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Final
Technical Support Document for
HWC MACT Standards

Volume VI

Development of Comparable Fuels Specifications

U.S. Environmental Protection Agency
Office of Solid Waste and Emergency Response (5305)
401 M Street, SW
Washington, D.C. 20460

MAY 1998

ACKNOWLEDGEMENTS

This document was prepared by the U.S. EPA's Office of Solid Waste, Waste Management Division. Energy and Environmental Research Corporation (EER) provided technical support under EPA contract No. 68-D2-0164. Paradigm Laboratories Incorporated performed all of the analyses on the fuel oils as a subcontractor to EER under EPA contract No. 68-D2-0164.

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ABSTRACT

This report provides detailed tests results for the analysis of eight (8) gasoline samples, eleven (11) No. 2 fuel oil samples, one (1) No. 4 fuel oil sample, and seven (7) No. 6 fuel oil samples from various geographic regions around the country. The combustion fuel samples collected for the program were characterized for the chemical and physical properties and the presence of the hazardous constituents listed in 40 CFR Part 260 Appendix VIII. Then statistical analyses, to estimated percentiles from the distribution of concentrations and from each chemical compound within each fuel type, was performed by Science Applications International Corporation (SAIC). For each individual fuel type, the 90th percentile was estimated for each chemical compound. For the composite fuel types, estimates of the 90th and 99th percentiles were calculated for each chemical compound.

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1.0 INTRODUCTION

This document provides technical background for the comparable fuel exclusion that is being considered for the final rule. As part of an April 19, 1996 proposed (60 FR 17459) rulemaking, EPA has developed a comparable fuel exclusion. A comparable fuel would be an ignitable waste or co-product production stream, both of which are currently defined as a hazardous waste, which meet the specifications of the exclusion. Comparable fuels are burned for energy recovery, in lieu of fossil fuels, due to their high BTU value. Benefits derived from this procedure include decreased use of fossil fuels and reduced operational costs. Under this provision, a comparable fuel would be excluded from the Research Conservation and Recovery Act (RCRA), Subtitle C Regulation, as long as it meets the comparable fuel exclusion and is burned. Industry contends these waste streams are cleaner than the fuels displaced and that burning these waste streams provides an overall environmental benefit. EPA's goal is to provide a comparable fuel exclusion that is both useful to the regulated community and assures that comparable fuel poses no greater risk than what otherwise would be associated with the burning of fossil fuels.

The Agency's current approach is to base a comparable fuel exclusion on constituent concentrations normally found in fossil fuels. For this "benchmark" approach, the concept is to permit hazardous constituents in the comparable fuel which are no greater in concentration than those of the same constituents naturally occurring in commercially available fossil fuels. Additionally, the current approach will not allow detectable levels of toxic synthetic chemicals, such as pesticides, in the comparable fuels. This approach will assure EPA that the comparable fuel, when burned, will pose no greater risk than a fossil fuel. This document contains data on as many toxic organics from 40 CFR, Part 261, Appendix VIII as could be quantitated for each fuel sample collected during this study. The EPA developed a series of constituent specifications based on the following parameters: kinematic viscosity, total nitrogen, total halogens, individual metals, Appendix VIII organics, and BTU content of each fuel. EPA is proposing that these specifications apply to all hazardous gaseous and liquid fuels, with the exception of viscosity, which is not relevant

for gaseous fuels. Table 1-1 gives the units of measure for each of these constituents and the individual metals analyzed.

In the proposed rule for comparable fuels, EPA presented several options to establish a benchmark specification. This document presents the data used to develop the initial specification for the proposed rule and the specifications for the final rule. This document summarizes the rationale of the ?benchmark" approach used to set the specifications and discusses, with some detail, the analytical approach used to characterize the constituents of concern.

1.1 Benchmark Fuel Selection Basis

Potential benchmark fuels (on which to base the comparable fuel specifications) that were considered include the commercially available fossil fuels of: (1) gases (such as natural gas and propane); (2) liquids (such as gasoline and fuel oils); and (3) solids (such as coal, coke, and peat). However, the benchmark fuels have been limited to liquid fossil fuels, including gasoline and Nos. 2, 4, and 6 fuel oils. This is because, as discussed below, solid fuels tend to have higher levels of hazardous constituents that are not destroyed in the incineration process, while gases tend to have hazardous constituent levels that are sufficiently low to make the specification of limited practical use.

Solid fuels (such as coal, wood, and biomass) will not be used to base the comparable fuels specification. Solid fuels are used widely throughout the U.S. as legitimate energy sources. However, the comparable fuel specification, which would exclude a hazardous waste fuel from RCRA Subtitle C regulation, will not be based on solid fossil fuels (in particular, coal) since they can have high levels of toxic constituents that will not be destroyed or detoxified by burning (e.g., metals and halogens). It is generally desired to minimize the feed rate of metals and halogens into waste incineration systems because these constituents are not destroyed in the incineration process (unlike organics which are destroyed; inorganics are found in the bottom ash, air pollution control system residues, or stack gas emissions). It is not the intent of the comparable fuels exclusion to set

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TABLE 1-1. ANALYTICAL PARAMETERS AND CONSTITUENTS FOR COMPARABLE FUEL STUDY

Property of Interest	Units	Described As
Heating Value	BTU/lb	min. or range
Kinematic Viscosity	cSt at 100°F	min. or range
Specific Gravity	at 15°C	range and average
Flash Point	°F	minimum
Total Nitrogen	weight %	maximum
Total Halogens:	ppm_w as Cl^-	maximum
Fluorine		maximum
Chlorine		maximum
Bromine		maximum
Iodine		maximum
Metals:		
Antimony	ppm_w[1]	maximum
Arsenic	ppm_w[1]	maximum
Barium	ppm_w[1]	maximum
Beryllium	ppm_w[1]	maximum
Cadmium	ppm_w[1]	maximum
Chromium	ppm_w[1]	maximum
Cobalt	ppm_w[1]	maximum
Lead	ppm_w[1]	maximum
Manganese	ppm_w[1]	maximum
Mercury	ppm_w[1]	maximum
Nickel	ppm_w[1]	maximum
Selenium	ppm_w[1]	maximum
Silver	ppm_w[1]	maximum
Thallium	ppm_w[1]	maximum
Appendix VIII Organics	ppm_w[1]	maximum
Total Aromatics	wt. %	maximum
Total PNAs	Wt. %	maximum

[1] ppm_w = mg/kg

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specifications based on the ?dirtiest" fossil fuels. Comparison with these solid fuels could result in a least common denominator approach whereby a hazardous waste-derived fuel would be ?comparable" if it was no more dangerous to burn than the most contaminated fossil fuels. Such ?comparability" is not congruent with the overall objective of RCRA in order to protect human health and the environment. It is also inconsistent with the specific directive to regulate combustion of hazardous waste-derived fuels where necessary to protect human health and the environment (RCRA Section 3004(q)). Thus, although a benchmark approach is used rather than a risk-based approach, the benchmark fossil fuels that are selected, in general, have lower contaminant levels for constituents that are not destroyed in the incineration process.

Metals and halogen concentrations in coal are compared with that of gasoline and fuel oils (Nos. 2, 4, and 6) in Table 1-2. For coal, median, maximum, and minimum levels are shown, based on data from a recent IEA Coal Research report (Clarke and Sloss, 1992) and the Electric Power Research Institute (EPRI) PISCES database (Wetherold et al., 1995). Data for the liquid fossil fuels are given from three sources: (1) 90th percentile levels based on the recent EPA-sponsored testing specifically for developing the comparable fuels specifications; (2) for No. 2, 4, and 6 fuel oil, average levels based on that from the EPRI Pisces database (Wetherold et al., 1995); and (3) for fuel oil, levels from the EPA/OSW database on hazardous waste burning combustors (including boilers and incinerators).

None of the Clean Air Act metals were detected in the gasoline samples. Pb, Ni, Sb, and Se are the only metals typically found in the fuel oil samples (with the metals levels generally increasing with the fuel oil number). Metals levels in coal can vary tremendously, depending on the origin of the fossil fuels. The No. 6 fuel oil high-end 90th percentile levels for Pb and Ni are comparable to the average coal levels. The average coal levels for As, Ba, Co, Cr, Mn, and Pb are typically 10 to 100 times higher than that of the liquid fossil fuels. Levels of Hg and Be in fuel oils are also typically much less than that of coal. The chlorine content of coal and fuel oils can range widely from less than 50 to greater than 2,000 ppmw. Typically though, coal has a chlorine level that can be 2 to 10 times higher than that of fuel oils.

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TABLE 1-2: COMPARISON OF THE METAL AND HALOGEN CONTENT OF COAL, GASOLINE, AND FUEL OILS

Constituent	Concentration (ppmw)									
	Coal[a]			Gasoline 90th %[b]	Fuel Oil No. 2 90th %[b]	Fuel Oil No. 4 90th %[b]	Fuel Oil No. 6 90th %[b]	Fuel Oil No. 2, 4, 6 Average[c]	Fuel Oils[e]		
	Avg.	Min.	Max.						Avg.	Min.	Max.
Antimony	1	0.05	10	< 7	< 6	< 11	6.5	0.2			
Arsenic	10	0.5	80	< 0.14	< 0.12	< 0.2	< 0.2	0.3	0.1		
Barium	200	20	1000	< 14	< 12	< 23	< 20	NA	0.3		
Beryllium	2	0.1	15	< 0.7	< 0.6	< 1.2	< 1	0.2	0.1		
Cadmium	0.5	0.1	3	< 0.7	< 0.6	< 1.2	< 1	0.3	0.5		
Chromium	20	0.5	60	< 1.4	< 1.2	< 2.3	< 2	0.7	0.5		
Cobalt	5	0.5	30	< 2.8	< 2.4	< 4.6	< 4.1	2			
Lead	40	2	80	< 7	6.6	9.9	30	2.6			
Manganese	70	5	300	< 0.7	< 0.6	< 1.2	< 1	0.2			
Mercury	0.1	0.02	1	< 0.1	< 0.1	< 0.2	< 0.2	0.03	< 0.1		
Nickel	20	0.5	50	< 2.8	< 2.4	16	36	31			
Selenium	1	0.2	10	< 0.14	0.07	0.13	0.12	0.2			
Silver	0.1	0.02	2	< 1.4	< 1.2	< 2.3	< 2	NA			
Thallium	< 1			< 14	< 12	< 23	< 20	NA			
Chlorine	1000	50	2000	< 25d	< 25d	< 0d	< 10d	36	500	50	3000
Fluorine	150	20	500	NM	NM	NM	NM	NA			

a Source: Clarke and Sloss (1992)

b Source: EPA (1996)

c Source: Wetherold et al. (1995)

e From hazardous waste burning combustors

NM: Not measured

NA: Not reported

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Gases are also not selected as benchmark fuels. Generally, basing the comparable fuel specification on a gaseous fuel would be overly conservative and have no practical use to the regulated industry (i.e., it is unlikely that many hazardous wastes would meet a fuel specification based on natural gas). Note that separate benchmark specifications are defined for a hazardous waste-derived fuel synthesis gas (syn-gas), as discussed below.

Additionally, non-petroleum liquid based fuels, including turpentine and tall oil, are not considered as benchmark fuels:

- Turpentine -- Turpentine has a very high energy content and is used as a fuel (and a manufacturing feedstock) both within and outside the forest products industry. However, turpentine has not been selected since: (1) turpentine is not a widely used commercial fuel; and (2) there are no ASTM standards for turpentine fuel which specify the minimum properties. This must be met for the product to be considered as a commercial fuel.

- Tall oil -- Tall oil is a traditional fuel source, and EPA has acknowledged that tall oil is a legitimate non-waste fuel under the BIF rule low risk waiver exemption (LRWE) and DRE trial burn exemptions (see 56 FR 7193, February 21, 1991). However, tall oil is not used because of lack of quality constituent data.

Liquid fossil fuels of Nos. 2 and 6 fuel oils, and gasoline, have been selected as the benchmark fuels. Liquid fuels are widely used by industry, readily combusted, and do not have the inconsistencies of solid or gaseous fuels. Gasoline has been included even though it is not typically utilized in industrial boilers and furnaces. Gasoline is a highly used, commercially available, liquid fuel, for which complete hazardous constituent analysis is available (allowing for a more complete and useable benchmark specification).

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1.2 Parameters and Rationale for Comparable Fuels Specifications

Benchmark fuel specifications are being set for: (1) physical specifications, including energy content (heating value) and kinematic viscosity; (2) general constituent specifications for total nitrogen and total halogens; and (3) individual hazardous constituents, including individual metals (including Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Ag, and Tl), and Appendix VIII organics. Rationale for the selection of these parameters is discussed in the following.

Since most comparable fuels are expected to have a lower BTU content than fossil fuels, more comparable fuel will be needed to produce the same heating value. This situation will potentially increase the environmental loading of hazardous constituent emissions from the comparable fuel. More comparable fuel would be burned to achieve the same heat input leading to greater environmental loading of potentially toxic substances than if fossil fuel was burned. This would not follow the intent of the comparable fuel exclusion. To address environmental loading, a minimum heating value specification comparable to the BTU content of the benchmark fossil fuels is used. Constituent levels have been corrected from the fuel's heating value (approximately 20,000 Btu/lb) to 10,000 Btu/lb.

1.2.1 *Heating Value*

A benchmark specification limit on minimum waste energy content is set. This is to ensure that the comparable fuel has a legitimate use as a fuel (note that the comparable fuels exclusion only applies to waste fuels that are ultimately burned). For solid and liquid wastes, a level of 5,000 Btu/lb (11,500 J/g) has been selected. This level has been traditionally used as a reasonable cutoff for determining if a waste is being burned for energy recovery. Note that it is based on the typical heating value of wood.

1.2.2 *Kinematic Viscosity*

Liquid waste viscosity affects the efficiency of combustion by influencing the atomization characteristics of the liquid waste. Note that viscosity is an important design specification for liquid

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burners. Thus the purpose of a viscosity specification is used to ensure that a comparable fuel is as burnable as the benchmark fuel.

The viscosity specification is based on that of No. 6 residual fuel oil (the heaviest, most viscous, liquid fossil fuel) at normal firing conditions. The comparable fuel viscosity specification is set at 50 cSt, as-fired. This is based on the ASTM standard for No. 6 fuel of 50 cSt (at 100 °C, which is a common firing temperature for No. 6 oil). Note that No. 6 residual oil must be heated (from 30 to 50°C) for handling and pumping purposes due to high viscosity at normal ambient temperatures. For atomization and burning, it must be heated further to reduce the viscosity needed for efficient atomization and combustion, usually to temperatures in the range of 70 to 130 °C (160 to 270°F). The exact temperature (and corresponding viscosity) requirement depends on factors including the burner design, atomization method (steam assisted, mechanical pressure, etc.), and viscosity characteristics of the No. 6 fuel oil (note that there is no one No. 6 oil; different No. 6 oils can have significantly different viscosities at the same temperature). Typically, mechanical pressure atomization nozzles require that the oil have a viscosity of 15 to 30 cSt (70 to 150 SSU), while steam assisted burner nozzles can handle higher viscosities ranging from 30 to 70 cSt (150 to 300 SSU). The 50 cSt ASTM value is an upper limit on what can be expected for No. 6 fuel oils at a typical firing temperature of 100°C (Perry and Green, 1994; Reed, 1986).

Additionally, the viscosity specification only applies to liquid waste fuels (not gaseous fuels, which are inherently less viscous than liquids, and not solids, for which viscosity is not applicable).

1.2.3 *Flash Point*

A specification on flash point is not being used since: (1) DOT and OSHA have regulations that control the hazards of flash point explosions; (2) it would preclude the inclusion of materials that are normally fuels such as methanol.

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1.2.4 *Total Halogens*

A comparable fuel specification for total halogens is used, generally in-lieu of meeting the individual specifications of chlorinated Appendix VIII compounds (expect PCBs for the most part). Limitation of the chlorine feed to the combustor is desired from an environmental protection perspective to: (1) reduce the emissions of the hazardous air pollutants of HCl and Cl_2, both of whose formation is directly related to the chlorine content of the waste feed; and (2) prevent the formation of chlorinated products of incomplete combustion (PICs), which includes PCDD/PCDF as well as chlorinated benzenes, biphenyls, phenols, etc. Limiting the waste feed chlorine level reduces the potential for the formation of chlorinated PICs through (Dellinger et al., 1990):

- Limiting the release from the combustion zone of undestroyed and/or partially fragmented chlorinated precursors contained in the waste feed. Note that kinetic theory and experimental work indicate the chlorination of unchlorinated hydrocarbons is very unlikely at combustion temperatures (i.e., chlorinated PICs are not formed from unchlorinated hydrocarbons in the combustion zone). Thus, the emissions of chlorinated PICs from the combustion zone is related directly to the chlorinated organic constituents in the waste feed. It is highly desired to minimize the level of chlorinated precursors in the combustion gases since the major route to formation of high molecular weight chlorinated PICs is through reactions of already chlorinated precursors.

- Limiting the potential for the formation of chlorinated PICs due to radical-radical association reactions as the combustion gas is cooled -- in particular organic radical reactions with Cl radicals formed in the combustion zone.

- Ensuring adequate flame stability (and corresponding combustion efficiency) and reducing flame sooting. Increasing levels of chlorine are known to increase flame sooting and decrease flame stability and efficiency. Cl atoms scavenge H atoms,

depleting the flame radical pool that drives the combustion reactions.

Note that a total halogen limit may have only a secondary effect on controlling PCDD/PCDF emissions. Analysis of PCDD/PCDF data from full-scale waste combustion systems indicates that the waste feed chlorine level does not have a dominant impact on PCDD/PCDF emissions (generally of primary importance is the PM air pollution control device temperature). However, the waste feed chlorine level may have a secondary influence. Certain well-controlled pilot-scale experimental studies indicate there can be a strong relationship between HCl and Cl_2 levels in the flue gas and PCDD/PCDF emissions (e.g., Gullett et al., 1994).

Additionally, a limit on total halogens, including both organic and inorganic forms, is appropriate since both forms in the waste fuel can contribute to halogenated PIC emissions. For example, PCDD/PCDF and other chlorinated PICs have been detected from sources burning both inorganic (e.g., salts) and/or organic chloride (e.g., plastics) containing wastes (e.g., Wikstrom et al., 1994; Fangmark et al., 1991; Christiansen, 1990; Nielsen, 1989). Inorganic chlorine salts have also been shown to act as a direct chlorine source for PCDD/PCDF formation at low de-novo synthesis temperatures (Addink and Olie, 1995).

Note that under well-controlled combustion conditions, the vast majority of organic halogens in the waste fuel feed will leave the combustor gas as HCl, HF, etc. Smaller levels will be in the combustion gas in the form of Cl_2, F_2, and halogenated organics, and some may also be present in the solid bottom and fly ash as salts. Inorganic halogen salts will also decompose to a lesser degree as HCl, HF, Cl_2, F_2, and PICs in the combustion gas; with the remainder as salts in the bottom and fly ash. Inorganic halogen salts are sometimes believed not to react at combustion temperatures due to high melting temperatures. However, work by Uchida et al., (1988) have shown that inorganic salts can directly contribute to HCl combustion gas levels (water vapor and zeolites participate in a reaction transforming chlorine salts to HCl). Thus, for halogenated hydrocarbon waste fuels, containing either inorganic or organic halogens, there is potential that under less optimum combustion conditions (higher CO, insufficient oxygen and mixing, etc.) halogenated PIC emissions may form.

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1.2.5 *Total Nitrogen*

A specification on total nitrogen is used, in addition to those on nitrogenated Appendix VIII compounds. Under oxidative conditions of typical hazardous waste combustors, the majority of waste nitrogen will be emitted as N_2 (not of environmental concern) or NO_x (a criteria air pollutant whose emissions levels are covered under the Clean Air Act ambient air quality standards for ozone control). However, under starved air (reducing) conditions, nitrogen will primarily form the HAPs HCN and NH_3. Starved air transient **?**puffs" can occur in hazardous waste combustors due to chamber overcharging (possibly due to unexpected surges in waste volatile composition), poor waste/air mixing, and poor liquid atomization. Additionally, nitrile radicals (CN^-) can form nitrogenated PICs (such as HAPs including hydrogen cyanide, acetonitrile, acrylonitrile, nitrophenols, nitrotoluenes, nitrobenzenes, aniline, acetamide, acrylamide, etc.) through radical-radical and radical-molecule reactions which occur as the combustion gas is cooled (Dellinger et al., 1990).

1.2.6 *Metals*

Benchmark specifications are set for the individual metals of Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Ag, and Tl (which include both Clean Air Act Title III and RCRA Appendix VIII metals). Limitation of the metals feed to the incinerator results in a direct reduction of metals emissions since, like chlorine, metals are not destroyed in the combustion process.

1.2.7 *Organics*

Specifications are set for RCRA Appendix VIII organics. Note that specifications are not set for some of the compounds on the Appendix VIII list because a routine analytical method is not available.

Specifications are set for oxygenates (at non-detect levels determined by the benchmark fuel analytical results). Oxygenates generally burn well and contribute to the combustion of other

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constituents in the fuel (organically bound oxygen provides a source of oxygen for the combustion process). Oxygenates are added intentionally to clean-burning ?reformulated" gasoline to enhance the completeness of combustion in internal combustion engines. However, under poor combustion conditions, breakdown of the oxygenate at the oxygen bond can lead to the production of free radicals (Weitzman, 1991). These radicals can recombine with other radicals or compounds to form higher molecular weight chlorinated PICs. Thus, a comparable fuel specification for oxygenates is used.

1.3 Parameters and Rationale for Synthesis Gas Fuel Specifications

Comparable fuel specifications are set for ?synthesis" gas (syn-gas) separately from solid and liquid hazardous wastes. The combustion of syn-gases meeting these specifications would be excluded from regulation as a hazardous waste. Syn-gas is generated by the gasification of hazardous wastes. Syn-gas is a mixture of primarily H_2 and CO, as well as the inerts of N_2, CO_2, Cl_2, S, etc. The syn-gas characteristics depend primarily on: (1) the composition of the material that is being gasified (to date, mostly natural gas, oil, or coal, although systems for wood, plastics, sludges, and other types of wastes are more recently being developed); (2) the use of oxygen vs. air for the gasification process; and (3) the amount of steam utilized for the gasification process (which affects the CO/H_2 ratio). Syn-gas has uses as:

- Feedstock in the chemical industry for making products such as ammonia, alcohols, acetic acid, MTBE, etc., as well as other hydrocarbons. Also, it is used as a source of hydrogen in the petrochemical industry for hydrogenation processes. For this, a well defined and homogeneous material (usually some fossil fuel) is generally used for the syn-gas generation; and

- Fuel for power generation, heating, etc.

To ensure that the combustion of syn-gas is comparable to that of fossil fuels, specifications are set on: (1) heating control; (2) general constituents for total chlorine, total nitrogen, and hydrogen

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sulfide; and (3) individual Appendix VIII constituents. Rationale for the selection and determination of these specifications is discussed in the following.

1.3.1 *Heating Value*

A minimum heating value limit of 100 Btu/scf is set for syn-gas. The minimum specification of 100 Btu/scf is based on syn-gas from the gasification of coal with oxygen. It is commonly required for gas turbine energy production.

For fuel usage related purposes, syn-gases are classified as either medium or low-BTU gases (medium generally being produced with pure oxygen, low-BTU generally with air). Medium BTU syn-gases generated from the gasification of fuels (including coal, fuel oil, biomass, municipal solid wastes, plastics, etc.) with pure oxygen can have heating values from 250-400 Btu/scf (Stultz and Kitto, 1992). Low-BTU syn-gases generated from the gasification of fuels with air can have heating values from about 100-200 Btu/scf. The heating value of the syn-gas depends primarily of the diluent content (nitrogen, carbon dioxide, chlorine, sulfur, moisture, etc.), which is a strong function of the syn-gas feed material composition and gasification process (particularly if air or pure oxygen is used for the gasification process). The heating value is not a strong function of the H_2/CO ratio since both gases have similar heating values on a Btu/scf basis (although a low H_2/CO ratio can adversely affect flame stability).

Syn-gas used as a fuel for power production in gas turbines typically requires a heat content from 250-450 Btu/scf, with a lower limit of around 200 Btu/scf. Intentionally manufactured syn-gases can have heating content levels as low as 100 Btu/scf (e.g., coal gasifiers with air). However, this gas by itself, although it may be quite burnable, does not achieve temperature and expansion ratios needed for thermodynamically efficient power generation. Thus, it is usually mixed with higher energy sources, and is not generally desired for most applications. Note that there are certain specially designed gas turbines (with very large ?silo" combustion chambers) that can handle very low-BTU (100 Btu/scf) syn-gases for power generation (for example, see Geiling (1992) and Gas Turbine World (1990)).

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Additionally, other low-BTU by-product gases are also used effectively for their fuel value (e.g., the blast furnace byproduct gas from steel manufacturing, with a heating level of about 50 Btu/scf and enhanced with gas and oil, is used in the furnace heating stoves).

Because syn-gas is sometimes used as a chemical feedstock, an absolute lower limit on heating value for comparable fuel classification may not be appropriate or needed because the syn-gas is not being used for energy recovery or supplementary purposes, making its heat content irrelevant. However, as a practical matter, whether or not syn-gas is being used as a chemical feedstock or fuel, the syn-gas is always being produced for its CO and/or H_2 content -- thus all gasification related syn-gases will have some appreciable heat content.

It is important to note that the heating value specification is expressed on a volumetric basis of Btu/scf (as opposed to Btu/lb for solid and liquids) because: (1) is it not appropriate to compare the heating value of different gases expressed in units of Btu/lb since the ratio of the weight-to-volume differs between different gases (particularly H_2 and CO); and (2) industry standard practice is to classify syn-gases based on the energy content per unit volume of gas.

1.3.2 *Hydrogen Sulfide*

A hydrogen sulfide (H_2S) specification of 200 ppmv is set. The sulfur content of the material used to produce the syn-gas is converted almost entirely into H_2S in the gasification process, with smaller amounts of COS. Thus, syn-gases produced from low sulfur content material such as wood, biomass, natural gas, and low sulfur fuel oil and coal, do not contain any appreciable H_2S. Once the syn-gas is burned under oxidizing conditions, the H_2S, if not removed prior to completing combustion, is converted to SO_x (primarily SO_2). SO_x emissions are regulated through the issuance of local air permits and the Clean Air Act national ambient air quality standards.

The H_2S content of high sulfur coal-based syn-gases can be over 1,000 ppmv (Stultz and Kitto,

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1992). However, in these cases, H_2S removal processes such as those based on the Claus process or regenerable metal sorbents are almost always used to reduce H_2S to well below 10 ppmv prior to syn-gas usage as a feedstock or for fuel value (for two technical reasons: (1) H_2S is much more easily removed than SO_x which are formed from syn-gas combustion, and (2) the syn-gas has a much lower flue gas volume than the gas produced from syn-gas full combustion). For use as a fuel, the technical limitation on the H_2S content of syn-gas is due to corrosion of downstream gas handling equipment, such as turbine blades, fans, etc. Generally levels below 200 ppmv can be tolerated. Note that for use as a feedstock, levels under 1 ppmv are usually required.

1.3.3 *Nitrogen (other than N_2)*

A nitrogen compound level (NH_3+HCN, other than N_2) of 300 ppmv is set. This is based on the typical nitrogen compound levels (NH_3+HCN) from syn-gases manufactured by coal from 100 to 300 ppmv (Stultz and Kitto, 1992). Nitrogen compounds in syn-gases are mostly in the form of NH_3, with smaller amounts of HCN and other nitrogenated organics. When syn-gases are burned, the nitrogen is converted primarily to NO_x, which is regulated through the issuance of local air permits and the Clean Air Act national ambient air quality standards. However, due to the increased potential to form nitrogenated PICs (as discussed previously for the comparable fuel specification for total nitrogen in solid and liquid wastes), especially from incomplete combustion conditions associated with inefficient incinerators, a specification on total nitrogen (other than N_2) is set.

1.3.4 *Total Halogens*

A total halogen specification for syn-gas of 1 ppmv is set. For use as a feedstock, a total halogen level of under 1 ppmv is usually required. For use as a fuel, lower concentrations of total halogens are desired to prevent corrosion in the downstream syn-gas burning equipment. In typical gasification processes, the majority of the halogens contained in the feedstreams are converted to syn-gas as gaseous halides and/or halogens. (Note that in some cases where the feedstream also contains alkali constituents such as sodium or lime, halogens may also be found in the bottom or entrained ash

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as solid salts). The raw halogen content of the syn-gas is thus a direct function of the halogen content of the material used to generate the syn-gas. For low halogen content materials, such as natural gas, and some fuel oils, coal, wood, and biomass streams, the syn-gas will not contain appreciable halogen levels. Alternatively, for some higher halogen content materials, such as certain coals with halogen contents of greater than 1000 ppmv, the concentration of halogen in the resulting syn-gas may be greater than 50 ppmv. However, as discussed above for hydrogen sulfide, when the syn-gas halogen content is high, halogen removal processes are used prior to syn-gas use as a fuel or feedstock. Halogen removal efficiencies are usually very high, i.e., greater than 99%. Thus, a level of 1 ppmv is reasonably achievable even for high halogen content syn-gas materials.

1.4 Collection of Liquid Fossil Fuel Samples Used for Analysis to Determine Benchmark

Commercially available fossil fuels are very diverse. The constituents in fuels can vary, depending on where fuels are refined, the condition of the catalysts used, and the origin of the raw material. Typically, fuels found on the East Coast are refined from Venezuelan and Middle East crude. Fuels on the West Coast are refined from domestic crude, although they can contain Venezuelan crude. This makes it almost impossible to determine the source of a given fuel. All fossil fuels are prepared to meet a series of American Standards for Testing Materials (ASTM) specifications, which were adopted as commercial standards by the National Bureau of Standards. These standards have been revised many times to meet changes in supply, so it is likely that they will continue to change as supplies change. The specifications focus on the physical parameters of the fuels, such as distillation temperatures, specific gravity, and viscosity.

To set the preliminary specification for comparable fuels, the EPA needed data on the concentrations of hazardous constituents in these fuels, as well as data on the physical parameters (viscosity, heating value, etc). Since this data is not readily available, EPA collected, from various geographic locations around the country (Table 1-3), representative samples from the end uses of conventional liquid fuels. This approach was designed to ensure a representative sampling, since constituents can vary, depending on the point of origin.

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TABLE 1-3. GEOGRAPHIC REGIONS WHERE FUEL SAMPLES WERE COLLECTED

LOCATION	SAMPLES COLLECTED
Irvine, California	Gasoline and Nos. 2, 4, and 6 fuel oils
North West New Jersey	Gasoline and No. 2 fuel oil
North East Connecticut	Gasoline and Nos. 2 and 6 fuel oils
Coffeyville, Kansas	Gasoline and No. 2 fuel oil
Fredonia, Kansas	Gasoline and No. 2 fuel oil
Norco, Louisiana	Gasoline and Nos. 2 and 6 fuel oils
Hopewell, Virginia	Gasoline and Nos. 2 and 6 fuel oils
Research Triangle Park, North Carolina	Gasoline and No. 2 fuel oil

A database comparing emissions using comparable fuels and fossil fuels does not exist. Since a comparison cannot be made between these fuels, a database on the toxic constituents of fuels being burned needs to be developed. This study analyzed each fossil fuel for all 40 CFR, Part 261, Appendix VIII toxic organic constituents for which a reasonable approach exists under SW-846 methodologies. The study also covered physical parameters, using ASTM protocols.

Based on the results of this study, a specification can be derived for comparable fuels that ensures they contain no more toxic constituents than the ?benchmark" fuel(s). In addition, method detection limits (MDLs) were determined for each SW-846 Method used, in accordance with 40 CFR, Part 136, Appendix B. Section 2 of this document discusses the process used for determining the MDLs in more detail.

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2.0 SAMPLING AND ANALYSIS

As stated previously, EPA collected and characterized samples of gasoline and Nos. 2, 4, and 6 fuel oils in order to provide data on which to base a ?benchmark" fuel. Altogether, EPA collected ten (10) gasoline samples, eleven (11) No. 2 fuel oil samples, one (1) No. 4 fuel oil sample, and seven (7) No. 6 fuel oil samples from various geographic regions around the country.

EPA worked with the Chemical Manufacturers Association (CMA) and its member organizations in obtaining fuel samples. CMA supplied a list of members to contact, as well as a letter endorsing EPA's efforts in this area. Contact was initiated with each company by telephone. They were questioned as to the nature of the fuels they burned in their boiler systems and, if one or more was a fuel of concern, whether they would they be willing to supply EPA with a one-liter sample for characterization and quantification.

Many industrial users were either skeptical about participation in a program of this type or had converted their units to natural gas. However, approximately 10% of those contacted were willing to cooperate. A number of industries had switched from No. 6 fuel oil to No. 2 fuel oil and/or natural gas, due to the difficulties and energy required to handle No. 6 fuel oil, especially in colder weather. Also, a very limited number of companies in the United States use No. 4 fuel oil. With narrow time constraints for this program, the limited use of Nos. 4 and 6 fuel oil by U.S. industries, and the corporate restraints on participating in these type of programs, EPA was limited in the number of Nos. 4 and 6 fuel oil samples it could obtain.

2.1 Analysis of Samples

This aspect of the program focused on the analysis of the combustion fuel samples (gasoline and Nos. 2, 4, and 6 fuel oils) collected for the program in order to characterize the chemical and physical properties and the presence of the hazardous constituents listed in 40 CFR, Part 261, Appendix VIII. From a historical perspective, 40 CFR, Part 261, Appendix VIII is the reference list

of potential hazardous constituents which need to be quantitated in the fossil fuels in order to set a specification. From a practical perspective, however, the essence of such a list and testing for the substances in the list present significant problems. The problems and some of the difficulties they impose are as follows:

1. The chemicals listed in 40 CFR, Part 261, Appendix VIII, are listed as they would exist in a pure state, as opposed to the forms they would take after being dispersed into the environment;

2. In developing 40 CFR, Part 261, Appendix VIII, no consideration was given to factors such as the environmental fate or the level of production of a given chemical. The list contains both prevalent, mobile, and toxic chemicals, that present major risks, and some chemicals that present a lesser risk due to low prevalence or instability in a matrix such as fuel oil or water; and

3. Analysis of many constituents from 40 CFR, Part 261, Appendix VIII would be impossible and/or impractical for the matrix being considered in this study for a variety of reasons: there are indefinitely large classes of compounds, many of which would not exist in fossil fuels; and standards do not exist for many other compounds.

The fundamental concern for EPA in developing the comparable fuel exclusion is to create a database by quantitating as many of the constituents from 40 CFR, Part 261, Appendix VIII as could readily and reliably be identified in the fossil fuels. However, the development and validation of new methodologies was not within the scope of this program. Thus, it was necessary to take an approach that used existing methodologies to quanitate as many of the constituents in 40 CFR, Part 261, Appendix VIII as possible.

To quanitate each fossil fuel sample, EPA chose to use the methodologies defined for the constituents from 40 CFR, Part 261, Appendix VIII subject to the following criteria:

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1) It must be practical to analyze fossil fuels for the constituent under consideration.

The chemistry of fossil fuels, the processes involved in their production, and the availability of practical and reliable analytical methodologies and standards were used to identify whether constituents fit the later consideration.

SW-846, ?Testing Methods for Evaluating Solid Waste," presents the methods most commonly used for quantitating organic and metal constituents in various matrices. Since matrices vary in waste streams, the methods have some flexibility. The analyst is then allowed to adjust the sample preparation procedures for the matrix being analyzed. The following information pertains to all analytical data generated to date for the Appendix VIII analytes.

In all cases the laboratory attempted to use approved and published methodologies. There was not time to determine what procedures were under development for fuel oil analysis by EPA or other agencies/laboratories at the time the analyzes took place.

Many of these analytes presented special analytical challenges since methods for their analysis were not available in SW-846 or CLP methods. Additionally, the gasoline and fuel oil matrices compounded the difficulties experienced in these analyses. Consequently, data for all the targets are not presented in this report. Table 2-1 details analytes for which data is not provided and why these data points were not generated.

It is important to note that compounds marked as not detected by VOA, semi-VOA, or HPLC were not detected using instrument conditions attempted to date. These compounds may be detectable at concentrations greater than 200 ppm by different instrument conditions than those attempted. Compound by compound research would be required to determine an approach for their analysis.

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Many metallic compounds appearing in the target lists were not specifically analyzed. Samples were analyzed for metallic elements, not organo-metallic compounds. Direct analysis for organo-metallic compounds would have been preferable, however, to the best of our knowledge, methods are not available to measure organo-metallics in these types of matrices. For example, thallium (1) acetate was reported as total thallium or lead phosphate reported as total lead.

Due to time constraints for this project, other categories were too broad for complete analysis. There are cases where the number of compounds, categories such as chlorinated fluorocarbons, are too great to analyze for every possible isomer. In situations like these, three of the more common chlorinated freons, dichlorodifluoromethane, trichlorofluoromethane, and 1,1,2-trichloro-1,2,2-trifluoroethane have been analyzed during the analytical phases of the clean fuels initiative. Results for chlorinated freons can be expressed as the sum of these compounds. Some of these reported compounds are listed by a synonym of the name found in Appendix VIII.

In all the analyses performed, the hydrocarbon matrix presented analytical difficulties. Most notable were the VOA and semi-VOA analyses performed by mass spectrometry. In most cases, the analyst had to manually integrate internal standards, surrogates, and targets, especially targets in the matrix spikes. These manual integrations were subjective, but were never done to intentionally misrepresent the data. In every manual integration, an honest attempt was made to isolate only the areas of interest. It must be noted that other analysts or data reviewers may have made the manual integrations differently.

For this study, each sample was collected in a pre-cleaned, 1-liter amber glass sample bottle with a Teflon®-lined cap. This type of sample bottle is available commercially with a certificate of analysis. All sample bottles were pre-cleaned according to EPA protocol. Samples were collected through purge valves, located on the main system feed lines prior to the burner. The fuel was allowed to purge through the valve and into a waste container, ensuring the collection of a fresh sample and removing any debris which may have collected in the line or valve.

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The following discussion summarizes the sample preparation, instrumental analysis and quality control procedures used to generate the data collected for each of these samples. Each section also briefly discusses any analytical difficulties encountered by the laboratory.

2.2 GC/MS Volatiles

2.2.1 *Method Summary*

A method for analyzing the volatile compounds was developed based on SW-846, Method 8240. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. Standards containing the target analytes in methanol were prepared at five levels. One microliter of each of these standards was used to calibrate the analytical system. Samples were treated as if they were at high concentrations and diluted weight to volume prior to analysis. This preparation was then injected into a heated injection port thereby transferring the sample to the analytical system. The direct injection technique was chosen over purge and trap because of the high volatile organic background in the matrix.

2.2.2 *Sample Preparation*

Method 8240 calls for a 2.5x weight to volume sample dilution/extraction with methanol. The methanol is the analyzed portion. To provide the lowest detection limits, a 2x dilution/extraction was performed. Actual sample weights were recorded and used to calculate the true dilution factor. Surrogate compounds were prepared in a methanol solution. The sample was diluted with methanol and surrogates were added. For gasoline, 1 g was diluted with 10 mls of methanol. In the case of No. 2, 4, and 6 fuel oils, 4 g was extracted with 10 mls of methanol, since the fuel oils were not miscible with methanol.

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Table 2-1 Analytes from Appendix VIII Not Determined During Study

Analyte	Reason Data Could Not be Generated.
Azaserine	Compound toxicity too great to safely handle
Epinephrine	A solvent compatible with analysis not found
Ethylenedithiocarbamic acid	Standard not available
Mitomycin C	A solvent compatible with analysis not found
alpha-naphthylthiourea	A solvent compatible with analysis not found
Reserpine	A solvent compatible with analysis not found
Selenourea	Too reactive in air and water
Streptozoticin	A solvent compatible with analysis not found
Thiosemicarbizide	A solvent compatible with analysis not found
Cyanogen	Standard not available
Nitrogen mustard	Standard not available
Methyl hydrazine	Not detected by voa, semi-voa, or HPLC analysis
Trypan blue	Not detected by voa, semi-voa, or HPLC analysis
Warfarin	Not detected by voa, semi-voa, or HPLC analysis
Chloromethoxy methane	Not detected by voa, semi-voa, or HPLC analysis
Chloroacetaldehyde	Not detected by voa, semi-voa, or HPLC analysis
Formic acid	Not detected by voa, semi-voa, or HPLC analysis
2-Methyl azidrine	Not detected by voa, semi-voa, or HPLC analysis
Dimethyl sulfate	Not detected by voa, semi-voa, or HPLC analysis
Tetranitromethane	Not detected by voa, semi-voa, or HPLC analysis
Aldicarb	Not detected by voa, semi-voa, or HPLC analysis
3,4-Diaminotoluene	Not detected by voa, semi-voa, or HPLC analysis
Methylthiouracil	Not detected by voa, semi-voa, or HPLC analysis
Ethyl carbamate	Not detected by voa, semi-voa, or HPLC analysis
Maleic anhydride	Not detected by voa, semi-voa, or HPLC analysis
Tetraethyl pyrophosphate	Not detected by voa, semi-voa, or HPLC analysis
Chloromethyl methyl ether	Not detected by voa, semi-voa, or HPLC analysis
Creosote	Chromatographically identical to and inseparable from fuel oil
Coal tar creosote	Chromatographically identical to and inseparable from fuel oil
Nitroglycerine	Not detected by voa, semi-voa, or HPLC analysis
N-nitrosodiisopropylamine	Standard could not be procured in time for analysis
N-Nitrosodiethanolamine	Standard could not be procured in time for analysis
1,1-dichloropropane	Standard could not be procured in time for analysis
N-nitroso-N-ethylurea	Not detected by voa, semi-voa, or HPLC analysis
N-nitroso-N-methylurea	Not detected by voa, semi-voa, or HPLC analysis
Dithiobiuret	Not detected by voa, semi-voa, or HPLC analysis
Ethylene glycol monoethyl ether	Not detected by voa, semi-voa, or HPLC analysis
Methanol	Not detected by voa, semi-voa, or HPLC analysis
Phosphoricdithioic acid, Trimethyl Ester	Standard not available

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2.2.3 *Instrumental Analysis*

SW-846, Method 8240 was employed for the instrumental analysis. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. One microliter of each methanol extract was injected into a heated injection port thereby transferring the sample to the analytical system.

2.2.4 *Quality Control*

Method 8240 was followed as closely as the analyte target list and sample matrix would allow. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was analyzed for each matrix. Section 2.14 of this report presents a discussion of surrogate spiking compound results for each sample and matrix spike as well as laboratory control sample (LCS) results for each analysis type. The QC results for surrogates are in Appendix D. The following specific criteria were used for this project:

- 50 ng of bromofluorobenzene (BFB) was analyzed at least every twelve hours with the tuning fragmentation pattern meeting the criteria specified in 8240;

- A five-point initial calibration curve with each volatile target was analyzed prior to sample analysis. However, since documentation on the behavior of these compounds could not be found, arbitrary limits were not set for the initial calibration. This data should be used as a first attempt to determine practical limits for these compounds;

- A continuing calibration was analyzed after each 12-hour BFB tune. Again, arbitrary limits were not set until practical recovery limits can be established; and

- The following Internal Standards and surrogates were used during the analysis.

Internal Standards	Concentration	Surrogates	Concentration
Bromochloromethane	50 mg/kg	1,2-Dichloroethane-d_4	50 mg/kg
1,4-Difluorobenzene	50 mg/kg	Toluene-d_8	50 mg/kg
Chlorobenzene-d_5	50 mg/kg	Bromofluorobenzene	50 mg/kg

Table 2-2 Comparable Fuels Procedures - Organics

Volatiles Analyses			
	Gasoline	**No. 4 & 6 Fuel Oil**	**No. 2 Fuel Oil**
Sample Prep	Diluted with Methanol Matrix soluble in Methanol	Methanol Solvent Matrix **not** soluble in Methanol	Methanol Solvent Matrix **not** soluble in Methanol
LCS	Standards Spiked into Methanol	Standards Spiked into Methanol	Standards Spiked into Methanol
Matrix Spiking & Surrogates	Gasoline diluted with Methanol then MS Standards & Surrogates Added	Methanolic Standards Spiked into Fuel Oil, then extracted with Methanol	Methanolic Standards Spiked into Fuel Oil, then extracted with Methanol
Comments	None	See Section 2.1.5 for related comments.	See Section 2.1.5 for related comments.
Semi-Volatiles Analyses			
Sample Prep	Diluted with MeCl Matrix soluble in MeCl. Extract was solvent exchanged to facilitate evaporation of interfering compounds such as xylenes.	Diluted with MeCl Matrix soluble in MeCl GPC Cleanup	Diluted with MeCl Matrix soluble in MeCl GPC Cleanup
LCS	Standards Spiked into MeCl	Standards Spiked into MeCl	Standards Spiked into MeCl
Matrix Spiking & Surrogates	Standards Spiked into Gasoline, then diluted with MeCl	Standards Spiked into Fuel Oil, then diluted with MeCl	Standards Spiked into Fuel Oil, then diluted with MeCl
Comments	None	None	None

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HPLC Analyses			
Sample Prep	Extracted with TCLP Extraction Fluid	Extracted with TCLP Extraction Fluid	Extracted with TCLP Extraction Fluid
LCS	Standards Spiked into Hexane then extracted	Standards Spiked into Hexane then extracted	Standards Spiked into Hexane then extracted
Matrix Spiking & Surrogates	Standards Spiked into Gasoline/TCLP fluid mixture, then extracted	Standards Spiked into Fuel Oil/TCLP fluid mixture, then extracted	Standards Spiked into Fuel Oil/TCLP fluid mixture, then extracted
Comments	Mixed equal volume of gasoline and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.	Mixed equal volume of Fuel Oil and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.	Mixed equal volume of Fuel Oil and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.

