major cumulative or latent effects to have resulted from exposure to this product. (See Health Hazard Data above.) Alkyl lead intoxicating is not expected under normal handling and conditions of use.

EMERGENCY AND FIRST AID PROCEDURES

EYES: Object is to flush material out then seek medical attention. Immediately flush eyes with large amounts of water for at least 15 minutes holding lids apart to ensure flushing of the entire eye surface. Seek medical attention.

September 1, 1991

P RACING FUELS, INC.
EDS NUMBER: M4039
PRODUCT NAME: LEADED RACING GASOLINE

SKIN: Wash contaminated areas with plenty of soap and water. A soothing ointment may be applied to irritated skin after thorough cleansing. Remove contaminated clothing and footwear. Seek medical attention if symptoms result.

INHALATION: Get contaminated person out contaminated area to fresh air. If breathing has stopped, resuscitate and administer oxygen if readily available. Seek medical attention immediately.

INGESTION: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. If vomiting occurs spontaneously, keep airway clear. Seek medical attention immediately.

NOTES TO PHYSICIAN: Gastric lavage only if large quantity has been ingested. Guard against aspiration into lungs which may result in chemical Pneuemonitis. Irregular heart beat may occur; use of Adrenalin is not advisable. Treat symptomatically.

I. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: Under normal conditions, the material is stable. Heat, sparks and static electricity can ignite the product. Use EP equipment to transfer.

INCOMPATIBILITY: N/A

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide and other organic compounds.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Material is not known to polymerize.

II. ENVIRONMENTAL PROCEDURES

SPILLS OR RELEASES: If material is spilled or released to the atmosphere, steps should be taken to contain liquids and prevent discharges to streams or sewer systems; and control or stop the loss of volatile materials to the atmosphere. Spills or releases should be reported, if required, to the appropriate local, state and federal regulatory agencies.

DISPOSAL: Clean-up action should be carefully planned and executed. Shipment, storage, and/or disposal of waste materials are regulated and action to handle or dispose of spilled or released materials must meet all applicable local, state and federal rules and regulations. If any question exists, the appropriate agencies should be contacted to assure proper action being taken. Waste product and contaminated material will be considered a hazardous waste if the flash point is less than 140 degrees Farenheit requiring disposal at an approved hazardous waste facility.

STORAGE: Protect against physical damage. Outside or detached storage is preferred. Separate from oxidizing materials. Store in cool, well ventilated area of non-combustible construction away from possible sources of ignition.

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS: Work in well ventilated areas. Special ventilation is not required under normal use. Good engineering controls in high volume uses is required in some localities.

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY: Respiratory protection is not required under normal use. Use NIOSH/MSHA approved respiratory protection following manufacturer's recommendation where spray, mist, or vapor may be generated. Supplied air respiratory protection is required for IDLH areas.

EYE: Face shield and goggles or chemical goggles should be worn where mist or spray may be generated.

VP RACING FUELS, INC.
MSDS NUMBER: M4039
PRODUCT NAME: LEADED RACING GASOLINE

PROTECTIVE EQUIPMENT cont.

GLOVES: Impervious gloves should be worn during routine handling of this product.
OTHER CLOTHING AND EQUIPMENT: Standard work clothing. Shoes contaminated with this product that can not be decontaminated should be discarded. Clothing contaminated with this product should be removed, washed in soap and water and dried before reuse. Contaminated clothing should be stored in well ventilated areas. Shower and eyewash facilities should be accessible.

MONITORING EXPOSURE

BIOLOGICAL: No applicable procedure; breath analysis for hydrocarbons has been suggested. Analysis of blood for lead may be used as an index of exposure to the Alkyl Lead compound.
PERSONAL/AREA: Both active and passive monitor employing charcoal absorption followed by gas chromatography. A molecular weight of 69 has been suggested as the average value to convert the determined weight of hydrocarbons to ppm. Direct reading indication tubes are available to evaluate short term exposure.

THE ABOVE INFORMATION IS BASED ON THE DATA OF WHICH WE ARE AWARE AND IS BELIEVED TO BE CORRECT AS OF THE DATE HEREON. SINCE THE INFORMATION CONTAINED HEREIN MAY BE APPLIED UNDER CONDITIONS BEYOND OUR CONTROL AND WITH WHICH WE MAY BE UNFAMILIAR AND SINCE DATA MADE AVAILABLE SUBSEQUENT TO THE DATE HEREON MAY SUGGEST MODIFICATION OF THE INFORMATION, WE DO NOT ASSUME ANY RESPONSIBILITY FOR THE RESULTS OF ITS USE. THIS INFORMATION IS FURNISHED UPON CONDITION THAT THE PERSON RECEIVING IT SHALL MAKE HIS OWN DETERMINATION OF THE SUITABILITY OF THE MATERIAL FOR HIS PARTICULAR PURPOSE. THIS FORM MAY BE REPRODUCED WITHOUT PERMISSION.



USA and WORLDWIDE

Material Safety Data Sheet

B35[®] RACING FUEL

PHILLIPS 66 COMPANY
A Division of Phillips Petroleum Company
Bartlesville, Oklahoma 74004

PHONE NUMBERS

Emergency:
Business Hours (918) 661-3865
After Hours (918) 661-8118
General MSDS Information:
(918) 661-8327
For Additional MSDSs: (918) 661-5952

A. Product Identification

Synonyms: Petrol, Motor Fuel
Chemical Name: Hydrocarbon Mixture
Chemical Family: Aliphatic and Aromatic Hydrocarbons
Chemical Formula: Mixture
CAS Reg. No.: Mixture
Product No.: 13064; 13065

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product is in U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals; hence, it is subject to all applicable provisions and restrictions of 40 CFR, section 721 and 723.250.

B. Hazardous Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Toluene	108-88-3	41.0	100 ppm	100 ppm
2,2,4-Trimethylpentane	540-84-1	42.3	NE	NE
n-Heptane	142-82-5	<8.7	400 ppm	400 ppm
n-Octane	111-65-9	<4.6	300 ppm	300 ppm
Isopentane	78-78-4	8.0	NE	NE
n-Butane	106-87-8	2.0	800 ppm	800 ppm
Methyl-tert-Butyl Ether	1634-04-4	<11.0	NE	NE

The specific chemical identity of this material is being withheld as a trade secret. In accordance with the provisions of 29 CFR Part 1910.1200(i), it will be provided to a health professional when requested, and/or to a treating physician or nurse in a medical emergency through utilization of the Emergency Telephone Number above.

NA - Not Applicable NE - Not Established

C. Personal Protection Information

Ventilation: Use with adequate ventilation to control exposure below recommended levels.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved supplied air purifying respirator. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied air respirator.

Eye Protection: Use safety glasses with side shields.

Skin Protection: Use impervious gloves. Use full-body, long-sleeved garments.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. Handling and Storage Precautions

Avoid breathing vapors. Avoid contact with eyes, skin or clothing. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse.

Store in a cool, well-ventilated area away from ignition sources. Provide means of controlling leaks and spills. Bond and ground during liquid transfer. Keep containers closed.

E. Reactivity Data

Stability: Stable
Conditions to Avoid: Not Applicable
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents

Hazardous Polymerization: Will Not Occur
Conditions to Avoid: Not Applicable
Hazardous Decomposition Products: Carbon oxides, various hydrocarbons, and lead fumes formed when burned.

F. Health Hazard Data

Recommended Exposure Limits:

See Section B.

Acute Effects of Overexposure:

- Eye: May be mildly irritating to eyes.
- Skin: May be mildly irritating to skin. May be absorbed in dangerous amounts through skin.
- Inhalation: May be cause headaches, dizziness or unconsciousness.
- Ingestion: May cause irritation to intestines. May be aspirated into lungs if swallowed, which may result in pulmonary edema and chemical pneumonitis.