2.2.5 *Analytical Difficulties*

The oily matrix of these samples posed the largest problem. Gasoline samples were miscible with methanol, but the fuel oil samples were not. Since the fuel oil samples were not miscible with methanol, results are likely to be biased low since the entire sample was not analyzed. As stated above, surrogate compounds were prepared in a methanol solution. This surrogate solution was then added directly to the specific matrix. For gasoline, which was soluble with methanol this does not pose a problem, however, for the fuel oils, since they were not soluble with methanol, the surrogates and matrix spike results may not be truly indicative of analyte recovery from the actual matrix. Headspace analysis may be a viable alternative to SW-846 8240, methanol dilution for future work. Another significant problem was the high frequency of instrument maintenance required to maintain analytical reliability. Also, several target analytes showed non-linear or inconsistent responses. Although exceeding 50% RSD, epichlorohydrin and benzenethiol were all present in each initial calibration point.

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2.3 GC/MS Semi-Volatiles

2.3.1 *Method Summary*

SW-846, Method 8270A was followed as closely as possible for the on-instrument analysis and Method 3520 was used to clean-up samples by gel permeation chromatography to allow their analysis at the lowest possible dilutions.

2.3.2 *Sample Preparation*

The gasoline samples were prepared by solvent exchange into methylene chloride. This procedure removed some of the volatile hydrocarbon background allowing analysis at lower dilutions than untreated gasoline. Surrogates were added prior to the solvent exchange to monitor analyte recovery. Based on the results from the MDL study (Appendix C) the solvent exchange procedure had no apparent impact on the semi-volatile results.

No. 2, 4, and 6 fuel oils were prepared by weighing 1 gram of sample, adding surrogate spiking compounds, then diluting to 10 mls with methylene chloride. The resulting solution was run through a gel permeation chromatography clean-up prior to analysis.

2.3.3 *Instrumental Analysis*

SW-846, Method 8270A was employed for the instrumental analysis. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. One microliter of each methylene chloride extract was injected into a heated injection port thereby transferring the sample to the analytical system.

2.3.4 *Quality Control*

Method 8270A was followed and included the following QC procedures. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was

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analyzed for each matrix. The following specific criteria were used for this project:

- A 50 ng DFTPP tune was run every twelve hours and met the criteria found on page 8270-9 of SW-846, Method 8270A before any other analyses were run.

- A five-point initial calibration containing each additional analyte was analyzed and average response factors for each compound calculated. Since no documentation on the behavior of these compounds could be found, arbitrary limits were not set for the initial calibration.

- Every twelve hours, immediately following the DFTPP tune, a continuing calibration was analyzed. However, for reasons listed above, arbitrary acceptance limits were not set. All samples were quantitated against the associated batch continuing calibration.

- Samples were run as undiluted as possible. Dilutions were made to prevent detector saturation by non-target peaks.

- Six (6) surrogate compounds, three (3) acid and three (3) base neutral extractable compounds, were spiked into each sample prior to the sample's preparation for analysis as follows:

Surrogates	Concentration	Surrogates	Concentration
Phenol-d_6	100 ppm on-column	2-Fluorobiphenyl	100 ppm on-column
2-Fluorophenol	100 ppm on-column	Nitrobenzene-d_5	100 ppm on-column
2,4,6-Trichlorophenol	100 ppm on-column	4-Terphenyl-d_{14}	100 ppm on-column

- Six (6) internal standards were used for target quantitation. All six (6) internal standards met +/- 50% recovery in each sample as compared to the associated continuing calibration for the sample analysis to be considered valid.

Internal Standards	Concentration	Internal Standards	Concentration
1,4-Dichlorobenzene-d_4	40 ppm final dilution	Phenanthrene-d_{10}	40 ppm final dilution
Naphthalene-d_8	40 ppm final dilution	Chrysene-d_{12}	40 ppm final dilution
Acenaphthene-d_{10}	40 ppm final dilution	Perylene-d_{12}	40 ppm final dilution

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2.3.5 *Analytical Difficulties*

Most problems involved contamination of the analytical instrumentation by the fuel oil matrix which caused occasional peak broadening, baseline elevation, and reduced sensitivity of easily degraded analytes. However, routine maintenance to the injection port inlet after each batch of fuel oil analysis kept the GC/MS system within acceptable operating parameters.

Most analytes performed linearly in the initial calibration. However, endothall, 6-propyl-2-thiouracil, and strychnine, while present in all calibration points, were greater than 50% RSD. Several other compounds exhibited poor response factors which contributed to the inability to detect them in matrix spikes.

The matrix spikes presented the greatest analytical problems. To yield meaningful recovery data, No. 2 fuel oil was diluted 10:1 with methylene chloride and spiked with compounds in a methanol solution. The resulting solution was cleaned up by GPC, then diluted 4:1 in methylene chloride for analysis. This solution minimized fuel oil interferences. All spiked compounds recovered within the calibration range except 4-aminopyridine, *m*-phenylenediamine, 3,3'-dimethoxybenzidine, and 6-propyl-2-thiouracil.

The gasoline matrix spike was solvent exchanged into methylene chloride to reduce as much of the aromatic background as possible. No further dilution was made prior to analysis. In this mix, the following compounds, if recovered, were masked by the matrix background and reported as not detected; 2,3-dichlorophenol, 2,5-dichlorophenol, 3,4-dichlorophenol, 3,5-dichlorophenol, 3-chlorophenol, 4-chlorophenol, acetone cyanohydrin, 2,3,4-trichlorophenol, 2,3,5-trichlorophenol, 2,3,6-trichlorophenol, thiofanox, and 4-aminopyridine. Due to the time restraints of this project, a matrix spike for fuel oils No.4 and No. 6 was not prepared and analyzed.

2.4 High Pressure Liquid Chromatography (HPLC)

2.4.1 *Method Summary*

A method for analyzing fuel oils was developed modeling similar HPLC methods such as SW-846, Method 8310 as closely as possible. A modified TCLP type extraction was performed and a diode array HPLC detector was used to measure analyte concentration.

2.4.2 *Sample Preparation*

Fuel oils were extracted with a Toxicity Characteristic Leaching Procedure (TCLP) extraction fluid by adding equal volumes of gasoline or No. 2 fuel oil with the TCLP fluid in a 22 ml vial. No. 4 and 6 fuel oils were first diluted 10:1 with hexane due to their viscous properties which allowed thorough mixing of sample and extraction fluid. The 22 ml vial was sealed and agitated on a TCLP extraction apparatus for a minimum of 12 hours. Additional cleanup of the TCLP extract was not required.

2.4.3 *Instrumental Analysis*

A 10 microliter aliquot of extraction fluid was analyzed by HPLC using a 25 cm x 4.6 mm, 5 micron particle, reverse phase ABZ+Plus column. A diode array detector was used to measure analyte concentration.

2.4.4 *Quality Control*

Method 8310 was followed as closely as the sample matrix would allow. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was analyzed for each matrix. Section 2.14 of this report presents a discussion of surrogate spiking compound results for each sample and matrix spike as well as laboratory control sample (LCS) results for each analysis type. The QC results for surrogates are in Appendix D. The following specific criteria were utilized.

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- Internal standards were not used. External calibration procedures were used to measure analyte concentration.

- Acetophenone was used as a surrogate to evaluate extraction performance. The surrogate was added to the 22 ml vial just prior to the agitation process. Surrogate was added to produce a concentration of 20 mg/kg on-column.

- A five-point calibration curve was analyzed for quantitation of analytes. However, since documentation on the behavior of these analytes could not be found, arbitrary limits on the correlation coefficients of the analytes were not set. Instead, the curves were analyzed and processed to the best ability of the analyst. This data should be used as a first attempt in determining acceptable calibration curve limits.

- A QC check was analyzed at least every twelve hours during sample analysis. An arbitrary limit of +/- 30% recovery for each analyte was adopted for the QC check. The acceptance limit may be reduced when more data about the behavior of these analytes is collected and evaluated.

- No recovery limits for surrogate recovery were arbitrarily set. However, the recovery had to be at least to the compound's detection limit.

2.4.5 *Analytical Difficulties and Recommendations*

Since each fraction was prepared and analyzed separately, the spiking concentrations ranged from 20 ppm in the gasoline to 100 ppm in the fuel oils. While the gasoline spikes showed recovery for all analytes, some of the recoveries were close to the lower calibration limit. For this reason, subsequent spiking concentrations were increased.

The analytes spiked into the fuels are not readily soluble in a non-polar matrix. For this reason, the spiking solutions were prepared in methanol to get them into a liquid matrix and the methanol solution was added to the extraction vessel with sample and extraction fluid. Under these conditions,

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the spiked compounds probably did not dissolve into the fuel oils matrix prior to extraction and therefore, the generated data may only provide very limited information.

Not all spiked compounds recovered ideally. In gasoline, thioacetamide only recovered at 10% and the diamines at about 50%. MNNG and ethylene thiourea were at nearly 200% recovery even though these compounds were not detected in the unspiked sample. Only thioacetamide recovered unusually in No. 2 fuel oil at nearly 300% with no detection of this compound in the unspiked sample. Thioacetamide also recovered high in the No. 6 fuel oil. Additionally, neither MNNG nor ethylene thiourea was detected in the matrix spike of No. 6 fuel oil.

The following are offered as suggestions for possible future studies. Due to the time constraints for this project, these possibilities were not tested. Different analytical columns may improve analyte recovery and chromatographic quality. Also, a much larger range of analytes may be analyzed by HPLC with different columns.

A better way of spiking fuel oils with polar analytes may be possible. However, these procedures may have to be researched and tested on a compound-by-compound basis. Entire classes of analytes were attempted for this project to analyze the largest number of analytes possible. In addition, other extraction techniques such as solid phase extraction may improve recovery and increase the number of analytes seen by HPLC.

2.5 Dioxins and Dibenzofurans

2.5.1 *Method Summary*

Due to the large number of individual isomers, analyte toxicity, and the high cost of standards, the dioxins (PCDD) and dibenzofurans (PCDF) were not analyzed by a published method, but as follows.

A standard was procured and calibrated for one select isomer of each group. For example, there are seven (7) isomers of tetrachlorodibenzo-p-dioxins, but only 2,3,7,8-PCDD was analyzed.

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The remaining isomers were searched for as 2,3,7,8-PCDD. The following listing provides specific isomer information.

Tetrachlorodibenzo-p-dioxins (Searched as 2,3,7,8-PCDD)

2,3,7,8-PCDD	1,2,3,4-PCDD
1,3,6,8-PCDD	1,3,7,9-PCDD
1,3,7,8-PCDD	1,2,7,8-PCDD
1,2,8,9-PCDD	

Pentachlorodibenzo-p-dioxins (Searched as 1,2,3,7,8-PCDD)

1,2,3,7,8-PCDD	1,2,3,4,7-PCDD

Hexachlorodibenzo-p-dioxin (Searched as 1,2,3,6,7,8-PCDD)

1,2,3,4,7,8-PCDD	1,2,3,6,7,8-PCDD
1,2,3,7,8,9-PCDD	

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (only hepta isomer)

Octachlorodibenzo-p-dioxin (only octa isomer)

Tetrachlorodibenzofurans (Searched as 2,3,7,8-PCDF)

2,3,7,8-PCDF	1,2,3,4-PCDF
1,3,6,8-PCDF	1,3,7,9-PCDF
1,3,7,8-PCDF	1,2,7,8-PCDF
1,2,8,9-PCDF	

Pentachlorodibenzofurans (Searched as 1,2,3,7,8-PCDF)

1,2,3,7,8-PCDF	1,2,3,4,7-PCDF

Hexachlorodibenzofurans (Searched as 1,2,3,6,7,8-PCDF)

1,2,3,4,7,8-PCDF	1,2,3,6,7,8-PCDF
1,2,3,7,8,9-PCDF	

1,2,3,4,6,7,8-Heptachlorodibenzofuran (only hepta isomer)

Octachlorodibenzofuran (only octa isomer)

A curve was not analyzed for these compounds. Instead, a one-point calibration was run after each 12- hour DFTPP tune. The analytical instrument was calibrated to look for PCDDs and PCDFs

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in samples in a present or not present mode rather than a quantitative mode.

2.5.2 *Sample Preparation*

For gasoline, PCDDs and PCDFs were searched concurrently with the semi-volatile analyses. See the semi-volatile sample preparation for details.

For the No. 2, 4, and 6 fuel oil samples, the GPC extracts could not be used for PCDD and PCDF analysis. The No. 2 fuel oil spiked with these compounds had no recovery. It was assumed that the GPC process removed these analytes from the spike.

Instead, No. 2 fuel oil was spiked with PCDDs and PCDFs in a 10:1 dilution then cleaned up with sulfuric acid. The remaining organic layer was analyzed with no further dilution. To minimize waste product with PCDDs and PCDFs, only No. 2 fuel oil was spiked. The remaining unspiked fuel oils were prepared in the same way prior to analysis.

2.5.3 *Instrumental Analysis*

See the semi-volatile instrumental analysis for details.

2.5.4 *Quality Control*

A method blank was analyzed for each matrix.

2.5.5 *Analytical Difficulties and Recommendations*

The sample clean-up used for this analysis effectively removed most of the hydrocarbon background. If this clean-up procedure was used with SIM mode mass spectrometry or high resolution mass spectrometry, much lower detection limits may be possible for PCDDs and PCDFs.

Also, calibration for each isomer in a five-point curve is possible. However, the cost of the

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standards and waste disposal would be significant.

2.6 Herbicides

2.6.1 *Method Summary*

SW-846, Method 8150 was followed for the on-instrument analysis and Method 3580 (Waste Dilution) was used in the initial sample preparation.

2.6.2 *Sample Preparation*

Samples were prepared in hexane as per Method 3580. A 1.0 ml aliquot was taken from the 3580 fraction, added to 0.2 ml methanol and brought to a volume of 5.0 ml with diethyl ether. Samples were then derivitized by the diazomethane bubbler procedure as per Method 8150. Samples were then analyzed by gas chromatography.

2.6.3 *Instrumental Analysis*

Instrumental analysis was conducted by injecting one (1) µl of extract on dual capillary columns equipped with electron capture detectors (ECD). The capillary columns employed were a DB-608 and a DB-1701.

2.6.4 *Quality Control*

A five-point external standard calibration procedure was used, with a 12-hour window for valid sample analyses. 2,4-Dichlorophenylacetic acid was used as a surrogate. No limits for surrogate recovery were set. A method blank was analyzed for each matrix.

2.6.5 *Analytical Difficulties and Recommendations*

The hydrocarbon matrix did not seem to cause interference in the derivitization of the acid

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herbicides.

2.7 Metals

2.7.1 *Method Summary*

EPA SW-846, Method 3040 was used for the preparation of all samples in this study. The method is a dissolution procedure. All dissolved samples were then analyzed by the appropriate SW-846 flame method, with the exception of arsenic and selenium, where the appropriate graphite furnace atomic absorption method was used. Mercury was analyzed by cold vapor atomic absorption.

2.7.2 *Sample Preparation*

All samples were prepared using EPA SW-846, Method 3040. All of the samples were diluted 1:10 with xylene. Final results were reported as mg/kg from the original weight.

2.7.3 *Instrumental Analysis*

Diluted samples were analyzed by the appropriate flame atomic absorption methodology, with the exception of arsenic and selenium, where the graphite furnace atomic absorption was chosen, and mercury, which was analyzed by cold vapor atomic absorption. The analysis of all of the diluted samples proceeded normally.

2.7.4 *Quality Control*

In general, a blank and three standards were used to perform initial calibration. Correlation coefficients were calculated for each curve, a QC check sample was analyzed after each curve, with the exception of osmium. An initial calibration verification and an initial blank verification were then performed. After every ten samples or between matrices, a calibration verification and a blank verification were performed. A duplicate sample and a matrix spike were performed on each matrix along with a method blank.

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For each metal analyte, a standard curve was performed. In all cases, the source for the stock standard was SPEX. The QC check sample was obtained from Conostan. All curves were linear and most correlation coefficients were better than 0.995. At the beginning and during each run, standard calibration checks and blank calibration checks were performed. All initial and continuing calibration blanks were less than the established PQL. All initial and continuing calibration verification results were between 90-110% with the following exceptions: Lead stayed at about 111% for the duration of the run and did not deviate more than 1-2%; and arsenic was variable, although most of the values were 90-110%. Due to its volatile nature, the osmium results were 80-120%.

Sample matrix QC consisted of preparing and analyzing one duplicate and spike for each matrix. For values significantly above the PQL, the results for relative percent differences were less than 20%. The No. 4 fuel oil's selenium result at the PQL showed some variability in the duplicate result. This may be due to the matrix. Most of the spike results were very good and fell within the 75-125% limit with the following exceptions: The barium spike for the No. 6 fuel oil returned a value of 72%. This could be attributed to the matrix; the silver spike results were unusual in that they were all high. This may be due to some stabilizing effect in the fuel versus xylene solvent; all selenium results were good, except for the No. 4 fuel oil mentioned above. Spike results for mercury were exceptional, relative to the method used. This round of results gave 36-47% recovery for mercury spike across the matrices.

2.7.5 *Analytical Difficulties and Recommendations*

The analysis of all of the diluted samples proceeded normally. Most of the spike results were very good and fell within the 75-125% recovery limit with the following exceptions. Osmium in the gasoline matrix was 59% and tin in the No. 4 and 6 fuel oil was low. While it is unknown why the osmium result was so low, the tin results could be attributed to the matrix.

The mercury method is not as well suited to the matrices encountered in this study. The spike results were the best that could be obtained under these conditions. In the time allowed, we could not find a second standard source for thallium and manganese. Silver displayed some unusual variability in the results for the QC check and the spike. Silver may be more susceptible to certain

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kinds of matrix enhancements that were not well documented. The furnace methods used to analyze arsenic and selenium needed some extra effort to set up properly, although once the furnace method was set, the results were very good.

2.8 Pesticides and PCBs

2.8.1 *Method Summary*

SW-846, Method 8080 was followed for the on-instrument analysis and Method 3580 (Waste Dilution) was used in the initial sample preparation. Method 3665 (sulfuric acid) was used to clean-up the samples prior to analysis for the Aroclor PCBs. No clean-up procedure was used for preparation of the extracts for pesticide analysis.

2.8.2 *Sample Preparation*

The samples were prepared using Method 3580. One (1) gram of sample was diluted to 10 mls. with Hexane.

2.8.3 *Instrumental Analysis*

Instrumental analysis was conducted by injecting one (1) µl of extract on dual capillary columns equipped with electron capture detectors (ECD). The capillary columns employed were a DB-608 and a DB-1701.

2.8.4 *Quality Control*

A method blank was analyzed for each matrix and an Endrin/DDT standard was analyzed prior to calibration and sample analysis, to ensure a <20% breakdown of the pesticides.

A five-point initial external calibration containing each single-response pesticide generated prior to sample analysis. A single-point external calibration standard was analyzed for all multi- response

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pesticides and PCBs for qualitative identification. A five-point initial external calibration curve was generated for one of the multi-response compounds (Aroclor 1260), for quantitative analysis.

Two surrogates, dibutylchlorendate and tetrachloro-m-xylene were used to monitor the integrity of the sample preparation and analytical system. The surrogates were added to produce a concentration of 10 µg/kg on-column. No limits were set for surrogate recovery, however, both surrogates were required to be present to validate each analysis.

2.8.5 *Analytical Difficulties and Recommendations*

The higher molecular weight components of the fuel oils No. 4 and No. 6 caused some interference with the analyses. The primary problem was difficulty eluting these heavy compounds from the GC column. This problem was absent from samples for PCB analysis that underwent Method 3665 clean-up. Perhaps a clean-up method suitable for pesticides, such as alumina or florisil column clean-up or Gel-permeation clean-up would produce better results.

2.9 Heating Value

2.9.1 *Method Summary*

Heat of combustion was determined using ASTM Standard D 240. In this test method, heat of combustion was determined by combusting a weighed sample in an Oxygen Bomb Calorimeter under controlled conditions. The rate of combustion was computed from temperature readings before and after combustion.

2.9.2 *Quality Control*

QC procedures consisted of one duplicate determination per every ten (10) samples and an analysis of a certified standard benzoic acid pellet per every ten (10) samples. Method precision and reproducibility were within the ranges specified in the method. Gross heat of combustion was reported. No adjustments were made for the heat of combustion of nitrogen and sulfur in the sample.

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Values were reported as Btu/lb rather than in the SI units of MJ/kg, as stated in the method.

2.10 Specific Gravity

2.10.1 *Method Summary*

Specific gravity was determined by using ASTM Standard D 1298. This method uses a hydrometer to determine specific gravity after the sample and apparatus were brought to a stable temperature of 60°F. The appropriate hydrometer was lowered into the sample cylinder and allowed to settle. At positional equilibrium, the hydrometer was read and the temperature of the sample noted.

2.10.2 *Quality Control*

The hydrometers used were calibrated in accordance with National Institute of Standards and Technology (NIST) Circular 555, and ASTM specification E 100. All sample temperatures were brought to 60°F for a period of five (5) hours prior to hydrometer readings. Duplicate determinations were performed per every ten (10) samples. All duplicates were within 5% RSD.

2.10.3 *Analytical Difficulties and Recommendations*

All specific gravity readings were made at 60°C as per ASTM D 1298. Highly viscous opaque samples presented problems in the accurate readings of the hydrometer. Air bubbles trapped in the more viscous samples may have had a minor influence on the reported results.

2.11 Flash Point

2.11.1 *Method Summary*

Flash point was determined by EPA SW-846, Method 1010, which is similar to ASTM Standard D 93, using a Pensky-Martens closed-cup Flash Tester. The sample was heated at a slow constant

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rate with continual stirring. A small flame was directed into the cup at regular intervals with simultaneous interruption of stirring. The flash point was the lowest temperature at which application of the test flame ignited the vapor above the sample.

2.11.2 *Quality Control*

Duplicate determinations were made on each of the ten (10) samples. All duplicates were within 2°C of the original result. Gasoline flash points were below the range attainable by the Pensky-Martens Method. These values were reported as less than 0°C.

2.12 Total Halogens

2.12.1 *Method Summary*

EPA Method 325.3/PARR and ASTM Standard D 4929 were used to analyze the samples for total halogens. The sample was ignited in a PARR bomb as part of the determination of gross heat of combustion. After combustion of two previously weighed samples, the resulting inorganic residue solution was washed from the inside surfaces of the PARR bomb. The wash water was brought to a total volume of 10 milliliters and titrated per EPA Method 325.3. Bromine, chlorine, and iodine are all reported as total chloride. Fluorine does not react with the titrant of EPA Method 325.3 and is not included in the reported values.

2.12.2 *Quality Control*

In the PARR bomb combustion process, a weighed sample is placed in the PARR bomb under 35 atmospheres of oxygen, approximately 515 psi. Combustion is rapid and complete with no traces of organic material remaining in the bomb. In order to assure the conversion of organic halide to inorganic halogen ion, samples were spiked with known amounts of methylene chloride prior to combustion in the bomb. Recovery of spiked halogen was in the range of 87% to 92% for all gasoline and No. 2 fuel oil samples. For Nos. 4 and 6 fuel oil samples, recovery was in the range of 20% to 45%, which was unacceptable. It is probable that the higher nitrogen content of the Nos. 4

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and 6 fuel oils resulted in the production of significant amounts of nitric acid during the PARR bomb combustion process. The nitric acid resulted in unacceptably high levels of ferric and chromate ions from the reaction with the stainless steel PARR bomb. Ferric and chromate ions are an interferant in the EPA Method 325.3 titration process.

2.12.3 *Analytical Difficulties and Recommendations*

In order to obtain reliable halogen values for the Nos. 4 and 6 fuel oils, these samples were analyzed by ASTM Standard D 4929, a method for determining the organic chloride content in crude oil. This method lists a rinse step to remove inorganic halides from the petroleum product. This step was omitted so that a total halide value would be determined for these samples. The method involves oxidation of a known weight sample in an oxygen stream at 800 °C. The oxygen stream was then led to a microcoulometric cell, where the halide ions react with coulometrically-generated silver ion. The microequivalents of silver ion consumed in the titration was equal to the microequivalents of titratable halide ion in the oxidized sample. Bromine and iodine titrate as chloride equivalents. Fluorine does not respond and is not included.

In the oxygen combustion process, approximately 50% of the bromine and iodine form oxyhalides (HOBr and HOI) which do not react in the titration. Bromine and iodine, therefore, provide an approximate 50% response factor. Calibration curves, replicate analyses, and checks using 2,4,6 trichlorophenol were performed on the sample daily.

2.13 Total Nitrogen

2.13.1 *Method Summary*

ASTM Standard D 4629 was used to analyze the samples for total nitrogen. The sample of liquid petroleum hydrocarbon was injected into a stream of inert gas. The sample was vaporized and carried to a high temperature zone where oxygen was introduced converting organic bound nitrogen nitric oxide (NO). The NO contacts ozone and emits light, through a process of chemiluminescence, which was detected by a photo multiplier as a measure of the nitrogen contained in the sample.

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2.13.2 *Quality Control*

The instrument was calibrated using nitrogen standards of pyridine or carbazole. Pyridine is used for samples with mid-range boiling points less than 430 °F. Carbazole was used for samples of higher boiling ranges. Method blanks were performed using toluene for gasoline samples and cetane for the higher boiling No. 2, 4, and 6 fuel oil samples.

Reproducibility values were within the specifications stated in ASTM Standard D 4629. All samples were run as replicate analyses. A calibration curve and a known check sample were run daily.

2.14 General Matrix Spike and Laboratory Control Sample Recovery

Every sample, blank, matrix spiked samples, and laboratory control samples were spiked with surrogate spiking compounds prior to the sample preparation. Recovery criteria for petroleum products is not established in the methodology. Therefore, acceptance limits were not used by the laboratory as a means of rejecting an analysis.

Matrix spikes and LCS samples were analyzed concurrently with the fuel oil samples. Due to the unknown analytical characteristics of the analytes in fuel oil and the unknown affect the sample preparation procedures may have had on these quality control samples, acceptance limits were not used by the laboratory as a means of rejecting an analysis. These data should be viewed as a first attempt to set acceptance limit criteria. Overall the recoveries calculated from the MDL study, which also represents some of the spike results, meet the method criteria except were it has been noted in the individual method discussions in this section.

Table 2-2 lists the specific procedures utilized for matrix spiking and the laboratory control samples. It is recommended that the description associated with each analytical fraction be reviewed for additional details.

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2.15 Analysis for Total Aromatic Hydrocarbons and Total Polynuclear Aromatic Hydrocarbons

The analysis for total aromatic hydrocarbons and total polynuclear aromatic hydrocarbons yielded results much lower than expected. A small number of specific analytes in these categories were analyzed and summed into totals. There were numerous analytes and isomers that should have been included in this total, but due to the huge number of compounds, they could not be individually calibrated and quantitated. The majority of these compounds are not listed in Appendix VIII and do not have validated methods for analysis. Other methods more suited to this type of analysis, other than identification and quantitation of individual compounds, should be considered for these total numbers.

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3.0 RESULTS

3.1 Laboratory Results

Appendix A lists the laboratory results for the semi-volatile, volatile, metals, inorganic parameters, physical parameters, and total aromatic hydrocarbons. These results were submitted to SAIC for statistical analysis which are presented in Appendix B. Appendix C lists the laboratory derived Method Detection Limit (MDL) Study results for each analyte. Appendix D lists the QA data results. The QA data includes surrogate spiking compound recovery for semi-volatile and volatile methods and duplicate and spike recoveries for metals. As stated in Section 2, the results for polynuclear aromatic hydrocarbons and total aromatic hydrocarbons are much lower than expected. The method used to generate these concentrations was to sum the results of the semi-volatile analysis. The constituents listed in 40 CFR, Part 261, Appendix VIII that could be quantitated only included a small number of the aromatic hydrocarbons which are normally present in fossil fuels.

3.2 Constituents Levels

Appendix B lists the comparable fuel constituent specifications for the final rule. The comparable fuels consist of four fuel types – gasoline and Nos. 2, 4, 6 fuel oils. The available data contain chemical compound concentrations from eight (8) samples from gasoline, 11 samples from No. 2 fuel oil, one (1) sample from No. 4 fuel oil and seven (7) samples from No. 6 fuel oil. The final constituent levels were calculated using the composite at the largest value.

For chemical in which at least one sample was measured above the minimum level of detection, the composite was based on the measured concentrations from the detected samples and on the quantitation limits from the non-detect samples. The composite values are presented in the table under the column heading "Concentration Limit." For chemicals in which none of the samples were measured above the minimum level of detection, the composite value was based on the reported quantitation limits and are presented in the table under the column heading "Minimum Required

Detection Limit." However, the final rule allows metals, hydrocarbons, and oxygenates to be present at any concentration less than or equal to the detection limits. For these compounds, all composite value are reported as a concentration limit, using the reported quantitation limits as concentration limit in the case where none of the samples were measured above the minimum detection limit.

For constituents with at least one detected sample, concentration limits have been corrected from the fuel's heating value to 10,000 BTU/lb. For constituents with no detected samples, the concentration limits (in the case of metals, hydrocarbons, or oxygenates) or minimum required detection limits are not corrected to 10,000 BTU/lb.

3.3 Estimates from Additional Halogen Data

Additional analysis was performed to calculate the highest value composite for total halogens. Because the analysis for No. 4 and No. 6 fuel oils was based on analytical methods measuring only total organic and inorganic halogens, additional data was gathered from EPA's database (i.e., Certificates of Compliance required by the BIF rule) and data submitted by one commenter. The additional Total Chlorine data is presented in Table 3-1. The total halogen value has been normalized for the fuel's heating value to 10,000 BTU/lb. This additional data was composited with the gasoline and No.2 fuel oil data contained in this report.

3.4 Statistical Analysis Results (SAIC) (Proposal)

This section presents the results from statistical analyses, performed by Science Applications International Corporation (SAIC), of chemical compound concentrations measured in comparable fuels for the proposed rule. As discussed previously, the comparable fuels consist of four fuel types — gasoline and Nos. 2, 4, and 6 fuel oils. Statistical analyses also were conducted on two (2) combinations of these fuel types: a composite of the three (3) fuel oils (Composite 246); and a composite of all four (4) fuel types. The available data contain chemical compound concentrations from eight (8) samples from gasoline, 11 samples from No. 2 fuel oil, one (1) sample from No. 4 fuel

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oil, and seven (7) samples from No. 6 fuel oil.

This statistical analyses estimated percentiles from the distribution of concentrations of each chemical compound within each fuel type. For each individual fuel type, the 90th percentile was estimated for every chemical compound. For the composite fuel types, estimates of the 50th and 90th percentiles were calculated for each chemical compound. Section 3.4.1 of this report presents the statistical analysis of the individual fuel types. Section 3.4.2 documents the statistical methodology for estimating percentiles from the composite of Nos. 2, 4, and 6 fuel oils. The analysis of the composite of all four fuel types is presented in Section 3.4.3.

The results from the statistical analyses of these fuel types are presented in Appendix C in the following tables:

- Table 1: Estimated 90th percentiles from gasoline;
- Table 2: Estimated 90th percentiles from No. 2 fuel oil;
- Table 3: Estimated 90th percentiles from No. 4 fuel oil;
- Table 4: Estimated 90th percentiles from No. 6 fuel oil;
- Table 5: Estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 6: Estimated 90th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 7: Estimated 50th percentiles from the composite of all four fuel types;
- Table 8: Estimated 90th percentiles from the composite of all four fuel types; and

As stated earlier, the samples were analyzed in two rounds based on the availability of clearly defined analytical protocols. For the additional compounds that were found during the second round of analyses the following tables, in Appendix C, represent the results from the statistical analyses of these fuel types. The methodology and discussion of the analysis conducted on the original set of data still applies to the information displayed in these tables as well.

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- Table 1A: Estimated 90th percentiles from gasoline;
- Table 2A: Estimated 90th percentiles from No. 2 fuel oil;
- Table 3A: Estimated 90th percentiles from No. 4 fuel oil;
- Table 4A: Estimated 90th percentiles from No. 6 fuel oil;
- Table 5A: Estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 6A: Estimated 90th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 7A: Estimated 50th percentiles from the composite of all four fuel types;
- Table 8A: Estimated 90th percentiles from the composite of all four fuel types; and

Within each table, two (2) sets of estimates are presented. For chemicals in which at least one (1) sample was measured above the minimum level of detection, the estimated percentiles were based on the measured concentrations from the detected samples and on the quantitation limits from the non-detect samples. These estimates are presented in the tables under the column heading "Concentration Limit." For chemicals in which none of the samples were measured above the minimum level of detection, the estimated percentiles were based on the reported quantitation limits and are presented in the tables under the column heading "Minimum Detection Limit."

All chemical concentrations were originally reported in the database with units equal to mg/kg. For the chemicals with at least one (1) detected sample, these concentrations were converted to mg/J using the reported heating values (Btu/lb) and the following conversion formula:

$$Concentration\left[\frac{mg}{J}\right] = \frac{Concentration\left[\frac{mg}{kg}\right]}{2326.11\left[(\frac{lb}{kg})(\frac{J}{BTU})\right] * Heating\ Value\left[\frac{BTU}{lb}\right]}$$

The estimated percentiles were generated from the mg/J concentrations and were converted back to mg/kg, for presentation in the tables, based on a heating value of 10,000 Btu/lb. For the

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chemicals with no detected samples, the percentiles were calculated from reported quantitation limits in the original units of mg/kg. All results are presented with two (2) significant figures.

3.4.1 *Estimates for Each Individual Fuel*

Estimated percentiles for the chemical compounds from each individual fuel type (i.e., gasoline and Nos. 2, 4, and 6 fuel oils) are presented in Appendix B, Tables 1 through 4 and Tables 1A through 4A, respectively. Only the chemicals that are contained in the 40 CFR, Part 261, Appendix VIII list are presented in these tables. Each of these tables presents the estimated 90th percentile for chemicals with at least one (1) detected concentration and undetected chemicals above the quantitation limit. The percentile estimates from the detected chemicals are presented under the column heading "Concentration Limit," and the percentiles for the non-detected (non-detect) chemicals are presented under the column heading "Minimum Detection Limit." For the chemicals with at least one (1) detected sample, the percentile estimates were based on the measured value for the detected samples and on the reported quantitation limits for the non-detect samples. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits.

When calculating the quantitation limit for volatile organic compounds (VOCs) in gasoline, in the analytical methods, there are matrix interferences that cause the calculated quantitation limits to be unreliable. Therefore, for the VOCs that were not detected in any of the gasoline samples, the estimated 90th percentile is not presented in Appendix B, Table 1. For these chemicals, the 90th percentile estimate from the composite of the Nos. 2, 4, and 6 fuel oils is presented in Appendix C, Table 1 as a surrogate for the 90th percentile for gasoline.

The estimated percentiles presented in Appendix C, Tables 1 through 4 and Tables 1A through 4A, were generated nonparametrically. That is, the percentiles are based on the rank order statistics of the sample concentrations. Distributional assumptions were not used in the calculation of the percentile estimates because of the sparse sample sizes. For gasoline, at least one of the eight

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(8) samples was measured above the minimum level of detection for only nine (9) of the 151 chemical compounds found in 40 CFR Part 261 Appendix VIII. For No. 2 fuel oil, at least one (1) of the 11 samples was measured above the minimum level of detection for only 11 of the 151 chemicals. Only one (1) sample was measured for each chemical compound from No. 4 fuel oil, and only 13 of the chemical compounds were measured above the minimum level of detection in this sample. For No. 6 fuel oil, at least one (1) of the seven (7) samples was measured above of the minimum level of detection for only 16 of the chemicals.

All of the chemicals originally were reported in units of mg/kg. The 90th percentile estimates for non-detect chemicals, under the column heading "Minimum Detection Limit," are presented in the original units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample, under the column heading "Concentration Limit," were calculated from concentrations that were converted from mg/kg to mg/J based on the report heating values (Btu/lb) for each sample. Then, the percentile estimates were converted from mg/J back to mg/kg based on 10,000 Btu/lb.

The nonparametric procedure for calculating the percentile estimates was based on standard procedures, namely PROC UNIVARIATE (Def. 5), in the SAS statistical software package. This standard nonparametric procedure is outlined in the following steps.

1. Let x_1, x_2, x_3, ..., x_n represent the chemical concentrations from the n-samples, ranked from lowest to highest, where n equals the total number of samples.

2. To calculate the 90th percentile, let 0.90*n = j + g, where j is the integer part of 0.90*n and g is the fractional part of 0.90*n.

3. The estimated 90th percentile is calculated as:

   (xj + xj+1)/2, if g = 0; and
   (xj + 1), if g > 0.

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Example: In No. 6 fuel oil, data were available from seven (7) samples. Therefore, n=7 and 0.90*n=6.3. The integer part (j) is equal to 6, and the fractional part (g) is equal to 3/10. Because the fractional part (g) is not equal to zero, the 90th percentile is equal to the interpolated values of the concentrations between the 6th and 7th samples. That is, the 90th percentile is the average of the largest concentration and the second largest concentration.

The estimated percentiles from this methodology are presented under the column heading "Concentration Limit" in Appendix C, Tables 1 through 4.

3.4.2 *Estimates from Composite 246*

In addition to the percentile estimates from each individual fuel type, percentile estimates are presented for a combination of Nos. 2, 4, and 6 fuel oils. This combination of fuel oils is labeled "Composite 246." The estimated percentiles presented under combination of fuel oils are weighted estimates from the chemical concentrations from the three (3) fuel oils. Estimates were generated from all reported samples of these fuel oils, using the measured concentrations from the detect samples and the reported quantitation limits from the non-detect samples.

Appendix C, Table 5 presents estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils. Estimated 90th percentiles are presented in Appendix C, Table 6. For chemicals with at least one (1) detected concentration, the percentile estimates are presented under the heading "Concentration Limit". The percentile estimates for the chemicals with no detected concentrations are presented under the heading "Minimum Detection Limit."

The estimated percentiles were generated by weighting each sample according to the number of samples available from each fuel type. This adjustment provides equal contribution from each sample to the composite estimate. That is, each fuel type should represent one-third of the population. Therefore, each sample from No. 2 fuel oil, which contained 11 samples, was assigned

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a weight of 1/33; the sample from No. 4 fuel oil was assigned a weight of 1/3; and each sample from No. 6 fuel oil, which contained seven (7) samples, was assigned a weight of 1/21. The chemical concentrations were then ranked from lowest to highest and the weights were summed across samples until the total weight was equal to 0.50. The corresponding chemical concentration was used as the estimated 50th percentile. That is, the 50th percentile is the concentration corresponding to the ranked sample for which 50% of the weights were accounted. If the sum of the weights does not equal 0.50 exactly, then the 50th percentile is the interpolated value of the two (2) reported concentrations surrounding the 50th percentile point. Similarly, the 90th percentile was estimated by the corresponding concentration when the sum of the weights was equal to 0.90.

As in the calculation of the percentiles for each individual fuel type, the percentiles for the detected chemicals are presented in units of mg/kg at 10,000 Btu/lb, and the percentiles for the non-detect chemicals are presented in the original units of mg/kg. All of the chemicals originally were reported in the database with units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample, under the column heading "Concentration Limit," were calculated from concentrations converted from mg/kg to mg/J, based on the reported heating values (Btu/lb) for each sample. The percentile estimates then were converted from mg/J back to mg/kg based on 10,000 Btu/lb. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits in the original units of mg/kg.

3.4.3 *Estimates from Composite of All Fuel Types*

Appendix C, Tables 7, 7A, 8, and 8A present percentile estimates for a combination of all four (4) fuel types (i.e., gasoline and Nos. 2, 4, and 6 fuel oils), labeled "Composite All." The estimated percentiles presented under this combination of fuel types are weighted estimates from the chemical concentrations from the four fuel types. Estimates were generated from all reported samples of these fuel types, using the measured concentrations from the detected analytes in the samples and the reported quantitation limits from the non-detect analytes in the samples.

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Appendix C, Table 7 and Table 7A presents estimated 50th percentiles from the composite of all fuel types. Estimated 90th percentiles are presented in Appendix C, Table 8, and Table 8A. For chemicals with at least one (1) detected concentration, the percentile estimates are presented under the heading "Concentration Limit." The percentile estimates for the chemicals with no detected concentrations are presented under the heading "Minimum Detection Limit."

The estimated percentiles were generated by weighing each sample according to the number of samples available from each fuel type, so that each fuel type provided equal contribution to the estimated percentiles. That is, each fuel type should represent one-quarter of the population. Therefore, the samples from gasoline and Nos. 2, 4, and 6 fuel oils were assigned weights of 1/32, 1/44, 1/4, and 1/28, respectively, based on the number of samples from each fuel type. The chemical concentrations were then ranked from lowest to highest, and the weights were summed across samples until the total weight was equal to 0.50. The corresponding chemical concentration was used as the estimated 50th percentile. That is, the 50th percentile is the concentration corresponding to the ranked sample for which 50% of the weights were accounted. If the sum of the weights does not equal 0.50 exactly, then the 50th percentile is an average of the two (2) reported concentrations that surround the 50th percentile point. Similarly, the 90th percentiles were estimated by the corresponding concentration when the sum of the weights was equal to 0.90.

In the analytical methods for calculating the quantitation limit for VOCs in gasoline, there are matrix interferences that cause the calculated quantitation limits to be unreliable. Therefore, for the VOCs not detected in any of the gasoline samples, the estimated percentiles for the composite of all fuel types, which includes gasoline, were not presented. For these chemicals, the estimates from the composite of the Nos. 2, 4, and 6 fuel oils (i.e., without gasoline) are presented in Appendix C, Tables 5, 5A, 6, and 6A as surrogates for the percentile estimates from the composite of all four (4) fuel types.

The percentiles for the detected chemicals are presented in units of mg/kg at 10,000 Btu/lb and the percentiles for the non-detect chemicals are presented in the original units of mg/kg. All of

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the chemicals originally were reported in the database with units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample (i.e., concentration limit) were calculated from concentrations converted from mg/kg to mg/J, based on the reported heating values (Btu/lb) for each sample. The percentile estimates then were converted from mg/J back to mg/kg based on 10,000 Btu/lb. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits in the original units of mg/kg.

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Table 3-1 Chlorine Content of Fuel Oils Used in Hazardous Waste Burning Boilers and Incinerators (as Reported in CoC Test Reports)

Facility Name and Location	Fuel Oil No.	Cl^- Content (ppm_w) Ind. Measurements	No. Of Measur.	Measurement Method	Comments
Amer. Cyan., Kalamazoo, MI	6	< 45	1	ASTM D3120	Sulfur method, not used
Huntsman Poly., Woodbury, NJ	6	< 100	6	SW-846 9020	Organic chlorine, not used
Rohm and Haas, Phil., PA	6	108, 110, 171	3	ASTM D 808/D 4327	Below method DL
Rohm and Haas, Bristol, PA	6	180	1	ASTM D 808/D 4327	Below method DL
Rohm and Haas	6	590, 660, 1000	3	EPA 9020	Below/near method DL
Rohm and Haas	6	840, 840	3	EPA 9020	
Dow Chem., Gales Ferry, CT	2	83, 93, 137	3	ASTM D 808	Below method DL, not used
Du Pont, Wilmington, DE	2	16, 429, 461, 470, 490, 523	5	ASTM D 808/D 4327	

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	1,2,4,5-Tetrachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,2,4-Trichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,2-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,3,5-Trinitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,3-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,4-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,4-Naphthoquinone	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1-Naphthylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,3,4,6-Tetrachlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4,5-Trichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4,6-Trichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dimethylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dinitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dinitrotoluene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,6-Dichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,6-Dinitrotoluene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Acetylaminofluorene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Chloronaphthalene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Chlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Naphthylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Nitroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Nitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Picoline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3,3'-Dichlorobenzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3-3'-Dimethylbenzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3-Methylcholanthrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4,6-Dinitro-2-methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Aminobiphenyl	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Bromophenyl phenyl ether	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Chloro-3-methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Chloroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Nitroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Nitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	5-Nitro-o-toluidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	7,12-Dimethylbenz[a]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	α,α-Dimethylphenethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Acetophenone	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Aniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Aramite	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	Benzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[a]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[a]pyrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[b]fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[k]fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Bis(2-chloroisopropyl)ether	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Butyl benzyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Chlorobenzilate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Chrysene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Di-n-butyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Di-n-octyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diallate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dibenzo[a,h]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dibenz[a,j]acridine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diethyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dimethoate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dimethyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dinoseb	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diphenylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Disulfoton	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Ethyl methanesulfonate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Famphur	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Fluorene	<270		U	26.7	<1200		U	117	<200	220		19.8	<99		U	9.90
8835-001	Hexachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorobutadiene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorocyclopentadiene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachloroethane	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorophene	<6700		U	26.7	<29000		U	117	<5000		U	19.8	<2500		U	9.90
8835-001	Hexachloropropene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Indeno(1,2,3-c,d)pyrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Isodrin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Isosafrole	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Kepone	<530		U	26.7	<2300		U	117	<400		U	19.8	<200		U	9.90
8835-001	Methapyrilene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Methyl parathion	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Methyl methanesulfonate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitroso-di-n-butylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosodi-n-propylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosodiethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosomethylethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosomorpholine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	N-Nitrosopiperidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosopyrrolidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Naphthalene	<270	2500		26.7	<1200	2000		117	<200	660		19.8	<99	170		9.90
8835-001	Nitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	O,O,O-Triethylphosphorothioate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	o-Toluidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<2000		U	9.90
8835-001	p-Dimethylaminoazobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	p-Phenylenediamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Parathion	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachloronitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phenacetin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phorate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pronamide	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pyridine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Safrole	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Sulfotepp	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Thionzin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-002	1,2,4,5-Tetrachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,2,4-Trichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,2-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,3,5-Trinitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,3-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,4-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,4-Naphthoquinone	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1-Naphthylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,3,4,6-Tetrachlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4,5-Trichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4,6-Trichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dimethylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dinitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dinitrotoluene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,6-Dichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,6-Dinitrotoluene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Acetylaminofluorene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Chloronaphthalene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Chlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Naphthylamine	<270		U	26.6	<1200		U	117					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-002	2-Nitroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Nitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Picoline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3,3'-Dichlorobenzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3-3'-Dimethylbenzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3-Methylcholanthrene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4,6-Dinitro-2-methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Aminobiphenyl	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Bromophenyl phenyl ether	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Chloro-3-methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Chloroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Nitroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Nitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	5-Nitro-o-toluidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	7,12-Dimethylbenz[a]anthracene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	α,α-Dimethylphenethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Acetophenone	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Aniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Aramite	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Benzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Benzo[a]anthracene	<270		U	26.6	<1200		U	117					<200	760		19.6
8835-002	Benzo[a]pyrene	<270		U	26.6	<1200		U	117					<200	450		19.6
8835-002	Benzo[b]fluoranthene	<270		U	26.6	<1200		U	117					<200	210		19.6
8835-002	Benzo[k]fluoranthene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Bis(2-chloroisopropyl)ether	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Butyl benzyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Chlorobenzilate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Chrysene	<270		U	26.6	<1200		U	117					<200	700		19.6
8835-002	Di-n-butyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Di-n-octyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diallate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dibenzo[a,h]anthracene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dibenz[a,j]acridine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diethyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dimethoate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dimethyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dinoseb	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diphenylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Disulfoton	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Ethyl methanesulfonate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Famphur	<270		U	26.6	<1200		U	117					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-002	Fluoranthene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Fluorene	<270		U	26.6	<1200		U	117					<200	220		19.6
8835-002	Hexachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorobutadiene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorocyclopentadiene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachloroethane	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorophene	<6600		U	26.6	<29000		U	117					<4900		U	19.6
8835-002	Hexachloropropene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Indeno(1,2,3-c,d)pyrene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Isodrin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Isosafrole	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Kepone	<530		U	26.6	<2300		U	117					<390		U	19.6
8835-002	Methapyrilene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Methyl parathion	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Methyl methanesulfonate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitroso-di-n-butylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosodi-n-propylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosodiethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosomethylethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosomorpholine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosopiperidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosopyrrolidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Naphthalene	<270	2600		26.6	<1200	2300		117					<200	550		19.6
8835-002	Nitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	O,O,O-Triethylphosphorothioate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	o-Toluidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	p-Dimethylaminoazobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	p-Phenylenediamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Parathion	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachloronitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phenacetin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phorate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pronamide	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pyridine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Safrole	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Sulfotepp	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Thionzin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-003	1,2,4,5-Tetrachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,2,4-Trichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	1,2-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,3,5-Trinitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,3-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,4-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,4-Naphthoquinone	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1-Naphthylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,3,4,6-Tetrachlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4,5-Trichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4,6-Trichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dimethylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dinitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dinitrotoluene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,6-Dichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,6-Dinitrotoluene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Acetylaminofluorene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Chloronaphthalene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Chlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Naphthylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Nitroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Nitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Picoline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3,3'-Dichlorobenzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3-3'-Dimethylbenzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3-Methylcholanthrene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4,6-Dinitro-2-methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Aminobiphenyl	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Bromophenyl phenyl ether	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Chloro-3-methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Chloroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Nitroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Nitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	5-Nitro-o-toluidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	7,12-Dimethylbenz[a]anthracene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	α,α-Dimethylphenethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Acetophenone	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Aniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Aramite	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Benzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Benzo[a]anthracene	<670		U	66.8	<590		U	59.4					<190	660		19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	Benzo[a]pyrene	<670		U	66.8	<590		U	59.4					<190	450		19.2
8835-003	Benzo[b]fluoranthene	<670		U	66.8	<590		U	59.4					<190	220		19.2
8835-003	Benzo[k]fluoranthene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Bis(2-chloroisopropyl)ether	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Butyl benzyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Chlorobenzilate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Chrysene	<670		U	66.8	<590		U	59.4					<190	740		19.2
8835-003	Di-n-butyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Di-n-octyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diallate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dibenzo[a,h]anthracene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dibenz[a,j]acridine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diethyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dimethoate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dimethyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dinoseb	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diphenylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Disulfoton	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Ethyl methanesulfonate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Famphur	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Fluoranthene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Fluorene	<670		U	66.8	<590		U	59.4					<190	210		19.2
8835-003	Hexachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorobutadiene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorocyclopentadiene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachloroethane	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorophene	<17000		U	66.8	<15000		U	59.4					<4800		U	19.2
8835-003	Hexachloropropene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Indeno(1,2,3-c,d)pyrene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Isodrin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Isosafrole	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Kepone	<1300		U	66.8	<1200		U	59.4					<380		U	19.2
8835-003	Methapyrilene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Methyl parathion	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Methyl methanesulfonate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitroso-di-n-butylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosodi-n-propylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosodiethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosomethylethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosomorpholine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosopiperidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosopyrrolidine	<670		U	66.8	<590		U	59.4					<190		U	19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	Naphthalene	<670	5400		66.8	<590	1300		59.4					<190	550		19.2
8835-003	Nitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	O,O,O-Triethylphosphorothioate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	o-Toluidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	p-Dimethylaminoazobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	p-Phenylenediamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Parathion	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachloronitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phenacetin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phorate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pronamide	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pyridine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Safrole	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Sulfotepp	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Thionzin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-004	1,2,4,5-Tetrachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,2,4-Trichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,2-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,3,5-Trinitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,3-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,4-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,4-Naphthoquinone	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1-Naphthylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,3,4,6-Tetrachlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4,5-Trichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4,6-Trichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dimethylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dinitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dinitrotoluene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,6-Dichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,6-Dinitrotoluene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Acetylaminofluorene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Chloronaphthalene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Chlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Naphthylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Nitroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Nitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-004	2-Picoline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3,3'-Dichlorobenzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3-3'-Dimethylbenzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3-Methylcholanthrene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4,6-Dinitro-2-methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Aminobiphenyl	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Bromophenyl phenyl ether	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Chloro-3-methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Chloroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Nitroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Nitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	5-Nitro-o-toluidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	7,12-Dimethylbenz[a]anthracene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	α,α-Dimethylphenethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Acetophenone	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Aniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Aramite	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Benzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Benzo[a]anthracene	<670		U	66.7	<600		U	59.6					<500	1900		50.0
8835-004	Benzo[a]pyrene	<670		U	66.7	<600		U	59.6					<500	770		50.0
8835-004	Benzo[b]fluoranthene	<670		U	66.7	<600		U	59.6					<500	540		50.0
8835-004	Benzo[k]fluoranthene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Bis(2-chloroisopropyl)ether	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Butyl benzyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Chlorobenzilate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Chrysene	<670		U	66.7	<600		U	59.6					<500	2700		50.0
8835-004	Di-n-butyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Di-n-octyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diallate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dibenzo[a,h]anthracene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dibenz[a,j]acridine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diethyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dimethoate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dimethyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dinoseb	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diphenylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Disulfoton	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Ethyl methanesulfonate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Famphur	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Fluoranthene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Fluorene	<670		U	66.7	<600		U	59.6					<500		U	50.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-004	Hexachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorobutadiene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorocyclopentadiene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachloroethane	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorophene	<17000		U	66.7	<15000		U	59.6					<12000		U	50.0
8835-004	Hexachloropropene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Indeno(1,2,3-c,d)pyrene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Isodrin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Isosafrole	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Kepone	<1300		U	66.7	<1200		U	59.6					<1000		U	50.0
8835-004	Methapyrilene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Methyl parathion	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Methyl methanesulfonate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitroso-di-n-butylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosodi-n-propylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosodiethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosomethylethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosomorpholine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosopiperidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosopyrrolidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Naphthalene	<670	6200		66.7	<600	1700		59.6					<500		U	50.0
8835-004	Nitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	O,O,O-Triethylphosphorothioate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	o-Toluidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	p-Dimethylaminoazobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	p-Phenylenediamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Parathion	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachloronitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phenacetin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phorate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pronamide	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pyridine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Safrole	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Sulfotepp	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Thionzin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-005	1,2,4,5-Tetrachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,2,4-Trichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,2-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,3,5-Trinitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	1,3-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,4-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,4-Naphthoquinone	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1-Naphthylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,3,4,6-Tetrachlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4,5-Trichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4,6-Trichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dimethylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dinitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dinitrotoluene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,6-Dichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,6-Dinitrotoluene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Acetylaminofluorene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Chloronaphthalene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Chlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Naphthylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Nitroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Nitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Picoline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3,3'-Dichlorobenzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3-3'-Dimethylbenzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3-Methylcholanthrene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4,6-Dinitro-2-methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Aminobiphenyl	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Bromophenyl phenyl ether	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Chloro-3-methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Chloroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Nitroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Nitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	5-Nitro-o-toluidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	7,12-Dimethylbenz[a]anthracene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	α,α-Dimethylphenethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Acetophenone	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Aniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Aramite	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Benzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Benzo[a]anthracene	<130		U	13.4	<590		U	59.5					<200	1600		19.8
8835-005	Benzo[a]pyrene	<130		U	13.4	<590		U	59.5					<200	960		19.8
8835-005	Benzo[b]fluoranthene	<130		U	13.4	<590		U	59.5					<200	670		19.8

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	Benzo[k]fluoranthene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Bis(2-chloroisopropyl)ether	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Butyl benzyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Chlorobenzilate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Chrysene	<130		U	13.4	<590		U	59.5					<200	2200		19.8
8835-005	Di-n-butyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Di-n-octyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diallate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dibenzo[a,h]anthracene	<130		U	13.4	<590		U	59.5					<200	250		19.8
8835-005	Dibenz[a,j]acridine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diethyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dimethoate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dimethyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dinoseb	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diphenylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Disulfoton	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Ethyl methanesulfonate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Famphur	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Fluoranthene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Fluorene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorobutadiene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorocyclopentadiene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachloroethane	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorophene	<3400		U	13.4	<15000		U	59.5					<5000		U	19.8
8835-005	Hexachloropropene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Indeno(1,2,3-c,d)pyrene	<130		U	13.4	<590		U	59.5					<200	290		19.8
8835-005	Isodrin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Isosafrole	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Kepone	<270		U	13.4	<1200		U	59.5					<400		U	19.8
8835-005	Methapyrilene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Methyl parathion	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Methyl methanesulfonate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitroso-di-n-butylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosodi-n-propylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosodiethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosomethylethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosomorpholine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosopiperidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosopyrrolidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Naphthalene	<130	1300		13.4	<590	1700		59.5					<200	260		19.8
8835-005	Nitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	O,O,O-Triethylphosphorothioate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	o-Toluidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	p-Dimethylaminoazobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	p-Phenylenediamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Parathion	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachloronitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phenacetin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phorate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pronamide	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pyridine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Safrole	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Sulfotepp	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Thionzin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-006	1,2,4,5-Tetrachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,2,4-Trichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,2-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,3,5-Trinitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,3-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,4-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,4-Naphthoquinone	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1-Naphthylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,3,4,6-Tetrachlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4,5-Trichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4,6-Trichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dimethylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dinitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dinitrotoluene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,6-Dichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,6-Dinitrotoluene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Acetylaminofluorene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Chloronaphthalene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Chlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Naphthylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Nitroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Nitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Picoline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	3,3'-Dichlorobenzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-006	3-3'-Dimethylbenzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	3-Methylcholanthrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4,6-Dinitro-2-methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Aminobiphenyl	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Bromophenyl phenyl ether	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Chloro-3-methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Chloroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Nitroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Nitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	5-Nitro-o-toluidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	7,12-Dimethylbenz[a]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	α,α-Dimethylphenethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Acetophenone	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Aniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Aramite	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[a]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[a]pyrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[b]fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[k]fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Bis(2-chloroisopropyl)ether	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Butyl benzyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Chlorobenzilate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Chrysene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Di-n-butyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Di-n-octyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diallate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dibenzo[a,h]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dibenz[a,j]acridine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diethyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dimethoate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dimethyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dinoseb	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diphenylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Disulfoton	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Ethyl methanesulfonate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Famphur	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Fluorene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorobutadiene	<140		U	14.1	<290		U	29.3					<980		U	98.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-006	Hexachlorocyclopentadiene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachloroethane	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorophene	<3500		U	14.1	<7300		U	29.3					<980		U	98.0
8835-006	Hexachloropropene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Indeno(1,2,3-c,d)pyrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Isodrin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Isosafrole	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Kepone	<280		U	14.1	<580		U	29.3					<2000		U	98.0
8835-006	Methapyrilene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Methyl parathion	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Methyl methanesulfonate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitroso-di-n-butylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosodi-n-propylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosodiethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosomethylethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosomorpholine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosopiperidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosopyrrolidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Naphthalene	<140	1100		14.1	<290		U	29.3					<980	1900		98.0
8835-006	Nitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	O,O,O-Triethylphosphorothioate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	o-Toluidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	p-Dimethylaminoazobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	p-Phenylenediamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Parathion	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachloronitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phenacetin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phorate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pronamide	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pyridine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Safrole	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Sulfotepp	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Thionzin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-007	1,2,4,5-Tetrachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,2,4-Trichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,2-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,3,5-Trinitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,3-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,4-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	1,4-Naphthoquinone	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1-Naphthylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,3,4,6-Tetrachlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4,5-Trichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4,6-Trichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dimethylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dinitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dinitrotoluene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,6-Dichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,6-Dinitrotoluene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Acetylaminofluorene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Chloronaphthalene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Chlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Naphthylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Nitroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Nitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Picoline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3,3'-Dichlorobenzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3-3'-Dimethylbenzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3-Methylcholanthrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4,6-Dinitro-2-methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Aminobiphenyl	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Bromophenyl phenyl ether	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Chloro-3-methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Chloroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Nitroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Nitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	5-Nitro-o-toluidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	7,12-Dimethylbenz[a]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	α,α-Dimethylphenethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Acetophenone	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Aniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Aramite	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[a]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[a]pyrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[b]fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[k]fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Bis(2-chloroisopropyl)ether	<270		U	27.4	<2400		U	235					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	Butyl benzyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Chlorobenzilate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Chrysene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Di-n-butyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Di-n-octyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diallate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dibenzo[a,h]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dibenz[a,j]acridine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diethyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dimethoate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dimethyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dinoseb	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diphenylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Disulfoton	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Ethyl methanesulfonate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Famphur	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Fluorene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorobutadiene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorocyclopentadiene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachloroethane	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorophene	<6800		U	27.4	<59000.0		U	235					<4900		U	19.6
8835-007	Hexachloropropene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Indeno(1,2,3-c,d)pyrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Isodrin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Isosafrole	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Kepone	<550		U	27.4	<4700		U	235					<390		U	19.6
8835-007	Methapyrilene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Methyl parathion	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Methyl methanesulfonate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitroso-di-n-butylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosodi-n-propylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosodiethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosomethylethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosomorpholine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosopiperidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosopyrrolidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Naphthalene	<270	2300		27.4	<2400	3500		235					<200	690		19.6
8835-007	Nitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	O,O,O-Triethylphosphorothioate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	o-Toluidine	<270		U	27.4	<2400		U	235					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	p-Dimethylaminoazobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	p-Phenylenediamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Parathion	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachloronitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phenacetin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phorate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pronamide	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pyridine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Safrole	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Sulfotepp	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Thionzin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-008	1,2,4,5-Tetrachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,2,4-Trichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,2-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,3,5-Trinitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,3-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,4-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,4-Naphthoquinone	<280		U	27.7	<600		U	59.7								
8835-008	1-Naphthylamine	<280		U	27.7	<600		U	59.7								
8835-008	2,3,4,6-Tetrachlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4,5-Trichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4,6-Trichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dimethylphenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dinitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dinitrotoluene	<280		U	27.7	<600		U	59.7								
8835-008	2,6-Dichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,6-Dinitrotoluene	<280		U	27.7	<600		U	59.7								
8835-008	2-Acetylaminofluorene	<280		U	27.7	<600		U	59.7								
8835-008	2-Chloronaphthalene	<280		U	27.7	<600		U	59.7								
8835-008	2-Chlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Naphthylamine	<280		U	27.7	<600		U	59.7								
8835-008	2-Nitroaniline	<280		U	27.7	<600		U	59.7								
8835-008	2-Nitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Picoline	<280		U	27.7	<600		U	59.7								
8835-008	3,3'-Dichlorobenzidine	<280		U	27.7	<600		U	59.7								
8835-008	3-3'-Dimethylbenzidine	<280		U	27.7	<600		U	59.7								
8835-008	3-Methylcholanthrene	<280		U	27.7	<600		U	59.7								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-008	4,6-Dinitro-2-methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Aminobiphenyl	<280		U	27.7	<600		U	59.7								
8835-008	4-Bromophenyl phenyl ether	<280		U	27.7	<600		U	59.7								
8835-008	4-Chloro-3-methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Chloroaniline	<280		U	27.7	<600		U	59.7								
8835-008	4-Methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Nitroaniline	<280		U	27.7	<600		U	59.7								
8835-008	4-Nitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	5-Nitro-o-toluidine	<280		U	27.7	<600		U	59.7								
8835-008	7,12-Dimethylbenz[a]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	α,α-Dimethylphenethylamine	<280		U	27.7	<600		U	59.7								
8835-008	Acetophenone	<280		U	27.7	<600		U	59.7								
8835-008	Aniline	<280		U	27.7	<600		U	59.7								
8835-008	Aramite	<280		U	27.7	<600		U	59.7								
8835-008	Benzidine	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[a]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[a]pyrene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[b]fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[k]fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Bis(2-chloroisopropyl)ether	<280		U	27.7	<600		U	59.7								
8835-008	Butyl benzyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Chlorobenzilate	<280		U	27.7	<600		U	59.7								
8835-008	Chrysene	<280		U	27.7	<600		U	59.7								
8835-008	Di-n-butyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Di-n-octyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Diallate	<280		U	27.7	<600		U	59.7								
8835-008	Dibenzo[a,h]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	Dibenz[a,j]acridine	<280		U	27.7	<600		U	59.7								
8835-008	Diethyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Dimethoate	<280		U	27.7	<600		U	59.7								
8835-008	Dimethyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Dinoseb	<280		U	27.7	<600		U	59.7								
8835-008	Diphenylamine	<280		U	27.7	<600		U	59.7								
8835-008	Disulfoton	<280		U	27.7	<600		U	59.7								
8835-008	Ethyl methanesulfonate	<280		U	27.7	<600		U	59.7								
8835-008	Famphur	<280		U	27.7	<600		U	59.7								
8835-008	Fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Fluorene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorobutadiene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorocyclopentadiene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachloroethane	<280		U	27.7	<600		U	59.7								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-008	Hexachlorophene	<6900		U	27.7	<15000		U	59.7								
8835-008	Hexachloropropene	<280		U	27.7	<600		U	59.7								
8835-008	Indeno(1,2,3-c,d)pyrene	<280		U	27.7	<600		U	59.7								
8835-008	Isodrin	<280		U	27.7	<600		U	59.7								
8835-008	Isosafrole	<280		U	27.7	<600		U	59.7								
8835-008	Kepone	<550		U	27.7	<1200		U	59.7								
8835-008	Methapyrilene	<280		U	27.7	<600		U	59.7								
8835-008	Methyl parathion	<280		U	27.7	<600		U	59.7								
8835-008	Methyl methanesulfonate	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitroso-di-n-butylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosodi-n-propylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosodiethylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosomethylethylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosomorpholine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosopiperidine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosopyrrolidine	<280		U	27.7	<600		U	59.7								
8835-008	Naphthalene	<280	2100		27.7	<600	1800		59.7								
8835-008	Nitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	O,O,O-Triethylphosphorothioate	<280		U	27.7	<600		U	59.7								
8835-008	o-Toluidine	<280		U	27.7	<600		U	59.7								
8835-008	p-Dimethylaminoazobenzene	<280		U	27.7	<600		U	59.7								
8835-008	p-Phenylenediamine	<280		U	27.7	<600		U	59.7								
8835-008	Parathion	<280		U	27.7	<600		U	59.7								
8835-008	Pentachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Pentachloronitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Pentachlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	Phenacetin	<280		U	27.7	<600		U	59.7								
8835-008	Phenol	<280		U	27.7	<600		U	59.7								
8835-008	Phorate	<280		U	27.7	<600		U	59.7								
8835-008	Pronamide	<280		U	27.7	<600		U	59.7								
8835-008	Pyridine	<280		U	27.7	<600		U	59.7								
8835-008	Safrole	<280		U	27.7	<600		U	59.7								
8835-008	Sulfotepp	<280		U	27.7	<600		U	59.7								
8835-008	Thionzin	<280		U	27.7	<600		U	59.7								
8835-009	1,2,4,5-Tetrachlorobenzene					<600		U	60.1								
8835-009	1,2,4-Trichlorobenzene					<600		U	60.1								
8835-009	1,2-Dichlorobenzene					<600		U	60.1								
8835-009	1,3,5-Trinitrobenzene					<600		U	60.1								
8835-009	1,3-Dichlorobenzene					<600		U	60.1								
8835-009	1,4-Dichlorobenzene					<600		U	60.1								
8835-009	1,4-Naphthoquinone					<600		U	60.1								
8835-009	1-Naphthylamine					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	2,3,4,6-Tetrachlorophenol					<600		U	60.1								
8835-009	2,4,5-Trichlorophenol					<600		U	60.1								
8835-009	2,4,6-Trichlorophenol					<600		U	60.1								
8835-009	2,4-Dichlorophenol					<600		U	60.1								
8835-009	2,4-Dimethylphenol					<600		U	60.1								
8835-009	2,4-Dinitrophenol					<600		U	60.1								
8835-009	2,4-Dinitrotoluene					<600		U	60.1								
8835-009	2,6-Dichlorophenol					<600		U	60.1								
8835-009	2,6-Dinitrotoluene					<600		U	60.1								
8835-009	2-Acetylaminofluorene					<600		U	60.1								
8835-009	2-Chloronaphthalene					<600		U	60.1								
8835-009	2-Chlorophenol					<600		U	60.1								
8835-009	2-Methylphenol					<600		U	60.1								
8835-009	2-Naphthylamine					<600		U	60.1								
8835-009	2-Nitroaniline					<600		U	60.1								
8835-009	2-Nitrophenol					<600		U	60.1								
8835-009	2-Picoline					<600		U	60.1								
8835-009	3,3'-Dichlorobenzidine					<600		U	60.1								
8835-009	3-3'-Dimethylbenzidine					<600		U	60.1								
8835-009	3-Methylcholanthrene					<600		U	60.1								
8835-009	4,6-Dinitro-2-methylphenol					<600		U	60.1								
8835-009	4-Aminobiphenyl					<600		U	60.1								
8835-009	4-Bromophenyl phenyl ether					<600		U	60.1								
8835-009	4-Chloro-3-methylphenol					<600		U	60.1								
8835-009	4-Chloroaniline					<600		U	60.1								
8835-009	4-Methylphenol					<600		U	60.1								
8835-009	4-Nitroaniline					<600		U	60.1								
8835-009	4-Nitrophenol					<600		U	60.1								
8835-009	5-Nitro-o-toluidine					<600		U	60.1								
8835-009	7,12-Dimethylbenz[a]anthracene					<600		U	60.1								
8835-009	α,α-Dimethylphenethylamine					<600		U	60.1								
8835-009	Acetophenone					<600		U	60.1								
8835-009	Aniline					<600		U	60.1								
8835-009	Aramite					<600		U	60.1								
8835-009	Benzidine					<600		U	60.1								
8835-009	Benzo[a]anthracene					<600		U	60.1								
8835-009	Benzo[a]pyrene					<600		U	60.1								
8835-009	Benzo[b]fluoranthene					<600		U	60.1								
8835-009	Benzo[k]fluoranthene					<600		U	60.1								
8835-009	Bis(2-chloroisopropyl)ether					<600		U	60.1								
8835-009	Butyl benzyl phthalate					<600		U	60.1								
8835-009	Chlorobenzilate					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	Chrysene					<600		U	60.1								
8835-009	Di-n-butyl phthalate					<600		U	60.1								
8835-009	Di-n-octyl phthalate					<600		U	60.1								
8835-009	Diallate					<600		U	60.1								
8835-009	Dibenzo[a,h]anthracene					<600		U	60.1								
8835-009	Dibenz[a,j]acridine					<600		U	60.1								
8835-009	Diethyl phthalate					<600		U	60.1								
8835-009	Dimethoate					<600		U	60.1								
8835-009	Dimethyl phthalate					<600		U	60.1								
8835-009	Dinoseb					<600		U	60.1								
8835-009	Diphenylamine					<600		U	60.1								
8835-009	Disulfoton					<600		U	60.1								
8835-009	Ethyl methanesulfonate					<600		U	60.1								
8835-009	Famphur					<600		U	60.1								
8835-009	Fluoranthene					<600		U	60.1								
8835-009	Fluorene					<600		U	60.1								
8835-009	Hexachlorobenzene					<600		U	60.1								
8835-009	Hexachlorobutadiene					<600		U	60.1								
8835-009	Hexachlorocyclopentadiene					<600		U	60.1								
8835-009	Hexachloroethane					<600		U	60.1								
8835-009	Hexachlorophene					<15000		U	60.1								
8835-009	Hexachloropropene					<600		U	60.1								
8835-009	Indeno(1,2,3-c,d)pyrene					<600		U	60.1								
8835-009	Isodrin					<600		U	60.1								
8835-009	Isosafrole					<600		U	60.1								
8835-009	Kepone					<1200		U	60.1								
8835-009	Methapyrilene					<600		U	60.1								
8835-009	Methyl parathion					<600		U	60.1								
8835-009	Methyl methanesulfonate					<600		U	60.1								
8835-009	N-Nitroso-di-n-butylamine					<600		U	60.1								
8835-009	N-Nitrosodi-n-propylamine					<600		U	60.1								
8835-009	N-Nitrosodiethylamine					<600		U	60.1								
8835-009	N-Nitrosomethylethylamine					<600		U	60.1								
8835-009	N-Nitrosomorpholine					<600		U	60.1								
8835-009	N-Nitrosopiperidine					<600		U	60.1								
8835-009	N-Nitrosopyrrolidine					<600		U	60.1								
8835-009	Naphthalene					<600	650		60.1								
8835-009	Nitrobenzene					<600		U	60.1								
8835-009	O,O,O-Triethylphosphorothioate					<600		U	60.1								
8835-009	o-Toluidine					<600		U	60.1								
8835-009	p-Dimethylaminoazobenzene					<600		U	60.1								
8835-009	p-Phenylenediamine					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	Parathion					<600		U	60.1								
8835-009	Pentachlorobenzene					<600		U	60.1								
8835-009	Pentachloronitrobenzene					<600		U	60.1								
8835-009	Pentachlorophenol					<600		U	60.1								
8835-009	Phenacetin					<600		U	60.1								
8835-009	Phenol					<600		U	60.1								
8835-009	Phorate					<600		U	60.1								
8835-009	Pronamide					<600		U	60.1								
8835-009	Pyridine					<600		U	60.1								
8835-009	Safrole					<600		U	60.1								
8835-009	Sulfotepp					<600		U	60.1								
8835-009	Thionzin					<600		U	60.1								
8835-010	1,2,4,5-Tetrachlorobenzene					<600		U	59.8								
8835-010	1,2,4-Trichlorobenzene					<600		U	59.8								
8835-010	1,2-Dichlorobenzene					<600		U	59.8								
8835-010	1,3,5-Trinitrobenzene					<600		U	59.8								
8835-010	1,3-Dichlorobenzene					<600		U	59.8								
8835-010	1,4-Dichlorobenzene					<600		U	59.8								
8835-010	1,4-Naphthoquinone					<600		U	59.8								
8835-010	1-Naphthylamine					<600		U	59.8								
8835-010	2,3,4,6-Tetrachlorophenol					<600		U	59.8								
8835-010	2,4,5-Trichlorophenol					<600		U	59.8								
8835-010	2,4,6-Trichlorophenol					<600		U	59.8								
8835-010	2,4-Dichlorophenol					<600		U	59.8								
8835-010	2,4-Dimethylphenol					<600		U	59.8								
8835-010	2,4-Dinitrophenol					<600		U	59.8								
8835-010	2,4-Dinitrotoluene					<600		U	59.8								
8835-010	2,6-Dichlorophenol					<600		U	59.8								
8835-010	2,6-Dinitrotoluene					<600		U	59.8								
8835-010	2-Acetylaminofluorene					<600		U	59.8								
8835-010	2-Chloronaphthalene					<600		U	59.8								
8835-010	2-Chlorophenol					<600		U	59.8								
8835-010	2-Methylphenol					<600		U	59.8								
8835-010	2-Naphthylamine					<600		U	59.8								
8835-010	2-Nitroaniline					<600		U	59.8								
8835-010	2-Nitrophenol					<600		U	59.8								
8835-010	2-Picoline					<600		U	59.8								
8835-010	3,3'-Dichlorobenzidine					<600		U	59.8								
8835-010	3-3'-Dimethylbenzidine					<600		U	59.8								
8835-010	3-Methylcholanthrene					<600		U	59.8								
8835-010	4,6-Dinitro-2-methylphenol					<600		U	59.8								
8835-010	4-Aminobiphenyl					<600		U	59.8								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-010	4-Bromophenyl phenyl ether					<600		U	59.8								
8835-010	4-Chloro-3-methylphenol					<600		U	59.8								
8835-010	4-Chloroaniline					<600		U	59.8								
8835-010	4-Methylphenol					<600		U	59.8								
8835-010	4-Nitroaniline					<600		U	59.8								
8835-010	4-Nitrophenol					<600		U	59.8								
8835-010	5-Nitro-o-toluidine					<600		U	59.8								
8835-010	7,12-Dimethylbenz[a]anthracene					<600		U	59.8								
8835-010	α,α-Dimethylphenethylamine					<600		U	59.8								
8835-010	Acetophenone					<600		U	59.8								
8835-010	Aniline					<600		U	59.8								
8835-010	Aramite					<600		U	59.8								
8835-010	Benzidine					<600		U	59.8								
8835-010	Benzo[a]anthracene					<600		U	59.8								
8835-010	Benzo[a]pyrene					<600		U	59.8								
8835-010	Benzo[b]fluoranthene					<600		U	59.8								
8835-010	Benzo[k]fluoranthene					<600		U	59.8								
8835-010	Bis(2-chloroisopropyl)ether					<600		U	59.8								
8835-010	Butyl benzyl phthalate					<600		U	59.8								
8835-010	Chlorobenzilate					<600		U	59.8								
8835-010	Chrysene					<600		U	59.8								
8835-010	Di-n-butyl phthalate					<600		U	59.8								
8835-010	Di-n-octyl phthalate					<600		U	59.8								
8835-010	Diallate					<600		U	59.8								
8835-010	Dibenzo[a,h]anthracene					<600		U	59.8								
8835-010	Dibenz[a,j]acridine					<600		U	59.8								
8835-010	Diethyl phthalate					<600		U	59.8								
8835-010	Dimethoate					<600		U	59.8								
8835-010	Dimethyl phthalate					<600		U	59.8								
8835-010	Dinoseb					<600		U	59.8								
8835-010	Diphenylamine					<600		U	59.8								
8835-010	Disulfoton					<600		U	59.8								
8835-010	Ethyl methanesulfonate					<600		U	59.8								
8835-010	Famphur					<600		U	59.8								
8835-010	Fluoranthene					<600		U	59.8								
8835-010	Fluorene					<600		U	59.8								
8835-010	Hexachlorobenzene					<600		U	59.8								
8835-010	Hexachlorobutadiene					<600		U	59.8								
8835-010	Hexachlorocyclopentadiene					<600		U	59.8								
8835-010	Hexachloroethane					<600		U	59.8								
8835-010	Hexachlorophene					<15000		U	59.8								
8835-010	Hexachloropropene					<600		U	59.8								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-010	Indeno(1,2,3-c,d)pyrene					<600		U	59.8								
8835-010	Isodrin					<600		U	59.8								
8835-010	Isosafrole					<600		U	59.8								
8835-010	Kepone					<1200		U	59.8								
8835-010	Methapyrilene					<600		U	59.8								
8835-010	Methyl parathion					<600		U	59.8								
8835-010	Methyl methanesulfonate					<600		U	59.8								
8835-010	N-Nitroso-di-n-butylamine					<600		U	59.8								
8835-010	N-Nitrosodi-n-propylamine					<600		U	59.8								
8835-010	N-Nitrosodiethylamine					<600		U	59.8								
8835-010	N-Nitrosomethylethylamine					<600		U	59.8								
8835-010	N-Nitrosomorpholine					<600		U	59.8								
8835-010	N-Nitrosopiperidine					<600		U	59.8								
8835-010	N-Nitrosopyrrolidine					<600		U	59.8								
8835-010	Naphthalene					<600	710		59.8								
8835-010	Nitrobenzene					<600		U	59.8								
8835-010	O,O,O-Triethylphosphorothioate					<600		U	59.8								
8835-010	o-Toluidine					<600		U	59.8								
8835-010	p-Dimethylaminoazobenzene					<600		U	59.8								
8835-010	p-Phenylenediamine					<600		U	59.8								
8835-010	Parathion					<600		U	59.8								
8835-010	Pentachlorobenzene					<600		U	59.8								
8835-010	Pentachloronitrobenzene					<600		U	59.8								
8835-010	Pentachlorophenol					<600		U	59.8								
8835-010	Phenacetin					<600		U	59.8								
8835-010	Phenol					<600		U	59.8								
8835-010	Phorate					<600		U	59.8								
8835-010	Pronamide					<600		U	59.8								
8835-010	Pyridine					<600		U	59.8								
8835-010	Safrole					<600		U	59.8								
8835-010	Sulfotepp					<600		U	59.8								
8835-010	Thionzin					<600		U	59.8								
8835-011	1,2,4,5-Tetrachlorobenzene					<580		U	58.3								
8835-011	1,2,4-Trichlorobenzene					<580		U	58.3								
8835-011	1,2-Dichlorobenzene					<580		U	58.3								
8835-011	1,3,5-Trinitrobenzene					<580		U	58.3								
8835-011	1,3-Dichlorobenzene					<580		U	58.3								
8835-011	1,4-Dichlorobenzene					<580		U	58.3								
8835-011	1,4-Naphthoquinone					<580		U	58.3								
8835-011	1-Naphthylamine					<580		U	58.3								
8835-011	2,3,4,6-Tetrachlorophenol					<580		U	58.3								
8835-011	2,4,5-Trichlorophenol					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	2,4,6-Trichlorophenol					<580		U	58.3								
8835-011	2,4-Dichlorophenol					<580		U	58.3								
8835-011	2,4-Dimethylphenol					<580		U	58.3								
8835-011	2,4-Dinitrophenol					<580		U	58.3								
8835-011	2,4-Dinitrotoluene					<580		U	58.3								
8835-011	2,6-Dichlorophenol					<580		U	58.3								
8835-011	2,6-Dinitrotoluene					<580		U	58.3								
8835-011	2-Acetylaminofluorene					<580		U	58.3								
8835-011	2-Chloronaphthalene					<580		U	58.3								
8835-011	2-Chlorophenol					<580		U	58.3								
8835-011	2-Methylphenol					<580		U	58.3								
8835-011	2-Naphthylamine					<580		U	58.3								
8835-011	2-Nitroaniline					<580		U	58.3								
8835-011	2-Nitrophenol					<580		U	58.3								
8835-011	2-Picoline					<580		U	58.3								
8835-011	3,3'-Dichlorobenzidine					<580		U	58.3								
8835-011	3-3'-Dimethylbenzidine					<580		U	58.3								
8835-011	3-Methylcholanthrene					<580		U	58.3								
8835-011	4,6-Dinitro-2-methylphenol					<580		U	58.3								
8835-011	4-Aminobiphenyl					<580		U	58.3								
8835-011	4-Bromophenyl phenyl ether					<580		U	58.3								
8835-011	4-Chloro-3-methylphenol					<580		U	58.3								
8835-011	4-Chloroaniline					<580		U	58.3								
8835-011	4-Methylphenol					<580		U	58.3								
8835-011	4-Nitroaniline					<580		U	58.3								
8835-011	4-Nitrophenol					<580		U	58.3								
8835-011	5-Nitro-o-toluidine					<580		U	58.3								
8835-011	7,12-Dimethylbenz[a]anthracene					<580		U	58.3								
8835-011	α,α-Dimethylphenethylamine					<580		U	58.3								
8835-011	Acetophenone					<580		U	58.3								
8835-011	Aniline					<580		U	58.3								
8835-011	Aramite					<580		U	58.3								
8835-011	Benzidine					<580		U	58.3								
8835-011	Benzo[a]anthracene					<580		U	58.3								
8835-011	Benzo[a]pyrene					<580		U	58.3								
8835-011	Benzo[b]fluoranthene					<580		U	58.3								
8835-011	Benzo[k]fluoranthene					<580		U	58.3								
8835-011	Bis(2-chloroisopropyl)ether					<580		U	58.3								
8835-011	Butyl benzyl phthalate					<580		U	58.3								
8835-011	Chlorobenzilate					<580		U	58.3								
8835-011	Chrysene					<580		U	58.3								
8835-011	Di-n-butyl phthalate					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	Di-n-octyl phthalate					<580		U	58.3								
8835-011	Diallate					<580		U	58.3								
8835-011	Dibenzo[a,h]anthracene					<580		U	58.3								
8835-011	Dibenz[a,j]acridine					<580		U	58.3								
8835-011	Diethyl phthalate					<580		U	58.3								
8835-011	Dimethoate					<580		U	58.3								
8835-011	Dimethyl phthalate					<580		U	58.3								
8835-011	Dinoseb					<580		U	58.3								
8835-011	Diphenylamine					<580		U	58.3								
8835-011	Disulfoton					<580		U	58.3								
8835-011	Ethyl methanesulfonate					<580		U	58.3								
8835-011	Famphur					<580		U	58.3								
8835-011	Fluoranthene					<580		U	58.3								
8835-011	Fluorene					<580		U	58.3								
8835-011	Hexachlorobenzene					<580		U	58.3								
8835-011	Hexachlorobutadiene					<580		U	58.3								
8835-011	Hexachlorocyclopentadiene					<580		U	58.3								
8835-011	Hexachloroethane					<580		U	58.3								
8835-011	Hexachlorophene					<14000		U	58.3								
8835-011	Hexachloropropene					<580		U	58.3								
8835-011	Indeno(1,2,3-c,d)pyrene					<580		U	58.3								
8835-011	Isodrin					<580		U	58.3								
8835-011	Isosafrole					<580		U	58.3								
8835-011	Kepone					<1200		U	58.3								
8835-011	Methapyrilene					<580		U	58.3								
8835-011	Methyl parathion					<580		U	58.3								
8835-011	Methyl methanesulfonate					<580		U	58.3								
8835-011	N-Nitroso-di-n-butylamine					<580		U	58.3								
8835-011	N-Nitrosodi-n-propylamine					<580		U	58.3								
8835-011	N-Nitrosodiethylamine					<580		U	58.3								
8835-011	N-Nitrosomethylethylamine					<580		U	58.3								
8835-011	N-Nitrosomorpholine					<580		U	58.3								
8835-011	N-Nitrosopiperidine					<580		U	58.3								
8835-011	N-Nitrosopyrrolidine					<580		U	58.3								
8835-011	Naphthalene					<580	810		58.3								
8835-011	Nitrobenzene					<580		U	58.3								
8835-011	O,O,O-Triethylphosphorothioate					<580		U	58.3								
8835-011	o-Toluidine					<580		U	58.3								
8835-011	p-Dimethylaminoazobenzene					<580		U	58.3								
8835-011	p-Phenylenediamine					<580		U	58.3								
8835-011	Parathion					<580		U	58.3								
8835-011	Pentachlorobenzene					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	Pentachloronitrobenzene					<580		U	58.3								
8835-011	Pentachlorophenol					<580		U	58.3								
8835-011	Phenacetin					<580		U	58.3								
8835-011	Phenol					<580		U	58.3								
8835-011	Phorate					<580		U	58.3								
8835-011	Pronamide					<580		U	58.3								
8835-011	Pyridine					<580		U	58.3								
8835-011	Safrole					<580		U	58.3								
8835-011	Sulfotepp					<580		U	58.3								
8835-011	Thionzin					<580		U	58.3								

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1.0 INTRODUCTION

This document provides technical background for the comparable fuel exclusion that is being considered for the final rule. As part of an April 19, 1996 proposed (60 FR 17459) rulemaking, EPA has developed a comparable fuel exclusion. A comparable fuel would be an ignitable waste or co-product production stream, both of which are currently defined as a hazardous waste, which meet the specifications of the exclusion. Comparable fuels are burned for energy recovery, in lieu of fossil fuels, due to their high BTU value. Benefits derived from this procedure include decreased use of fossil fuels and reduced operational costs. Under this provision, a comparable fuel would be excluded from the Research Conservation and Recovery Act (RCRA), Subtitle C Regulation, as long as it meets the comparable fuel exclusion and is burned. Industry contends these waste streams are cleaner than the fuels displaced and that burning these waste streams provides an overall environmental benefit. EPA's goal is to provide a comparable fuel exclusion that is both useful to the regulated community and assures that comparable fuel poses no greater risk than what otherwise would be associated with the burning of fossil fuels.

The Agency's current approach is to base a comparable fuel exclusion on constituent concentrations normally found in fossil fuels. For this "benchmark" approach, the concept is to permit hazardous constituents in the comparable fuel which are no greater in concentration than those of the same constituents naturally occurring in commercially available fossil fuels. Additionally, the current approach will not allow detectable levels of toxic synthetic chemicals, such as pesticides, in the comparable fuels. This approach will assure EPA that the comparable fuel, when burned, will pose no greater risk than a fossil fuel. This document contains data on as many toxic organics from 40 CFR, Part 261, Appendix VIII as could be quantitated for each fuel sample collected during this study. The EPA developed a series of constituent specifications based on the following parameters: kinematic viscosity, total nitrogen, total halogens, individual metals, Appendix VIII organics, and BTU content of each fuel. EPA is proposing that these specifications apply to all hazardous gaseous and liquid fuels, with the exception of viscosity, which is not relevant

for gaseous fuels. Table 1-1 gives the units of measure for each of these constituents and the individual metals analyzed.

In the proposed rule for comparable fuels, EPA presented several options to establish a benchmark specification. This document presents the data used to develop the initial specification for the proposed rule and the specifications for the final rule. This document summarizes the rationale of the ?benchmark" approach used to set the specifications and discusses, with some detail, the analytical approach used to characterize the constituents of concern.

1.1 Benchmark Fuel Selection Basis

Potential benchmark fuels (on which to base the comparable fuel specifications) that were considered include the commercially available fossil fuels of: (1) gases (such as natural gas and propane); (2) liquids (such as gasoline and fuel oils); and (3) solids (such as coal, coke, and peat). However, the benchmark fuels have been limited to liquid fossil fuels, including gasoline and Nos. 2, 4, and 6 fuel oils. This is because, as discussed below, solid fuels tend to have higher levels of hazardous constituents that are not destroyed in the incineration process, while gases tend to have hazardous constituent levels that are sufficiently low to make the specification of limited practical use.

Solid fuels (such as coal, wood, and biomass) will not be used to base the comparable fuels specification. Solid fuels are used widely throughout the U.S. as legitimate energy sources. However, the comparable fuel specification, which would exclude a hazardous waste fuel from RCRA Subtitle C regulation, will not be based on solid fossil fuels (in particular, coal) since they can have high levels of toxic constituents that will not be destroyed or detoxified by burning (e.g., metals and halogens). It is generally desired to minimize the feed rate of metals and halogens into waste incineration systems because these constituents are not destroyed in the incineration process (unlike organics which are destroyed; inorganics are found in the bottom ash, air pollution control system residues, or stack gas emissions). It is not the intent of the comparable fuels exclusion to set

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TABLE 1-1. ANALYTICAL PARAMETERS AND CONSTITUENTS FOR COMPARABLE FUEL STUDY

Property of Interest	Units	Described As
Heating Value	BTU/lb	min. or range
Kinematic Viscosity	cSt at 100°F	min. or range
Specific Gravity	at 15°C	range and average
Flash Point	°F	minimum
Total Nitrogen	weight %	maximum
Total Halogens:	ppm_w as Cl^-	maximum
Fluorine		maximum
Chlorine		maximum
Bromine		maximum
Iodine		maximum
Metals:		
Antimony	ppm_w[1]	maximum
Arsenic	ppm_w[1]	maximum
Barium	ppm_w[1]	maximum
Beryllium	ppm_w[1]	maximum
Cadmium	ppm_w[1]	maximum
Chromium	ppm_w[1]	maximum
Cobalt	ppm_w[1]	maximum
Lead	ppm_w[1]	maximum
Manganese	ppm_w[1]	maximum
Mercury	ppm_w[1]	maximum
Nickel	ppm_w[1]	maximum
Selenium	ppm_w[1]	maximum
Silver	ppm_w[1]	maximum
Thallium	ppm_w[1]	maximum
Appendix VIII Organics	ppm_w[1]	maximum
Total Aromatics	wt. %	maximum
Total PNAs	Wt. %	maximum

[1] ppm_w = mg/kg

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specifications based on the ?dirtiest" fossil fuels. Comparison with these solid fuels could result in a least common denominator approach whereby a hazardous waste-derived fuel would be ?comparable" if it was no more dangerous to burn than the most contaminated fossil fuels. Such ?comparability" is not congruent with the overall objective of RCRA in order to protect human health and the environment. It is also inconsistent with the specific directive to regulate combustion of hazardous waste-derived fuels where necessary to protect human health and the environment (RCRA Section 3004(q)). Thus, although a benchmark approach is used rather than a risk-based approach, the benchmark fossil fuels that are selected, in general, have lower contaminant levels for constituents that are not destroyed in the incineration process.

Metals and halogen concentrations in coal are compared with that of gasoline and fuel oils (Nos. 2, 4, and 6) in Table 1-2. For coal, median, maximum, and minimum levels are shown, based on data from a recent IEA Coal Research report (Clarke and Sloss, 1992) and the Electric Power Research Institute (EPRI) PISCES database (Wetherold et al., 1995). Data for the liquid fossil fuels are given from three sources: (1) 90th percentile levels based on the recent EPA-sponsored testing specifically for developing the comparable fuels specifications; (2) for No. 2, 4, and 6 fuel oil, average levels based on that from the EPRI Pisces database (Wetherold et al., 1995); and (3) for fuel oil, levels from the EPA/OSW database on hazardous waste burning combustors (including boilers and incinerators).