Subchronic and Chronic Effects of Overexposure:

Unleaded gasoline has produced cancer in laboratory animals. No comparable health hazard for cancer is known to occur in humans.

Other Health Effects:

Unleaded gasoline has also produced kidney damage in male rats only. No comparable health hazard for kidney disease is known to occur in humans.

Exposure of pregnant rats during gestation to Toluene at levels of 250 ppm and higher produced some maternal toxicity and embryo/feto toxicity. A lifetime inhalation study in rats did not show any toxic effects even at the high dose of 300 ppm.

Behavioural signs of hearing loss were observed in rats exposed to Toluene subchronically at levels of 1000 ppm or more. Comparable effects have not been reported in humans.

Health Hazard Categories:

	Animal	Human		Animal	Human
Known Carcinogen	___	___	Toxic	___	___
Suspect Carcinogen	<u>X</u>	___	Corrosive	___	___
Mutagen	___	___	Irritant	___	___
Teratogen	___	___	Target Organ Toxin	<u>X</u>	<u>X</u>
Allergic Sensitizer	___	___	Specify - Lung - Aspiration Hazard		
Highly Toxic	___	___			

First Aid and Emergency Procedures:

- Eye: Flush eyes with running water for at least fifteen minutes. If irritation develops, seek medical attention.
- Skin: Flush from skin with water. If irritation develops, seek medical attention.
- Inhalation: Remove from exposure. If illness or adverse symptoms develop, seek medical attention.
- Ingestion: Do not induce vomiting. Seek immediate medical assistance.
- Note to Physician: Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

G. Physical Data

Appearance: Purple
Odor: Mild, Gasoline-like Odor
Boiling Point: 85-250F (29-121C)
Vapor Pressure: 7.0 psi at 100F (37.8C)
Vapor Density (Air = 1): >1
Solubility in Water: Negligible
Specific Gravity (H2O = 1): 0.75 at 60/60F (15.6/15.6C)
Percent Volatile by Volume: 100
Evaporation Rate (Ethyl Ether = 1): <1
Viscosity: Not Established

H. Fire and Explosion Data

Flash Point (Method Used): <20F (-7C) (Estimated)
Flammable Limits (% by Volume in Air):
LEL - Not Established
UEL - Not Established

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO2)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Shut off source, if possible. Use NIOSH/MSHA approved self-contained breathing apparatus and other protective equipment and/or garments described in Section C if conditions warrant. Water fog or spray may be used to cool exposed containers and equipment. Do not spray water directly on the fire product will float and could be reignited on surface of water.

Fire and Explosion Hazards: Carbon oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate along ground away from handling site. Flashback along vapor trail may occur.

I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Shut off source, if possible and contain spill. Keep out of water sources and sewers. Absorb in a dry, inert material (sand, clay, sawdust, etc.). Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):
Incinerate or otherwise handle at a RCRA permitted waste management facility.

J. DOT Transportation

Shipping Name: Gasoline
Hazard Class: Flammable liquid
ID Number: UN 1203
Marking: Gasoline, UN 1203, and "This End Up" on packages containing inside packaging, for non-bulk packaging; 1203 on bulk containers.
Label: Flammable liquid
Placard: Flammable/1203
Hazardous Substance/RQ: Not Applicable
Shipping Description: Gasoline, Flammable liquid, UN 1203
Packaging References: 49 CFR 173.118 and 173.119(a)

K. RCRA Classification - Unadulterated Product as a Waste

Ignitable (D001)

L. Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

M. Hazard Classification

This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<input type="checkbox"/> Combustible Liquid	<input type="checkbox"/> Flammable Aerosol	<input type="checkbox"/> Oxidizer
<input type="checkbox"/> Compressed Gas	<input type="checkbox"/> Explosive	<input type="checkbox"/> Pyrophoric
<input type="checkbox"/> Flammable Gas	<input checked="" type="checkbox"/> Health Hazard (Section F)	<input type="checkbox"/> Unstable
<input checked="" type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Water Reactive
<input type="checkbox"/> Flammable Solid		

Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

N. Additional Comments

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (See Section B.)