None of the Clean Air Act metals were detected in the gasoline samples. Pb, Ni, Sb, and Se are the only metals typically found in the fuel oil samples (with the metals levels generally increasing with the fuel oil number). Metals levels in coal can vary tremendously, depending on the origin of the fossil fuels. The No. 6 fuel oil high-end 90th percentile levels for Pb and Ni are comparable to the average coal levels. The average coal levels for As, Ba, Co, Cr, Mn, and Pb are typically 10 to 100 times higher than that of the liquid fossil fuels. Levels of Hg and Be in fuel oils are also typically much less than that of coal. The chlorine content of coal and fuel oils can range widely from less than 50 to greater than 2,000 ppmw. Typically though, coal has a chlorine level that can be 2 to 10 times higher than that of fuel oils.

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TABLE 1-2: COMPARISON OF THE METAL AND HALOGEN CONTENT OF COAL, GASOLINE, AND FUEL OILS

Constituent	Concentration (ppmw)									
	Coal[a]			Gasoline 90th %[b]	Fuel Oil No. 2 90th %[b]	Fuel Oil No. 4 90th %[b]	Fuel Oil No. 6 90th %[b]	Fuel Oil No. 2, 4, 6 Average[c]	Fuel Oils[e]		
	Avg.	Min.	Max.						Avg.	Min.	Max.
Antimony	1	0.05	10	< 7	< 6	< 11	6.5	0.2			
Arsenic	10	0.5	80	< 0.14	< 0.12	< 0.2	< 0.2	0.3	0.1		
Barium	200	20	1000	< 14	< 12	< 23	< 20	NA	0.3		
Beryllium	2	0.1	15	< 0.7	< 0.6	< 1.2	< 1	0.2	0.1		
Cadmium	0.5	0.1	3	< 0.7	< 0.6	< 1.2	< 1	0.3	0.5		
Chromium	20	0.5	60	< 1.4	< 1.2	< 2.3	< 2	0.7	0.5		
Cobalt	5	0.5	30	< 2.8	< 2.4	< 4.6	< 4.1	2			
Lead	40	2	80	< 7	6.6	9.9	30	2.6			
Manganese	70	5	300	< 0.7	< 0.6	< 1.2	< 1	0.2			
Mercury	0.1	0.02	1	< 0.1	< 0.1	< 0.2	< 0.2	0.03	< 0.1		
Nickel	20	0.5	50	< 2.8	< 2.4	16	36	31			
Selenium	1	0.2	10	< 0.14	0.07	0.13	0.12	0.2			
Silver	0.1	0.02	2	< 1.4	< 1.2	< 2.3	< 2	NA			
Thallium	< 1			< 14	< 12	< 23	< 20	NA			
Chlorine	1000	50	2000	< 25d	< 25d	< 0d	< 10d	36	500	50	3000
Fluorine	150	20	500	NM	NM	NM	NM	NA			

a Source: Clarke and Sloss (1992)

b Source: EPA (1996)

c Source: Wetherold et al. (1995)

e From hazardous waste burning combustors

NM: Not measured

NA: Not reported

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Gases are also not selected as benchmark fuels. Generally, basing the comparable fuel specification on a gaseous fuel would be overly conservative and have no practical use to the regulated industry (i.e., it is unlikely that many hazardous wastes would meet a fuel specification based on natural gas). Note that separate benchmark specifications are defined for a hazardous waste-derived fuel synthesis gas (syn-gas), as discussed below.

Additionally, non-petroleum liquid based fuels, including turpentine and tall oil, are not considered as benchmark fuels:

- Turpentine -- Turpentine has a very high energy content and is used as a fuel (and a manufacturing feedstock) both within and outside the forest products industry. However, turpentine has not been selected since: (1) turpentine is not a widely used commercial fuel; and (2) there are no ASTM standards for turpentine fuel which specify the minimum properties. This must be met for the product to be considered as a commercial fuel.

- Tall oil -- Tall oil is a traditional fuel source, and EPA has acknowledged that tall oil is a legitimate non-waste fuel under the BIF rule low risk waiver exemption (LRWE) and DRE trial burn exemptions (see 56 FR 7193, February 21, 1991). However, tall oil is not used because of lack of quality constituent data.

Liquid fossil fuels of Nos. 2 and 6 fuel oils, and gasoline, have been selected as the benchmark fuels. Liquid fuels are widely used by industry, readily combusted, and do not have the inconsistencies of solid or gaseous fuels. Gasoline has been included even though it is not typically utilized in industrial boilers and furnaces. Gasoline is a highly used, commercially available, liquid fuel, for which complete hazardous constituent analysis is available (allowing for a more complete and useable benchmark specification).

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1.2 Parameters and Rationale for Comparable Fuels Specifications

Benchmark fuel specifications are being set for: (1) physical specifications, including energy content (heating value) and kinematic viscosity; (2) general constituent specifications for total nitrogen and total halogens; and (3) individual hazardous constituents, including individual metals (including Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Ag, and Tl), and Appendix VIII organics. Rationale for the selection of these parameters is discussed in the following.

Since most comparable fuels are expected to have a lower BTU content than fossil fuels, more comparable fuel will be needed to produce the same heating value. This situation will potentially increase the environmental loading of hazardous constituent emissions from the comparable fuel. More comparable fuel would be burned to achieve the same heat input leading to greater environmental loading of potentially toxic substances than if fossil fuel was burned. This would not follow the intent of the comparable fuel exclusion. To address environmental loading, a minimum heating value specification comparable to the BTU content of the benchmark fossil fuels is used. Constituent levels have been corrected from the fuel's heating value (approximately 20,000 Btu/lb) to 10,000 Btu/lb.

1.2.1 *Heating Value*

A benchmark specification limit on minimum waste energy content is set. This is to ensure that the comparable fuel has a legitimate use as a fuel (note that the comparable fuels exclusion only applies to waste fuels that are ultimately burned). For solid and liquid wastes, a level of 5,000 Btu/lb (11,500 J/g) has been selected. This level has been traditionally used as a reasonable cutoff for determining if a waste is being burned for energy recovery. Note that it is based on the typical heating value of wood.

1.2.2 *Kinematic Viscosity*

Liquid waste viscosity affects the efficiency of combustion by influencing the atomization characteristics of the liquid waste. Note that viscosity is an important design specification for liquid

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burners. Thus the purpose of a viscosity specification is used to ensure that a comparable fuel is as burnable as the benchmark fuel.

The viscosity specification is based on that of No. 6 residual fuel oil (the heaviest, most viscous, liquid fossil fuel) at normal firing conditions. The comparable fuel viscosity specification is set at 50 cSt, as-fired. This is based on the ASTM standard for No. 6 fuel of 50 cSt (at 100 °C, which is a common firing temperature for No. 6 oil). Note that No. 6 residual oil must be heated (from 30 to 50°C) for handling and pumping purposes due to high viscosity at normal ambient temperatures. For atomization and burning, it must be heated further to reduce the viscosity needed for efficient atomization and combustion, usually to temperatures in the range of 70 to 130 °C (160 to 270°F). The exact temperature (and corresponding viscosity) requirement depends on factors including the burner design, atomization method (steam assisted, mechanical pressure, etc.), and viscosity characteristics of the No. 6 fuel oil (note that there is no one No. 6 oil; different No. 6 oils can have significantly different viscosities at the same temperature). Typically, mechanical pressure atomization nozzles require that the oil have a viscosity of 15 to 30 cSt (70 to 150 SSU), while steam assisted burner nozzles can handle higher viscosities ranging from 30 to 70 cSt (150 to 300 SSU). The 50 cSt ASTM value is an upper limit on what can be expected for No. 6 fuel oils at a typical firing temperature of 100°C (Perry and Green, 1994; Reed, 1986).

Additionally, the viscosity specification only applies to liquid waste fuels (not gaseous fuels, which are inherently less viscous than liquids, and not solids, for which viscosity is not applicable).

1.2.3 *Flash Point*

A specification on flash point is not being used since: (1) DOT and OSHA have regulations that control the hazards of flash point explosions; (2) it would preclude the inclusion of materials that are normally fuels such as methanol.

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1.2.4 *Total Halogens*

A comparable fuel specification for total halogens is used, generally in-lieu of meeting the individual specifications of chlorinated Appendix VIII compounds (expect PCBs for the most part). Limitation of the chlorine feed to the combustor is desired from an environmental protection perspective to: (1) reduce the emissions of the hazardous air pollutants of HCl and Cl_2, both of whose formation is directly related to the chlorine content of the waste feed; and (2) prevent the formation of chlorinated products of incomplete combustion (PICs), which includes PCDD/PCDF as well as chlorinated benzenes, biphenyls, phenols, etc. Limiting the waste feed chlorine level reduces the potential for the formation of chlorinated PICs through (Dellinger et al., 1990):

- Limiting the release from the combustion zone of undestroyed and/or partially fragmented chlorinated precursors contained in the waste feed. Note that kinetic theory and experimental work indicate the chlorination of unchlorinated hydrocarbons is very unlikely at combustion temperatures (i.e., chlorinated PICs are not formed from unchlorinated hydrocarbons in the combustion zone). Thus, the emissions of chlorinated PICs from the combustion zone is related directly to the chlorinated organic constituents in the waste feed. It is highly desired to minimize the level of chlorinated precursors in the combustion gases since the major route to formation of high molecular weight chlorinated PICs is through reactions of already chlorinated precursors.

- Limiting the potential for the formation of chlorinated PICs due to radical-radical association reactions as the combustion gas is cooled -- in particular organic radical reactions with Cl radicals formed in the combustion zone.

- Ensuring adequate flame stability (and corresponding combustion efficiency) and reducing flame sooting. Increasing levels of chlorine are known to increase flame sooting and decrease flame stability and efficiency. Cl atoms scavenge H atoms,

depleting the flame radical pool that drives the combustion reactions.

Note that a total halogen limit may have only a secondary effect on controlling PCDD/PCDF emissions. Analysis of PCDD/PCDF data from full-scale waste combustion systems indicates that the waste feed chlorine level does not have a dominant impact on PCDD/PCDF emissions (generally of primary importance is the PM air pollution control device temperature). However, the waste feed chlorine level may have a secondary influence. Certain well-controlled pilot-scale experimental studies indicate there can be a strong relationship between HCl and Cl_2 levels in the flue gas and PCDD/PCDF emissions (e.g., Gullett et al., 1994).

Additionally, a limit on total halogens, including both organic and inorganic forms, is appropriate since both forms in the waste fuel can contribute to halogenated PIC emissions. For example, PCDD/PCDF and other chlorinated PICs have been detected from sources burning both inorganic (e.g., salts) and/or organic chloride (e.g., plastics) containing wastes (e.g., Wikstrom et al., 1994; Fangmark et al., 1991; Christiansen, 1990; Nielsen, 1989). Inorganic chlorine salts have also been shown to act as a direct chlorine source for PCDD/PCDF formation at low de-novo synthesis temperatures (Addink and Olie, 1995).

Note that under well-controlled combustion conditions, the vast majority of organic halogens in the waste fuel feed will leave the combustor gas as HCl, HF, etc. Smaller levels will be in the combustion gas in the form of Cl_2, F_2, and halogenated organics, and some may also be present in the solid bottom and fly ash as salts. Inorganic halogen salts will also decompose to a lesser degree as HCl, HF, Cl_2, F_2, and PICs in the combustion gas; with the remainder as salts in the bottom and fly ash. Inorganic halogen salts are sometimes believed not to react at combustion temperatures due to high melting temperatures. However, work by Uchida et al., (1988) have shown that inorganic salts can directly contribute to HCl combustion gas levels (water vapor and zeolites participate in a reaction transforming chlorine salts to HCl). Thus, for halogenated hydrocarbon waste fuels, containing either inorganic or organic halogens, there is potential that under less optimum combustion conditions (higher CO, insufficient oxygen and mixing, etc.) halogenated PIC emissions may form.

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1.2.5 *Total Nitrogen*

A specification on total nitrogen is used, in addition to those on nitrogenated Appendix VIII compounds. Under oxidative conditions of typical hazardous waste combustors, the majority of waste nitrogen will be emitted as N_2 (not of environmental concern) or NO_x (a criteria air pollutant whose emissions levels are covered under the Clean Air Act ambient air quality standards for ozone control). However, under starved air (reducing) conditions, nitrogen will primarily form the HAPs HCN and NH_3. Starved air transient **?**puffs" can occur in hazardous waste combustors due to chamber overcharging (possibly due to unexpected surges in waste volatile composition), poor waste/air mixing, and poor liquid atomization. Additionally, nitrile radicals (CN^-) can form nitrogenated PICs (such as HAPs including hydrogen cyanide, acetonitrile, acrylonitrile, nitrophenols, nitrotoluenes, nitrobenzenes, aniline, acetamide, acrylamide, etc.) through radical-radical and radical-molecule reactions which occur as the combustion gas is cooled (Dellinger et al., 1990).

1.2.6 *Metals*

Benchmark specifications are set for the individual metals of Sb, As, Ba, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Ag, and Tl (which include both Clean Air Act Title III and RCRA Appendix VIII metals). Limitation of the metals feed to the incinerator results in a direct reduction of metals emissions since, like chlorine, metals are not destroyed in the combustion process.

1.2.7 *Organics*

Specifications are set for RCRA Appendix VIII organics. Note that specifications are not set for some of the compounds on the Appendix VIII list because a routine analytical method is not available.

Specifications are set for oxygenates (at non-detect levels determined by the benchmark fuel analytical results). Oxygenates generally burn well and contribute to the combustion of other

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constituents in the fuel (organically bound oxygen provides a source of oxygen for the combustion process). Oxygenates are added intentionally to clean-burning ?reformulated" gasoline to enhance the completeness of combustion in internal combustion engines. However, under poor combustion conditions, breakdown of the oxygenate at the oxygen bond can lead to the production of free radicals (Weitzman, 1991). These radicals can recombine with other radicals or compounds to form higher molecular weight chlorinated PICs. Thus, a comparable fuel specification for oxygenates is used.

1.3 Parameters and Rationale for Synthesis Gas Fuel Specifications

Comparable fuel specifications are set for ?synthesis" gas (syn-gas) separately from solid and liquid hazardous wastes. The combustion of syn-gases meeting these specifications would be excluded from regulation as a hazardous waste. Syn-gas is generated by the gasification of hazardous wastes. Syn-gas is a mixture of primarily H_2 and CO, as well as the inerts of N_2, CO_2, Cl_2, S, etc. The syn-gas characteristics depend primarily on: (1) the composition of the material that is being gasified (to date, mostly natural gas, oil, or coal, although systems for wood, plastics, sludges, and other types of wastes are more recently being developed); (2) the use of oxygen vs. air for the gasification process; and (3) the amount of steam utilized for the gasification process (which affects the CO/H_2 ratio). Syn-gas has uses as:

- Feedstock in the chemical industry for making products such as ammonia, alcohols, acetic acid, MTBE, etc., as well as other hydrocarbons. Also, it is used as a source of hydrogen in the petrochemical industry for hydrogenation processes. For this, a well defined and homogeneous material (usually some fossil fuel) is generally used for the syn-gas generation; and

- Fuel for power generation, heating, etc.

To ensure that the combustion of syn-gas is comparable to that of fossil fuels, specifications are set on: (1) heating control; (2) general constituents for total chlorine, total nitrogen, and hydrogen

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sulfide; and (3) individual Appendix VIII constituents. Rationale for the selection and determination of these specifications is discussed in the following.

1.3.1 *Heating Value*

A minimum heating value limit of 100 Btu/scf is set for syn-gas. The minimum specification of 100 Btu/scf is based on syn-gas from the gasification of coal with oxygen. It is commonly required for gas turbine energy production.

For fuel usage related purposes, syn-gases are classified as either medium or low-BTU gases (medium generally being produced with pure oxygen, low-BTU generally with air). Medium BTU syn-gases generated from the gasification of fuels (including coal, fuel oil, biomass, municipal solid wastes, plastics, etc.) with pure oxygen can have heating values from 250-400 Btu/scf (Stultz and Kitto, 1992). Low-BTU syn-gases generated from the gasification of fuels with air can have heating values from about 100-200 Btu/scf. The heating value of the syn-gas depends primarily of the diluent content (nitrogen, carbon dioxide, chlorine, sulfur, moisture, etc.), which is a strong function of the syn-gas feed material composition and gasification process (particularly if air or pure oxygen is used for the gasification process). The heating value is not a strong function of the H_2/CO ratio since both gases have similar heating values on a Btu/scf basis (although a low H_2/CO ratio can adversely affect flame stability).

Syn-gas used as a fuel for power production in gas turbines typically requires a heat content from 250-450 Btu/scf, with a lower limit of around 200 Btu/scf. Intentionally manufactured syn-gases can have heating content levels as low as 100 Btu/scf (e.g., coal gasifiers with air). However, this gas by itself, although it may be quite burnable, does not achieve temperature and expansion ratios needed for thermodynamically efficient power generation. Thus, it is usually mixed with higher energy sources, and is not generally desired for most applications. Note that there are certain specially designed gas turbines (with very large ?silo" combustion chambers) that can handle very low-BTU (100 Btu/scf) syn-gases for power generation (for example, see Geiling (1992) and Gas Turbine World (1990)).

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Additionally, other low-BTU by-product gases are also used effectively for their fuel value (e.g., the blast furnace byproduct gas from steel manufacturing, with a heating level of about 50 Btu/scf and enhanced with gas and oil, is used in the furnace heating stoves).

Because syn-gas is sometimes used as a chemical feedstock, an absolute lower limit on heating value for comparable fuel classification may not be appropriate or needed because the syn-gas is not being used for energy recovery or supplementary purposes, making its heat content irrelevant. However, as a practical matter, whether or not syn-gas is being used as a chemical feedstock or fuel, the syn-gas is always being produced for its CO and/or H_2 content -- thus all gasification related syn-gases will have some appreciable heat content.

It is important to note that the heating value specification is expressed on a volumetric basis of Btu/scf (as opposed to Btu/lb for solid and liquids) because: (1) is it not appropriate to compare the heating value of different gases expressed in units of Btu/lb since the ratio of the weight-to-volume differs between different gases (particularly H_2 and CO); and (2) industry standard practice is to classify syn-gases based on the energy content per unit volume of gas.

1.3.2 *Hydrogen Sulfide*

A hydrogen sulfide (H_2S) specification of 200 ppmv is set. The sulfur content of the material used to produce the syn-gas is converted almost entirely into H_2S in the gasification process, with smaller amounts of COS. Thus, syn-gases produced from low sulfur content material such as wood, biomass, natural gas, and low sulfur fuel oil and coal, do not contain any appreciable H_2S. Once the syn-gas is burned under oxidizing conditions, the H_2S, if not removed prior to completing combustion, is converted to SO_x (primarily SO_2). SO_x emissions are regulated through the issuance of local air permits and the Clean Air Act national ambient air quality standards.

The H_2S content of high sulfur coal-based syn-gases can be over 1,000 ppmv (Stultz and Kitto,

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1992). However, in these cases, H_2S removal processes such as those based on the Claus process or regenerable metal sorbents are almost always used to reduce H_2S to well below 10 ppmv prior to syn-gas usage as a feedstock or for fuel value (for two technical reasons: (1) H_2S is much more easily removed than SO_x which are formed from syn-gas combustion, and (2) the syn-gas has a much lower flue gas volume than the gas produced from syn-gas full combustion). For use as a fuel, the technical limitation on the H_2S content of syn-gas is due to corrosion of downstream gas handling equipment, such as turbine blades, fans, etc. Generally levels below 200 ppmv can be tolerated. Note that for use as a feedstock, levels under 1 ppmv are usually required.

1.3.3 *Nitrogen (other than N_2)*

A nitrogen compound level (NH_3+HCN, other than N_2) of 300 ppmv is set. This is based on the typical nitrogen compound levels (NH_3+HCN) from syn-gases manufactured by coal from 100 to 300 ppmv (Stultz and Kitto, 1992). Nitrogen compounds in syn-gases are mostly in the form of NH_3, with smaller amounts of HCN and other nitrogenated organics. When syn-gases are burned, the nitrogen is converted primarily to NO_x, which is regulated through the issuance of local air permits and the Clean Air Act national ambient air quality standards. However, due to the increased potential to form nitrogenated PICs (as discussed previously for the comparable fuel specification for total nitrogen in solid and liquid wastes), especially from incomplete combustion conditions associated with inefficient incinerators, a specification on total nitrogen (other than N_2) is set.

1.3.4 *Total Halogens*

A total halogen specification for syn-gas of 1 ppmv is set. For use as a feedstock, a total halogen level of under 1 ppmv is usually required. For use as a fuel, lower concentrations of total halogens are desired to prevent corrosion in the downstream syn-gas burning equipment. In typical gasification processes, the majority of the halogens contained in the feedstreams are converted to syn-gas as gaseous halides and/or halogens. (Note that in some cases where the feedstream also contains alkali constituents such as sodium or lime, halogens may also be found in the bottom or entrained ash

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as solid salts). The raw halogen content of the syn-gas is thus a direct function of the halogen content of the material used to generate the syn-gas. For low halogen content materials, such as natural gas, and some fuel oils, coal, wood, and biomass streams, the syn-gas will not contain appreciable halogen levels. Alternatively, for some higher halogen content materials, such as certain coals with halogen contents of greater than 1000 ppmv, the concentration of halogen in the resulting syn-gas may be greater than 50 ppmv. However, as discussed above for hydrogen sulfide, when the syn-gas halogen content is high, halogen removal processes are used prior to syn-gas use as a fuel or feedstock. Halogen removal efficiencies are usually very high, i.e., greater than 99%. Thus, a level of 1 ppmv is reasonably achievable even for high halogen content syn-gas materials.

1.4 Collection of Liquid Fossil Fuel Samples Used for Analysis to Determine Benchmark

Commercially available fossil fuels are very diverse. The constituents in fuels can vary, depending on where fuels are refined, the condition of the catalysts used, and the origin of the raw material. Typically, fuels found on the East Coast are refined from Venezuelan and Middle East crude. Fuels on the West Coast are refined from domestic crude, although they can contain Venezuelan crude. This makes it almost impossible to determine the source of a given fuel. All fossil fuels are prepared to meet a series of American Standards for Testing Materials (ASTM) specifications, which were adopted as commercial standards by the National Bureau of Standards. These standards have been revised many times to meet changes in supply, so it is likely that they will continue to change as supplies change. The specifications focus on the physical parameters of the fuels, such as distillation temperatures, specific gravity, and viscosity.

To set the preliminary specification for comparable fuels, the EPA needed data on the concentrations of hazardous constituents in these fuels, as well as data on the physical parameters (viscosity, heating value, etc). Since this data is not readily available, EPA collected, from various geographic locations around the country (Table 1-3), representative samples from the end uses of conventional liquid fuels. This approach was designed to ensure a representative sampling, since constituents can vary, depending on the point of origin.

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TABLE 1-3. GEOGRAPHIC REGIONS WHERE FUEL SAMPLES WERE COLLECTED

LOCATION	SAMPLES COLLECTED
Irvine, California	Gasoline and Nos. 2, 4, and 6 fuel oils
North West New Jersey	Gasoline and No. 2 fuel oil
North East Connecticut	Gasoline and Nos. 2 and 6 fuel oils
Coffeyville, Kansas	Gasoline and No. 2 fuel oil
Fredonia, Kansas	Gasoline and No. 2 fuel oil
Norco, Louisiana	Gasoline and Nos. 2 and 6 fuel oils
Hopewell, Virginia	Gasoline and Nos. 2 and 6 fuel oils
Research Triangle Park, North Carolina	Gasoline and No. 2 fuel oil

A database comparing emissions using comparable fuels and fossil fuels does not exist. Since a comparison cannot be made between these fuels, a database on the toxic constituents of fuels being burned needs to be developed. This study analyzed each fossil fuel for all 40 CFR, Part 261, Appendix VIII toxic organic constituents for which a reasonable approach exists under SW-846 methodologies. The study also covered physical parameters, using ASTM protocols.

Based on the results of this study, a specification can be derived for comparable fuels that ensures they contain no more toxic constituents than the ?benchmark" fuel(s). In addition, method detection limits (MDLs) were determined for each SW-846 Method used, in accordance with 40 CFR, Part 136, Appendix B. Section 2 of this document discusses the process used for determining the MDLs in more detail.

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2.0 SAMPLING AND ANALYSIS

As stated previously, EPA collected and characterized samples of gasoline and Nos. 2, 4, and 6 fuel oils in order to provide data on which to base a ?benchmark" fuel. Altogether, EPA collected ten (10) gasoline samples, eleven (11) No. 2 fuel oil samples, one (1) No. 4 fuel oil sample, and seven (7) No. 6 fuel oil samples from various geographic regions around the country.

EPA worked with the Chemical Manufacturers Association (CMA) and its member organizations in obtaining fuel samples. CMA supplied a list of members to contact, as well as a letter endorsing EPA's efforts in this area. Contact was initiated with each company by telephone. They were questioned as to the nature of the fuels they burned in their boiler systems and, if one or more was a fuel of concern, whether they would they be willing to supply EPA with a one-liter sample for characterization and quantification.

Many industrial users were either skeptical about participation in a program of this type or had converted their units to natural gas. However, approximately 10% of those contacted were willing to cooperate. A number of industries had switched from No. 6 fuel oil to No. 2 fuel oil and/or natural gas, due to the difficulties and energy required to handle No. 6 fuel oil, especially in colder weather. Also, a very limited number of companies in the United States use No. 4 fuel oil. With narrow time constraints for this program, the limited use of Nos. 4 and 6 fuel oil by U.S. industries, and the corporate restraints on participating in these type of programs, EPA was limited in the number of Nos. 4 and 6 fuel oil samples it could obtain.

2.1 Analysis of Samples

This aspect of the program focused on the analysis of the combustion fuel samples (gasoline and Nos. 2, 4, and 6 fuel oils) collected for the program in order to characterize the chemical and physical properties and the presence of the hazardous constituents listed in 40 CFR, Part 261, Appendix VIII. From a historical perspective, 40 CFR, Part 261, Appendix VIII is the reference list

of potential hazardous constituents which need to be quantitated in the fossil fuels in order to set a specification. From a practical perspective, however, the essence of such a list and testing for the substances in the list present significant problems. The problems and some of the difficulties they impose are as follows:

1. The chemicals listed in 40 CFR, Part 261, Appendix VIII, are listed as they would exist in a pure state, as opposed to the forms they would take after being dispersed into the environment;

2. In developing 40 CFR, Part 261, Appendix VIII, no consideration was given to factors such as the environmental fate or the level of production of a given chemical. The list contains both prevalent, mobile, and toxic chemicals, that present major risks, and some chemicals that present a lesser risk due to low prevalence or instability in a matrix such as fuel oil or water; and

3. Analysis of many constituents from 40 CFR, Part 261, Appendix VIII would be impossible and/or impractical for the matrix being considered in this study for a variety of reasons: there are indefinitely large classes of compounds, many of which would not exist in fossil fuels; and standards do not exist for many other compounds.

The fundamental concern for EPA in developing the comparable fuel exclusion is to create a database by quantitating as many of the constituents from 40 CFR, Part 261, Appendix VIII as could readily and reliably be identified in the fossil fuels. However, the development and validation of new methodologies was not within the scope of this program. Thus, it was necessary to take an approach that used existing methodologies to quanitate as many of the constituents in 40 CFR, Part 261, Appendix VIII as possible.

To quanitate each fossil fuel sample, EPA chose to use the methodologies defined for the constituents from 40 CFR, Part 261, Appendix VIII subject to the following criteria:

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1) It must be practical to analyze fossil fuels for the constituent under consideration.

The chemistry of fossil fuels, the processes involved in their production, and the availability of practical and reliable analytical methodologies and standards were used to identify whether constituents fit the later consideration.

SW-846, ?Testing Methods for Evaluating Solid Waste," presents the methods most commonly used for quantitating organic and metal constituents in various matrices. Since matrices vary in waste streams, the methods have some flexibility. The analyst is then allowed to adjust the sample preparation procedures for the matrix being analyzed. The following information pertains to all analytical data generated to date for the Appendix VIII analytes.

In all cases the laboratory attempted to use approved and published methodologies. There was not time to determine what procedures were under development for fuel oil analysis by EPA or other agencies/laboratories at the time the analyzes took place.

Many of these analytes presented special analytical challenges since methods for their analysis were not available in SW-846 or CLP methods. Additionally, the gasoline and fuel oil matrices compounded the difficulties experienced in these analyses. Consequently, data for all the targets are not presented in this report. Table 2-1 details analytes for which data is not provided and why these data points were not generated.

It is important to note that compounds marked as not detected by VOA, semi-VOA, or HPLC were not detected using instrument conditions attempted to date. These compounds may be detectable at concentrations greater than 200 ppm by different instrument conditions than those attempted. Compound by compound research would be required to determine an approach for their analysis.

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Many metallic compounds appearing in the target lists were not specifically analyzed. Samples were analyzed for metallic elements, not organo-metallic compounds. Direct analysis for organo-metallic compounds would have been preferable, however, to the best of our knowledge, methods are not available to measure organo-metallics in these types of matrices. For example, thallium (1) acetate was reported as total thallium or lead phosphate reported as total lead.

Due to time constraints for this project, other categories were too broad for complete analysis. There are cases where the number of compounds, categories such as chlorinated fluorocarbons, are too great to analyze for every possible isomer. In situations like these, three of the more common chlorinated freons, dichlorodifluoromethane, trichlorofluoromethane, and 1,1,2-trichloro-1,2,2-trifluoroethane have been analyzed during the analytical phases of the clean fuels initiative. Results for chlorinated freons can be expressed as the sum of these compounds. Some of these reported compounds are listed by a synonym of the name found in Appendix VIII.

In all the analyses performed, the hydrocarbon matrix presented analytical difficulties. Most notable were the VOA and semi-VOA analyses performed by mass spectrometry. In most cases, the analyst had to manually integrate internal standards, surrogates, and targets, especially targets in the matrix spikes. These manual integrations were subjective, but were never done to intentionally misrepresent the data. In every manual integration, an honest attempt was made to isolate only the areas of interest. It must be noted that other analysts or data reviewers may have made the manual integrations differently.

For this study, each sample was collected in a pre-cleaned, 1-liter amber glass sample bottle with a Teflon®-lined cap. This type of sample bottle is available commercially with a certificate of analysis. All sample bottles were pre-cleaned according to EPA protocol. Samples were collected through purge valves, located on the main system feed lines prior to the burner. The fuel was allowed to purge through the valve and into a waste container, ensuring the collection of a fresh sample and removing any debris which may have collected in the line or valve.

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The following discussion summarizes the sample preparation, instrumental analysis and quality control procedures used to generate the data collected for each of these samples. Each section also briefly discusses any analytical difficulties encountered by the laboratory.

2.2 GC/MS Volatiles

2.2.1 *Method Summary*

A method for analyzing the volatile compounds was developed based on SW-846, Method 8240. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. Standards containing the target analytes in methanol were prepared at five levels. One microliter of each of these standards was used to calibrate the analytical system. Samples were treated as if they were at high concentrations and diluted weight to volume prior to analysis. This preparation was then injected into a heated injection port thereby transferring the sample to the analytical system. The direct injection technique was chosen over purge and trap because of the high volatile organic background in the matrix.

2.2.2 *Sample Preparation*

Method 8240 calls for a 2.5x weight to volume sample dilution/extraction with methanol. The methanol is the analyzed portion. To provide the lowest detection limits, a 2x dilution/extraction was performed. Actual sample weights were recorded and used to calculate the true dilution factor. Surrogate compounds were prepared in a methanol solution. The sample was diluted with methanol and surrogates were added. For gasoline, 1 g was diluted with 10 mls of methanol. In the case of No. 2, 4, and 6 fuel oils, 4 g was extracted with 10 mls of methanol, since the fuel oils were not miscible with methanol.

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Table 2-1 Analytes from Appendix VIII Not Determined During Study

Analyte	Reason Data Could Not be Generated.
Azaserine	Compound toxicity too great to safely handle
Epinephrine	A solvent compatible with analysis not found
Ethylenedithiocarbamic acid	Standard not available
Mitomycin C	A solvent compatible with analysis not found
alpha-naphthylthiourea	A solvent compatible with analysis not found
Reserpine	A solvent compatible with analysis not found
Selenourea	Too reactive in air and water
Streptozoticin	A solvent compatible with analysis not found
Thiosemicarbizide	A solvent compatible with analysis not found
Cyanogen	Standard not available
Nitrogen mustard	Standard not available
Methyl hydrazine	Not detected by voa, semi-voa, or HPLC analysis
Trypan blue	Not detected by voa, semi-voa, or HPLC analysis
Warfarin	Not detected by voa, semi-voa, or HPLC analysis
Chloromethoxy methane	Not detected by voa, semi-voa, or HPLC analysis
Chloroacetaldehyde	Not detected by voa, semi-voa, or HPLC analysis
Formic acid	Not detected by voa, semi-voa, or HPLC analysis
2-Methyl azidrine	Not detected by voa, semi-voa, or HPLC analysis
Dimethyl sulfate	Not detected by voa, semi-voa, or HPLC analysis
Tetranitromethane	Not detected by voa, semi-voa, or HPLC analysis
Aldicarb	Not detected by voa, semi-voa, or HPLC analysis
3,4-Diaminotoluene	Not detected by voa, semi-voa, or HPLC analysis
Methylthiouracil	Not detected by voa, semi-voa, or HPLC analysis
Ethyl carbamate	Not detected by voa, semi-voa, or HPLC analysis
Maleic anhydride	Not detected by voa, semi-voa, or HPLC analysis
Tetraethyl pyrophosphate	Not detected by voa, semi-voa, or HPLC analysis
Chloromethyl methyl ether	Not detected by voa, semi-voa, or HPLC analysis
Creosote	Chromatographically identical to and inseparable from fuel oil
Coal tar creosote	Chromatographically identical to and inseparable from fuel oil
Nitroglycerine	Not detected by voa, semi-voa, or HPLC analysis
N-nitrosodiisopropylamine	Standard could not be procured in time for analysis
N-Nitrosodiethanolamine	Standard could not be procured in time for analysis
1,1-dichloropropane	Standard could not be procured in time for analysis
N-nitroso-N-ethylurea	Not detected by voa, semi-voa, or HPLC analysis
N-nitroso-N-methylurea	Not detected by voa, semi-voa, or HPLC analysis
Dithiobiuret	Not detected by voa, semi-voa, or HPLC analysis
Ethylene glycol monoethyl ether	Not detected by voa, semi-voa, or HPLC analysis
Methanol	Not detected by voa, semi-voa, or HPLC analysis
Phosphoricdithioic acid, Trimethyl Ester	Standard not available

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2.2.3 *Instrumental Analysis*

SW-846, Method 8240 was employed for the instrumental analysis. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. One microliter of each methanol extract was injected into a heated injection port thereby transferring the sample to the analytical system.

2.2.4 *Quality Control*

Method 8240 was followed as closely as the analyte target list and sample matrix would allow. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was analyzed for each matrix. Section 2.14 of this report presents a discussion of surrogate spiking compound results for each sample and matrix spike as well as laboratory control sample (LCS) results for each analysis type. The QC results for surrogates are in Appendix D. The following specific criteria were used for this project:

- 50 ng of bromofluorobenzene (BFB) was analyzed at least every twelve hours with the tuning fragmentation pattern meeting the criteria specified in 8240;

- A five-point initial calibration curve with each volatile target was analyzed prior to sample analysis. However, since documentation on the behavior of these compounds could not be found, arbitrary limits were not set for the initial calibration. This data should be used as a first attempt to determine practical limits for these compounds;

- A continuing calibration was analyzed after each 12-hour BFB tune. Again, arbitrary limits were not set until practical recovery limits can be established; and

- The following Internal Standards and surrogates were used during the analysis.

Internal Standards	Concentration	Surrogates	Concentration
Bromochloromethane	50 mg/kg	1,2-Dichloroethane-d_4	50 mg/kg
1,4-Difluorobenzene	50 mg/kg	Toluene-d_8	50 mg/kg
Chlorobenzene-d_5	50 mg/kg	Bromofluorobenzene	50 mg/kg

Table 2-2 Comparable Fuels Procedures - Organics

Volatiles Analyses			
	Gasoline	**No. 4 & 6 Fuel Oil**	**No. 2 Fuel Oil**
Sample Prep	Diluted with Methanol Matrix soluble in Methanol	Methanol Solvent Matrix **not** soluble in Methanol	Methanol Solvent Matrix **not** soluble in Methanol
LCS	Standards Spiked into Methanol	Standards Spiked into Methanol	Standards Spiked into Methanol
Matrix Spiking & Surrogates	Gasoline diluted with Methanol then MS Standards & Surrogates Added	Methanolic Standards Spiked into Fuel Oil, then extracted with Methanol	Methanolic Standards Spiked into Fuel Oil, then extracted with Methanol
Comments	None	See Section 2.1.5 for related comments.	See Section 2.1.5 for related comments.
Semi-Volatiles Analyses			
Sample Prep	Diluted with MeCl Matrix soluble in MeCl. Extract was solvent exchanged to facilitate evaporation of interfering compounds such as xylenes.	Diluted with MeCl Matrix soluble in MeCl GPC Cleanup	Diluted with MeCl Matrix soluble in MeCl GPC Cleanup
LCS	Standards Spiked into MeCl	Standards Spiked into MeCl	Standards Spiked into MeCl
Matrix Spiking & Surrogates	Standards Spiked into Gasoline, then diluted with MeCl	Standards Spiked into Fuel Oil, then diluted with MeCl	Standards Spiked into Fuel Oil, then diluted with MeCl
Comments	None	None	None

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HPLC Analyses			
Sample Prep	Extracted with TCLP Extraction Fluid	Extracted with TCLP Extraction Fluid	Extracted with TCLP Extraction Fluid
LCS	Standards Spiked into Hexane then extracted	Standards Spiked into Hexane then extracted	Standards Spiked into Hexane then extracted
Matrix Spiking & Surrogates	Standards Spiked into Gasoline/TCLP fluid mixture, then extracted	Standards Spiked into Fuel Oil/TCLP fluid mixture, then extracted	Standards Spiked into Fuel Oil/TCLP fluid mixture, then extracted
Comments	Mixed equal volume of gasoline and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.	Mixed equal volume of Fuel Oil and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.	Mixed equal volume of Fuel Oil and TCLP extraction fluid, rotated 18 hrs. Analyzed TCLP fluid.

2.2.5 *Analytical Difficulties*

The oily matrix of these samples posed the largest problem. Gasoline samples were miscible with methanol, but the fuel oil samples were not. Since the fuel oil samples were not miscible with methanol, results are likely to be biased low since the entire sample was not analyzed. As stated above, surrogate compounds were prepared in a methanol solution. This surrogate solution was then added directly to the specific matrix. For gasoline, which was soluble with methanol this does not pose a problem, however, for the fuel oils, since they were not soluble with methanol, the surrogates and matrix spike results may not be truly indicative of analyte recovery from the actual matrix. Headspace analysis may be a viable alternative to SW-846 8240, methanol dilution for future work. Another significant problem was the high frequency of instrument maintenance required to maintain analytical reliability. Also, several target analytes showed non-linear or inconsistent responses. Although exceeding 50% RSD, epichlorohydrin and benzenethiol were all present in each initial calibration point.

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2.3 GC/MS Semi-Volatiles

2.3.1 *Method Summary*

SW-846, Method 8270A was followed as closely as possible for the on-instrument analysis and Method 3520 was used to clean-up samples by gel permeation chromatography to allow their analysis at the lowest possible dilutions.

2.3.2 *Sample Preparation*

The gasoline samples were prepared by solvent exchange into methylene chloride. This procedure removed some of the volatile hydrocarbon background allowing analysis at lower dilutions than untreated gasoline. Surrogates were added prior to the solvent exchange to monitor analyte recovery. Based on the results from the MDL study (Appendix C) the solvent exchange procedure had no apparent impact on the semi-volatile results.

No. 2, 4, and 6 fuel oils were prepared by weighing 1 gram of sample, adding surrogate spiking compounds, then diluting to 10 mls with methylene chloride. The resulting solution was run through a gel permeation chromatography clean-up prior to analysis.

2.3.3 *Instrumental Analysis*

SW-846, Method 8270A was employed for the instrumental analysis. A gas chromatograph with a fused silica capillary column and mass spectrometer was used to separate, identify, and quantitate the target analytes. One microliter of each methylene chloride extract was injected into a heated injection port thereby transferring the sample to the analytical system.

2.3.4 *Quality Control*

Method 8270A was followed and included the following QC procedures. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was

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analyzed for each matrix. The following specific criteria were used for this project:

- A 50 ng DFTPP tune was run every twelve hours and met the criteria found on page 8270-9 of SW-846, Method 8270A before any other analyses were run.

- A five-point initial calibration containing each additional analyte was analyzed and average response factors for each compound calculated. Since no documentation on the behavior of these compounds could be found, arbitrary limits were not set for the initial calibration.

- Every twelve hours, immediately following the DFTPP tune, a continuing calibration was analyzed. However, for reasons listed above, arbitrary acceptance limits were not set. All samples were quantitated against the associated batch continuing calibration.

- Samples were run as undiluted as possible. Dilutions were made to prevent detector saturation by non-target peaks.

- Six (6) surrogate compounds, three (3) acid and three (3) base neutral extractable compounds, were spiked into each sample prior to the sample's preparation for analysis as follows:

Surrogates	Concentration	Surrogates	Concentration
Phenol-d_6	100 ppm on-column	2-Fluorobiphenyl	100 ppm on-column
2-Fluorophenol	100 ppm on-column	Nitrobenzene-d_5	100 ppm on-column
2,4,6-Trichlorophenol	100 ppm on-column	4-Terphenyl-d_{14}	100 ppm on-column

- Six (6) internal standards were used for target quantitation. All six (6) internal standards met +/- 50% recovery in each sample as compared to the associated continuing calibration for the sample analysis to be considered valid.

Internal Standards	Concentration	Internal Standards	Concentration
1,4-Dichlorobenzene-d_4	40 ppm final dilution	Phenanthrene-d_{10}	40 ppm final dilution
Naphthalene-d_8	40 ppm final dilution	Chrysene-d_{12}	40 ppm final dilution
Acenaphthene-d_{10}	40 ppm final dilution	Perylene-d_{12}	40 ppm final dilution

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2.3.5 *Analytical Difficulties*

Most problems involved contamination of the analytical instrumentation by the fuel oil matrix which caused occasional peak broadening, baseline elevation, and reduced sensitivity of easily degraded analytes. However, routine maintenance to the injection port inlet after each batch of fuel oil analysis kept the GC/MS system within acceptable operating parameters.

Most analytes performed linearly in the initial calibration. However, endothall, 6-propyl-2-thiouracil, and strychnine, while present in all calibration points, were greater than 50% RSD. Several other compounds exhibited poor response factors which contributed to the inability to detect them in matrix spikes.

The matrix spikes presented the greatest analytical problems. To yield meaningful recovery data, No. 2 fuel oil was diluted 10:1 with methylene chloride and spiked with compounds in a methanol solution. The resulting solution was cleaned up by GPC, then diluted 4:1 in methylene chloride for analysis. This solution minimized fuel oil interferences. All spiked compounds recovered within the calibration range except 4-aminopyridine, *m*-phenylenediamine, 3,3'-dimethoxybenzidine, and 6-propyl-2-thiouracil.

The gasoline matrix spike was solvent exchanged into methylene chloride to reduce as much of the aromatic background as possible. No further dilution was made prior to analysis. In this mix, the following compounds, if recovered, were masked by the matrix background and reported as not detected; 2,3-dichlorophenol, 2,5-dichlorophenol, 3,4-dichlorophenol, 3,5-dichlorophenol, 3-chlorophenol, 4-chlorophenol, acetone cyanohydrin, 2,3,4-trichlorophenol, 2,3,5-trichlorophenol, 2,3,6-trichlorophenol, thiofanox, and 4-aminopyridine. Due to the time restraints of this project, a matrix spike for fuel oils No.4 and No. 6 was not prepared and analyzed.

2.4 High Pressure Liquid Chromatography (HPLC)

2.4.1 *Method Summary*

A method for analyzing fuel oils was developed modeling similar HPLC methods such as SW-846, Method 8310 as closely as possible. A modified TCLP type extraction was performed and a diode array HPLC detector was used to measure analyte concentration.

2.4.2 *Sample Preparation*

Fuel oils were extracted with a Toxicity Characteristic Leaching Procedure (TCLP) extraction fluid by adding equal volumes of gasoline or No. 2 fuel oil with the TCLP fluid in a 22 ml vial. No. 4 and 6 fuel oils were first diluted 10:1 with hexane due to their viscous properties which allowed thorough mixing of sample and extraction fluid. The 22 ml vial was sealed and agitated on a TCLP extraction apparatus for a minimum of 12 hours. Additional cleanup of the TCLP extract was not required.

2.4.3 *Instrumental Analysis*

A 10 microliter aliquot of extraction fluid was analyzed by HPLC using a 25 cm x 4.6 mm, 5 micron particle, reverse phase ABZ+Plus column. A diode array detector was used to measure analyte concentration.

2.4.4 *Quality Control*

Method 8310 was followed as closely as the sample matrix would allow. See Table 2-2 for additional information regarding specific procedures utilized on this project. A method blank was analyzed for each matrix. Section 2.14 of this report presents a discussion of surrogate spiking compound results for each sample and matrix spike as well as laboratory control sample (LCS) results for each analysis type. The QC results for surrogates are in Appendix D. The following specific criteria were utilized.

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- Internal standards were not used. External calibration procedures were used to measure analyte concentration.

- Acetophenone was used as a surrogate to evaluate extraction performance. The surrogate was added to the 22 ml vial just prior to the agitation process. Surrogate was added to produce a concentration of 20 mg/kg on-column.

- A five-point calibration curve was analyzed for quantitation of analytes. However, since documentation on the behavior of these analytes could not be found, arbitrary limits on the correlation coefficients of the analytes were not set. Instead, the curves were analyzed and processed to the best ability of the analyst. This data should be used as a first attempt in determining acceptable calibration curve limits.

- A QC check was analyzed at least every twelve hours during sample analysis. An arbitrary limit of +/- 30% recovery for each analyte was adopted for the QC check. The acceptance limit may be reduced when more data about the behavior of these analytes is collected and evaluated.

- No recovery limits for surrogate recovery were arbitrarily set. However, the recovery had to be at least to the compound's detection limit.

2.4.5 *Analytical Difficulties and Recommendations*

Since each fraction was prepared and analyzed separately, the spiking concentrations ranged from 20 ppm in the gasoline to 100 ppm in the fuel oils. While the gasoline spikes showed recovery for all analytes, some of the recoveries were close to the lower calibration limit. For this reason, subsequent spiking concentrations were increased.

The analytes spiked into the fuels are not readily soluble in a non-polar matrix. For this reason, the spiking solutions were prepared in methanol to get them into a liquid matrix and the methanol solution was added to the extraction vessel with sample and extraction fluid. Under these conditions,

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the spiked compounds probably did not dissolve into the fuel oils matrix prior to extraction and therefore, the generated data may only provide very limited information.

Not all spiked compounds recovered ideally. In gasoline, thioacetamide only recovered at 10% and the diamines at about 50%. MNNG and ethylene thiourea were at nearly 200% recovery even though these compounds were not detected in the unspiked sample. Only thioacetamide recovered unusually in No. 2 fuel oil at nearly 300% with no detection of this compound in the unspiked sample. Thioacetamide also recovered high in the No. 6 fuel oil. Additionally, neither MNNG nor ethylene thiourea was detected in the matrix spike of No. 6 fuel oil.

The following are offered as suggestions for possible future studies. Due to the time constraints for this project, these possibilities were not tested. Different analytical columns may improve analyte recovery and chromatographic quality. Also, a much larger range of analytes may be analyzed by HPLC with different columns.

A better way of spiking fuel oils with polar analytes may be possible. However, these procedures may have to be researched and tested on a compound-by-compound basis. Entire classes of analytes were attempted for this project to analyze the largest number of analytes possible. In addition, other extraction techniques such as solid phase extraction may improve recovery and increase the number of analytes seen by HPLC.

2.5 Dioxins and Dibenzofurans

2.5.1 *Method Summary*

Due to the large number of individual isomers, analyte toxicity, and the high cost of standards, the dioxins (PCDD) and dibenzofurans (PCDF) were not analyzed by a published method, but as follows.

A standard was procured and calibrated for one select isomer of each group. For example, there are seven (7) isomers of tetrachlorodibenzo-p-dioxins, but only 2,3,7,8-PCDD was analyzed.

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The remaining isomers were searched for as 2,3,7,8-PCDD. The following listing provides specific isomer information.

Tetrachlorodibenzo-p-dioxins (Searched as 2,3,7,8-PCDD)

2,3,7,8-PCDD	1,2,3,4-PCDD
1,3,6,8-PCDD	1,3,7,9-PCDD
1,3,7,8-PCDD	1,2,7,8-PCDD
1,2,8,9-PCDD	

Pentachlorodibenzo-p-dioxins (Searched as 1,2,3,7,8-PCDD)

1,2,3,7,8-PCDD	1,2,3,4,7-PCDD

Hexachlorodibenzo-p-dioxin (Searched as 1,2,3,6,7,8-PCDD)

1,2,3,4,7,8-PCDD	1,2,3,6,7,8-PCDD
1,2,3,7,8,9-PCDD	

1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (only hepta isomer)

Octachlorodibenzo-p-dioxin (only octa isomer)

Tetrachlorodibenzofurans (Searched as 2,3,7,8-PCDF)

2,3,7,8-PCDF	1,2,3,4-PCDF
1,3,6,8-PCDF	1,3,7,9-PCDF
1,3,7,8-PCDF	1,2,7,8-PCDF
1,2,8,9-PCDF	

Pentachlorodibenzofurans (Searched as 1,2,3,7,8-PCDF)

1,2,3,7,8-PCDF	1,2,3,4,7-PCDF

Hexachlorodibenzofurans (Searched as 1,2,3,6,7,8-PCDF)

1,2,3,4,7,8-PCDF	1,2,3,6,7,8-PCDF
1,2,3,7,8,9-PCDF	

1,2,3,4,6,7,8-Heptachlorodibenzofuran (only hepta isomer)

Octachlorodibenzofuran (only octa isomer)

A curve was not analyzed for these compounds. Instead, a one-point calibration was run after each 12- hour DFTPP tune. The analytical instrument was calibrated to look for PCDDs and PCDFs

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in samples in a present or not present mode rather than a quantitative mode.

2.5.2 *Sample Preparation*

For gasoline, PCDDs and PCDFs were searched concurrently with the semi-volatile analyses. See the semi-volatile sample preparation for details.

For the No. 2, 4, and 6 fuel oil samples, the GPC extracts could not be used for PCDD and PCDF analysis. The No. 2 fuel oil spiked with these compounds had no recovery. It was assumed that the GPC process removed these analytes from the spike.

Instead, No. 2 fuel oil was spiked with PCDDs and PCDFs in a 10:1 dilution then cleaned up with sulfuric acid. The remaining organic layer was analyzed with no further dilution. To minimize waste product with PCDDs and PCDFs, only No. 2 fuel oil was spiked. The remaining unspiked fuel oils were prepared in the same way prior to analysis.

2.5.3 *Instrumental Analysis*

See the semi-volatile instrumental analysis for details.

2.5.4 *Quality Control*

A method blank was analyzed for each matrix.

2.5.5 *Analytical Difficulties and Recommendations*

The sample clean-up used for this analysis effectively removed most of the hydrocarbon background. If this clean-up procedure was used with SIM mode mass spectrometry or high resolution mass spectrometry, much lower detection limits may be possible for PCDDs and PCDFs.

Also, calibration for each isomer in a five-point curve is possible. However, the cost of the

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standards and waste disposal would be significant.

2.6 Herbicides

2.6.1 *Method Summary*

SW-846, Method 8150 was followed for the on-instrument analysis and Method 3580 (Waste Dilution) was used in the initial sample preparation.

2.6.2 *Sample Preparation*

Samples were prepared in hexane as per Method 3580. A 1.0 ml aliquot was taken from the 3580 fraction, added to 0.2 ml methanol and brought to a volume of 5.0 ml with diethyl ether. Samples were then derivitized by the diazomethane bubbler procedure as per Method 8150. Samples were then analyzed by gas chromatography.

2.6.3 *Instrumental Analysis*

Instrumental analysis was conducted by injecting one (1) µl of extract on dual capillary columns equipped with electron capture detectors (ECD). The capillary columns employed were a DB-608 and a DB-1701.

2.6.4 *Quality Control*

A five-point external standard calibration procedure was used, with a 12-hour window for valid sample analyses. 2,4-Dichlorophenylacetic acid was used as a surrogate. No limits for surrogate recovery were set. A method blank was analyzed for each matrix.

2.6.5 *Analytical Difficulties and Recommendations*

The hydrocarbon matrix did not seem to cause interference in the derivitization of the acid

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herbicides.

2.7 Metals

2.7.1 *Method Summary*

EPA SW-846, Method 3040 was used for the preparation of all samples in this study. The method is a dissolution procedure. All dissolved samples were then analyzed by the appropriate SW-846 flame method, with the exception of arsenic and selenium, where the appropriate graphite furnace atomic absorption method was used. Mercury was analyzed by cold vapor atomic absorption.

2.7.2 *Sample Preparation*

All samples were prepared using EPA SW-846, Method 3040. All of the samples were diluted 1:10 with xylene. Final results were reported as mg/kg from the original weight.

2.7.3 *Instrumental Analysis*

Diluted samples were analyzed by the appropriate flame atomic absorption methodology, with the exception of arsenic and selenium, where the graphite furnace atomic absorption was chosen, and mercury, which was analyzed by cold vapor atomic absorption. The analysis of all of the diluted samples proceeded normally.

2.7.4 *Quality Control*

In general, a blank and three standards were used to perform initial calibration. Correlation coefficients were calculated for each curve, a QC check sample was analyzed after each curve, with the exception of osmium. An initial calibration verification and an initial blank verification were then performed. After every ten samples or between matrices, a calibration verification and a blank verification were performed. A duplicate sample and a matrix spike were performed on each matrix along with a method blank.

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For each metal analyte, a standard curve was performed. In all cases, the source for the stock standard was SPEX. The QC check sample was obtained from Conostan. All curves were linear and most correlation coefficients were better than 0.995. At the beginning and during each run, standard calibration checks and blank calibration checks were performed. All initial and continuing calibration blanks were less than the established PQL. All initial and continuing calibration verification results were between 90-110% with the following exceptions: Lead stayed at about 111% for the duration of the run and did not deviate more than 1-2%; and arsenic was variable, although most of the values were 90-110%. Due to its volatile nature, the osmium results were 80-120%.

Sample matrix QC consisted of preparing and analyzing one duplicate and spike for each matrix. For values significantly above the PQL, the results for relative percent differences were less than 20%. The No. 4 fuel oil's selenium result at the PQL showed some variability in the duplicate result. This may be due to the matrix. Most of the spike results were very good and fell within the 75-125% limit with the following exceptions: The barium spike for the No. 6 fuel oil returned a value of 72%. This could be attributed to the matrix; the silver spike results were unusual in that they were all high. This may be due to some stabilizing effect in the fuel versus xylene solvent; all selenium results were good, except for the No. 4 fuel oil mentioned above. Spike results for mercury were exceptional, relative to the method used. This round of results gave 36-47% recovery for mercury spike across the matrices.

2.7.5 *Analytical Difficulties and Recommendations*

The analysis of all of the diluted samples proceeded normally. Most of the spike results were very good and fell within the 75-125% recovery limit with the following exceptions. Osmium in the gasoline matrix was 59% and tin in the No. 4 and 6 fuel oil was low. While it is unknown why the osmium result was so low, the tin results could be attributed to the matrix.

The mercury method is not as well suited to the matrices encountered in this study. The spike results were the best that could be obtained under these conditions. In the time allowed, we could not find a second standard source for thallium and manganese. Silver displayed some unusual variability in the results for the QC check and the spike. Silver may be more susceptible to certain

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kinds of matrix enhancements that were not well documented. The furnace methods used to analyze arsenic and selenium needed some extra effort to set up properly, although once the furnace method was set, the results were very good.

2.8 Pesticides and PCBs

2.8.1 *Method Summary*

SW-846, Method 8080 was followed for the on-instrument analysis and Method 3580 (Waste Dilution) was used in the initial sample preparation. Method 3665 (sulfuric acid) was used to clean-up the samples prior to analysis for the Aroclor PCBs. No clean-up procedure was used for preparation of the extracts for pesticide analysis.

2.8.2 *Sample Preparation*

The samples were prepared using Method 3580. One (1) gram of sample was diluted to 10 mls. with Hexane.

2.8.3 *Instrumental Analysis*

Instrumental analysis was conducted by injecting one (1) µl of extract on dual capillary columns equipped with electron capture detectors (ECD). The capillary columns employed were a DB-608 and a DB-1701.

2.8.4 *Quality Control*

A method blank was analyzed for each matrix and an Endrin/DDT standard was analyzed prior to calibration and sample analysis, to ensure a <20% breakdown of the pesticides.

A five-point initial external calibration containing each single-response pesticide generated prior to sample analysis. A single-point external calibration standard was analyzed for all multi- response

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pesticides and PCBs for qualitative identification. A five-point initial external calibration curve was generated for one of the multi-response compounds (Aroclor 1260), for quantitative analysis.

Two surrogates, dibutylchlorendate and tetrachloro-m-xylene were used to monitor the integrity of the sample preparation and analytical system. The surrogates were added to produce a concentration of 10 µg/kg on-column. No limits were set for surrogate recovery, however, both surrogates were required to be present to validate each analysis.

2.8.5 *Analytical Difficulties and Recommendations*

The higher molecular weight components of the fuel oils No. 4 and No. 6 caused some interference with the analyses. The primary problem was difficulty eluting these heavy compounds from the GC column. This problem was absent from samples for PCB analysis that underwent Method 3665 clean-up. Perhaps a clean-up method suitable for pesticides, such as alumina or florisil column clean-up or Gel-permeation clean-up would produce better results.

2.9 Heating Value

2.9.1 *Method Summary*

Heat of combustion was determined using ASTM Standard D 240. In this test method, heat of combustion was determined by combusting a weighed sample in an Oxygen Bomb Calorimeter under controlled conditions. The rate of combustion was computed from temperature readings before and after combustion.

2.9.2 *Quality Control*

QC procedures consisted of one duplicate determination per every ten (10) samples and an analysis of a certified standard benzoic acid pellet per every ten (10) samples. Method precision and reproducibility were within the ranges specified in the method. Gross heat of combustion was reported. No adjustments were made for the heat of combustion of nitrogen and sulfur in the sample.

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Values were reported as Btu/lb rather than in the SI units of MJ/kg, as stated in the method.

2.10 Specific Gravity

2.10.1 *Method Summary*

Specific gravity was determined by using ASTM Standard D 1298. This method uses a hydrometer to determine specific gravity after the sample and apparatus were brought to a stable temperature of 60°F. The appropriate hydrometer was lowered into the sample cylinder and allowed to settle. At positional equilibrium, the hydrometer was read and the temperature of the sample noted.

2.10.2 *Quality Control*

The hydrometers used were calibrated in accordance with National Institute of Standards and Technology (NIST) Circular 555, and ASTM specification E 100. All sample temperatures were brought to 60°F for a period of five (5) hours prior to hydrometer readings. Duplicate determinations were performed per every ten (10) samples. All duplicates were within 5% RSD.

2.10.3 *Analytical Difficulties and Recommendations*

All specific gravity readings were made at 60°C as per ASTM D 1298. Highly viscous opaque samples presented problems in the accurate readings of the hydrometer. Air bubbles trapped in the more viscous samples may have had a minor influence on the reported results.

2.11 Flash Point

2.11.1 *Method Summary*

Flash point was determined by EPA SW-846, Method 1010, which is similar to ASTM Standard D 93, using a Pensky-Martens closed-cup Flash Tester. The sample was heated at a slow constant

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rate with continual stirring. A small flame was directed into the cup at regular intervals with simultaneous interruption of stirring. The flash point was the lowest temperature at which application of the test flame ignited the vapor above the sample.

2.11.2 *Quality Control*

Duplicate determinations were made on each of the ten (10) samples. All duplicates were within 2°C of the original result. Gasoline flash points were below the range attainable by the Pensky-Martens Method. These values were reported as less than 0°C.

2.12 Total Halogens

2.12.1 *Method Summary*

EPA Method 325.3/PARR and ASTM Standard D 4929 were used to analyze the samples for total halogens. The sample was ignited in a PARR bomb as part of the determination of gross heat of combustion. After combustion of two previously weighed samples, the resulting inorganic residue solution was washed from the inside surfaces of the PARR bomb. The wash water was brought to a total volume of 10 milliliters and titrated per EPA Method 325.3. Bromine, chlorine, and iodine are all reported as total chloride. Fluorine does not react with the titrant of EPA Method 325.3 and is not included in the reported values.

2.12.2 *Quality Control*

In the PARR bomb combustion process, a weighed sample is placed in the PARR bomb under 35 atmospheres of oxygen, approximately 515 psi. Combustion is rapid and complete with no traces of organic material remaining in the bomb. In order to assure the conversion of organic halide to inorganic halogen ion, samples were spiked with known amounts of methylene chloride prior to combustion in the bomb. Recovery of spiked halogen was in the range of 87% to 92% for all gasoline and No. 2 fuel oil samples. For Nos. 4 and 6 fuel oil samples, recovery was in the range of 20% to 45%, which was unacceptable. It is probable that the higher nitrogen content of the Nos. 4

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and 6 fuel oils resulted in the production of significant amounts of nitric acid during the PARR bomb combustion process. The nitric acid resulted in unacceptably high levels of ferric and chromate ions from the reaction with the stainless steel PARR bomb. Ferric and chromate ions are an interferant in the EPA Method 325.3 titration process.

2.12.3 *Analytical Difficulties and Recommendations*

In order to obtain reliable halogen values for the Nos. 4 and 6 fuel oils, these samples were analyzed by ASTM Standard D 4929, a method for determining the organic chloride content in crude oil. This method lists a rinse step to remove inorganic halides from the petroleum product. This step was omitted so that a total halide value would be determined for these samples. The method involves oxidation of a known weight sample in an oxygen stream at 800 °C. The oxygen stream was then led to a microcoulometric cell, where the halide ions react with coulometrically-generated silver ion. The microequivalents of silver ion consumed in the titration was equal to the microequivalents of titratable halide ion in the oxidized sample. Bromine and iodine titrate as chloride equivalents. Fluorine does not respond and is not included.

In the oxygen combustion process, approximately 50% of the bromine and iodine form oxyhalides (HOBr and HOI) which do not react in the titration. Bromine and iodine, therefore, provide an approximate 50% response factor. Calibration curves, replicate analyses, and checks using 2,4,6 trichlorophenol were performed on the sample daily.

2.13 Total Nitrogen

2.13.1 *Method Summary*

ASTM Standard D 4629 was used to analyze the samples for total nitrogen. The sample of liquid petroleum hydrocarbon was injected into a stream of inert gas. The sample was vaporized and carried to a high temperature zone where oxygen was introduced converting organic bound nitrogen nitric oxide (NO). The NO contacts ozone and emits light, through a process of chemiluminescence, which was detected by a photo multiplier as a measure of the nitrogen contained in the sample.

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2.13.2 *Quality Control*

The instrument was calibrated using nitrogen standards of pyridine or carbazole. Pyridine is used for samples with mid-range boiling points less than 430 °F. Carbazole was used for samples of higher boiling ranges. Method blanks were performed using toluene for gasoline samples and cetane for the higher boiling No. 2, 4, and 6 fuel oil samples.

Reproducibility values were within the specifications stated in ASTM Standard D 4629. All samples were run as replicate analyses. A calibration curve and a known check sample were run daily.

2.14 General Matrix Spike and Laboratory Control Sample Recovery

Every sample, blank, matrix spiked samples, and laboratory control samples were spiked with surrogate spiking compounds prior to the sample preparation. Recovery criteria for petroleum products is not established in the methodology. Therefore, acceptance limits were not used by the laboratory as a means of rejecting an analysis.

Matrix spikes and LCS samples were analyzed concurrently with the fuel oil samples. Due to the unknown analytical characteristics of the analytes in fuel oil and the unknown affect the sample preparation procedures may have had on these quality control samples, acceptance limits were not used by the laboratory as a means of rejecting an analysis. These data should be viewed as a first attempt to set acceptance limit criteria. Overall the recoveries calculated from the MDL study, which also represents some of the spike results, meet the method criteria except were it has been noted in the individual method discussions in this section.

Table 2-2 lists the specific procedures utilized for matrix spiking and the laboratory control samples. It is recommended that the description associated with each analytical fraction be reviewed for additional details.

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2.15 Analysis for Total Aromatic Hydrocarbons and Total Polynuclear Aromatic Hydrocarbons

The analysis for total aromatic hydrocarbons and total polynuclear aromatic hydrocarbons yielded results much lower than expected. A small number of specific analytes in these categories were analyzed and summed into totals. There were numerous analytes and isomers that should have been included in this total, but due to the huge number of compounds, they could not be individually calibrated and quantitated. The majority of these compounds are not listed in Appendix VIII and do not have validated methods for analysis. Other methods more suited to this type of analysis, other than identification and quantitation of individual compounds, should be considered for these total numbers.

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3.0 RESULTS

3.1 Laboratory Results

Appendix A lists the laboratory results for the semi-volatile, volatile, metals, inorganic parameters, physical parameters, and total aromatic hydrocarbons. These results were submitted to SAIC for statistical analysis which are presented in Appendix B. Appendix C lists the laboratory derived Method Detection Limit (MDL) Study results for each analyte. Appendix D lists the QA data results. The QA data includes surrogate spiking compound recovery for semi-volatile and volatile methods and duplicate and spike recoveries for metals. As stated in Section 2, the results for polynuclear aromatic hydrocarbons and total aromatic hydrocarbons are much lower than expected. The method used to generate these concentrations was to sum the results of the semi-volatile analysis. The constituents listed in 40 CFR, Part 261, Appendix VIII that could be quantitated only included a small number of the aromatic hydrocarbons which are normally present in fossil fuels.

3.2 Constituents Levels

Appendix B lists the comparable fuel constituent specifications for the final rule. The comparable fuels consist of four fuel types – gasoline and Nos. 2, 4, 6 fuel oils. The available data contain chemical compound concentrations from eight (8) samples from gasoline, 11 samples from No. 2 fuel oil, one (1) sample from No. 4 fuel oil and seven (7) samples from No. 6 fuel oil. The final constituent levels were calculated using the composite at the largest value.

For chemical in which at least one sample was measured above the minimum level of detection, the composite was based on the measured concentrations from the detected samples and on the quantitation limits from the non-detect samples. The composite values are presented in the table under the column heading "Concentration Limit." For chemicals in which none of the samples were measured above the minimum level of detection, the composite value was based on the reported quantitation limits and are presented in the table under the column heading "Minimum Required

Detection Limit." However, the final rule allows metals, hydrocarbons, and oxygenates to be present at any concentration less than or equal to the detection limits. For these compounds, all composite value are reported as a concentration limit, using the reported quantitation limits as concentration limit in the case where none of the samples were measured above the minimum detection limit.

For constituents with at least one detected sample, concentration limits have been corrected from the fuel's heating value to 10,000 BTU/lb. For constituents with no detected samples, the concentration limits (in the case of metals, hydrocarbons, or oxygenates) or minimum required detection limits are not corrected to 10,000 BTU/lb.

3.3 Estimates from Additional Halogen Data

Additional analysis was performed to calculate the highest value composite for total halogens. Because the analysis for No. 4 and No. 6 fuel oils was based on analytical methods measuring only total organic and inorganic halogens, additional data was gathered from EPA's database (i.e., Certificates of Compliance required by the BIF rule) and data submitted by one commenter. The additional Total Chlorine data is presented in Table 3-1. The total halogen value has been normalized for the fuel's heating value to 10,000 BTU/lb. This additional data was composited with the gasoline and No.2 fuel oil data contained in this report.

3.4 Statistical Analysis Results (SAIC) (Proposal)

This section presents the results from statistical analyses, performed by Science Applications International Corporation (SAIC), of chemical compound concentrations measured in comparable fuels for the proposed rule. As discussed previously, the comparable fuels consist of four fuel types — gasoline and Nos. 2, 4, and 6 fuel oils. Statistical analyses also were conducted on two (2) combinations of these fuel types: a composite of the three (3) fuel oils (Composite 246); and a composite of all four (4) fuel types. The available data contain chemical compound concentrations from eight (8) samples from gasoline, 11 samples from No. 2 fuel oil, one (1) sample from No. 4 fuel

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oil, and seven (7) samples from No. 6 fuel oil.

This statistical analyses estimated percentiles from the distribution of concentrations of each chemical compound within each fuel type. For each individual fuel type, the 90th percentile was estimated for every chemical compound. For the composite fuel types, estimates of the 50th and 90th percentiles were calculated for each chemical compound. Section 3.4.1 of this report presents the statistical analysis of the individual fuel types. Section 3.4.2 documents the statistical methodology for estimating percentiles from the composite of Nos. 2, 4, and 6 fuel oils. The analysis of the composite of all four fuel types is presented in Section 3.4.3.

The results from the statistical analyses of these fuel types are presented in Appendix C in the following tables:

- Table 1: Estimated 90th percentiles from gasoline;
- Table 2: Estimated 90th percentiles from No. 2 fuel oil;
- Table 3: Estimated 90th percentiles from No. 4 fuel oil;
- Table 4: Estimated 90th percentiles from No. 6 fuel oil;
- Table 5: Estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 6: Estimated 90th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 7: Estimated 50th percentiles from the composite of all four fuel types;
- Table 8: Estimated 90th percentiles from the composite of all four fuel types; and

As stated earlier, the samples were analyzed in two rounds based on the availability of clearly defined analytical protocols. For the additional compounds that were found during the second round of analyses the following tables, in Appendix C, represent the results from the statistical analyses of these fuel types. The methodology and discussion of the analysis conducted on the original set of data still applies to the information displayed in these tables as well.

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- Table 1A: Estimated 90th percentiles from gasoline;
- Table 2A: Estimated 90th percentiles from No. 2 fuel oil;
- Table 3A: Estimated 90th percentiles from No. 4 fuel oil;
- Table 4A: Estimated 90th percentiles from No. 6 fuel oil;
- Table 5A: Estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 6A: Estimated 90th percentiles from the composite of Nos. 2, 4, and 6 fuel oils;
- Table 7A: Estimated 50th percentiles from the composite of all four fuel types;
- Table 8A: Estimated 90th percentiles from the composite of all four fuel types; and

Within each table, two (2) sets of estimates are presented. For chemicals in which at least one (1) sample was measured above the minimum level of detection, the estimated percentiles were based on the measured concentrations from the detected samples and on the quantitation limits from the non-detect samples. These estimates are presented in the tables under the column heading "Concentration Limit." For chemicals in which none of the samples were measured above the minimum level of detection, the estimated percentiles were based on the reported quantitation limits and are presented in the tables under the column heading "Minimum Detection Limit."

All chemical concentrations were originally reported in the database with units equal to mg/kg. For the chemicals with at least one (1) detected sample, these concentrations were converted to mg/J using the reported heating values (Btu/lb) and the following conversion formula:

$$Concentration\left[\frac{mg}{J}\right] = \frac{Concentration\left[\frac{mg}{kg}\right]}{2326.11\left[(\frac{lb}{kg})(\frac{J}{BTU})\right] * Heating\ Value\left[\frac{BTU}{lb}\right]}$$

The estimated percentiles were generated from the mg/J concentrations and were converted back to mg/kg, for presentation in the tables, based on a heating value of 10,000 Btu/lb. For the

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chemicals with no detected samples, the percentiles were calculated from reported quantitation limits in the original units of mg/kg. All results are presented with two (2) significant figures.

3.4.1 *Estimates for Each Individual Fuel*

Estimated percentiles for the chemical compounds from each individual fuel type (i.e., gasoline and Nos. 2, 4, and 6 fuel oils) are presented in Appendix B, Tables 1 through 4 and Tables 1A through 4A, respectively. Only the chemicals that are contained in the 40 CFR, Part 261, Appendix VIII list are presented in these tables. Each of these tables presents the estimated 90th percentile for chemicals with at least one (1) detected concentration and undetected chemicals above the quantitation limit. The percentile estimates from the detected chemicals are presented under the column heading "Concentration Limit," and the percentiles for the non-detected (non-detect) chemicals are presented under the column heading "Minimum Detection Limit." For the chemicals with at least one (1) detected sample, the percentile estimates were based on the measured value for the detected samples and on the reported quantitation limits for the non-detect samples. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits.

When calculating the quantitation limit for volatile organic compounds (VOCs) in gasoline, in the analytical methods, there are matrix interferences that cause the calculated quantitation limits to be unreliable. Therefore, for the VOCs that were not detected in any of the gasoline samples, the estimated 90th percentile is not presented in Appendix B, Table 1. For these chemicals, the 90th percentile estimate from the composite of the Nos. 2, 4, and 6 fuel oils is presented in Appendix C, Table 1 as a surrogate for the 90th percentile for gasoline.

The estimated percentiles presented in Appendix C, Tables 1 through 4 and Tables 1A through 4A, were generated nonparametrically. That is, the percentiles are based on the rank order statistics of the sample concentrations. Distributional assumptions were not used in the calculation of the percentile estimates because of the sparse sample sizes. For gasoline, at least one of the eight

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(8) samples was measured above the minimum level of detection for only nine (9) of the 151 chemical compounds found in 40 CFR Part 261 Appendix VIII. For No. 2 fuel oil, at least one (1) of the 11 samples was measured above the minimum level of detection for only 11 of the 151 chemicals. Only one (1) sample was measured for each chemical compound from No. 4 fuel oil, and only 13 of the chemical compounds were measured above the minimum level of detection in this sample. For No. 6 fuel oil, at least one (1) of the seven (7) samples was measured above of the minimum level of detection for only 16 of the chemicals.

All of the chemicals originally were reported in units of mg/kg. The 90th percentile estimates for non-detect chemicals, under the column heading "Minimum Detection Limit," are presented in the original units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample, under the column heading "Concentration Limit," were calculated from concentrations that were converted from mg/kg to mg/J based on the report heating values (Btu/lb) for each sample. Then, the percentile estimates were converted from mg/J back to mg/kg based on 10,000 Btu/lb.

The nonparametric procedure for calculating the percentile estimates was based on standard procedures, namely PROC UNIVARIATE (Def. 5), in the SAS statistical software package. This standard nonparametric procedure is outlined in the following steps.

1. Let x_1, x_2, x_3, ..., x_n represent the chemical concentrations from the n-samples, ranked from lowest to highest, where n equals the total number of samples.

2. To calculate the 90th percentile, let 0.90*n = j + g, where j is the integer part of 0.90*n and g is the fractional part of 0.90*n.

3. The estimated 90th percentile is calculated as:

   (xj + xj+1)/2, if g = 0; and
   (xj + 1), if g > 0.

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Example: In No. 6 fuel oil, data were available from seven (7) samples. Therefore, n=7 and 0.90*n=6.3. The integer part (j) is equal to 6, and the fractional part (g) is equal to 3/10. Because the fractional part (g) is not equal to zero, the 90th percentile is equal to the interpolated values of the concentrations between the 6th and 7th samples. That is, the 90th percentile is the average of the largest concentration and the second largest concentration.

The estimated percentiles from this methodology are presented under the column heading "Concentration Limit" in Appendix C, Tables 1 through 4.

3.4.2 *Estimates from Composite 246*

In addition to the percentile estimates from each individual fuel type, percentile estimates are presented for a combination of Nos. 2, 4, and 6 fuel oils. This combination of fuel oils is labeled "Composite 246." The estimated percentiles presented under combination of fuel oils are weighted estimates from the chemical concentrations from the three (3) fuel oils. Estimates were generated from all reported samples of these fuel oils, using the measured concentrations from the detect samples and the reported quantitation limits from the non-detect samples.

Appendix C, Table 5 presents estimated 50th percentiles from the composite of Nos. 2, 4, and 6 fuel oils. Estimated 90th percentiles are presented in Appendix C, Table 6. For chemicals with at least one (1) detected concentration, the percentile estimates are presented under the heading "Concentration Limit". The percentile estimates for the chemicals with no detected concentrations are presented under the heading "Minimum Detection Limit."

The estimated percentiles were generated by weighting each sample according to the number of samples available from each fuel type. This adjustment provides equal contribution from each sample to the composite estimate. That is, each fuel type should represent one-third of the population. Therefore, each sample from No. 2 fuel oil, which contained 11 samples, was assigned

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a weight of 1/33; the sample from No. 4 fuel oil was assigned a weight of 1/3; and each sample from No. 6 fuel oil, which contained seven (7) samples, was assigned a weight of 1/21. The chemical concentrations were then ranked from lowest to highest and the weights were summed across samples until the total weight was equal to 0.50. The corresponding chemical concentration was used as the estimated 50th percentile. That is, the 50th percentile is the concentration corresponding to the ranked sample for which 50% of the weights were accounted. If the sum of the weights does not equal 0.50 exactly, then the 50th percentile is the interpolated value of the two (2) reported concentrations surrounding the 50th percentile point. Similarly, the 90th percentile was estimated by the corresponding concentration when the sum of the weights was equal to 0.90.

As in the calculation of the percentiles for each individual fuel type, the percentiles for the detected chemicals are presented in units of mg/kg at 10,000 Btu/lb, and the percentiles for the non-detect chemicals are presented in the original units of mg/kg. All of the chemicals originally were reported in the database with units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample, under the column heading "Concentration Limit," were calculated from concentrations converted from mg/kg to mg/J, based on the reported heating values (Btu/lb) for each sample. The percentile estimates then were converted from mg/J back to mg/kg based on 10,000 Btu/lb. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits in the original units of mg/kg.

3.4.3 *Estimates from Composite of All Fuel Types*

Appendix C, Tables 7, 7A, 8, and 8A present percentile estimates for a combination of all four (4) fuel types (i.e., gasoline and Nos. 2, 4, and 6 fuel oils), labeled "Composite All." The estimated percentiles presented under this combination of fuel types are weighted estimates from the chemical concentrations from the four fuel types. Estimates were generated from all reported samples of these fuel types, using the measured concentrations from the detected analytes in the samples and the reported quantitation limits from the non-detect analytes in the samples.

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Appendix C, Table 7 and Table 7A presents estimated 50th percentiles from the composite of all fuel types. Estimated 90th percentiles are presented in Appendix C, Table 8, and Table 8A. For chemicals with at least one (1) detected concentration, the percentile estimates are presented under the heading "Concentration Limit." The percentile estimates for the chemicals with no detected concentrations are presented under the heading "Minimum Detection Limit."

The estimated percentiles were generated by weighing each sample according to the number of samples available from each fuel type, so that each fuel type provided equal contribution to the estimated percentiles. That is, each fuel type should represent one-quarter of the population. Therefore, the samples from gasoline and Nos. 2, 4, and 6 fuel oils were assigned weights of 1/32, 1/44, 1/4, and 1/28, respectively, based on the number of samples from each fuel type. The chemical concentrations were then ranked from lowest to highest, and the weights were summed across samples until the total weight was equal to 0.50. The corresponding chemical concentration was used as the estimated 50th percentile. That is, the 50th percentile is the concentration corresponding to the ranked sample for which 50% of the weights were accounted. If the sum of the weights does not equal 0.50 exactly, then the 50th percentile is an average of the two (2) reported concentrations that surround the 50th percentile point. Similarly, the 90th percentiles were estimated by the corresponding concentration when the sum of the weights was equal to 0.90.

In the analytical methods for calculating the quantitation limit for VOCs in gasoline, there are matrix interferences that cause the calculated quantitation limits to be unreliable. Therefore, for the VOCs not detected in any of the gasoline samples, the estimated percentiles for the composite of all fuel types, which includes gasoline, were not presented. For these chemicals, the estimates from the composite of the Nos. 2, 4, and 6 fuel oils (i.e., without gasoline) are presented in Appendix C, Tables 5, 5A, 6, and 6A as surrogates for the percentile estimates from the composite of all four (4) fuel types.

The percentiles for the detected chemicals are presented in units of mg/kg at 10,000 Btu/lb and the percentiles for the non-detect chemicals are presented in the original units of mg/kg. All of

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the chemicals originally were reported in the database with units of mg/kg. The percentile estimates for chemicals with at least one (1) detected sample (i.e., concentration limit) were calculated from concentrations converted from mg/kg to mg/J, based on the reported heating values (Btu/lb) for each sample. The percentile estimates then were converted from mg/J back to mg/kg based on 10,000 Btu/lb. For the chemicals with no samples measured above the minimum level of detection, the percentile estimates were based on the reported quantitation limits in the original units of mg/kg.

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Table 3-1 Chlorine Content of Fuel Oils Used in Hazardous Waste Burning Boilers and Incinerators (as Reported in CoC Test Reports)

Facility Name and Location	Fuel Oil No.	Cl^- Content (ppm_w) Ind. Measurements	No. Of Measur.	Measurement Method	Comments
Amer. Cyan., Kalamazoo, MI	6	< 45	1	ASTM D3120	Sulfur method, not used
Huntsman Poly., Woodbury, NJ	6	< 100	6	SW-846 9020	Organic chlorine, not used
Rohm and Haas, Phil., PA	6	108, 110, 171	3	ASTM D 808/D 4327	Below method DL
Rohm and Haas, Bristol, PA	6	180	1	ASTM D 808/D 4327	Below method DL
Rohm and Haas	6	590, 660, 1000	3	EPA 9020	Below/near method DL
Rohm and Haas	6	840, 840	3	EPA 9020	
Dow Chem., Gales Ferry, CT	2	83, 93, 137	3	ASTM D 808	Below method DL, not used
Du Pont, Wilmington, DE	2	16, 429, 461, 470, 490, 523	5	ASTM D 808/D 4327	

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Appendix A

Laboratory Data

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	1,2,4,5-Tetrachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,2,4-Trichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,2-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,3,5-Trinitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,3-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,4-Dichlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1,4-Naphthoquinone	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	1-Naphthylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,3,4,6-Tetrachlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4,5-Trichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4,6-Trichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dimethylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dinitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,4-Dinitrotoluene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,6-Dichlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2,6-Dinitrotoluene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Acetylaminofluorene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Chloronaphthalene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Chlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Naphthylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Nitroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Nitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	2-Picoline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3,3'-Dichlorobenzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3-3'-Dimethylbenzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	3-Methylcholanthrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4,6-Dinitro-2-methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Aminobiphenyl	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Bromophenyl phenyl ether	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Chloro-3-methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Chloroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Methylphenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Nitroaniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	4-Nitrophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	5-Nitro-o-toluidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	7,12-Dimethylbenz[a]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	α,α-Dimethylphenethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Acetophenone	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Aniline	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Aramite	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	Benzidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[a]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[a]pyrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[b]fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Benzo[k]fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Bis(2-chloroisopropyl)ether	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Butyl benzyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Chlorobenzilate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Chrysene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Di-n-butyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Di-n-octyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diallate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dibenzo[a,h]anthracene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dibenz[a,j]acridine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diethyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dimethoate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dimethyl phthalate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Dinoseb	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Diphenylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Disulfoton	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Ethyl methanesulfonate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Famphur	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Fluoranthene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Fluorene	<270		U	26.7	<1200		U	117	<200	220		19.8	<99		U	9.90
8835-001	Hexachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorobutadiene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorocyclopentadiene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachloroethane	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Hexachlorophene	<6700		U	26.7	<29000		U	117	<5000		U	19.8	<2500		U	9.90
8835-001	Hexachloropropene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Indeno(1,2,3-c,d)pyrene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Isodrin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Isosafrole	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Kepone	<530		U	26.7	<2300		U	117	<400		U	19.8	<200		U	9.90
8835-001	Methapyrilene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Methyl parathion	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Methyl methanesulfonate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitroso-di-n-butylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosodi-n-propylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosodiethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosomethylethylamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosomorpholine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	N-Nitrosopiperidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	N-Nitrosopyrrolidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Naphthalene	<270	2500		26.7	<1200	2000		117	<200	660		19.8	<99	170		9.90
8835-001	Nitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	O,O,O-Triethylphosphorothioate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	o-Toluidine	<270		U	26.7	<1200		U	117	<200		U	19.8	<2000		U	9.90
8835-001	p-Dimethylaminoazobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	p-Phenylenediamine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Parathion	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachlorobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachloronitrobenzene	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pentachlorophenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phenacetin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phenol	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Phorate	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pronamide	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Pyridine	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Safrole	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Sulfotepp	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-001	Thionzin	<270		U	26.7	<1200		U	117	<200		U	19.8	<99		U	9.90
8835-002	1,2,4,5-Tetrachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,2,4-Trichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,2-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,3,5-Trinitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,3-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,4-Dichlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1,4-Naphthoquinone	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	1-Naphthylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,3,4,6-Tetrachlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4,5-Trichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4,6-Trichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dimethylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dinitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,4-Dinitrotoluene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,6-Dichlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2,6-Dinitrotoluene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Acetylaminofluorene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Chloronaphthalene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Chlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Naphthylamine	<270		U	26.6	<1200		U	117					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-002	2-Nitroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Nitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	2-Picoline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3,3'-Dichlorobenzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3-3'-Dimethylbenzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	3-Methylcholanthrene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4,6-Dinitro-2-methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Aminobiphenyl	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Bromophenyl phenyl ether	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Chloro-3-methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Chloroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Methylphenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Nitroaniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	4-Nitrophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	5-Nitro-o-toluidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	7,12-Dimethylbenz[a]anthracene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	α,α-Dimethylphenethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Acetophenone	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Aniline	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Aramite	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Benzidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Benzo[a]anthracene	<270		U	26.6	<1200		U	117					<200	760		19.6
8835-002	Benzo[a]pyrene	<270		U	26.6	<1200		U	117					<200	450		19.6
8835-002	Benzo[b]fluoranthene	<270		U	26.6	<1200		U	117					<200	210		19.6
8835-002	Benzo[k]fluoranthene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Bis(2-chloroisopropyl)ether	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Butyl benzyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Chlorobenzilate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Chrysene	<270		U	26.6	<1200		U	117					<200	700		19.6
8835-002	Di-n-butyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Di-n-octyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diallate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dibenzo[a,h]anthracene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dibenz[a,j]acridine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diethyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dimethoate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dimethyl phthalate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Dinoseb	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Diphenylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Disulfoton	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Ethyl methanesulfonate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Famphur	<270		U	26.6	<1200		U	117					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-002	Fluoranthene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Fluorene	<270		U	26.6	<1200		U	117					<200	220		19.6
8835-002	Hexachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorobutadiene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorocyclopentadiene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachloroethane	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Hexachlorophene	<6600		U	26.6	<29000		U	117					<4900		U	19.6
8835-002	Hexachloropropene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Indeno(1,2,3-c,d)pyrene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Isodrin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Isosafrole	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Kepone	<530		U	26.6	<2300		U	117					<390		U	19.6
8835-002	Methapyrilene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Methyl parathion	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Methyl methanesulfonate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitroso-di-n-butylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosodi-n-propylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosodiethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosomethylethylamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosomorpholine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosopiperidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	N-Nitrosopyrrolidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Naphthalene	<270	2600		26.6	<1200	2300		117					<200	550		19.6
8835-002	Nitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	O,O,O-Triethylphosphorothioate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	o-Toluidine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	p-Dimethylaminoazobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	p-Phenylenediamine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Parathion	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachlorobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachloronitrobenzene	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pentachlorophenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phenacetin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phenol	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Phorate	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pronamide	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Pyridine	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Safrole	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Sulfotepp	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-002	Thionzin	<270		U	26.6	<1200		U	117					<200		U	19.6
8835-003	1,2,4,5-Tetrachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,2,4-Trichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	1,2-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,3,5-Trinitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,3-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,4-Dichlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1,4-Naphthoquinone	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	1-Naphthylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,3,4,6-Tetrachlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4,5-Trichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4,6-Trichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dimethylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dinitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,4-Dinitrotoluene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,6-Dichlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2,6-Dinitrotoluene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Acetylaminofluorene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Chloronaphthalene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Chlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Naphthylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Nitroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Nitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	2-Picoline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3,3'-Dichlorobenzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3-3'-Dimethylbenzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	3-Methylcholanthrene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4,6-Dinitro-2-methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Aminobiphenyl	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Bromophenyl phenyl ether	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Chloro-3-methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Chloroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Methylphenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Nitroaniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	4-Nitrophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	5-Nitro-o-toluidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	7,12-Dimethylbenz[a]anthracene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	α,α-Dimethylphenethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Acetophenone	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Aniline	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Aramite	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Benzidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Benzo[a]anthracene	<670		U	66.8	<590		U	59.4					<190	660		19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	Benzo[a]pyrene	<670		U	66.8	<590		U	59.4					<190	450		19.2
8835-003	Benzo[b]fluoranthene	<670		U	66.8	<590		U	59.4					<190	220		19.2
8835-003	Benzo[k]fluoranthene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Bis(2-chloroisopropyl)ether	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Butyl benzyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Chlorobenzilate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Chrysene	<670		U	66.8	<590		U	59.4					<190	740		19.2
8835-003	Di-n-butyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Di-n-octyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diallate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dibenzo[a,h]anthracene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dibenz[a,j]acridine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diethyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dimethoate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dimethyl phthalate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Dinoseb	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Diphenylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Disulfoton	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Ethyl methanesulfonate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Famphur	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Fluoranthene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Fluorene	<670		U	66.8	<590		U	59.4					<190	210		19.2
8835-003	Hexachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorobutadiene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorocyclopentadiene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachloroethane	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Hexachlorophene	<17000		U	66.8	<15000		U	59.4					<4800		U	19.2
8835-003	Hexachloropropene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Indeno(1,2,3-c,d)pyrene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Isodrin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Isosafrole	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Kepone	<1300		U	66.8	<1200		U	59.4					<380		U	19.2
8835-003	Methapyrilene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Methyl parathion	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Methyl methanesulfonate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitroso-di-n-butylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosodi-n-propylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosodiethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosomethylethylamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosomorpholine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosopiperidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	N-Nitrosopyrrolidine	<670		U	66.8	<590		U	59.4					<190		U	19.2