Toluene
Methyl-tert-Butyl Ether

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USA and WORLDWIDE

Material Safety Data Sheet

B32[®] RACING FUEL

PHILLIPS 66 COMPANY
A Division of Phillips Petroleum Company
Bartlesville, Oklahoma 74004

PHONE NUMBERS

Emergency:
Business Hours (918) 661-3865
After Hours (918) 661-8118
General MSDS Information:
(918) 661-8327
For Additional MSDSs: (918) 661-5952

A. Product Identification

Synonyms: Petrol; Motor Fuel
Chemical Name: Hydrocarbon Mixture
Chemical Family: Aliphatic and Aromatic Hydrocarbons
Chemical Formula: Mixture
CAS Reg. No.: Mixture
Product No.: 13060, 13061

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product is in U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals; hence, it is subject to all applicable provisions and restrictions of 40 CFR, section 721 and 723.250.

B. Hazardous Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Mixture of Aliphatic and Aromatic Hydrocarbons*	Various	99.9	300 ppm**	300 ppm**
Tetraethyl Lead	78-00-2	4 ml/gal	0.075 mg/m3***	0.1 mg/m3***

* The specific chemical identity of this material is being withheld as a trade secret. In accordance with the provisions of 29 CFR Part 1910.1200(i), it will be provided to a health professional when requested, and/or to a treating physician or nurse in a medical emergency through utilization of the Emergency Telephone Number above.

** For Gasoline
*** As Lead (Pb), skin notation

NA - Not Applicable NE - Not Established

C. Personal Protection Information

Ventilation: Use adequate ventilation to control below recommended exposure levels.

Respiratory Protection: For concentrations exceeding the recommended exposure level, use NIOSH/MSHA approved air purifying respirator. In case of spill or leak resulting in unknown concentration, use NIOSH/MSHA approved supplied air respirator. If conditions immediately dangerous to life or health (IDLH) exist, use NIOSH/MSHA approved self-contained breathing apparatus (SCBA).

Eye Protection: Wear safety glasses with side shields.

Skin Protection: Wear polyvinyl alcohol or Buna-N gloves. Use full-body, long sleeved garments to prevent skin contact.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. Handling and Storage Precautions

Avoid inhalation and skin or eye contact. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Immediately remove contaminated clothing. Launder contaminated clothing before reuse. Do not siphon by mouth.

Store in a cool, well-ventilated area away from ignition sources. Provide means of controlling leaks and spills. Bond and ground during liquid transfer. Keep containers closed. Protect containers from physical damage.

E. Reactivity Data

Stability: Stable
Conditions to Avoid: Not Applicable
Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents

Hazardous Polymerization: Will Not Occur
Conditions to Avoid: Not Applicable
Hazardous Decomposition Products: Carbon oxides formed when burned.

F. Health Hazard Data

Recommended Exposure Limits:

See Section B.

Acute Effects of Overexposure:

- Eye:** May cause slight irritation to the eyes.
- Skin:** May cause slight irritation to the skin.
- Inhalation:** May cause headache, nausea, weakness, sedation and unconsciousness.
- Ingestion:** May cause slight irritation to intestines. May be aspirated into the lungs if swallowed, which may result in pulmonary edema and chemical pneumonitis.

Subchronic and Chronic Effects of Overexposure:

Unleaded gasoline has produced cancer in laboratory animals. No comparable health hazard for cancer is known to occur in humans.

Other Health Effects:

Unleaded gasoline has also produced kidney damage in male rats only. No comparable health hazard for kidney disease is known to occur in humans.