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-003	Naphthalene	<670	5400		66.8	<590	1300		59.4					<190	550		19.2
8835-003	Nitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	O,O,O-Triethylphosphorothioate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	o-Toluidine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	p-Dimethylaminoazobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	p-Phenylenediamine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Parathion	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachlorobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachloronitrobenzene	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pentachlorophenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phenacetin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phenol	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Phorate	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pronamide	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Pyridine	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Safrole	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Sulfotepp	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-003	Thionzin	<670		U	66.8	<590		U	59.4					<190		U	19.2
8835-004	1,2,4,5-Tetrachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,2,4-Trichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,2-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,3,5-Trinitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,3-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,4-Dichlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1,4-Naphthoquinone	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	1-Naphthylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,3,4,6-Tetrachlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4,5-Trichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4,6-Trichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dimethylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dinitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,4-Dinitrotoluene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,6-Dichlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2,6-Dinitrotoluene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Acetylaminofluorene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Chloronaphthalene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Chlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Naphthylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Nitroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	2-Nitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-004	2-Picoline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3,3'-Dichlorobenzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3-3'-Dimethylbenzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	3-Methylcholanthrene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4,6-Dinitro-2-methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Aminobiphenyl	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Bromophenyl phenyl ether	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Chloro-3-methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Chloroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Methylphenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Nitroaniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	4-Nitrophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	5-Nitro-o-toluidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	7,12-Dimethylbenz[a]anthracene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	α,α-Dimethylphenethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Acetophenone	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Aniline	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Aramite	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Benzidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Benzo[a]anthracene	<670		U	66.7	<600		U	59.6					<500	1900		50.0
8835-004	Benzo[a]pyrene	<670		U	66.7	<600		U	59.6					<500	770		50.0
8835-004	Benzo[b]fluoranthene	<670		U	66.7	<600		U	59.6					<500	540		50.0
8835-004	Benzo[k]fluoranthene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Bis(2-chloroisopropyl)ether	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Butyl benzyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Chlorobenzilate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Chrysene	<670		U	66.7	<600		U	59.6					<500	2700		50.0
8835-004	Di-n-butyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Di-n-octyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diallate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dibenzo[a,h]anthracene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dibenz[a,j]acridine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diethyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dimethoate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dimethyl phthalate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Dinoseb	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Diphenylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Disulfoton	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Ethyl methanesulfonate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Famphur	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Fluoranthene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Fluorene	<670		U	66.7	<600		U	59.6					<500		U	50.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-004	Hexachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorobutadiene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorocyclopentadiene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachloroethane	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Hexachlorophene	<17000		U	66.7	<15000		U	59.6					<12000		U	50.0
8835-004	Hexachloropropene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Indeno(1,2,3-c,d)pyrene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Isodrin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Isosafrole	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Kepone	<1300		U	66.7	<1200		U	59.6					<1000		U	50.0
8835-004	Methapyrilene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Methyl parathion	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Methyl methanesulfonate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitroso-di-n-butylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosodi-n-propylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosodiethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosomethylethylamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosomorpholine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosopiperidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	N-Nitrosopyrrolidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Naphthalene	<670	6200		66.7	<600	1700		59.6					<500		U	50.0
8835-004	Nitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	O,O,O-Triethylphosphorothioate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	o-Toluidine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	p-Dimethylaminoazobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	p-Phenylenediamine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Parathion	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachlorobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachloronitrobenzene	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pentachlorophenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phenacetin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phenol	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Phorate	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pronamide	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Pyridine	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Safrole	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Sulfotepp	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-004	Thionzin	<670		U	66.7	<600		U	59.6					<500		U	50.0
8835-005	1,2,4,5-Tetrachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,2,4-Trichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,2-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,3,5-Trinitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	1,3-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,4-Dichlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1,4-Naphthoquinone	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	1-Naphthylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,3,4,6-Tetrachlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4,5-Trichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4,6-Trichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dimethylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dinitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,4-Dinitrotoluene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,6-Dichlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2,6-Dinitrotoluene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Acetylaminofluorene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Chloronaphthalene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Chlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Naphthylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Nitroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Nitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	2-Picoline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3,3'-Dichlorobenzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3-3'-Dimethylbenzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	3-Methylcholanthrene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4,6-Dinitro-2-methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Aminobiphenyl	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Bromophenyl phenyl ether	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Chloro-3-methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Chloroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Methylphenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Nitroaniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	4-Nitrophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	5-Nitro-o-toluidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	7,12-Dimethylbenz[a]anthracene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	α,α-Dimethylphenethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Acetophenone	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Aniline	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Aramite	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Benzidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Benzo[a]anthracene	<130		U	13.4	<590		U	59.5					<200	1600		19.8
8835-005	Benzo[a]pyrene	<130		U	13.4	<590		U	59.5					<200	960		19.8
8835-005	Benzo[b]fluoranthene	<130		U	13.4	<590		U	59.5					<200	670		19.8

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	Benzo[k]fluoranthene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Bis(2-chloroisopropyl)ether	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Butyl benzyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Chlorobenzilate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Chrysene	<130		U	13.4	<590		U	59.5					<200	2200		19.8
8835-005	Di-n-butyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Di-n-octyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diallate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dibenzo[a,h]anthracene	<130		U	13.4	<590		U	59.5					<200	250		19.8
8835-005	Dibenz[a,j]acridine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diethyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dimethoate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dimethyl phthalate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Dinoseb	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Diphenylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Disulfoton	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Ethyl methanesulfonate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Famphur	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Fluoranthene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Fluorene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorobutadiene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorocyclopentadiene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachloroethane	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Hexachlorophene	<3400		U	13.4	<15000		U	59.5					<5000		U	19.8
8835-005	Hexachloropropene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Indeno(1,2,3-c,d)pyrene	<130		U	13.4	<590		U	59.5					<200	290		19.8
8835-005	Isodrin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Isosafrole	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Kepone	<270		U	13.4	<1200		U	59.5					<400		U	19.8
8835-005	Methapyrilene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Methyl parathion	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Methyl methanesulfonate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitroso-di-n-butylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosodi-n-propylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosodiethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosomethylethylamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosomorpholine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosopiperidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	N-Nitrosopyrrolidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Naphthalene	<130	1300		13.4	<590	1700		59.5					<200	260		19.8
8835-005	Nitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-005	O,O,O-Triethylphosphorothioate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	o-Toluidine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	p-Dimethylaminoazobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	p-Phenylenediamine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Parathion	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachlorobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachloronitrobenzene	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pentachlorophenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phenacetin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phenol	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Phorate	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pronamide	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Pyridine	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Safrole	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Sulfotepp	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-005	Thionzin	<130		U	13.4	<590		U	59.5					<200		U	19.8
8835-006	1,2,4,5-Tetrachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,2,4-Trichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,2-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,3,5-Trinitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,3-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,4-Dichlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1,4-Naphthoquinone	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	1-Naphthylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,3,4,6-Tetrachlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4,5-Trichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4,6-Trichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dimethylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dinitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,4-Dinitrotoluene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,6-Dichlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2,6-Dinitrotoluene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Acetylaminofluorene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Chloronaphthalene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Chlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Naphthylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Nitroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Nitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	2-Picoline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	3,3'-Dichlorobenzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-006	3-3'-Dimethylbenzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	3-Methylcholanthrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4,6-Dinitro-2-methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Aminobiphenyl	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Bromophenyl phenyl ether	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Chloro-3-methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Chloroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Methylphenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Nitroaniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	4-Nitrophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	5-Nitro-o-toluidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	7,12-Dimethylbenz[a]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	α,α-Dimethylphenethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Acetophenone	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Aniline	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Aramite	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[a]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[a]pyrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[b]fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Benzo[k]fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Bis(2-chloroisopropyl)ether	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Butyl benzyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Chlorobenzilate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Chrysene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Di-n-butyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Di-n-octyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diallate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dibenzo[a,h]anthracene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dibenz[a,j]acridine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diethyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dimethoate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dimethyl phthalate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Dinoseb	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Diphenylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Disulfoton	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Ethyl methanesulfonate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Famphur	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Fluoranthene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Fluorene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorobutadiene	<140		U	14.1	<290		U	29.3					<980		U	98.0

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-006	Hexachlorocyclopentadiene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachloroethane	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Hexachlorophene	<3500		U	14.1	<7300		U	29.3					<980		U	98.0
8835-006	Hexachloropropene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Indeno(1,2,3-c,d)pyrene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Isodrin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Isosafrole	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Kepone	<280		U	14.1	<580		U	29.3					<2000		U	98.0
8835-006	Methapyrilene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Methyl parathion	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Methyl methanesulfonate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitroso-di-n-butylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosodi-n-propylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosodiethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosomethylethylamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosomorpholine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosopiperidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	N-Nitrosopyrrolidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Naphthalene	<140	1100		14.1	<290		U	29.3					<980	1900		98.0
8835-006	Nitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	O,O,O-Triethylphosphorothioate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	o-Toluidine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	p-Dimethylaminoazobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	p-Phenylenediamine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Parathion	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachlorobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachloronitrobenzene	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pentachlorophenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phenacetin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phenol	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Phorate	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pronamide	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Pyridine	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Safrole	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Sulfotepp	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-006	Thionzin	<140		U	14.1	<290		U	29.3					<980		U	98.0
8835-007	1,2,4,5-Tetrachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,2,4-Trichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,2-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,3,5-Trinitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,3-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1,4-Dichlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	1,4-Naphthoquinone	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	1-Naphthylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,3,4,6-Tetrachlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4,5-Trichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4,6-Trichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dimethylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dinitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,4-Dinitrotoluene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,6-Dichlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2,6-Dinitrotoluene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Acetylaminofluorene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Chloronaphthalene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Chlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Naphthylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Nitroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Nitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	2-Picoline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3,3'-Dichlorobenzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3-3'-Dimethylbenzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	3-Methylcholanthrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4,6-Dinitro-2-methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Aminobiphenyl	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Bromophenyl phenyl ether	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Chloro-3-methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Chloroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Methylphenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Nitroaniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	4-Nitrophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	5-Nitro-o-toluidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	7,12-Dimethylbenz[a]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	α,α-Dimethylphenethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Acetophenone	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Aniline	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Aramite	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[a]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[a]pyrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[b]fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Benzo[k]fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Bis(2-chloroisopropyl)ether	<270		U	27.4	<2400		U	235					<200		U	19.6

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	Butyl benzyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Chlorobenzilate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Chrysene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Di-n-butyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Di-n-octyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diallate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dibenzo[a,h]anthracene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dibenz[a,j]acridine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diethyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dimethoate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dimethyl phthalate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Dinoseb	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Diphenylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Disulfoton	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Ethyl methanesulfonate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Famphur	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Fluoranthene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Fluorene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorobutadiene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorocyclopentadiene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachloroethane	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Hexachlorophene	<6800		U	27.4	<59000.0		U	235					<4900		U	19.6
8835-007	Hexachloropropene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Indeno(1,2,3-c,d)pyrene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Isodrin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Isosafrole	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Kepone	<550		U	27.4	<4700		U	235					<390		U	19.6
8835-007	Methapyrilene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Methyl parathion	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Methyl methanesulfonate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitroso-di-n-butylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosodi-n-propylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosodiethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosomethylethylamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosomorpholine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosopiperidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	N-Nitrosopyrrolidine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Naphthalene	<270	2300		27.4	<2400	3500		235					<200	690		19.6
8835-007	Nitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	O,O,O-Triethylphosphorothioate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	o-Toluidine	<270		U	27.4	<2400		U	235					<200		U	19.6

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	p-Dimethylaminoazobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	p-Phenylenediamine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Parathion	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachlorobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachloronitrobenzene	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pentachlorophenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phenacetin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phenol	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Phorate	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pronamide	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Pyridine	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Safrole	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Sulfotepp	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-007	Thionzin	<270		U	27.4	<2400		U	235					<200		U	19.6
8835-008	1,2,4,5-Tetrachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,2,4-Trichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,2-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,3,5-Trinitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,3-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,4-Dichlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	1,4-Naphthoquinone	<280		U	27.7	<600		U	59.7								
8835-008	1-Naphthylamine	<280		U	27.7	<600		U	59.7								
8835-008	2,3,4,6-Tetrachlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4,5-Trichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4,6-Trichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dimethylphenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dinitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,4-Dinitrotoluene	<280		U	27.7	<600		U	59.7								
8835-008	2,6-Dichlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2,6-Dinitrotoluene	<280		U	27.7	<600		U	59.7								
8835-008	2-Acetylaminofluorene	<280		U	27.7	<600		U	59.7								
8835-008	2-Chloronaphthalene	<280		U	27.7	<600		U	59.7								
8835-008	2-Chlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Naphthylamine	<280		U	27.7	<600		U	59.7								
8835-008	2-Nitroaniline	<280		U	27.7	<600		U	59.7								
8835-008	2-Nitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	2-Picoline	<280		U	27.7	<600		U	59.7								
8835-008	3,3'-Dichlorobenzidine	<280		U	27.7	<600		U	59.7								
8835-008	3-3'-Dimethylbenzidine	<280		U	27.7	<600		U	59.7								
8835-008	3-Methylcholanthrene	<280		U	27.7	<600		U	59.7								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-008	4,6-Dinitro-2-methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Aminobiphenyl	<280		U	27.7	<600		U	59.7								
8835-008	4-Bromophenyl phenyl ether	<280		U	27.7	<600		U	59.7								
8835-008	4-Chloro-3-methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Chloroaniline	<280		U	27.7	<600		U	59.7								
8835-008	4-Methylphenol	<280		U	27.7	<600		U	59.7								
8835-008	4-Nitroaniline	<280		U	27.7	<600		U	59.7								
8835-008	4-Nitrophenol	<280		U	27.7	<600		U	59.7								
8835-008	5-Nitro-o-toluidine	<280		U	27.7	<600		U	59.7								
8835-008	7,12-Dimethylbenz[a]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	α,α-Dimethylphenethylamine	<280		U	27.7	<600		U	59.7								
8835-008	Acetophenone	<280		U	27.7	<600		U	59.7								
8835-008	Aniline	<280		U	27.7	<600		U	59.7								
8835-008	Aramite	<280		U	27.7	<600		U	59.7								
8835-008	Benzidine	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[a]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[a]pyrene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[b]fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Benzo[k]fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Bis(2-chloroisopropyl)ether	<280		U	27.7	<600		U	59.7								
8835-008	Butyl benzyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Chlorobenzilate	<280		U	27.7	<600		U	59.7								
8835-008	Chrysene	<280		U	27.7	<600		U	59.7								
8835-008	Di-n-butyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Di-n-octyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Diallate	<280		U	27.7	<600		U	59.7								
8835-008	Dibenzo[a,h]anthracene	<280		U	27.7	<600		U	59.7								
8835-008	Dibenz[a,j]acridine	<280		U	27.7	<600		U	59.7								
8835-008	Diethyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Dimethoate	<280		U	27.7	<600		U	59.7								
8835-008	Dimethyl phthalate	<280		U	27.7	<600		U	59.7								
8835-008	Dinoseb	<280		U	27.7	<600		U	59.7								
8835-008	Diphenylamine	<280		U	27.7	<600		U	59.7								
8835-008	Disulfoton	<280		U	27.7	<600		U	59.7								
8835-008	Ethyl methanesulfonate	<280		U	27.7	<600		U	59.7								
8835-008	Famphur	<280		U	27.7	<600		U	59.7								
8835-008	Fluoranthene	<280		U	27.7	<600		U	59.7								
8835-008	Fluorene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorobutadiene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachlorocyclopentadiene	<280		U	27.7	<600		U	59.7								
8835-008	Hexachloroethane	<280		U	27.7	<600		U	59.7								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-008	Hexachlorophene	<6900		U	27.7	<15000		U	59.7								
8835-008	Hexachloropropene	<280		U	27.7	<600		U	59.7								
8835-008	Indeno(1,2,3-c,d)pyrene	<280		U	27.7	<600		U	59.7								
8835-008	Isodrin	<280		U	27.7	<600		U	59.7								
8835-008	Isosafrole	<280		U	27.7	<600		U	59.7								
8835-008	Kepone	<550		U	27.7	<1200		U	59.7								
8835-008	Methapyrilene	<280		U	27.7	<600		U	59.7								
8835-008	Methyl parathion	<280		U	27.7	<600		U	59.7								
8835-008	Methyl methanesulfonate	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitroso-di-n-butylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosodi-n-propylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosodiethylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosomethylethylamine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosomorpholine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosopiperidine	<280		U	27.7	<600		U	59.7								
8835-008	N-Nitrosopyrrolidine	<280		U	27.7	<600		U	59.7								
8835-008	Naphthalene	<280	2100		27.7	<600	1800		59.7								
8835-008	Nitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	O,O,O-Triethylphosphorothioate	<280		U	27.7	<600		U	59.7								
8835-008	o-Toluidine	<280		U	27.7	<600		U	59.7								
8835-008	p-Dimethylaminoazobenzene	<280		U	27.7	<600		U	59.7								
8835-008	p-Phenylenediamine	<280		U	27.7	<600		U	59.7								
8835-008	Parathion	<280		U	27.7	<600		U	59.7								
8835-008	Pentachlorobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Pentachloronitrobenzene	<280		U	27.7	<600		U	59.7								
8835-008	Pentachlorophenol	<280		U	27.7	<600		U	59.7								
8835-008	Phenacetin	<280		U	27.7	<600		U	59.7								
8835-008	Phenol	<280		U	27.7	<600		U	59.7								
8835-008	Phorate	<280		U	27.7	<600		U	59.7								
8835-008	Pronamide	<280		U	27.7	<600		U	59.7								
8835-008	Pyridine	<280		U	27.7	<600		U	59.7								
8835-008	Safrole	<280		U	27.7	<600		U	59.7								
8835-008	Sulfotepp	<280		U	27.7	<600		U	59.7								
8835-008	Thionzin	<280		U	27.7	<600		U	59.7								
8835-009	1,2,4,5-Tetrachlorobenzene					<600		U	60.1								
8835-009	1,2,4-Trichlorobenzene					<600		U	60.1								
8835-009	1,2-Dichlorobenzene					<600		U	60.1								
8835-009	1,3,5-Trinitrobenzene					<600		U	60.1								
8835-009	1,3-Dichlorobenzene					<600		U	60.1								
8835-009	1,4-Dichlorobenzene					<600		U	60.1								
8835-009	1,4-Naphthoquinone					<600		U	60.1								
8835-009	1-Naphthylamine					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	2,3,4,6-Tetrachlorophenol					<600		U	60.1								
8835-009	2,4,5-Trichlorophenol					<600		U	60.1								
8835-009	2,4,6-Trichlorophenol					<600		U	60.1								
8835-009	2,4-Dichlorophenol					<600		U	60.1								
8835-009	2,4-Dimethylphenol					<600		U	60.1								
8835-009	2,4-Dinitrophenol					<600		U	60.1								
8835-009	2,4-Dinitrotoluene					<600		U	60.1								
8835-009	2,6-Dichlorophenol					<600		U	60.1								
8835-009	2,6-Dinitrotoluene					<600		U	60.1								
8835-009	2-Acetylaminofluorene					<600		U	60.1								
8835-009	2-Chloronaphthalene					<600		U	60.1								
8835-009	2-Chlorophenol					<600		U	60.1								
8835-009	2-Methylphenol					<600		U	60.1								
8835-009	2-Naphthylamine					<600		U	60.1								
8835-009	2-Nitroaniline					<600		U	60.1								
8835-009	2-Nitrophenol					<600		U	60.1								
8835-009	2-Picoline					<600		U	60.1								
8835-009	3,3'-Dichlorobenzidine					<600		U	60.1								
8835-009	3-3'-Dimethylbenzidine					<600		U	60.1								
8835-009	3-Methylcholanthrene					<600		U	60.1								
8835-009	4,6-Dinitro-2-methylphenol					<600		U	60.1								
8835-009	4-Aminobiphenyl					<600		U	60.1								
8835-009	4-Bromophenyl phenyl ether					<600		U	60.1								
8835-009	4-Chloro-3-methylphenol					<600		U	60.1								
8835-009	4-Chloroaniline					<600		U	60.1								
8835-009	4-Methylphenol					<600		U	60.1								
8835-009	4-Nitroaniline					<600		U	60.1								
8835-009	4-Nitrophenol					<600		U	60.1								
8835-009	5-Nitro-o-toluidine					<600		U	60.1								
8835-009	7,12-Dimethylbenz[a]anthracene					<600		U	60.1								
8835-009	α,α-Dimethylphenethylamine					<600		U	60.1								
8835-009	Acetophenone					<600		U	60.1								
8835-009	Aniline					<600		U	60.1								
8835-009	Aramite					<600		U	60.1								
8835-009	Benzidine					<600		U	60.1								
8835-009	Benzo[a]anthracene					<600		U	60.1								
8835-009	Benzo[a]pyrene					<600		U	60.1								
8835-009	Benzo[b]fluoranthene					<600		U	60.1								
8835-009	Benzo[k]fluoranthene					<600		U	60.1								
8835-009	Bis(2-chloroisopropyl)ether					<600		U	60.1								
8835-009	Butyl benzyl phthalate					<600		U	60.1								
8835-009	Chlorobenzilate					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	Chrysene					<600		U	60.1								
8835-009	Di-n-butyl phthalate					<600		U	60.1								
8835-009	Di-n-octyl phthalate					<600		U	60.1								
8835-009	Diallate					<600		U	60.1								
8835-009	Dibenzo[a,h]anthracene					<600		U	60.1								
8835-009	Dibenz[a,j]acridine					<600		U	60.1								
8835-009	Diethyl phthalate					<600		U	60.1								
8835-009	Dimethoate					<600		U	60.1								
8835-009	Dimethyl phthalate					<600		U	60.1								
8835-009	Dinoseb					<600		U	60.1								
8835-009	Diphenylamine					<600		U	60.1								
8835-009	Disulfoton					<600		U	60.1								
8835-009	Ethyl methanesulfonate					<600		U	60.1								
8835-009	Famphur					<600		U	60.1								
8835-009	Fluoranthene					<600		U	60.1								
8835-009	Fluorene					<600		U	60.1								
8835-009	Hexachlorobenzene					<600		U	60.1								
8835-009	Hexachlorobutadiene					<600		U	60.1								
8835-009	Hexachlorocyclopentadiene					<600		U	60.1								
8835-009	Hexachloroethane					<600		U	60.1								
8835-009	Hexachlorophene					<15000		U	60.1								
8835-009	Hexachloropropene					<600		U	60.1								
8835-009	Indeno(1,2,3-c,d)pyrene					<600		U	60.1								
8835-009	Isodrin					<600		U	60.1								
8835-009	Isosafrole					<600		U	60.1								
8835-009	Kepone					<1200		U	60.1								
8835-009	Methapyrilene					<600		U	60.1								
8835-009	Methyl parathion					<600		U	60.1								
8835-009	Methyl methanesulfonate					<600		U	60.1								
8835-009	N-Nitroso-di-n-butylamine					<600		U	60.1								
8835-009	N-Nitrosodi-n-propylamine					<600		U	60.1								
8835-009	N-Nitrosodiethylamine					<600		U	60.1								
8835-009	N-Nitrosomethylethylamine					<600		U	60.1								
8835-009	N-Nitrosomorpholine					<600		U	60.1								
8835-009	N-Nitrosopiperidine					<600		U	60.1								
8835-009	N-Nitrosopyrrolidine					<600		U	60.1								
8835-009	Naphthalene					<600	650		60.1								
8835-009	Nitrobenzene					<600		U	60.1								
8835-009	O,O,O-Triethylphosphorothioate					<600		U	60.1								
8835-009	o-Toluidine					<600		U	60.1								
8835-009	p-Dimethylaminoazobenzene					<600		U	60.1								
8835-009	p-Phenylenediamine					<600		U	60.1								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-009	Parathion					<600		U	60.1								
8835-009	Pentachlorobenzene					<600		U	60.1								
8835-009	Pentachloronitrobenzene					<600		U	60.1								
8835-009	Pentachlorophenol					<600		U	60.1								
8835-009	Phenacetin					<600		U	60.1								
8835-009	Phenol					<600		U	60.1								
8835-009	Phorate					<600		U	60.1								
8835-009	Pronamide					<600		U	60.1								
8835-009	Pyridine					<600		U	60.1								
8835-009	Safrole					<600		U	60.1								
8835-009	Sulfotepp					<600		U	60.1								
8835-009	Thionzin					<600		U	60.1								
8835-010	1,2,4,5-Tetrachlorobenzene					<600		U	59.8								
8835-010	1,2,4-Trichlorobenzene					<600		U	59.8								
8835-010	1,2-Dichlorobenzene					<600		U	59.8								
8835-010	1,3,5-Trinitrobenzene					<600		U	59.8								
8835-010	1,3-Dichlorobenzene					<600		U	59.8								
8835-010	1,4-Dichlorobenzene					<600		U	59.8								
8835-010	1,4-Naphthoquinone					<600		U	59.8								
8835-010	1-Naphthylamine					<600		U	59.8								
8835-010	2,3,4,6-Tetrachlorophenol					<600		U	59.8								
8835-010	2,4,5-Trichlorophenol					<600		U	59.8								
8835-010	2,4,6-Trichlorophenol					<600		U	59.8								
8835-010	2,4-Dichlorophenol					<600		U	59.8								
8835-010	2,4-Dimethylphenol					<600		U	59.8								
8835-010	2,4-Dinitrophenol					<600		U	59.8								
8835-010	2,4-Dinitrotoluene					<600		U	59.8								
8835-010	2,6-Dichlorophenol					<600		U	59.8								
8835-010	2,6-Dinitrotoluene					<600		U	59.8								
8835-010	2-Acetylaminofluorene					<600		U	59.8								
8835-010	2-Chloronaphthalene					<600		U	59.8								
8835-010	2-Chlorophenol					<600		U	59.8								
8835-010	2-Methylphenol					<600		U	59.8								
8835-010	2-Naphthylamine					<600		U	59.8								
8835-010	2-Nitroaniline					<600		U	59.8								
8835-010	2-Nitrophenol					<600		U	59.8								
8835-010	2-Picoline					<600		U	59.8								
8835-010	3,3'-Dichlorobenzidine					<600		U	59.8								
8835-010	3-3'-Dimethylbenzidine					<600		U	59.8								
8835-010	3-Methylcholanthrene					<600		U	59.8								
8835-010	4,6-Dinitro-2-methylphenol					<600		U	59.8								
8835-010	4-Aminobiphenyl					<600		U	59.8								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-010	4-Bromophenyl phenyl ether					<600		U	59.8								
8835-010	4-Chloro-3-methylphenol					<600		U	59.8								
8835-010	4-Chloroaniline					<600		U	59.8								
8835-010	4-Methylphenol					<600		U	59.8								
8835-010	4-Nitroaniline					<600		U	59.8								
8835-010	4-Nitrophenol					<600		U	59.8								
8835-010	5-Nitro-o-toluidine					<600		U	59.8								
8835-010	7,12-Dimethylbenz[a]anthracene					<600		U	59.8								
8835-010	α,α-Dimethylphenethylamine					<600		U	59.8								
8835-010	Acetophenone					<600		U	59.8								
8835-010	Aniline					<600		U	59.8								
8835-010	Aramite					<600		U	59.8								
8835-010	Benzidine					<600		U	59.8								
8835-010	Benzo[a]anthracene					<600		U	59.8								
8835-010	Benzo[a]pyrene					<600		U	59.8								
8835-010	Benzo[b]fluoranthene					<600		U	59.8								
8835-010	Benzo[k]fluoranthene					<600		U	59.8								
8835-010	Bis(2-chloroisopropyl)ether					<600		U	59.8								
8835-010	Butyl benzyl phthalate					<600		U	59.8								
8835-010	Chlorobenzilate					<600		U	59.8								
8835-010	Chrysene					<600		U	59.8								
8835-010	Di-n-butyl phthalate					<600		U	59.8								
8835-010	Di-n-octyl phthalate					<600		U	59.8								
8835-010	Diallate					<600		U	59.8								
8835-010	Dibenzo[a,h]anthracene					<600		U	59.8								
8835-010	Dibenz[a,j]acridine					<600		U	59.8								
8835-010	Diethyl phthalate					<600		U	59.8								
8835-010	Dimethoate					<600		U	59.8								
8835-010	Dimethyl phthalate					<600		U	59.8								
8835-010	Dinoseb					<600		U	59.8								
8835-010	Diphenylamine					<600		U	59.8								
8835-010	Disulfoton					<600		U	59.8								
8835-010	Ethyl methanesulfonate					<600		U	59.8								
8835-010	Famphur					<600		U	59.8								
8835-010	Fluoranthene					<600		U	59.8								
8835-010	Fluorene					<600		U	59.8								
8835-010	Hexachlorobenzene					<600		U	59.8								
8835-010	Hexachlorobutadiene					<600		U	59.8								
8835-010	Hexachlorocyclopentadiene					<600		U	59.8								
8835-010	Hexachloroethane					<600		U	59.8								
8835-010	Hexachlorophene					<15000		U	59.8								
8835-010	Hexachloropropene					<600		U	59.8								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-010	Indeno(1,2,3-c,d)pyrene					<600		U	59.8								
8835-010	Isodrin					<600		U	59.8								
8835-010	Isosafrole					<600		U	59.8								
8835-010	Kepone					<1200		U	59.8								
8835-010	Methapyrilene					<600		U	59.8								
8835-010	Methyl parathion					<600		U	59.8								
8835-010	Methyl methanesulfonate					<600		U	59.8								
8835-010	N-Nitroso-di-n-butylamine					<600		U	59.8								
8835-010	N-Nitrosodi-n-propylamine					<600		U	59.8								
8835-010	N-Nitrosodiethylamine					<600		U	59.8								
8835-010	N-Nitrosomethylethylamine					<600		U	59.8								
8835-010	N-Nitrosomorpholine					<600		U	59.8								
8835-010	N-Nitrosopiperidine					<600		U	59.8								
8835-010	N-Nitrosopyrrolidine					<600		U	59.8								
8835-010	Naphthalene					<600	710		59.8								
8835-010	Nitrobenzene					<600		U	59.8								
8835-010	O,O,O-Triethylphosphorothioate					<600		U	59.8								
8835-010	o-Toluidine					<600		U	59.8								
8835-010	p-Dimethylaminoazobenzene					<600		U	59.8								
8835-010	p-Phenylenediamine					<600		U	59.8								
8835-010	Parathion					<600		U	59.8								
8835-010	Pentachlorobenzene					<600		U	59.8								
8835-010	Pentachloronitrobenzene					<600		U	59.8								
8835-010	Pentachlorophenol					<600		U	59.8								
8835-010	Phenacetin					<600		U	59.8								
8835-010	Phenol					<600		U	59.8								
8835-010	Phorate					<600		U	59.8								
8835-010	Pronamide					<600		U	59.8								
8835-010	Pyridine					<600		U	59.8								
8835-010	Safrole					<600		U	59.8								
8835-010	Sulfotepp					<600		U	59.8								
8835-010	Thionzin					<600		U	59.8								
8835-011	1,2,4,5-Tetrachlorobenzene					<580		U	58.3								
8835-011	1,2,4-Trichlorobenzene					<580		U	58.3								
8835-011	1,2-Dichlorobenzene					<580		U	58.3								
8835-011	1,3,5-Trinitrobenzene					<580		U	58.3								
8835-011	1,3-Dichlorobenzene					<580		U	58.3								
8835-011	1,4-Dichlorobenzene					<580		U	58.3								
8835-011	1,4-Naphthoquinone					<580		U	58.3								
8835-011	1-Naphthylamine					<580		U	58.3								
8835-011	2,3,4,6-Tetrachlorophenol					<580		U	58.3								
8835-011	2,4,5-Trichlorophenol					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	2,4,6-Trichlorophenol					<580		U	58.3								
8835-011	2,4-Dichlorophenol					<580		U	58.3								
8835-011	2,4-Dimethylphenol					<580		U	58.3								
8835-011	2,4-Dinitrophenol					<580		U	58.3								
8835-011	2,4-Dinitrotoluene					<580		U	58.3								
8835-011	2,6-Dichlorophenol					<580		U	58.3								
8835-011	2,6-Dinitrotoluene					<580		U	58.3								
8835-011	2-Acetylaminofluorene					<580		U	58.3								
8835-011	2-Chloronaphthalene					<580		U	58.3								
8835-011	2-Chlorophenol					<580		U	58.3								
8835-011	2-Methylphenol					<580		U	58.3								
8835-011	2-Naphthylamine					<580		U	58.3								
8835-011	2-Nitroaniline					<580		U	58.3								
8835-011	2-Nitrophenol					<580		U	58.3								
8835-011	2-Picoline					<580		U	58.3								
8835-011	3,3'-Dichlorobenzidine					<580		U	58.3								
8835-011	3-3'-Dimethylbenzidine					<580		U	58.3								
8835-011	3-Methylcholanthrene					<580		U	58.3								
8835-011	4,6-Dinitro-2-methylphenol					<580		U	58.3								
8835-011	4-Aminobiphenyl					<580		U	58.3								
8835-011	4-Bromophenyl phenyl ether					<580		U	58.3								
8835-011	4-Chloro-3-methylphenol					<580		U	58.3								
8835-011	4-Chloroaniline					<580		U	58.3								
8835-011	4-Methylphenol					<580		U	58.3								
8835-011	4-Nitroaniline					<580		U	58.3								
8835-011	4-Nitrophenol					<580		U	58.3								
8835-011	5-Nitro-o-toluidine					<580		U	58.3								
8835-011	7,12-Dimethylbenz[a]anthracene					<580		U	58.3								
8835-011	α,α-Dimethylphenethylamine					<580		U	58.3								
8835-011	Acetophenone					<580		U	58.3								
8835-011	Aniline					<580		U	58.3								
8835-011	Aramite					<580		U	58.3								
8835-011	Benzidine					<580		U	58.3								
8835-011	Benzo[a]anthracene					<580		U	58.3								
8835-011	Benzo[a]pyrene					<580		U	58.3								
8835-011	Benzo[b]fluoranthene					<580		U	58.3								
8835-011	Benzo[k]fluoranthene					<580		U	58.3								
8835-011	Bis(2-chloroisopropyl)ether					<580		U	58.3								
8835-011	Butyl benzyl phthalate					<580		U	58.3								
8835-011	Chlorobenzilate					<580		U	58.3								
8835-011	Chrysene					<580		U	58.3								
8835-011	Di-n-butyl phthalate					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	Di-n-octyl phthalate					<580		U	58.3								
8835-011	Diallate					<580		U	58.3								
8835-011	Dibenzo[a,h]anthracene					<580		U	58.3								
8835-011	Dibenz[a,j]acridine					<580		U	58.3								
8835-011	Diethyl phthalate					<580		U	58.3								
8835-011	Dimethoate					<580		U	58.3								
8835-011	Dimethyl phthalate					<580		U	58.3								
8835-011	Dinoseb					<580		U	58.3								
8835-011	Diphenylamine					<580		U	58.3								
8835-011	Disulfoton					<580		U	58.3								
8835-011	Ethyl methanesulfonate					<580		U	58.3								
8835-011	Famphur					<580		U	58.3								
8835-011	Fluoranthene					<580		U	58.3								
8835-011	Fluorene					<580		U	58.3								
8835-011	Hexachlorobenzene					<580		U	58.3								
8835-011	Hexachlorobutadiene					<580		U	58.3								
8835-011	Hexachlorocyclopentadiene					<580		U	58.3								
8835-011	Hexachloroethane					<580		U	58.3								
8835-011	Hexachlorophene					<14000		U	58.3								
8835-011	Hexachloropropene					<580		U	58.3								
8835-011	Indeno(1,2,3-c,d)pyrene					<580		U	58.3								
8835-011	Isodrin					<580		U	58.3								
8835-011	Isosafrole					<580		U	58.3								
8835-011	Kepone					<1200		U	58.3								
8835-011	Methapyrilene					<580		U	58.3								
8835-011	Methyl parathion					<580		U	58.3								
8835-011	Methyl methanesulfonate					<580		U	58.3								
8835-011	N-Nitroso-di-n-butylamine					<580		U	58.3								
8835-011	N-Nitrosodi-n-propylamine					<580		U	58.3								
8835-011	N-Nitrosodiethylamine					<580		U	58.3								
8835-011	N-Nitrosomethylethylamine					<580		U	58.3								
8835-011	N-Nitrosomorpholine					<580		U	58.3								
8835-011	N-Nitrosopiperidine					<580		U	58.3								
8835-011	N-Nitrosopyrrolidine					<580		U	58.3								
8835-011	Naphthalene					<580	810		58.3								
8835-011	Nitrobenzene					<580		U	58.3								
8835-011	O,O,O-Triethylphosphorothioate					<580		U	58.3								
8835-011	o-Toluidine					<580		U	58.3								
8835-011	p-Dimethylaminoazobenzene					<580		U	58.3								
8835-011	p-Phenylenediamine					<580		U	58.3								
8835-011	Parathion					<580		U	58.3								
8835-011	Pentachlorobenzene					<580		U	58.3								

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COMPARABLE FUELS RESULTS - SVOC (mg/Kg)

Sample	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
		Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-011	Pentachloronitrobenzene					<580		U	58.3								
8835-011	Pentachlorophenol					<580		U	58.3								
8835-011	Phenacetin					<580		U	58.3								
8835-011	Phenol					<580		U	58.3								
8835-011	Phorate					<580		U	58.3								
8835-011	Pronamide					<580		U	58.3								
8835-011	Pyridine					<580		U	58.3								
8835-011	Safrole					<580		U	58.3								
8835-011	Sulfotepp					<580		U	58.3								
8835-011	Thionzin					<580		U	58.3								

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-001	1,1,2,2-Tetrachloroethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,1,2-Trichloroethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,1-Dichloroethene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,2,3,-Trichloropropane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,2,4-Trichlorobenzene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,2-Dibromo-3-chloropropane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,2-Dibromoethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,2-Dichlorobenzene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,3-Dichlorobenzene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	1,4-Dichlorobenzene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	2-Butanone	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	2-Chloroethylvinyl ether	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Acetonitrile	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Acrolein	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Acrylonitrile	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Allyl chloride	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Benzene	<3300	6400		333	<32	38		3.23	<17	42		1.72	<16		U
8835-001	Bromoform	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Bromomethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Carbon disulfide	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Carbon tetrachloride	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Chlorobenzene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Chloroform	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Chloromethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Chloroprene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	cis-1,2-Dichloroethene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	cis-1,3-Dichloropropene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	cis-1,4-Dichloro-2-butene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Dibromomethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Dichlorodifluoromethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Ethyl methacrylate	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Iodomethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Isobutanol	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	m,p-Xylene	<6700	44000		333	<65	1200		3.23	<34	560		1.72	<33	60	
8835-001	Methacrylonitrile	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Methyl methacrylate	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Methylene chloride	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	o-Xylene	<3300	17000		333	<32	290		3.23	<17	130		1.72	<16		U
8835-001	p-Dioxane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Pentachloroethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Propionitrile	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Tetrachloroethene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Toluene	<3300	50000		333	<32	280		3.23	<17	220		1.72	<16		U
8835-001	trans-1,2-Dichloroethene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	trans-1,4-Dichloro-2-butene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Trichloroethene	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-001	Trichlorofluoromethane	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-001	Vinyl Chloride	<3300		U	333	<32		U	3.23	<17		U	1.72	<16		U
8835-002	1,1,2,2-Tetrachloroethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,1,2-Trichloroethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,1-Dichloroethene	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,2,3,-Trichloropropane	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,2,4-Trichlorobenzene	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,2-Dibromo-3-chloropropane	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,2-Dibromoethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,2-Dichlorobenzene	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,3-Dichlorobenzene	<3200		U	325	<34		U	3.43					<17		U
8835-002	1,4-Dichlorobenzene	<3200		U	325	<34		U	3.43					<17		U
8835-002	2-Butanone	<3200		U	325	<34		U	3.43					<17		U
8835-002	2-Chloroethylvinyl ether	<3200		U	325	<34		U	3.43					<17		U
8835-002	Acetonitrile	<3200		U	325	<34		U	3.43					<17		U
8835-002	Acrolein	<3200		U	325	<34		U	3.43					<17		U
8835-002	Acrylonitrile	<3200		U	325	<34		U	3.43					<17		U
8835-002	Allyl chloride	<3200		U	325	<34		U	3.43					<17		U
8835-002	Benzene	<3200	6200		325	<34	39		3.43					<17		U
8835-002	Bromoform	<3200		U	325	<34		U	3.43					<17		U
8835-002	Bromomethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Carbon disulfide	<3200		U	325	<34		U	3.43					<17		U
8835-002	Carbon tetrachloride	<3200		U	325	<34		U	3.43					<17		U
8835-002	Chlorobenzene	<3200		U	325	<34		U	3.43					<17		U
8835-002	Chloroform	<3200		U	325	<34		U	3.43					<17		U
8835-002	Chloromethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Chloroprene	<3200		U	325	<34		U	3.43					<17		U
8835-002	cis-1,2-Dichloroethene	<3200		U	325	<34		U	3.43					<17		U
8835-002	cis-1,3-Dichloropropene	<3200		U	325	<34		U	3.43					<17		U
8835-002	cis-1,4-Dichloro-2-butene	<3200		U	325	<34		U	3.43					<17		U
8835-002	Dibromomethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Dichlorodifluoromethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Ethyl methacrylate	<3200		U	325	<34		U	3.43					<17		U
8835-002	Iodomethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Isobutanol	<3200		U	325	<34		U	3.43					<17		U
8835-002	m,p-Xylene	<6500	43000		325	<69	1200		3.43					<33	320	
8835-002	Methacrylonitrile	<3200		U	325	<34		U	3.43					<17		U
8835-002	Methyl methacrylate	<3200		U	325	<34		U	3.43					<17		U
8835-002	Methylene chloride	<3200		U	325	<34		U	3.43					<17		U
8835-002	o-Xylene	<3200	17000		325	<34	300		3.43					<17	67	
8835-002	p-Dioxane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Pentachloroethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Propionitrile	<3200		U	325	<34		U	3.43					<17		U
8835-002	Tetrachloroethene	<3200		U	325	<34		U	3.43					<17		U
8835-002	Toluene	<3200	49000		325	<34	290		3.43					<17	76	
8835-002	trans-1,2-Dichloroethene	<3200		U	325	<34		U	3.43					<17		U
8835-002	trans-1,4-Dichloro-2-butene	<3200		U	325	<34		U	3.43					<17		U
8835-002	Trichloroethene	<3200		U	325	<34		U	3.43					<17		U

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-002	Trichlorofluoromethane	<3200		U	325	<34		U	3.43					<17		U
8835-002	Vinyl Chloride	<3200		U	325	<34		U	3.43					<17		U
8835-003	1,1,2,2-Tetrachloroethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,1,2-Trichloroethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,1-Dichloroethene	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,2,3,-Trichloropropane	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,2,4-Trichlorobenzene	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,2-Dibromo-3-chloropropane	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,2-Dibromoethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,2-Dichlorobenzene	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,3-Dichlorobenzene	<3400		U	339	<33		U	3.29					<16		U
8835-003	1,4-Dichlorobenzene	<3400		U	339	<33		U	3.29					<16		U
8835-003	2-Butanone	<3400		U	339	<33		U	3.29					<16		U
8835-003	2-Chloroethylvinyl ether	<3400		U	339	<33		U	3.29					<16		U
8835-003	Acetonitrile	<3400		U	339	<33		U	3.29					<16		U
8835-003	Acrolein	<3400		U	339	<33		U	3.29					<16		U
8835-003	Acrylonitrile	<3400		U	339	<33		U	3.29					<16		U
8835-003	Allyl chloride	<3400		U	339	<33		U	3.29					<16		U
8835-003	Benzene	<3400	6600		339	<33		U	3.29					<16		U
8835-003	Bromoform	<3400		U	339	<33		U	3.29					<16		U
8835-003	Bromomethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Carbon disulfide	<3400		U	339	<33		U	3.29					<16		U
8835-003	Carbon tetrachloride	<3400		U	339	<33		U	3.29					<16		U
8835-003	Chlorobenzene	<3400		U	339	<33		U	3.29					<16		U
8835-003	Chloroform	<3400		U	339	<33		U	3.29					<16		U
8835-003	Chloromethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Chloroprene	<3400		U	339	<33		U	3.29					<16		U
8835-003	cis-1,2-Dichloroethene	<3400		U	339	<33		U	3.29					<16		U
8835-003	cis-1,3-Dichloropropene	<3400		U	339	<33		U	3.29					<16		U
8835-003	cis-1,4-Dichloro-2-butene	<3400		U	339	<33		U	3.29					<16		U
8835-003	Dibromomethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Dichlorodifluoromethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Ethyl methacrylate	<3400		U	339	<33		U	3.29					<16		U
8835-003	Iodomethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Isobutanol	<3400		U	339	<33		U	3.29					<16		U
8835-003	m,p-Xylene	<6800	36000		339	<66	500		3.29					<32	300	
8835-003	Methacrylonitrile	<3400		U	339	<33		U	3.29					<16		U
8835-003	Methyl methacrylate	<3400		U	339	<33		U	3.29					<16		U
8835-003	Methylene chloride	<3400		U	339	<33		U	3.29					<16		U
8835-003	o-Xylene	<3400	13000		339	<33	270		3.29					<16	63	
8835-003	p-Dioxane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Pentachloroethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Propionitrile	<3400		U	339	<33		U	3.29					<16		U
8835-003	Tetrachloroethene	<3400		U	339	<33		U	3.29					<16		U
8835-003	Toluene	<3400	68000		339	<33	160		3.29					<16	76	
8835-003	trans-1,2-Dichloroethene	<3400		U	339	<33		U	3.29					<16		U
8835-003	trans-1,4-Dichloro-2-butene	<3400		U	339	<33		U	3.29					<16		U

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-003	Trichloroethene	<3400		U	339	<33		U	3.29					<16		U
8835-003	Trichlorofluoromethane	<3400		U	339	<33		U	3.29					<16		U
8835-003	Vinyl Chloride	<3400		U	339	<33		U	3.29					<16		U
8835-004	1,1,2,2-Tetrachloroethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,1,2-Trichloroethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,1-Dichloroethene	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,2,3,-Trichloropropane	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,2,4-Trichlorobenzene	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,2-Dibromo-3-chloropropane	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,2-Dibromoethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,2-Dichlorobenzene	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,3-Dichlorobenzene	<3400		U	337	<33		U	3.33					<16		U
8835-004	1,4-Dichlorobenzene	<3400		U	337	<33		U	3.33					<16		U
8835-004	2-Butanone	<3400		U	337	<33		U	3.33					<16		U
8835-004	2-Chloroethylvinyl ether	<3400		U	337	<33		U	3.33					<16		U
8835-004	Acetonitrile	<3400		U	337	<33		U	3.33					<16		U
8835-004	Acrolein	<3400		U	337	<33		U	3.33					<16		U
8835-004	Acrylonitrile	<3400		U	337	<33		U	3.33					<16		U
8835-004	Allyl chloride	<3400		U	337	<33		U	3.33					<16		U
8835-004	Benzene	<3400	6600		337	<33		U	3.33					<16		U
8835-004	Bromoform	<3400		U	337	<33		U	3.33					<16		U
8835-004	Bromomethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Carbon disulfide	<3400		U	337	<33		U	3.33					<16		U
8835-004	Carbon tetrachloride	<3400		U	337	<33		U	3.33					<16		U
8835-004	Chlorobenzene	<3400		U	337	<33		U	3.33					<16		U
8835-004	Chloroform	<3400		U	337	<33		U	3.33					<16		U
8835-004	Chloromethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Chloroprene	<3400		U	337	<33		U	3.33					<16		U
8835-004	cis-1,2-Dichloroethene	<3400		U	337	<33		U	3.33					<16		U
8835-004	cis-1,3-Dichloropropene	<3400		U	337	<33		U	3.33					<16		U
8835-004	cis-1,4-Dichloro-2-butene	<3400		U	337	<33		U	3.33					<16		U
8835-004	Dibromomethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Dichlorodifluoromethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Ethyl methacrylate	<3400		U	337	<33		U	3.33					<16		U
8835-004	Iodomethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Isobutanol	<3400		U	337	<33		U	3.33					<16		U
8835-004	m,p-Xylene	<6700	36000		337	<66	1000		3.33					<32	34	
8835-004	Methacrylonitrile	<3400		U	337	<33		U	3.33					<16		U
8835-004	Methyl methacrylate	<3400		U	337	<33		U	3.33					<16		U
8835-004	Methylene chloride	<3400		U	337	<33		U	3.33					<16		U
8835-004	o-Xylene	<3400	13000		337	<33	290		3.33					<16		U
8835-004	p-Dioxane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Pentachloroethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Propionitrile	<3400		U	337	<33		U	3.33					<16		U
8835-004	Tetrachloroethene	<3400		U	337	<33		U	3.33					<16		U
8835-004	Toluene	<3400	69000		337	<33	170		3.33					<16		U
8835-004	trans-1,2-Dichloroethene	<3400		U	337	<33		U	3.33					<16		U

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-004	trans-1,4-Dichloro-2-butene	<3400		U	337	<33		U	3.33					<16		U
8835-004	Trichloroethene	<3400		U	337	<33		U	3.33					<16		U
8835-004	Trichlorofluoromethane	<3400		U	337	<33		U	3.33					<16		U
8835-004	Vinyl Chloride	<3400		U	337	<33		U	3.33					<16		U
8835-005	1,1,2,2-Tetrachloroethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,1,2-Trichloroethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,1-Dichloroethene	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,2,3,-Trichloropropane	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,2,4-Trichlorobenzene	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,2-Dibromo-3-chloropropane	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,2-Dibromoethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,2-Dichlorobenzene	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,3-Dichlorobenzene	<3200		U	326	<32		U	3.25					<16		U
8835-005	1,4-Dichlorobenzene	<3200		U	326	<32		U	3.25					<16		U
8835-005	2-Butanone	<3200		U	326	<32		U	3.25					<16		U
8835-005	2-Chloroethylvinyl ether	<3200		U	326	<32		U	3.25					<16		U
8835-005	Acetonitrile	<3200		U	326	<32		U	3.25					<16		U
8835-005	Acrolein	<3200		U	326	<32		U	3.25					<16		U
8835-005	Acrylonitrile	<3200		U	326	<32		U	3.25					<16		U
8835-005	Allyl chloride	<3200		U	326	<32		U	3.25					<16		U
8835-005	Benzene	<3200	5400		326	<32		U	3.25					<16		U
8835-005	Bromoform	<3200		U	326	<32		U	3.25					<16		U
8835-005	Bromomethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Carbon disulfide	<3200		U	326	<32		U	3.25					<16		U
8835-005	Carbon tetrachloride	<3200		U	326	<32		U	3.25					<16		U
8835-005	Chlorobenzene	<3200		U	326	<32		U	3.25					<16		U
8835-005	Chloroform	<3200		U	326	<32		U	3.25					<16		U
8835-005	Chloromethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Chloroprene	<3200		U	326	<32		U	3.25					<16		U
8835-005	cis-1,2-Dichloroethene	<3200		U	326	<32		U	3.25					<16		U
8835-005	cis-1,3-Dichloropropene	<3200		U	326	<32		U	3.25					<16		U
8835-005	cis-1,4-Dichloro-2-butene	<3200		U	326	<32		U	3.25					<16		U
8835-005	Dibromomethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Dichlorodifluoromethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Ethyl methacrylate	<3200		U	326	<32		U	3.25					<16		U
8835-005	Iodomethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Isobutanol	<3200		U	326	<32		U	3.25					<16		U
8835-005	m,p-Xylene	<6500	39000		326	<65	360		3.25					<31		U
8835-005	Methacrylonitrile	<3200		U	326	<32		U	3.25					<16		U
8835-005	Methyl methacrylate	<3200		U	326	<32		U	3.25					<16		U
8835-005	Methylene chloride	<3200		U	326	<32		U	3.25					<16		U
8835-005	o-Xylene	<3200	14000		326	<32	170		3.25					<16		U
8835-005	p-Dioxane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Pentachloroethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Propionitrile	<3200		U	326	<32		U	3.25					<16		U
8835-005	Tetrachloroethene	<3200		U	326	<32		U	3.25					<16		U
8835-005	Toluene	<3200	42000		326	<32	130		3.25					<16		U

US EPA ARCHIVE DOCUMENT

COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-005	trans-1,2-Dichloroethene	<3200		U	326	<32		U	3.25					<16		U
8835-005	trans-1,4-Dichloro-2-butene	<3200		U	326	<32		U	3.25					<16		U
8835-005	Trichloroethene	<3200		U	326	<32		U	3.25					<16		U
8835-005	Trichlorofluoromethane	<3200		U	326	<32		U	3.25					<16		U
8835-005	Vinyl Chloride	<3200		U	326	<32		U	3.25					<16		U
8835-006	1,1,2,2-Tetrachloroethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,1,2-Trichloroethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,1-Dichloroethene	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,2,3,-Trichloropropane	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,2,4-Trichlorobenzene	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,2-Dibromo-3-chloropropane	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,2-Dibromoethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,2-Dichlorobenzene	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,3-Dichlorobenzene	<1600		U	161	<34		U	3.44					<21		U
8835-006	1,4-Dichlorobenzene	<1600		U	161	<34		U	3.44					<21		U
8835-006	2-Butanone	<1600		U	161	<34		U	3.44					<21		U
8835-006	2-Chloroethylvinyl ether	<1600		U	161	<34		U	3.44					<21		U
8835-006	Acetonitrile	<1600		U	161	<34		U	3.44					<21		U
8835-006	Acrolein	<1600		U	161	<34		U	3.44					<21		U
8835-006	Acrylonitrile	<1600		U	161	<34		U	3.44					<21		U
8835-006	Allyl chloride	<1600		U	161	<34		U	3.44					<21		U
8835-006	Benzene	<1600	6200		161	<34		U	3.44					<21		U
8835-006	Bromoform	<1600		U	161	<34		U	3.44					<21		U
8835-006	Bromomethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Carbon disulfide	<1600		U	161	<34		U	3.44					<21		U
8835-006	Carbon tetrachloride	<1600		U	161	<34		U	3.44					<21		U
8835-006	Chlorobenzene	<1600		U	161	<34		U	3.44					<21		U
8835-006	Chloroform	<1600		U	161	<34		U	3.44					<21		U
8835-006	Chloromethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Chloroprene	<1600		U	161	<34		U	3.44					<21		U
8835-006	cis-1,2-Dichloroethene	<1600		U	161	<34		U	3.44					<21		U
8835-006	cis-1,3-Dichloropropene	<1600		U	161	<34		U	3.44					<21		U
8835-006	cis-1,4-Dichloro-2-butene	<1600		U	161	<34		U	3.44					<21		U
8835-006	Dibromomethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Dichlorodifluoromethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Ethyl methacrylate	<1600		U	161	<34		U	3.44					<21		U
8835-006	Iodomethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Isobutanol	<1600		U	161	<34		U	3.44					<21		U
8835-006	m,p-Xylene	<3200	22000		161	<69	130		3.44					<42	150	
8835-006	Methacrylonitrile	<1600		U	161	<34		U	3.44					<21		U
8835-006	Methyl methacrylate	<1600		U	161	<34		U	3.44					<21		U
8835-006	Methylene chloride	<1600		U	161	<34		U	3.44					<21		U
8835-006	o-Xylene	<1600	8300		161	<34	61		3.44					<21	70	
8835-006	p-Dioxane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Pentachloroethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Propionitrile	<1600		U	161	<34		U	3.44					<21		U
8835-006	Tetrachloroethene	<1600		U	161	<34		U	3.44					<21		U

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-006	Toluene	<1600	29000		161	<34	96		3.44					<21	60	
8835-006	trans-1,2-Dichloroethene	<1600		U	161	<34		U	3.44					<21		U
8835-006	trans-1,4-Dichloro-2-butene	<1600		U	161	<34		U	3.44					<21		U
8835-006	Trichloroethene	<1600		U	161	<34		U	3.44					<21		U
8835-006	Trichlorofluoromethane	<1600		U	161	<34		U	3.44					<21		U
8835-006	Vinyl Chloride	<1600		U	161	<34		U	3.44					<21		U
8835-007	1,1,2,2-Tetrachloroethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,1,2-Trichloroethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,1-Dichloroethene	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,2,3,-Trichloropropane	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,2,4-Trichlorobenzene	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,2-Dibromo-3-chloropropane	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,2-Dibromoethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,2-Dichlorobenzene	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,3-Dichlorobenzene	<1700		U	169	<33		U	3.35					<20		U
8835-007	1,4-Dichlorobenzene	<1700		U	169	<33		U	3.35					<20		U
8835-007	2-Butanone	<1700		U	169	<33		U	3.35					<20		U
8835-007	2-Chloroethylvinyl ether	<1700		U	169	<33		U	3.35					<20		U
8835-007	Acetonitrile	<1700		U	169	<33		U	3.35					<20		U
8835-007	Acrolein	<1700		U	169	<33		U	3.35					<20		U
8835-007	Acrylonitrile	<1700		U	169	<33		U	3.35					<20		U
8835-007	Allyl chloride	<1700		U	169	<33		U	3.35					<20		U
8835-007	Benzene	<1700	4500		169	<33		U	3.35					<20		U
8835-007	Bromoform	<1700		U	169	<33		U	3.35					<20		U
8835-007	Bromomethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Carbon disulfide	<1700		U	169	<33		U	3.35					<20		U
8835-007	Carbon tetrachloride	<1700		U	169	<33		U	3.35					<20		U
8835-007	Chlorobenzene	<1700		U	169	<33		U	3.35					<20		U
8835-007	Chloroform	<1700		U	169	<33		U	3.35					<20		U
8835-007	Chloromethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Chloroprene	<1700		U	169	<33		U	3.35					<20		U
8835-007	cis-1,2-Dichloroethene	<1700		U	169	<33		U	3.35					<20		U
8835-007	cis-1,3-Dichloropropene	<1700		U	169	<33		U	3.35					<20		U
8835-007	cis-1,4-Dichloro-2-butene	<1700		U	169	<33		U	3.35					<20		U
8835-007	Dibromomethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Dichlorodifluoromethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Ethyl methacrylate	<1700		U	169	<33		U	3.35					<20		U
8835-007	Iodomethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Isobutanol	<1700		U	169	<33		U	3.35					<20		U
8835-007	m,p-Xylene	<3400	56000		169	<67	670		3.35					<39	73	
8835-007	Methacrylonitrile	<1700		U	169	<33		U	3.35					<20		U
8835-007	Methyl methacrylate	<1700		U	169	<33		U	3.35					<20		U
8835-007	Methylene chloride	<1700		U	169	<33		U	3.35					<20		U
8835-007	o-Xylene	<1700	12000		169	<33	320		3.35					<20	33	
8835-007	p-Dioxane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Pentachloroethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Propionitrile	<1700		U	169	<33		U	3.35					<20		U

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-007	Tetrachloroethene	<1700		U	169	<33		U	3.35					<20		U
8835-007	Toluene	<1700	32000		169	<33	240		3.35					<20	29	
8835-007	trans-1,2-Dichloroethene	<1700		U	169	<33		U	3.35					<20		U
8835-007	trans-1,4-Dichloro-2-butene	<1700		U	169	<33		U	3.35					<20		U
8835-007	Trichloroethene	<1700		U	169	<33		U	3.35					<20		U
8835-007	Trichlorofluoromethane	<1700		U	169	<33		U	3.35					<20		U
8835-007	Vinyl chloride	<1700		U	169	<33		U	3.35					<20		U
8835-008	1,1,2,2-Tetrachloroethane	<1700		U	170	<33		U	3.35							
8835-008	1,1,2-Trichloroethane	<1700		U	170	<33		U	3.35							
8835-008	1,1-Dichloroethene	<1700		U	170	<33		U	3.35							
8835-008	1,2,3,-Trichloropropane	<1700		U	170	<33		U	3.35							
8835-008	1,2,4-Trichlorobenzene	<1700		U	170	<33		U	3.35							
8835-008	1,2-Dibromo-3-chloropropane	<1700		U	170	<33		U	3.35							
8835-008	1,2-Dibromoethane	<1700		U	170	<33		U	3.35							
8835-008	1,2-Dichlorobenzene	<1700		U	170	<33		U	3.35							
8835-008	1,3-Dichlorobenzene	<1700		U	170	<33		U	3.35							
8835-008	1,4-Dichlorobenzene	<1700		U	170	<33		U	3.35							
8835-008	2-Butanone	<1700		U	170	<33		U	3.35							
8835-008	2-Chloroethylvinyl ether	<1700		U	170	<33		U	3.35							
8835-008	Acetonitrile	<1700		U	170	<33		U	3.35							
8835-008	Acrolein	<1700		U	170	<33		U	3.35							
8835-008	Acrylonitrile	<1700		U	170	<33		U	3.35							
8835-008	Allyl chloride	<1700		U	170	<33		U	3.35							
8835-008	Benzene	<1700	8000		170	<33	42		3.35							
8835-008	Bromoform	<1700		U	170	<33		U	3.35							
8835-008	Bromomethane	<1700		U	170	<33		U	3.35							
8835-008	Carbon disulfide	<1700		U	170	<33		U	3.35							
8835-008	Carbon tetrachloride	<1700		U	170	<33		U	3.35							
8835-008	Chlorobenzene	<1700		U	170	<33		U	3.35							
8835-008	Chloroform	<1700		U	170	<33		U	3.35							
8835-008	Chloromethane	<1700		U	170	<33		U	3.35							
8835-008	Chloroprene	<1700		U	170	<33		U	3.35							
8835-008	cis-1,2-Dichloroethene	<1700		U	170	<33		U	3.35							
8835-008	cis-1,3-Dichloropropene	<1700		U	170	<33		U	3.35							
8835-008	cis-1,4-Dichloro-2-butene	<1700		U	170	<33		U	3.35							
8835-008	Dibromomethane	<1700		U	170	<33		U	3.35							
8835-008	Dichlorodifluoromethane	<1700		U	170	<33		U	3.35							
8835-008	Ethyl methacrylate	<1700		U	170	<33		U	3.35							
8835-008	Iodomethane	<1700		U	170	<33		U	3.35							
8835-008	Isobutanol	<1700		U	170	<33		U	3.35							
8835-008	m,p-Xylene	<3400	28000		170	<67	630		3.35							
8835-008	Methacrylonitrile	<1700		U	170	<33		U	3.35							
8835-008	Methyl methacrylate	<1700		U	170	<33		U	3.35							
8835-008	Methylene chloride	<1700		U	170	<33		U	3.35							
8835-008	o-Xylene	<1700	10000		170	<33	280		3.35							
8835-008	p-Dioxane	<1700		U	170	<33		U	3.35							
8835-008	Pentachloroethane	<1700		U	170	<33		U	3.35							

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-008	Propionitrile	<1700		U	170	<33		U	3.35							
8835-008	Tetrachloroethene	<1700		U	170	<33		U	3.35							
8835-008	Toluene	<1700	34000		170	<33	300		3.35							
8835-008	trans-1,2-Dichloroethene	<1700		U	170	<33		U	3.35							
8835-008	trans-1,4-Dichloro-2-butene	<1700		U	170	<33		U	3.35							
8835-008	Trichloroethene	<1700		U	170	<33		U	3.35							
8835-008	Trichlorofluoromethane	<1700		U	170	<33		U	3.35							
8835-008	Vinyl chloride	<1700		U	170	<33		U	3.35							
8835-009	1,1,2,2-Tetrachloroethane					<34		U	3.37							
8835-009	1,1,2-Trichloroethane					<34		U	3.37							
8835-009	1,1-Dichloroethene					<34		U	3.37							
8835-009	1,2,3,-Trichloropropane					<34		U	3.37							
8835-009	1,2,4-Trichlorobenzene					<34		U	3.37							
8835-009	1,2-Dibromo-3-chloropropane					<34		U	3.37							
8835-009	1,2-Dibromoethane					<34		U	3.37							
8835-009	1,2-Dichlorobenzene					<34		U	3.37							
8835-009	1,3-Dichlorobenzene					<34		U	3.37							
8835-009	1,4-Dichlorobenzene					<34		U	3.37							
8835-009	2-Butanone					<34		U	3.37							
8835-009	2-Chloroethylvinyl ether					<34		U	3.37							
8835-009	Acetonitrile					<34		U	3.37							
8835-009	Acrolein					<34		U	3.37							
8835-009	Acrylonitrile					<34		U	3.37							
8835-009	Allyl chloride					<34		U	3.37							
8835-009	Benzene					<34		U	3.37							
8835-009	Bromoform					<34		U	3.37							
8835-009	Bromomethane					<34		U	3.37							
8835-009	Carbon disulfide					<34		U	3.37							
8835-009	Carbon tetrachloride					<34		U	3.37							
8835-009	Chlorobenzene					<34		U	3.37							
8835-009	Chloroform					<34		U	3.37							
8835-009	Chloromethane					<34		U	3.37							
8835-009	Chloroprene					<34		U	3.37							
8835-009	cis-1,2-Dichloroethene					<34		U	3.37							
8835-009	cis-1,3-Dichloropropene					<34		U	3.37							
8835-009	cis-1,4-Dichloro-2-butene					<34		U	3.37							
8835-009	Dibromomethane					<34		U	3.37							
8835-009	Dichlorodifluoromethane					<34		U	3.37							
8835-009	Ethyl methacrylate					<34		U	3.37							
8835-009	Iodomethane					<34		U	3.37							
8835-009	Isobutanol					<34		U	3.37							
8835-009	m,p-Xylene					<67	420		3.37							
8835-009	Methacrylonitrile					<34		U	3.37							
8835-009	Methyl methacrylate					<34		U	3.37							
8835-009	Methylene chloride					<34		U	3.37							
8835-009	o-Xylene					<34	180		3.37							
8835-009	p-Dioxane					<34		U	3.37							

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-009	Pentachloroethane					<34		U	3.37							
8835-009	Propionitrile					<34		U	3.37							
8835-009	Tetrachloroethene					<34		U	3.37							
8835-009	Toluene					<34	220		3.37							
8835-009	trans-1,2-Dichloroethene					<34		U	3.37							
8835-009	trans-1,4-Dichloro-2-butene					<34		U	3.37							
8835-009	Trichloroethene					<34		U	3.37							
8835-009	Trichlorofluoromethane					<34		U	3.37							
8835-009	Vinyl Chloride					<34		U	3.37							
8835-010	1,1,2,2-Tetrachloroethane					<32		U	3.23							
8835-010	1,1,2-Trichloroethane					<32		U	3.23							
8835-010	1,1-Dichloroethene					<32		U	3.23							
8835-010	1,2,3,-Trichloropropane					<32		U	3.23							
8835-010	1,2,4-Trichlorobenzene					<32		U	3.23							
8835-010	1,2-Dibromo-3-chloropropane					<32		U	3.23							
8835-010	1,2-Dibromoethane					<32		U	3.23							
8835-010	1,2-Dichlorobenzene					<32		U	3.23							
8835-010	1,3-Dichlorobenzene					<32		U	3.23							
8835-010	1,4-Dichlorobenzene					<32		U	3.23							
8835-010	2-Butanone					<32		U	3.23							
8835-010	2-Chloroethylvinyl ether					<32		U	3.23							
8835-010	Acetonitrile					<32		U	3.23							
8835-010	Acrolein					<32		U	3.23							
8835-010	Acrylonitrile					<32		U	3.23							
8835-010	Allyl chloride					<32		U	3.23							
8835-010	Benzene					<32		U	3.23							
8835-010	Bromoform					<32		U	3.23							
8835-010	Bromomethane					<32		U	3.23							
8835-010	Carbon disulfide					<32		U	3.23							
8835-010	Carbon tetrachloride					<32		U	3.23							
8835-010	Chlorobenzene					<32		U	3.23							
8835-010	Chloroform					<32		U	3.23							
8835-010	Chloromethane					<32		U	3.23							
8835-010	Chloroprene					<32		U	3.23							
8835-010	cis-1,2-Dichloroethene					<32		U	3.23							
8835-010	cis-1,3-Dichloropropene					<32		U	3.23							
8835-010	cis-1,4-Dichloro-2-butene					<32		U	3.23							
8835-010	Dibromomethane					<32		U	3.23							
8835-010	Dichlorodifluoromethane					<32		U	3.23							
8835-010	Ethyl methacrylate					<32		U	3.23							
8835-010	Iodomethane					<32		U	3.23							
8835-010	Isobutanol					<32		U	3.23							
8835-010	m,p-Xylene					<65	410		3.23							
8835-010	Methacrylonitrile					<32		U	3.23							
8835-010	Methyl methacrylate					<32		U	3.23							
8835-010	Methylene chloride					<32		U	3.23							
8835-010	o-Xylene					<32	180		3.23							

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-010	p-Dioxane					<32		U	3.23							
8835-010	Pentachloroethane					<32		U	3.23							
8835-010	Propionitrile					<32		U	3.23							
8835-010	Tetrachloroethene					<32		U	3.23							
8835-010	Toluene					<32	170		3.23							
8835-010	trans-1,2-Dichloroethene					<32		U	3.23							
8835-010	trans-1,4-Dichloro-2-butene					<32		U	3.23							
8835-010	Trichloroethene					<32		U	3.23							
8835-010	Trichlorofluoromethane					<32		U	3.23							
8835-010	Vinyl chloride					<32		U	3.23							
8835-011	1,1,2,2-Tetrachloroethane					<39		U	3.92							
8835-011	1,1,2-Trichloroethane					<39		U	3.92							
8835-011	1,1-Dichloroethene					<39		U	3.92							
8835-011	1,2,3,-Trichloropropane					<39		U	3.92							
8835-011	1,2,4-Trichlorobenzene					<39		U	3.92							
8835-011	1,2-Dibromo-3-chloropropane					<39		U	3.92							
8835-011	1,2-Dibromoethane					<39		U	3.92							
8835-011	1,2-Dichlorobenzene					<39		U	3.92							
8835-011	1,3-Dichlorobenzene					<39		U	3.92							
8835-011	1,4-Dichlorobenzene					<39		U	3.92							
8835-011	2-Butanone					<39		U	3.92							
8835-011	2-Chloroethylvinyl ether					<39		U	3.92							
8835-011	Acetonitrile					<39		U	3.92							
8835-011	Acrolein					<39		U	3.92							
8835-011	Acrylonitrile					<39		U	3.92							
8835-011	Allyl chloride					<39		U	3.92							
8835-011	Benzene					<39	75		3.92							
8835-011	Bromoform					<39		U	3.92							
8835-011	Bromomethane					<39		U	3.92							
8835-011	Carbon disulfide					<39		U	3.92							
8835-011	Carbon tetrachloride					<39		U	3.92							
8835-011	Chlorobenzene					<39		U	3.92							
8835-011	Chloroform					<39		U	3.92							
8835-011	Chloromethane					<39		U	3.92							
8835-011	Chloroprene					<39		U	3.92							
8835-011	cis-1,2-Dichloroethene					<39		U	3.92							
8835-011	cis-1,3-Dichloropropene					<39		U	3.92							
8835-011	cis-1,4-Dichloro-2-butene					<39		U	3.92							
8835-011	Dibromomethane					<39		U	3.92							
8835-011	Dichlorodifluoromethane					<39		U	3.92							
8835-011	Ethyl methacrylate					<39		U	3.92							
8835-011	Iodomethane					<39		U	3.92							
8835-011	Isobutanol					<39		U	3.92							
8835-011	m,p-Xylene					<78	900		3.92							
8835-011	Methacrylonitrile					<39		U	3.92							
8835-011	Methyl methacrylate					<39		U	3.92							
8835-011	Methylene chloride					<39		U	3.92							

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COMPARABLE FUELS RESULTS - VOC (mg/Kg)

		Fuel = Gasoline				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*		
Sample	**Analyte**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**	**D.F.**	**Q.L.**	**Quant-itation**	**Code**
8835-011	o-Xylene					<39	460		3.92							
8835-011	p-Dioxane					<39		U	3.92							
8835-011	Pentachloroethane					<39		U	3.92							
8835-011	Propionitrile					<39		U	3.92							
8835-011	Tetrachloroethene					<39		U	3.92							
8835-011	Toluene					<39	380		3.92							
8835-011	trans-1,2-Dichloroethene					<39		U	3.92							
8835-011	trans-1,4-Dichloro-2-butene					<39		U	3.92							
8835-011	Trichloroethene					<39		U	3.92							
8835-011	Trichlorofluoromethane					<39		U	3.92							
8835-011	Vinyl Chloride					<39		U	3.92							

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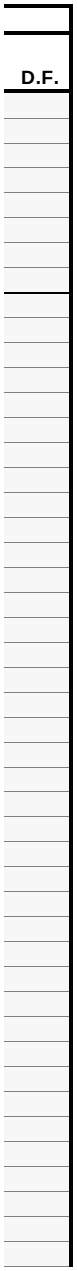

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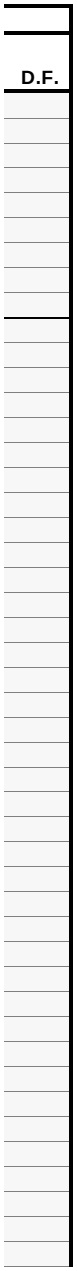

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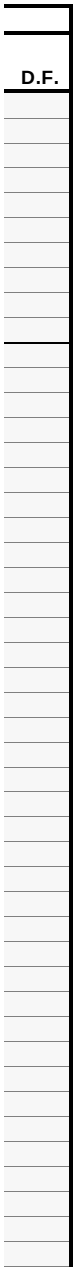

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COMPARATIVE FUELS RESULTS - METALS (mg/L)

Sample	Method	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
			Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-001	7040	Antimony	<6.67	BQL	U	13.35	<5.84	BQL	U	11.68	<11.47	BQL	U	22.94	<10.19	BQL	U	20.39
8835-001	7060	Arsenic	<0.13	BQL	U	13.35	<0.12	BQL	U	11.68	<0.23	BQL	U	22.94	<0.20	BQL	U	20.39
8835-001	7080	Barium	<13.35	BQL	U	13.35	<11.68	BQL	U	11.68	<22.94	BQL	U	22.94	<20.39	BQL	U	20.39
8835-001	7090	Beryllium	<0.67	BQL	U	13.35	<0.58	BQL	U	11.68	<1.15	BQL	U	22.94	<1.02	BQL	U	20.39
8835-001	7130	Cadmium	<0.67	BQL	U	13.35	<0.58	BQL	U	11.68	<1.15	BQL	U	22.94	<1.02	BQL	U	20.39
8835-001	7190	Chromium	<1.34	BQL	U	13.35	<1.17	BQL	U	11.68	<2.29	BQL	U	22.94	<2.04	BQL	U	20.39
8835-001	7420	Lead	<6.67	BQL	U	13.35	<5.84	13.1		11.68	<11.47	19.2		22.94	<10.19	31.4		20.39
8835-001	7460	Manganese	<0.67	BQL	U	13.35	<0.58	BQL	U	11.68	<1.15	BQL	U	22.94	<1.02	BQL	U	20.39
8835-001	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00	<0.18	BQL	U	1.00	<0.17	BQL	U	1.00
8835-001	7520	Nickel	<2.67	BQL	U	13.35	<2.34	BQL	U	11.68	<4.59	31.9		22.94	<4.08	106		20.39
8835-001	7740	Selenium	<0.13	BQL	U	13.35	<0.12	BQL	U	11.68	<0.23	0.25		22.94	<0.20	0.28		20.39
8835-001	7760	Silver	<1.33	BQL	U	13.35	<1.17	BQL	U	11.68	<2.29	BQL	U	22.94	<2.04	BQL	U	20.39
8835-001	7840	Thallium	<13.35	BQL	U	13.35	<11.68	BQL	U	11.68	<22.94	BQL	U	22.94	<20.39	BQL	U	20.39
8835-002	7040	Antimony	<6.66	BQL	U	13.32	<5.83	BQL	U	11.67					<10.14	BQL	U	20.28
8835-002	7060	Arsenic	<0.13	BQL	U	13.32	<0.12	BQL	U	11.67					<0.20	BQL	U	20.28
8835-002	7080	Barium	<13.32	BQL	U	13.32	<11.67	BQL	U	11.67					<20.28	BQL	U	20.28
8835-002	7090	Beryllium	<0.66	BQL	U	13.32	<0.58	BQL	U	11.67					<1.01	BQL	U	20.28
8835-002	7130	Cadmium	<0.66	BQL	U	13.32	<0.58	BQL	U	11.67					<1.01	BQL	U	20.28
8835-002	7190	Chromium	<1.33	BQL	U	13.32	<1.17	BQL	U	11.67					<2.03	BQL	U	20.28
8835-002	7420	Lead	<6.66	BQL	U	13.32	<5.83	10.4		11.67					<10.14	40.4		20.28
8835-002	7460	Manganese	<0.66	BQL	U	13.32	<0.59	BQL	U	11.67					<1.01	BQL	U	20.28
8835-002	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00					<0.17	BQL	U	1.00
8835-002	7520	Nickel	<2.66	BQL	U	13.32	<2.33	BQL	U	11.67					<4.06	6.8		20.28
8835-002	7740	Selenium	<0.13	BQL	U	13.32	<0.12	0.18		11.67					<0.20	BQL	U	20.28
8835-002	7760	Silver	<1.33	BQL	U	13.32	<1.17	BQL	U	11.67					<2.03	BQL	U	20.28
8835-002	7840	Thallium	<13.32	BQL	U	13.32	<11.67	BQL	U	11.67					<20.28	BQL	U	20.28
8835-003	7040	Antimony	<6.67	BQL	U	13.35	<5.94	BQL	U	11.88					<10.10	BQL	U	20.20
8835-003	7060	Arsenic	<0.13	BQL	U	13.35	<0.12	BQL	U	11.88					<0.20	BQL	U	20.20
8835-003	7080	Barium	<13.35	BQL	U	13.35	<11.88	BQL	U	11.88					<20.20	BQL	U	20.20
8835-003	7090	Beryllium	<0.67	BQL	U	13.35	<0.59	BQL	U	11.88					<1.01	BQL	U	20.20
8835-003	7130	Cadmium	<0.67	BQL	U	13.35	<0.59	BQL	U	11.88					<1.01	BQL	U	20.20
8835-003	7190	Chromium	<1.33	BQL	U	13.35	<1.19	BQL	U	11.88					<2.02	BQL	U	20.20
8835-003	7420	Lead	<6.67	BQL	U	13.35	<5.94	9.26		11.88					<10.10	40.5		20.20
8835-003	7460	Manganese	<0.67	BQL	U	13.35	<0.59	BQL	U	11.88					<1.01	BQL	U	20.20
8835-003	7470	Mercury	<0.10	BQL	U	1.00	<0.11	BQL	U	1.00					<0.17	BQL	U	1.00
8835-003	7520	Nickel	<2.67	BQL	U	13.35	<2.38	BQL	U	11.88					<4.04	6.81		20.20
8835-003	7740	Selenium	<0.134	BQL	U	13.35	<0.12	BQL	U	11.88					<0.20	BQL	U	20.20
8835-003	7760	Silver	<1.34	BQL	U	13.35	<1.19	BQL	U	11.88					<2.02	BQL	U	20.20
8835-003	7840	Thallium	<13.35	BQL	U	13.35	<11.88	BQL	U	11.88					<20.20	BQL	U	20.20
8835-004	7040	Antimony	<6.67	BQL	U	13.33	<5.96	BQL	U	11.92					<10.11	BQL	U	20.22
8835-004	7060	Arsenic	<0.13	BQL	U	13.33	<0.12	BQL	U	11.92					<0.20	BQL	U	20.22
8835-004	7080	Barium	<13.33	BQL	U	13.33	<11.92	BQL	U	11.92					<20.22	BQL	U	20.22

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COMPARATIVE FUELS RESULTS - METALS (mg/L)

Sample	Method	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
			Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-004	7090	Beryllium	<0.67	BQL	U	13.33	<0.60	BQL	U	11.92					<1.01	BQL	U	20.22
8835-004	7130	Cadmium	<0.67	BQL	U	13.33	<0.60	BQL	U	11.92					<1.01	BQL	U	20.22
8835-004	7190	Chromium	<1.33	BQL	U	13.33	<1.19	BQL	U	11.92					<2.02	BQL	U	20.22
8835-004	7420	Lead	<6.67	BQL	U	13.33	<5.96	6.73		11.92					<10.11	54.2		20.22
8835-004	7460	Manganese	<0.66	BQL	U	13.33	<0.60	BQL	U	11.92					<1.01	BQL	U	20.22
8835-004	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00					<0.14	BQL	U	1.00
8835-004	7520	Nickel	<2.67	BQL	U	13.33	<2.38	BQL	U	11.92					<4.04	5.86		20.22
8835-004	7740	Selenium	<0.13	BQL	U	13.33	<0.12	BQL	U	11.92					<0.20	BQL	U	20.22
8835-004	7760	Silver	<1.33	BQL	U	13.33	<1.19	BQL	U	11.92					<2.02	BQL	U	20.22
8835-004	7840	Thallium	<13.33	BQL	U	13.33	<11.92	BQL	U	11.92					<20.22	BQL	U	20.22
8835-005	7040	Antimony	<6.71	BQL	U	13.42	<5.94	BQL	U	11.89					<10.06	15.7		20.12
8835-005	7060	Arsenic	<0.13	BQL	U	13.42	<0.12	BQL	U	11.89					<0.20	BQL	U	20.12
8835-005	7080	Barium	<13.42	BQL	U	13.42	<11.89	BQL	U	11.89					<20.12	BQL	U	20.12
8835-005	7090	Beryllium	<0.67	BQL	U	13.42	<0.59	BQL	U	11.89					<1.01	BQL	U	20.12
8835-005	7130	Cadmium	<0.67	BQL	U	13.42	<0.59	BQL	U	11.89					<1.01	BQL	U	20.12
8835-005	7190	Chromium	<1.34	BQL	U	13.42	<1.19	BQL	U	11.89					<2.01	BQL	U	20.12
8835-005	7420	Lead	<6.71	BQL	U	13.42	<5.94	10.1		11.89					<10.06	56.8		20.12
8835-005	7460	Manganese	<0.67	BQL	U	13.42	<0.59	BQL	U	11.89					<1.01	BQL	U	20.12
8835-005	7470	Mercury	<0.10	BQL	U	1.00	<0.09	BQL	U	1.00					<0.20	BQL	U	1.00
8835-005	7520	Nickel	<2.68	BQL	U	13.42	<2.38	BQL	U	11.89					<4.02	6.1		20.12
8835-005	7740	Selenium	<0.13	BQL	U	13.42	<1.19	BQL	U	11.89					<2.01	BQL	U	20.12
8835-005	7760	Silver	<1.34	BQL	U	13.42	<0.12	BQL	U	11.89					<0.20	BQL	U	20.12
8835-005	7840	Thallium	<13.42	BQL	U	13.42	<11.89	BQL	U	11.89					<20.12	BQL	U	20.12
8835-006	7040	Antimony	<7.05	BQL	U	14.10	<5.85	BQL	U	11.71					<10.20	BQL	U	20.41
8835-006	7060	Arsenic	<0.14	BQL	U	14.10	<0.12	BQL	U	11.71					<0.20	BQL	U	20.41
8835-006	7080	Barium	<14.10	BQL	U	14.10	<11.71	BQL	U	11.71					<20.41	BQL	U	20.41
8835-006	7090	Beryllium	<0.70	BQL	U	14.10	<0.58	BQL	U	11.71					<1.02	BQL	U	20.41
8835-006	7130	Cadmium	<0.70	BQL	U	14.10	<0.58	BQL	U	11.71					<1.02	BQL	U	20.41
8835-006	7190	Chromium	<1.41	BQL	U	14.10	<1.17	BQL	U	11.71					<2.04	BQL	U	20.41
8835-006	7420	Lead	<7.05	BQL	U	14.10	<5.85	8.47		11.71					<10.20	35.4		20.41
8835-006	7460	Manganese	<0.70	BQL	U	14.10	<0.58	BQL	U	11.71					<1.02	BQL	U	20.41
8835-006	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00					<0.25	BQL	U	1.00
8835-006	7520	Nickel	<2.82	BQL	U	14.10	<2.34	BQL	U	11.71					<4.08	50.2		20.41
8835-006	7740	Selenium	<0.14	BQL	U	14.10	<0.12	0.15		11.71					<0.20	BQL	U	20.41
8835-006	7760	Silver	<1.41	BQL	U	14.10	<1.17	BQL	U	11.71					<2.04	BQL	U	20.41
8835-006	7840	Thallium	<14.10	BQL	U	14.10	<11.71	BQL	U	11.71					<20.41	BQL	U	20.41
8835-007	7040	Antimony	<6.84	BQL	U	13.68	<0.05	BQL	U	0.10					<10.11	BQL	U	20.22
8835-007	7060	Arsenic	<0.14	BQL	U	13.68	<0.12	BQL	U	11.76					<0.20	BQL	U	20.22
8835-007	7080	Barium	<13.68	BQL	U	13.68	<0.10	BQL	U	0.10					<20.22	BQL	U	20.22
8835-007	7090	Beryllium	<0.68	BQL	U	13.68	<0.005	BQL	U	0.10					<1.01	BQL	U	20.22
8835-007	7130	Cadmium	<0.68	BQL	U	13.68	<0.005	BQL	U	0.10					<1.01	BQL	U	20.22
8835-007	7190	Chromium	<1.37	BQL	U	13.68	<0.010	BQL	U	0.10					<2.02	BQL	U	20.22

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COMPARATIVE FUELS RESULTS - METALS (mg/L)

Sample	Method	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
			Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-007	7420	Lead	<6.84	BQL	U	13.68	<0.051	0.1		0.10					<10.11	36.1		20.22
8835-007	7460	Manganese	<0.68	BQL	U	13.68	<0.005	BQL	U	0.10					<1.011	BQL	U	20.22
8835-007	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00					<0.13	BQL	U	1.00
8835-007	7520	Nickel	<2.74	BQL	U	13.68	<0.020	BQL	U	0.10					<4.04	49.5		20.22
8835-007	7740	Selenium	<0.14	BQL	U	13.68	<0.12	BQL	U	11.76					<0.20	BQL	U	20.22
8835-007	7760	Silver	<1.37	BQL	U	13.68	<0.010	BQL	U	0.10					<2.02	BQL	U	20.22
8835-007	7840	Thallium	<13.68	BQL	U	13.68	<0.10	BQL	U	0.10					<20.22	BQL	U	20.22
8835-008	7040	Antimony	<6.92	BQL	U	13.85	<5.97	BQL	U	11.95								
8835-008	7060	Arsenic	<0.14	BQL	U	13.85	<0.12	BQL	U	11.95								
8835-008	7080	Barium	<13.85	BQL	U	13.85	<11.95	BQL	U	11.95								
8835-008	7090	Beryllium	<0.69	BQL	U	13.85	<0.60	BQL	U	11.95								
8835-008	7130	Cadmium	<0.69	BQL	U	13.85	<060	BQL	U	11.95								
8835-008	7190	Chromium	<1.38	BQL	U	13.85	<1.19	BQL	U	11.95								
8835-008	7420	Lead	<6.92	BQL	U	13.85	<5.97	8.12		11.95								
8835-008	7460	Manganese	<0.69	BQL	U	13.85	<0.60	BQL	U	11.95								
8835-008	7470	Mercury	<0.10	BQL	U	1.00	<0.10	BQL	U	1.00								
8835-008	7520	Nickel	<2.77	BQL	U	13.85	<2.39	BQL	U	11.95								
8835-008	7740	Selenium	<0.14	BQL	U	13.85	<0.12	BQL	U	11.95								
8835-008	7760	Silver	<1.38	BQL	U	13.85	<1.19	BQL	U	11.95								
8835-008	7840	Thallium	<13.85	BQL	U	13.85	<11.95	BQL	U	11.95								
8835-009	7040	Antimony					<6.01	BQL	U	12.02								
8835-009	7060	Arsenic					<0.12	BQL	U	12.02								
8835-009	7080	Barium					<12.02	BQL	U	12.02								
8835-009	7090	Beryllium					<0.60	BQL	U	12.02								
8835-009	7130	Cadmium					<0.60	BQL	U	12.02								
8835-009	7190	Chromium					<1.20	BQL	U	12.02								
8835-009	7420	Lead					<6.01	7.6		12.02								
8835-009	7460	Manganese					<0.60	BQL	U	12.02								
8835-009	7470	Mercury					<0.11	BQL	U	1.00								
8835-009	7520	Nickel					<2.40	BQL	U	12.02								
8835-009	7740	Selenium					<0.12	BQL	U	12.02								
8835-009	7760	Silver					<1.20	BQL	U	12.02								
8835-009	7840	Thallium					<12.02	BQL	U	12.02								
8835-010	7040	Antimony					<5.98	BQL	U	11.96								
8835-010	7060	Arsenic					<0.12	BQL	U	11.96								
8835-010	7080	Barium					<11.96	BQL	U	11.96								
8835-010	7090	Beryllium					<0.60	BQL	U	11.96								
8835-010	7130	Cadmium					<0.60	BQL	U	11.96								
8835-010	7190	Chromium					<1.20	BQL	U	11.96								
8835-010	7420	Lead					<5.98	7.79		11.96								
8835-010	7460	Manganese					<0.60	BQL	U	11.96								
8835-010	7470	Mercury					<0.10	BQL	U	1.00								

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COMPARATIVE FUELS RESULTS - METALS (mg/L)

Sample	Method	Analyte	*Fuel = Gasoline*				*Fuel = No.2*				*Fuel = No.4*				*Fuel = No.6*			
			Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.	Q.L.	Quant-itation	Code	D.F.
8835-010	7520	Nickel					<2.39	BQL	U	11.96								
8835-010	7740	Selenium					<0.12	BQL	U	11.96								
8835-010	7760	Silver					<1.20	BQL	U	11.96								
8835-010	7840	Thallium					<11.96	BQL	U	11.96								
8835-011	7040	Antimony					<11.67	BQL	U	23.34								
8835-011	7060	Arsenic					<0.12	BQL	U	11.67								
8835-011	7080	Barium					<23.34	BQL	U	23.34								
8835-011	7090	Beryllium					<1.17	BQL	U	23.34								
8835-011	7130	Cadmium					<1.17	BQL	U	23.34								
8835-011	7190	Chromium					<2.33	BQL	U	23.34								
8835-011	7420	Lead					<11.67	19.7		23.34								
8835-011	7460	Manganese					<1.17	BQL	U	23.34								
8835-011	7470	Mercury					<0.10	BQL	U	1.00								
8835-011	7520	Nickel					<4.67	BQL	U	23.34								
8835-011	7740	Selenium					<0.12	BQL	U	11.67								
8835-011	7760	Silver					<2.33	BQL	U	23.34								
8835-011	7840	Thallium					<23.34	BQL	U	23.34								

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COMPARATIVE FUELS RESULTS - PHYSICAL PARAMETERS

Sample	Method	Analyte	*Fuel = Gasoline*		*Fuel = No.2*		*Fuel = No.4*		*Fuel = No.6*	
			Quant-itation	D.F.	Quant-itation	D.F.	Quant-itation	D.F.	Quant-itation	D.F.
8835-001	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1	< 10	1	< 10	1
8835-001	ASTM D240	Heating Value* (BTU/lb)	19506	1	19583	1	19425	1	18354	1
8835-001	ASTM D1298	Specific Gravity (@ 60 F)	0.759	1	0.864	1	0.892	1	0.988	1
8835-001	ASTM D4629	Total Nitrogen as N	8	1	203	1	2930	1	8950	1
8835-001	SW-846 1010	Flash Point (F)	< 0	1	54	1	66	1	81	1
8835-001	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.91	1	6.4	1	531	1
8835-002	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-002	ASTM D240	Heating Value* (BTU/lb)	19394	1	19610	1			18715	1
8835-002	ASTM D1298	Specific Gravity (@ 60 F)	0.761	1	0.864	1			0.995	1
8835-002	ASTM D4629	Total Nitrogen as N	8	1	213	1			1860	1
8835-002	SW-846 1010	Flash Point (F)	< 0	1	53.5	1			68.5	1
8835-002	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.87	1			98	1
8835-003	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-003	ASTM D240	Heating Value* (BTU/lb)	19682	1	19823	1			18410	1
8835-003	ASTM D1298	Specific Gravity (@ 60 F)	0.761	1	0.85	1			0.995	1
8835-003	ASTM D4629	Total Nitrogen as N	6	1	110	1			1820	1
8835-003	SW-846 1010	Flash Point (F)	< 0	1	48	1			73	1
8835-003	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.66	1			98	1
8835-004	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-004	ASTM D240	Heating Value* (BTU/lb)	19420	1	19755	1			18219	1
8835-004	ASTM D1298	Specific Gravity (@ 60 F)	0.762	1	0.85	1			1.04	1
8835-004	ASTM D4629	Total Nitrogen as N	6	1	104	1			2210	1
8835-004	SW-846 1010	Flash Point (F)	< 0	1	44.5	1			117	1
8835-004	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.73	1			322	1
8835-005	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-005	ASTM D240	Heating Value* (BTU/lb)	19189	1	19763	1			18138	1
8835-005	ASTM D1298	Specific Gravity (@ 60 F)	0.758	1	0.851	1			1.04	1
8835-005	ASTM D4629	Total Nitrogen as N	22	1	186	1			2150	1
8835-005	SW-846 1010	Flash Point (F)	< 0	1	47.5	1			112	1
8835-005	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		3.5	1			331	1
8835-006	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-006	ASTM D240	Specific Gravity (@ 60 F)	19924	1	19891	1			18622	1
8835-006	ASTM D1298	Specific Gravity (@ 60 F)	0.721	1	0.862	1			0.991	1
8835-006	ASTM D4629	Total Nitrogen as N	11	1	341	1			5260	1
8835-006	SW-846 1010	Flash Point (F)	< 0	1	77	1			82	1
8835-006	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		4.36	1			656	1