Fuels containing lead anti-knock compounds should be handled in such a way to minimize contact with the body. Lead can accumulate in the body with overexposure and cause illness due to effects on the blood, nerves, kidneys and the reproductive system.

Health Hazard Categories:

	Animal	Human		Animal	Human
Known Carcinogen	___	___	Toxic	___	___
Suspect Carcinogen	<u>X</u>	___	Corrosive	___	___
Mutagen	___	___	Irritant	___	___
Teratogen	___	___	Target Organ Toxin	<u>X</u>	<u>X</u>
Allergic Sensitizer	___	___	Specify - Lung - Aspiration Hazard		
Highly Toxic	___	___			

First Aid and Emergency Procedures:

- Eye:** Flush eyes with running water for at least fifteen minutes. If irritation develops, seek medical attention.
- Skin:** Wash with soap and water. If irritation develops, seek medical attention.
- Inhalation:** Remove from exposure. If illness or adverse symptoms develop, seek medical attention.
- Ingestion:** Do not induce vomiting. Seek immediate medical assistance.
- Note to Physician:** Gastric Lavage using a cuffed endotracheal tube may be performed at your discretion.

G. Physical Data

Appearance: Blue Liquid
Odor: Mild, Gasoline-like Odor
Boiling Point: 99-301F (37-149C)
Vapor Pressure: 7.0 psi at 100F (38C), Reid Vapor Pressure
Vapor Density (Air = 1): >1
Solubility in Water: Negligible
Specific Gravity (H2O = 1): 0.73 at 60/60F (15.6/15.6C)
Percent Volatile by Volume: 100
Evaporation Rate (Ethyl Ether = 1): <1
Viscosity: Not Established

H. Fire and Explosion Data

Flash Point (Method Used): <20F (-7C) (Estimate)
Flammable Limits (% by Volume in Air): LEL - 1.5
UEL - 7.3

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO2), water

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Wear appropriate safety equipment for fire conditions including NIOSH/MSHA approved self-contained breathing apparatus (SCBA). Shut off source if possible. Water fog or spray may be used to cool exposed equipment and containers.

Fire and Explosion Hazards: Carbon oxides, lead fumes, and various hydrocarbons formed when burned. Highly flammable vapors which are heavier than air may accumulate in low areas and/or spread along ground away from handling site. Flash back along vapor trail is possible.

I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective equipment and/or garments specified in Section C, if exposure conditions warrant. Shut off source, if possible, and contain spill. Protect from ignition. Keep out of water sources and sewers. Absorb in dry, inert material. Transfer to disposal drums using non-sparking equipment.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):
Incinerate or otherwise handle at a RCRA permitted waste management facility.

J. DOT Transportation

Shipping Name: Gasoline
Hazard Class: Flammable liquid
ID Number: UN 1203
Marking: Gasoline, UN 1203, and "This End Up" on packages containing inside packaging, for non-bulk packaging; 1203 on bulk containers.
Label: Flammable liquid
Placard: Flammable/1203
Hazardous Substance/RQ: Not Applicable
Shipping Description: Gasoline, Flammable liquid, UN 1203
Packaging References: 49 CFR 173.118 and 173.119(a)

K. RCRA Classification - Unadulterated Product as a Waste

Ignitable (D001)
EP Toxic-Lead (D008)

L. Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

M. Hazard Classification

This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<input type="checkbox"/> Combustible Liquid	<input type="checkbox"/> Flammable Aerosol	<input type="checkbox"/> Oxidizer
<input type="checkbox"/> Compressed Gas	<input type="checkbox"/> Explosive	<input type="checkbox"/> Pyrophoric
<input type="checkbox"/> Flammable Gas	<input checked="" type="checkbox"/> Health Hazard (Section F)	<input type="checkbox"/> Unstable
<input checked="" type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Water Reactive
<input type="checkbox"/> Flammable Solid		

Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

N. Additional Comments

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (See Section B):

Lead compounds

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