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COMPARATIVE FUELS RESULTS - PHYSICAL PARAMETERS

Sample	Method	Analyte	*Fuel = Gasoline*		*Fuel = No.2*		*Fuel = No.4*		*Fuel = No.6*	
			Quant-itation	D.F.	Quant-itation	D.F.	Quant-itation	D.F.	Quant-itation	D.F.
8835-007	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1			< 10	1
8835-007	ASTM D240	Heating Value* (BTU/lb)	19373	1	19570	1			18559	1
8835-007	ASTM D1298	Specific Gravity (@ 60 F)	0.744	1	0.859	1			0.99	1
8835-007	ASTM D4629	Total Nitrogen as N	12	1	165	1			5310	1
8835-007	SW-846 1010	Flash Point (F)	< 0	1	60	1			92.5	1
8835-007	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.34	1			668	1
8835-008	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)	< 25	1	< 25	1				
8835-008	ASTM D240	Heating Value* (BTU/lb)	19552	1	19865	1				
8835-008	ASTM D1298	Specific Gravity (@ 60 F)	0.733	1	0.846	1				
8835-008	ASTM D4629	Total Nitrogen as N	17	1	98	1				
8835-008	SW-846 1010	Flash Point (F)	< 0	1	61.5	1				
8835-008	ASTM D445	Kinematic Viscosity (cSt @ 100 F)	N/A		2.6	1				
8835-009	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)			< 25	1				
8835-009	ASTM D240	Heating Value* (BTU/lb)			19942	1				
8835-009	ASTM D1298	Specific Gravity (@ 60 F)			0.851	1				
8835-009	ASTM D4629	Total Nitrogen as N			43	1				
8835-009	SW-846 1010	Flash Point (F)			72	1				
8835-009	ASTM D445	Kinematic Viscosity (cSt @ 100 F)			3.49	1				
8835-010	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)			< 25	1				
8835-010	ASTM D240	Heating Value* (BTU/lb)			20000	1				
8835-010	ASTM D1298	Specific Gravity (@ 60 F)			0.853	1				
8835-010	ASTM D4629	Total Nitrogen as N			42	1				
8835-010	SW-846 1010	Flash Point (F)			71	1				
8835-010	ASTM D445	Kinematic Viscosity (cSt @ 100 F)			3.71	1				
8835-011	EPA 325.3/Parr	Total Halogens as Cl- (ppmw)			< 25	1				
8835-011	ASTM D240	Heating Value* (BTU/lb)			19745	1				
8835-011	ASTM D1298	Specific Gravity (@ 60 F)			0.86	1				
8835-011	ASTM D4629	Total Nitrogen as N			219	1				
8835-011	SW-846 1010	Flash Point (F)			58	1				
8835-011	ASTM D445	Kinematic Viscosity (cSt @ 100 F)			2.87	1				

N/A - Not Applicable

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COMPARABLE FUELS RESULTS - TOTAL AROMATIC HYDROCARBONS

		Fuel = Gasoline		*Fuel = No.2*		*Fuel = No.4*		*Fuel = No.6*	
Sample	**Analyte**	**Quant-itation**	**DF**	**Quant-itation**	**DF**	**Quant-itation**	**DF**	**Quant-itation**	**DF**
8835-001	Total Aromatic Hydrocarbons (Weight Percent)	15.6	1.0	2.78	1.0	0.97	1.0	0.37	1.0
8835-002	Total Aromatic Hydrocarbons (Weight Percent)	15.5	1.0	2.95	1.0			1.4	1.0
8835-003	Total Aromatic Hydrocarbons (Weight Percent)	16.9	1.0	1.53	1.0			1.42	1.0
8835-004	Total Aromatic Hydrocarbons (Weight Percent)	17.2	1.0	2.06	1.0			0.36	1.0
8835-005	Total Aromatic Hydrocarbons (Weight Percent)	12.6	1.0	2.19	1.0			0.41	1.0
8835-006	Total Aromatic Hydrocarbons (Weight Percent)	8.1	1.0	0.66	1.0			2.99	1.0
8835-007	Total Aromatic Hydrocarbons (Weight Percent)	12.9	1.0	5.24	1.0			0.85	1.0
8835-008	Total Aromatic Hydrocarbons (Weight Percent)	10.5	1.0	1.36	1.0				
8835-009	Total Aromatic Hydrocarbons (Weight Percent)			1.29	1.0				
8835-010	Total Aromatic Hydrocarbons (Weight Percent)			1.42	1.0				
8835-011	Total Aromatic Hydrocarbons (Weight Percent)			1.22	1.0				
8835-001	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.7	1.0	2.9	1.0	1.0	1.0	0.39	1.0
8835-002	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.7	1.0	3.09	1.0			1.5	1.0
8835-003	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.8	1.0	1.52	1.0			1.52	1.0
8835-004	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.9	1.0	2.08	1.0			0.42	1.0
8835-005	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.3	1.0	2.35	1.0			0.49	1.0
8835-006	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.3	1.0	0.7	1.0			3.15	1.0
8835-007	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.6	1.0	5.47	1.0			0.89	1.0
8835-008	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)	0.6	1.0	1.41	1.0				
8835-009	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)			1.36	1.0				
8835-010	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)			1.5	1.0				
8835-011	Total Polynuclear Aromatic Hydrocarbons (Weight Percent)			1.22	1.0				

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Appendix B

Constituent Levels

Appendix B: Comparable Fuel Specification

Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
Total Nitrogen as N	NA	9000	18400	4900	-
Total Halogens as Cl	NA	1000	18400	540	-
Total Organic Halogens as Cl	NA			25 or individual halogenated organics listed below	-
Polychlorinated biphenyls, total [Arocolors, total][a]	1336-36-3	ND		non-detect	1.4
Cyanide, total	57-12-5	ND		non-detect	1.0
Metals					
Antimony, total	7440-36-0	ND		7.9	-
Arsenic, total	7440-38-2	ND		0.23	-
Barium, total	7440-39-3	ND		23	-
Beryllium, total	7440-41-7	ND		1.2	-
Cadmium, total	7440-43-9	ND		1.2	-
Chromium, total	7440-47-3	ND		2.3	-
Cobalt	7440-48-4	ND		4.6	-
Lead, total	7439-92-1	57	18100	31	-
Manganese	7439-96-5	ND		1.2	-
Mercury, total	7439-97-6	ND		0.24	-
Nickel, total	7440-02-0	106	18400	58	-
Selenium, total	7782-49-2	0.28	18400	0.15	-
Silver, total	7440-22-4	ND		2.3	-
Thallium, total	7440-28-0	ND		23	-
Hydrocarbons					
Benzo[a]anthracene	56-55-3	ND		1100	-
Benzene	71-43-2	8000	19600	4100	-
Benzo[b]fluoranthene	205-99-2	ND		960	-
Benzo[k]fluoranthene	207-08-9	ND		1900	-
Benzo[a]pyrene	50-32-8	ND		960	-
Chrysene	218-01-9	ND		1400	-
Dibenzo[a,h]anthracene	53-70-3	ND		960	-
7,12-Dimethylbenz[a]anthracene	57-97-6	ND		1900	-
Fluoranthene	206-44-0	ND		1900	-
Indeno(1,2,3-cd)pyrene	193-39-5	ND		960	-
3-Methylcholanthrene	56-49-5	ND		1900	-
Naphthalene	91-20-3	6200	19400	3200	-

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
Toluene	108-88-3	69000	19400	36000	-
Oxygenates					
Acetophenone	98-86-2	ND		1900	-
Acrolein	107-02-8	ND		37	-
Allyl alcohol	107-18-6	ND		30	-
Bis(2-ethylhexyl)phthalate [Di-2-ethylhexyl phthalate]	117-81-7	ND		1900	-
Butyl benzyl phthalate	85-68-7	ND		1900	-
o-Cresol [2-Methyl phenol]	95-48-7	ND		220	-
m-Cresol [3-Methyl phenol]	108-39-4	ND		220	-
p-Cresol [4-Methyl phenol]	106-44-5	ND		220	-
Di-n-butyl phthalate	84-74-2	ND		1900	-
Diethyl phthalate	84-66-2	ND		1900	-
2,4-Dimethylphenol	105-67-9	ND		1900	-
Dimethyl phthalate	131-11-3	ND		1900	-
Di-n-octyl phthalate	117-84-0	ND		960	-
Endothall	145-73-3	ND		100	-
Ethyl methacrylate	97-63-2	ND		37	-
2-Ethoxyethanol [Ethylene glycol monoethyl ether]	110-80-5	ND		100	-
Isobutyl alcohol	78-83-1	ND		37	-
Isosafrole	120-58-1	ND		1900	-
Methyl ethyl ketone [2-Butanone]	78-93-3	ND		37	-
Methyl methacrylate	80-62-6	ND		37	-
1,4-Naphthoquinone	130-15-4	ND		1900	-
Phenol	108-95-2	ND		1900	-
Propargyl alcohol [2-Propyn-1-ol]	107-19-7	ND		30	-
Safrole	94-59-7	ND		1900	-
Sulfonated Organics					
Carbon disulfide	75-15-0	ND		non-detect	37
Disulfoton	298-04-4	ND		non-detect	1900
Ethyl methanesulfonate	62-50-0	ND		non-detect	1900
Methyl methanesulfonate	66-27-3	ND		non-detect	1900
Phorate	298-02-2	ND		non-detect	1900
1,3-Propane sultone	1120-71-4	ND		non-detect	100
Tetraethyldithiopyrophosphate [Sulfotepp]	3689-24-5	ND		non-detect	1900
Thiophenol [Benzenethiol]	108-98-5	ND		non-detect	30

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
O,O,O-Triethyl phosphorothioate	126-68-1	ND		non-detect	1900
Nitrogenated Organics					
Acetonitrile [Methyl cyanide]	75-05-8	ND		non-detect	37
2-Acetylaminofluorene [2-AAF]	53-96-3	ND		non-detect	1900
Acrylonitrile	107-13-1	ND		non-detect	37
4-Aminobiphenyl	92-67-1	ND		non-detect	1900
4-Aminopyridine	504-24-5	ND		non-detect	100
Aniline	62-53-3	ND		non-detect	1900
Benzidine	92-87-5	ND		non-detect	1900
Dibenz[a,j]acridine	224-42-0	ND		non-detect	1900
O,O-Diethyl O-pyrazinyl phophoro- thioate [Thionazin]	297-97-2	ND		non-detect	1900
Dimethoate	60-51-5	ND		non-detect	1900
p-(Dimethylamino)azobenzene [4-Dimethylaminoazobenzene]	60-11-7	ND		non-detect	1900
3,3'-Dimethylbenzidine	119-93-7	ND		non-detect	1900
α,α-Dimethylphenethylamine	122-09-8	ND		non-detect	1900
3,3'-Dimethoxybenzidine	119-90-4	ND		non-detect	100
1,3-Dinitrobenzene [m-Dinitrobenzene]	99-65-0	ND		non-detect	1900
4,6-Dinitro-o-cresol	534-52-1	ND		non-detect	1900
2,4-Dinitrophenol	51-28-5	ND		non-detect	1900
2,4-Dinitrotoluene	121-14-2	ND		non-detect	1900
2,6-Dinitrotoluene	606-20-2	ND		non-detect	1900
Dinoseb [2-sec-Butyl-4,6-dinitrophenol]	88-85-7	ND		non-detect	1900
Diphenylamine	122-39-4	ND		non-detect	1900
Ethyl carbamate [Urethane]	51-79-6	ND		non-detect	100
Ethylenethiourea (2- Imidazolidinethione)	96-45-7	ND		non-detect	110
Famphur	52-85-7	ND		non-detect	1900
Methacrylonitrile	126-98-7	ND		non-detect	37
Methapyrilene	91-80-5	ND		non-detect	1900
Methomyl	16752-77-5	ND		non-detect	57
2-Methyllactonitrile [Acetone cyanohydrin]	75-86-5	ND		non-detect	100

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
Methyl parathion	298-00-0	ND		non-detect	1900
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	70-25-7	ND		non-detect	110
1-Naphthylamine, [α-Naphthylamine]	134-32-7	ND		non-detect	1900
2-Naphthylamine, [β-Naphthylamine]	91-59-8	ND		non-detect	1900
Nicotine	54-11-5	ND		non-detect	100
4-Nitroaniline, [p-Nitroaniline]	100-01-6	ND		non-detect	1900
Nitrobenzene	98-95-3	ND		non-detect	1900
p-Nitrophenol, [p-Nitrophenol]	100-02-7	ND		non-detect	1900
5-Nitro-o-toluidine	99-55-8	ND		non-detect	1900
N-Nitrosodi-n-butylamine	924-16-3	ND		non-detect	1900
N-Nitrosodiethylamine	55-18-5	ND		non-detect	1900
N-Nitrosodiphenylamine, [Diphenylnitrosamine]	86-30-6	ND		non-detect	1900
N-Nitroso-N-methylethylamine	10595-95-6	ND		non-detect	1900
N-Nitrosomorpholine	59-89-2	ND		non-detect	1900
N-Nitrosopiperidine	100-75-4	ND		non-detect	1900
N-Nitrosopyrrolidine	930-55-2	ND		non-detect	1900
2-Nitropropane	79-46-9	ND		non-detect	30
Parathion	56-38-2	ND		non-detect	1900
Phenacetin	62-44-2	ND		non-detect	1900
1,4-Phenylene diamine, [p-Phenylenediamine]	106-50-3	ND		non-detect	1900
N-Phenylthiourea	103-85-5	ND		non-detect	57
2-Picoline [alpha-Picoline]	109-06-8	ND		non-detect	1900
Propythioracil [6-Propyl-2-thiouracil]	51-52-5	ND		non-detect	100
Pyridine	110-86-1	ND		non-detect	1900
Strychnine	57-24-9	ND		non-detect	100
Thioacetamide	62-55-5	ND		non-detect	57
Thiofanox	39196-18-4	ND		non-detect	100
Thiourea	62-56-6	ND		non-detect	57
Toluene-2,4-diamine [2,4-Diaminotoluene]	95-80-7	ND		non-detect	57

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
Toluene-2,6-diamine [2,6-Diaminotoluene]	823-40-5	ND		non-detect	57
o-Toluidine	95-53-4	ND		non-detect	2200
p-Toluidine	106-49-0	ND		non-detect	100
1,3,5-Trinitrobenzene, [sym-Trinitobenzene]	99-35-4	ND		non-detect	2000
Halogenated Organics					
Allyl chloride	107-05-1	ND		non-detect	37
Aramite	140-57-8	ND		non-detect	1900
Benzal chloride [Dichloromethyl benzene]	98-87-3	ND		non-detect	100
Benzyl chloride	100-44-77	ND		non-detect	100
Bis(2-chloroethyl)ether [Dichoroethyl ether]	111-44-4	ND		non-detect	1900
Bromoform [Tribromomethane]	75-25-2	ND		non-detect	37
Bromomethane [Methyl bromide]	74-83-9	ND		non-detect	37
4-Bromophenyl phenyl ether [p-Bromo diphenyl ether]	101-55-3	ND		non-detect	1900
Carbon tetrachloride	56-23-5	ND		non-detect	37
Chlordane	57-74-9	ND		non-detect	14
p-Chloroaniline	106-47-8	ND		non-detect	1900
Chlorobenzene	108-90-7	ND		non-detect	37
Chlorobenzilate	510-15-6	ND		non-detect	1900
p-Chloro-m-cresol	59-50-7	ND		non-detect	1900
2-Chloroethyl vinyl ether	110-75-8	ND		non-detect	37
Chloroform	67-66-3	ND		non-detect	37
Chloromethane [Methyl chloride]	74-87-3	ND		non-detect	37
2-Chloronaphthalene [beta-Chloronaphthalene]	91-58-7	ND		non-detect	1900
2-Chlorophenol [o-Chlorophenol]	95-57-8	ND		non-detect	1900
Chloroprene [2-Chloro-1,3-butadiene]	1126-99-8	ND		non-detect	37
2,4-D [2,4-Dichlorophenoxyacetic acid]	94-75-7	ND		non-detect	7.0
Diallate	2303-16-4	ND		non-detect	1900
1,2-Dibromo-3-chloropropane	96-12-8	ND		non-detect	37

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
1,2-Dichlorobenzene [o-Dichlorobenzene]	95-50-1	ND		non-detect	1900
1,3-Dichlorobenzene [m-Dichlorobenzene]	541-73-1	ND		non-detect	1900
1,4-Dichlorobenzene [p-Dichlorobenzene]	106-46-7	ND		non-detect	1900
3,3'-Dichlorobenzidine	91-94-1	ND		non-detect	1900
Dichlorodifluoromethane [CFC-12]	75-71-8	ND		non-detect	37
1,2-Dichloroethane [Ethylene dichloride]	107-06-2	ND		non-detect	37
1,1-Dichloroethylene [Vinylidene chloride]	75-35-4	ND		non-detect	37
Dichloromethoxy ethane [Bis(2-chloroethoxy)methane	111-91-1	ND		non-detect	1900
2,4-Dichlorophenol	120-83-2	ND		non-detect	1900
2,6-Dichlorophenol	87-65-0	ND		non-detect	1900
1,2-Dichloropropane [Propylene dichloride]	78-87-5	ND		non-detect	37
cis-1,3-Dichloropropylene	10061-01-5	ND		non-detect	37
trans-1,3-Dichloropropylene	10061-02-6	ND		non-detect	37
1,3-Dichloro-2-propanol	96-23-1	ND		non-detect	30
Endosulfan I	959-98-8	ND		non-detect	1.4
Endosulfan II	33213-65-9	ND		non-detect	1.4
Endrin	72-20-8	ND		non-detect	1.4
Endrin aldehyde	7421-93-4	ND		non-detect	1.4
Endrin Ketone	53494-70-5	ND		non-detect	1.4
Epichlorohydrin [1-Chloro-2,3-epoxy propane]	106-89-8	ND		non-detect	30
Ethylidene dichloride [1,1-Dichloroethane]	75-34-3	ND		non-detect	37
2-Fluoroacetamide	640-19-7	ND		non-detect	100
Heptachlor	76-44-8	ND		non-detect	1.4
Heptachlor epoxide	1024-57-3	ND		non-detect	2.8

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
Hexachlorobenzene	118-74-1	ND		non-detect	1900
Hexachloro-1,3-butadiene [Hexachlorobutadiene]	87-68-3	ND		non-detect	1900
Hexachlorocyclopentadiene	77-47-4	ND		non-detect	1900
Hexachloroethane	67-72-1	ND		non-detect	1900
Hexachlorophene	70-30-4	ND		non-detect	1000
Hexachloropropene [Hexachloropropylene]	1888-71-7	ND		non-detect	1900
Isodrin	465-73-6	ND		non-detect	1900
Kepone [Chlordecone]	143-50-0	ND		non-detect	3600
Lindane [gamma-BHC] [gamma-Hexachlorocyclohexane]	58-89-9	ND		non-detect	1.4
Methylene chloride [Dichloromethane]	75-09-2	ND		non-detect	37
4,4'-methylene-bis(2-chloroaniline)	101-14-4	ND		non-detect	100
Methyl iodide [Iodomethane]	74-88-4	ND		non-detect	37
Pentachlorobenzene	608-93-5	ND		non-detect	1900
Pentachloroethane	76-01-7	ND		non-detect	37
Pentachloronitrobenzene [PCNB] [Quintobenzene] [Quintozene]	82-68-8	ND		non-detect	1900
Pentachlorophenol	87-86-5	ND		non-detect	1900
Pronamide	23950-58-5	ND		non-detect	1900
Silvex [2,4,5-Trichlorophenoxypropionic acid]	93-72-1	ND		non-detect	7.0
2,3,7,8-Tetrachlorodibenzo-p-dioxin [2,3,7,8-TCDD]	1746-01-6	ND		non-detect	30
1,2,4,5-Tetrachlorobenzene	95-94-3	ND		non-detect	1900
1,1,2,2-Tetrachloroethane	79-34-5	ND		non-detect	37
Tetrachloroethylene [Perchloroethylene]	127-18-4	ND		non-detect	37
2,3,4,6-Tetrachlorophenol	58-90-2	ND		non-detect	1900
1,2,4-Trichlorobenzene	120-82-1	ND		non-detect	1900
1,1,1-Trichloroethane [Methyl chloroform]	71-55-6	ND		non-detect	37

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Chemical Name	CAS Number	Composite Value (mg/kg)	Heating Value (BTU/lb)	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Required Detection Limit (mg/kg)
1,1,2-Trichloroethane [Vinyl trichloride]	79-00-5	ND		non-detect	37
Trichloroethylene	79-01-6	ND		non-detect	37
Trichlorofluoromethane [Trichlormonofluoromethane]	75-69-4	ND		non-detect	37
2,4,5-Trichlorophenol	95-95-4	ND		non-detect	1900
2,4,6-Trichlorophenol	88-06-2	ND		non-detect	1900
1,2,3-Trichloropropane	96-18-4	ND		non-detect	37
Vinyl Chloride	75-01-4	ND		non-detect	37

NA - Not Applicable
ND - Non-Detect

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Appendix C

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Statistical Analysis Results

Table 1.
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	9.3	-
Total Halogens as Cl^-	non-detect	25
Antimony	non-detect	7.0
Arsenic	non-detect	0.14
Barium	non-detect	14
Beryllium	non-detect	0.70
Cadmium	non-detect	0.70
Chromium	non-detect	1.4
Cobalt	non-detect	2.8
Lead	non-detect	7.0
Manganese	non-detect	0.70
Mercury	non-detect	0.10
Nickel	non-detect	2.8
Selenium	non-detect	0.14
Silver	non-detect	1.4
Thallium	non-detect	14
α,α-Dimethylphenethylamine	non-detect	670
α-Naphthylamine	non-detect	670
ß-Naphthylamine	non-detect	670
1,1,2,2-Tetrachloroethane	non-detect	34
1,1,2-Trichloroethane	non-detect	34
1,1-Dichloroethylene	non-detect	34
1,2,3,-Trichloropropane	non-detect	34
1,2,4,5-Tetrachlorobenzene	non-detect	670
1,2,4-Trichlorobenzene	non-detect	670
1,2-Dibromo-3-chloropropane	non-detect	34
1,2-Dichloroethylene (cis- or trans-)	non-detect	17
1,3,5-Trinitrobenzene	non-detect	670
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	17
1,4-Naphthoquinone	non-detect	670
2,3,4,6-Tetrachlorophenol	non-detect	670
2,4,5-Trichlorophenol	non-detect	670
2,4,6-Trichlorophenol	non-detect	670
2,4-Dichlorophenol	non-detect	670
2,4-Dimethylphenol	non-detect	670
2,4-Dinitrophenol	non-detect	670
2,4-Dinitrotoluene	non-detect	670
2,6-Dichlorophenol	non-detect	670
2,6-Dinitrotoluene	non-detect	670
2-Acetylaminofluorene	non-detect	670
2-Chloroethyl vinyl ether	non-detect	34
2-Chloronaphthalene	non-detect	670
2-Chlorophenol	non-detect	670

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Table 1. (Continued)
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
2-Picoline	non-detect	670
3,3'-Dichlorobenzidine	non-detect	670
3-3'-Dimethylbenzidine	non-detect	670
3-Methylcholanthrene	non-detect	670
4,6-Dinitro-o-cresol	non-detect	670
4-Aminobiphenyl	non-detect	670
4-Bromophenyl phenyl ether	non-detect	670
5-Nitro-o-toluidine	non-detect	670
7,12-Dimethylbenz[a]anthracene	non-detect	670
Acetonitrile	non-detect	34
Acetophenone	non-detect	670
Acrolein	non-detect	34
Acrylonitrile	non-detect	34
Allyl chloride	non-detect	34
Aniline	non-detect	670
Aramite	non-detect	670
Benzene	3500	-
Benzidine	non-detect	670
Benzo[a]anthracene	340	-
Benzo[a]pyrene	340	-
Benzo[b]fluoranthene	non-detect	670
Benzo[k]fluoranthene	non-detect	670
Bromoform	non-detect	34
Butyl benzyl phthalate	non-detect	670
Carbon disulfide	non-detect	34
Carbon tetrachloride	non-detect	34
Chlorobenzene	non-detect	34
Chlorobenzilate	non-detect	670
Chloroform	non-detect	34
Chloroprene	non-detect	34
Chrysene	340	-
cis-1,3-Dichloropropene	non-detect	34
Cresol (o-, m-, or p-)	non-detect	670
Di-n-butyl phthalate	non-detect	670
Di-n-octyl phthalate	340	-
Diallate	non-detect	670
Dibenz[a,j]acridine	non-detect	670
Dibenzo[a,h]anthracene	340	-
Dichlorodifluoromethane	non-detect	34
Diethyl phthalate	non-detect	670
Dimethoate	non-detect	670
Dimethyl phthalate	non-detect	670
Dinoseb	non-detect	670

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Table 1. (Continued)
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Diphenylamine	non-detect	670
Disulfoton	non-detect	670
Ethyl methacrylate	non-detect	34
Ethyl methanesulfonate	non-detect	670
Famphur	non-detect	670
Fluoranthene	non-detect	670
Fluorene	non-detect	670
Hexachlorobenzene	non-detect	670
Hexachlorobutadiene	non-detect	670
Hexachlorocyclopentadiene	non-detect	670
Hexachloroethane	non-detect	670
Hexachlorophene	non-detect	17000
Hexachloropropene	non-detect	670
Indeno(1,2,3-cd)pyrene	non-detect	670
Isobutyl alcohol	non-detect	34
Isodrin	non-detect	670
Isosafrole	non-detect	670
Kepone	non-detect	1300
m-Dichlorobenzene	non-detect	670
Methacrylonitrile	non-detect	34
Methapyrilene	non-detect	670
Methyl bromide	non-detect	34
Methyl chloride	non-detect	34
Methyl ethyl ketone	non-detect	34
Methyl iodide	non-detect	34
Methyl methacrylate	non-detect	34
Methyl methanesulfonate	non-detect	670
Methyl parathion	non-detect	670
Methylene chloride	non-detect	34
N-Nitrosodi-n-butylamine	non-detect	670
N-Nitrosodiethylamine	non-detect	670
N-Nitrosomethylethylamine	non-detect	670
N-Nitrosomorpholine	non-detect	670
N-Nitrosopiperidine	non-detect	670
N-Nitrosopyrrolidine	non-detect	670
Naphthalene	2800	-
Nitrobenzene	non-detect	670
o-Dichlorobenzene	non-detect	670
o-Toluidine	non-detect	670
O,O,O-Triethyl phosphorothionate	non-detect	670
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	670
p-(Dimethylamino)azobenzene	non-detect	670
p-Chloro-m-cresol	non-detect	670

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Table 1. (Continued)
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Chloroaniline	non-detect	670
p-Dichlorobenzene	non-detect	670
p-Nitroaniline	non-detect	670
p-Nitrophenol	non-detect	670
p-Phenylenediamine	non-detect	670
Parathion	non-detect	670
Pentachlorobenzene	non-detect	670
Pentachloroethane	non-detect	34
Pentachloronitrobenzene	non-detect	670
Pentachlorophenol	non-detect	670
Phenacetin	non-detect	670
Phenol	non-detect	670
Phorate	non-detect	670
Pronamide	non-detect	670
Pyridine	non-detect	670
Safrole	non-detect	670
Tetrachloroethylene	non-detect	34
Tetraethyldithiopyrophosphate	non-detect	670
Toluene	35000	-
Trichloroethylene	non-detect	34
Trichlorofluoromethane	non-detect	34
Vinyl Chloride	non-detect	34

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Table 2.
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	110	-
Total Halogens as Cl^-	non-detect	25
Antimony	non-detect	6.0
Arsenic	non-detect	0.12
Barium	non-detect	12
Beryllium	non-detect	0.60
Cadmium	non-detect	0.60
Chromium	non-detect	1.2
Cobalt	non-detect	2.4
Lead	6.6	-
Manganese	non-detect	0.60
Mercury	non-detect	0.11
Nickel	non-detect	2.4
Selenium	0.070	-
Silver	non-detect	1.2
Thallium	non-detect	12
α,α-Dimethylphenethylamine	non-detect	1200
α-Naphthylamine	non-detect	1200
ß-Naphthylamine	non-detect	1200
1,1,2,2-Tetrachloroethane	non-detect	34
1,1,2-Trichloroethane	non-detect	34
1,1-Dichloroethylene	non-detect	34
1,2,3,-Trichloropropane	non-detect	34
1,2,4,5-Tetrachlorobenzene	non-detect	1200
1,2,4-Trichlorobenzene	non-detect	1200
1,2-Dibromo-3-chloropropane	non-detect	34
1,2-Dichloroethylene (cis- or trans-)	non-detect	34
1,3,5-Trinitrobenzene	non-detect	1200
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	34
1,4-Naphthoquinone	non-detect	1200
2,3,4,6-Tetrachlorophenol	non-detect	1200
2,4,5-Trichlorophenol	non-detect	1200
2,4,6-Trichlorophenol	non-detect	1200
2,4-Dichlorophenol	non-detect	1200
2,4-Dimethylphenol	non-detect	1200
2,4-Dinitrophenol	non-detect	1200
2,4-Dinitrotoluene	non-detect	1200
2,6-Dichlorophenol	non-detect	1200
2,6-Dinitrotoluene	non-detect	1200
2-Acetylaminofluorene	non-detect	1200
2-Chloroethyl vinyl ether	non-detect	34
2-Chloronaphthalene	non-detect	1200
2-Chlorophenol	non-detect	1200
2-Picoline	non-detect	1200

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Table 2. (Continued)
No. 2 Fuel Oil - Combined Results)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3,3'-Dichlorobenzidine	non-detect	1200
3-3'-Dimethylbenzidine	non-detect	1200
3-Methylcholanthrene	non-detect	1200
4,6-Dinitro-o-cresol	non-detect	1200
4-Aminobiphenyl	non-detect	1200
4-Bromophenyl phenyl ether	non-detect	1200
5-Nitro-o-toluidine	non-detect	1200
7,12-Dimethylbenz[a]anthracene	non-detect	1200
Acetonitrile	non-detect	34
Acetophenone	non-detect	1200
Acrolein	non-detect	34
Acrylonitrile	non-detect	34
Allyl chloride	non-detect	34
Aniline	non-detect	1200
Aramite	non-detect	1200
Benzene	21	-
Benzidine	non-detect	1200
Benzo[a]anthracene	610	-
Benzo[a]pyrene	610	-
Benzo[b]fluoranthene	non-detect	1200
Benzo[k]fluoranthene	non-detect	1200
Bromoform	non-detect	34
Butyl benzyl phthalate	non-detect	1200
Carbon disulfide	non-detect	34
Carbon tetrachloride	non-detect	34
Chlorobenzene	non-detect	34
Chlorobenzilate	non-detect	1200
Chloroform	non-detect	34
Chloroprene	non-detect	34
Chrysene	610	-
cis-1,3-Dichloropropene	non-detect	34
Cresol (o-, m-, or p-)	non-detect	1200
Di-n-butyl phthalate	non-detect	1200
Di-n-octyl phthalate	610	-
Diallate	non-detect	1200
Dibenz[a,j]acridine	non-detect	1200
Dibenzo[a,h]anthracene	610	-
Dichlorodifluoromethane	non-detect	34
Diethyl phthalate	non-detect	1200
Dimethoate	non-detect	1200
Dimethyl phthalate	non-detect	1200
Dinoseb	non-detect	1200
Diphenylamine	non-detect	1200
Disulfoton	non-detect	1200

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Table 2. (Continued)
No. 2 Fuel Oil - Combined Results)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Ethyl methacrylate	non-detect	34
Ethyl methanesulfonate	non-detect	1200
Famphur	non-detect	1200
Fluoranthene	non-detect	1200
Fluorene	non-detect	1200
Hexachlorobenzene	non-detect	1200
Hexachlorobutadiene	non-detect	1200
Hexachlorocyclopentadiene	non-detect	1200
Hexachloroethane	non-detect	1200
Hexachlorophene	non-detect	29000
Hexachloropropene	non-detect	1200
Indeno(1,2,3-cd)pyrene	non-detect	1200
Isobutyl alcohol	non-detect	34
Isodrin	non-detect	1200
Isosafrole	non-detect	1200
Kepone	non-detect	2300
m-Dichlorobenzene	non-detect	1200
Methacrylonitrile	non-detect	34
Methapyrilene	non-detect	1200
Methyl bromide	non-detect	34
Methyl chloride	non-detect	34
Methyl ethyl ketone	non-detect	34
Methyl iodide	non-detect	34
Methyl methacrylate	non-detect	34
Methyl methanesulfonate	non-detect	1200
Methyl parathion	non-detect	1200
Methylene chloride	non-detect	34
N-Nitrosodi-n-butylamine	non-detect	1200
N-Nitrosodiethylamine	non-detect	1200
N-Nitrosomethylethylamine	non-detect	1200
N-Nitrosomorpholine	non-detect	1200
N-Nitrosopiperidine	non-detect	1200
N-Nitrosopyrrolidine	non-detect	1200
Naphthalene	1200	-
Nitrobenzene	non-detect	1200
o-Dichlorobenzene	non-detect	1200
o-Toluidine	non-detect	1200
O,O,O-Triethyl phosphorothionate	non-detect	1200
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	1200
p-(Dimethylamino)azobenzene	non-detect	1200
p-Chloro-m-cresol	non-detect	1200
p-Chloroaniline	non-detect	1200
p-Dichlorobenzene	non-detect	1200
p-Nitroaniline	non-detect	1200

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Table 2. (Continued)
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Nitrophenol	non-detect	1200
p-Phenylenediamine	non-detect	1200
Parathion	non-detect	1200
Pentachlorobenzene	non-detect	1200
Pentachloroethane	non-detect	34
Pentachloronitrobenzene	non-detect	1200
Pentachlorophenol	non-detect	1200
Phenacetin	non-detect	1200
Phenol	non-detect	1200
Phorate	non-detect	1200
Pronamide	non-detect	1200
Pyridine	non-detect	1200
Safrole	non-detect	1200
Tetrachloroethylene	non-detect	34
Tetraethyldithiopyrophosphate	non-detect	1200
Toluene	150	-
Trichloroethylene	non-detect	34
Trichlorofluoromethane	non-detect	34
Vinyl Chloride	non-detect	34

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Table 3.
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	1500	-
Total Halogens as Cl^-	non-detect	10
Antimony	non-detect	11
Arsenic	non-detect	0.23
Barium	non-detect	23
Beryllium	non-detect	1.2
Cadmium	non-detect	1.2
Chromium	non-detect	2.3
Cobalt	non-detect	4.6
Lead	9.9	-
Manganese	non-detect	1.2
Mercury	non-detect	0.18
Nickel	16	-
Selenium	0.13	-
Silver	non-detect	2.3
Thallium	non-detect	23
α,α-Dimethylphenethylamine	non-detect	200
α-Naphthylamine	non-detect	200
ß-Naphthylamine	non-detect	200
1,1,2,2-Tetrachloroethane	non-detect	17
1,1,2-Trichloroethane	non-detect	17
1,1-Dichloroethylene	non-detect	17
1,2,3,-Trichloropropane	non-detect	17
1,2,4,5-Tetrachlorobenzene	non-detect	200
1,2,4-Trichlorobenzene	non-detect	200
1,2-Dibromo-3-chloropropane	non-detect	17
1,2-Dichloroethylene (cis- or trans-)	non-detect	17
1,3,5-Trinitrobenzene	non-detect	200
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	17
1,4-Naphthoquinone	non-detect	200
2,3,4,6-Tetrachlorophenol	non-detect	200
2,4,5-Trichlorophenol	non-detect	200
2,4,6-Trichlorophenol	non-detect	200
2,4-Dichlorophenol	non-detect	200
2,4-Dimethylphenol	non-detect	200
2,4-Dinitrophenol	non-detect	200
2,4-Dinitrotoluene	non-detect	200
2,6-Dichlorophenol	non-detect	200
2,6-Dinitrotoluene	non-detect	200
2-Acetylaminofluorene	non-detect	200
2-Chloroethyl vinyl ether	non-detect	17
2-Chloronaphthalene	non-detect	200
2-Chlorophenol	non-detect	200
2-Picoline	non-detect	200

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Table 3. (Continued)
No. 4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3,3'-Dichlorobenzidine	non-detect	200
3-3'-Dimethylbenzidine	non-detect	200
3-Methylcholanthrene	non-detect	200
4,6-Dinitro-o-cresol	non-detect	200
4-Aminobiphenyl	non-detect	200
4-Bromophenyl phenyl ether	non-detect	200
5-Nitro-o-toluidine	non-detect	200
7,12-Dimethylbenz[a]anthracene	non-detect	200
Acetonitrile	non-detect	17
Acetophenone	non-detect	200
Acrolein	non-detect	17
Acrylonitrile	non-detect	17
Allyl chloride	non-detect	17
Aniline	non-detect	200
Aramite	non-detect	200
Benzene	22	-
Benzidine	non-detect	200
Benzo[a]anthracene	100	-
Benzo[a]pyrene	100	-
Benzo[b]fluoranthene	non-detect	200
Benzo[k]fluoranthene	non-detect	200
Bromoform	non-detect	17
Butyl benzyl phthalate	non-detect	200
Carbon disulfide	non-detect	17
Carbon tetrachloride	non-detect	17
Chlorobenzene	non-detect	17
Chlorobenzilate	non-detect	200
Chloroform	non-detect	17
Chloroprene	non-detect	17
Chrysene	100	-
cis-1,3-Dichloropropene	non-detect	17
Cresol (o-, m-, or p-)	non-detect	200
Di-n-butyl phthalate	non-detect	200
Di-n-octyl phthalate	100	-
Diallate	non-detect	200
Dibenz[a,j]acridine	non-detect	200
Dibenzo[a,h]anthracene	100	-
Dichlorodifluoromethane	non-detect	17
Diethyl phthalate	non-detect	200
Dimethoate	non-detect	200
Dimethyl phthalate	non-detect	200
Dinoseb	non-detect	200
Diphenylamine	non-detect	200
Disulfoton	non-detect	200

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Table 3. (Continued)
No. 4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Ethyl methacrylate	non-detect	17
Ethyl methanesulfonate	non-detect	200
Famphur	non-detect	200
Fluoranthene	non-detect	200
Fluorene	110	-
Hexachlorobenzene	non-detect	200
Hexachlorobutadiene	non-detect	200
Hexachlorocyclopentadiene	non-detect	200
Hexachloroethane	non-detect	200
Hexachlorophene	non-detect	5000
Hexachloropropene	non-detect	200
Indeno(1,2,3-cd)pyrene	non-detect	200
Isobutyl alcohol	non-detect	17
Isodrin	non-detect	200
Isosafrole	non-detect	200
Kepone	non-detect	400
m-Dichlorobenzene	non-detect	200
Methacrylonitrile	non-detect	17
Methapyrilene	non-detect	200
Methyl bromide	non-detect	17
Methyl chloride	non-detect	17
Methyl ethyl ketone	non-detect	17
Methyl iodide	non-detect	17
Methyl methacrylate	non-detect	17
Methyl methanesulfonate	non-detect	200
Methyl parathion	non-detect	200
Methylene chloride	non-detect	17
N-Nitrosodi-n-butylamine	non-detect	200
N-Nitrosodiethylamine	non-detect	200
N-Nitrosomethylethylamine	non-detect	200
N-Nitrosomorpholine	non-detect	200
N-Nitrosopiperidine	non-detect	200
N-Nitrosopyrrolidine	non-detect	200
Naphthalene	340	-
Nitrobenzene	non-detect	200
o-Dichlorobenzene	non-detect	200
o-Toluidine	non-detect	200
O,O,O-Triethyl phosphorothionate	non-detect	200
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	200
p-(Dimethylamino)azobenzene	non-detect	200
p-Chloro-m-cresol	non-detect	200
p-Chloroaniline	non-detect	200
p-Dichlorobenzene	non-detect	200
p-Nitroaniline	non-detect	200

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Table 3. (Continued)
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Nitrophenol	non-detect	200
p-Phenylenediamine	non-detect	200
Parathion	non-detect	200
Pentachlorobenzene	non-detect	200
Pentachloroethane	non-detect	17
Pentachloronitrobenzene	non-detect	200
Pentachlorophenol	non-detect	200
Phenacetin	non-detect	200
Phenol	non-detect	200
Phorate	non-detect	200
Pronamide	non-detect	200
Pyridine	non-detect	200
Safrole	non-detect	200
Tetrachloroethylene	non-detect	17
Tetraethyldithiopyrophosphate	non-detect	200
Toluene	110	-
Trichloroethylene	non-detect	17
Trichlorofluoromethane	non-detect	17
Vinyl Chloride	non-detect	17

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Table 4.
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	3500	-
Total Halogens as Cl^-	non-detect	10
Antimony	6.5	-
Arsenic	non-detect	0.20
Barium	non-detect	20
Beryllium	non-detect	1.0
Cadmium	non-detect	1.0
Chromium	non-detect	2.0
Cobalt	non-detect	4.1
Lead	30	-
Manganese	non-detect	1.0
Mercury	non-detect	0.22
Nickel	36	-
Selenium	0.12	-
Silver	non-detect	2.0
Thallium	non-detect	20
α,α-Dimethylphenethylamine	non-detect	640
α-Naphthylamine	non-detect	640
ß-Naphthylamine	non-detect	640
1,1,2,2-Tetrachloroethane	non-detect	20
1,1,2-Trichloroethane	non-detect	20
1,1-Dichloroethylene	non-detect	20
1,2,3,-Trichloropropane	non-detect	20
1,2,4,5-Tetrachlorobenzene	non-detect	640
1,2,4-Trichlorobenzene	non-detect	640
1,2-Dibromo-3-chloropropane	non-detect	20
1,2-Dichloroethylene (cis- or trans-)	non-detect	21
1,3,5-Trinitrobenzene	non-detect	640
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	21
1,4-Naphthoquinone	non-detect	640
2,3,4,6-Tetrachlorophenol	non-detect	640
2,4,5-Trichlorophenol	non-detect	640
2,4,6-Trichlorophenol	non-detect	640
2,4-Dichlorophenol	non-detect	640
2,4-Dimethylphenol	non-detect	640
2,4-Dinitrophenol	non-detect	640
2,4-Dinitrotoluene	non-detect	640
2,6-Dichlorophenol	non-detect	640
2,6-Dinitrotoluene	non-detect	640
2-Acetylaminofluorene	non-detect	640
2-Chloroethyl vinyl ether	non-detect	20
2-Chloronaphthalene	non-detect	640
2-Chlorophenol	non-detect	640
2-Picoline	non-detect	640

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Table 4. (Continued)
No. 6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3,3'-Dichlorobenzidine	non-detect	640
3-3'-Dimethylbenzidine	non-detect	640
3-Methylcholanthrene	non-detect	640
4,6-Dinitro-o-cresol	non-detect	640
4-Aminobiphenyl	non-detect	640
4-Bromophenyl phenyl ether	non-detect	640
5-Nitro-o-toluidine	non-detect	640
7,12-Dimethylbenz[a]anthracene	non-detect	640
Acetonitrile	non-detect	20
Acetophenone	non-detect	640
Acrolein	non-detect	20
Acrylonitrile	non-detect	20
Allyl chloride	non-detect	20
Aniline	non-detect	640
Aramite	non-detect	640
Benzene	11	-
Benzidine	non-detect	640
Benzo[a]anthracene	930	-
Benzo[a]pyrene	530	-
Benzo[b]fluoranthene	420	-
Benzo[k]fluoranthene	non-detect	640
Bromoform	non-detect	20
Butyl benzyl phthalate	non-detect	640
Carbon disulfide	non-detect	20
Carbon tetrachloride	non-detect	20
Chlorobenzene	non-detect	20
Chlorobenzilate	non-detect	640
Chloroform	non-detect	20
Chloroprene	non-detect	20
Chrysene	1300	-
cis-1,3-Dichloropropene	non-detect	20
Cresol (o-, m-, or p-)	non-detect	790
Di-n-butyl phthalate	non-detect	640
Di-n-octyl phthalate	350	-
Diallate	non-detect	640
Dibenz[a,j]acridine	non-detect	640
Dibenzo[a,h]anthracene	350	-
Dichlorodifluoromethane	non-detect	20
Diethyl phthalate	non-detect	640
Dimethoate	non-detect	640
Dimethyl phthalate	non-detect	640
Dinoseb	non-detect	640
Diphenylamine	non-detect	640
Disulfoton	non-detect	640

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Table 4. (Continued)
No. 6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Ethyl methacrylate	non-detect	20
Ethyl methanesulfonate	non-detect	640
Famphur	non-detect	640
Fluoranthene	non-detect	640
Fluorene	350	-
Hexachlorobenzene	non-detect	640
Hexachlorobutadiene	non-detect	640
Hexachlorocyclopentadiene	non-detect	640
Hexachloroethane	non-detect	640
Hexachlorophene	non-detect	16000
Hexachloropropene	non-detect	640
Indeno(1,2,3-cd)pyrene	350	-
Isobutyl alcohol	non-detect	20
Isodrin	non-detect	640
Isosafrole	non-detect	640
Kepone	non-detect	1300
m-Dichlorobenzene	non-detect	640
Methacrylonitrile	non-detect	20
Methapyrilene	non-detect	640
Methyl bromide	non-detect	20
Methyl chloride	non-detect	20
Methyl ethyl ketone	non-detect	20
Methyl iodide	non-detect	20
Methyl methacrylate	non-detect	20
Methyl methanesulfonate	non-detect	640
Methyl parathion	non-detect	640
Methylene chloride	non-detect	20
N-Nitrosodi-n-butylamine	non-detect	640
N-Nitrosodiethylamine	non-detect	640
N-Nitrosomethylethylamine	non-detect	640
N-Nitrosomorpholine	non-detect	640
N-Nitrosopiperidine	non-detect	640
N-Nitrosopyrrolidine	non-detect	640
Naphthalene	570	-
Nitrobenzene	non-detect	640
o-Dichlorobenzene	non-detect	640
o-Toluidine	non-detect	1300
O,O,O-Triethyl phosphorothionate	non-detect	640
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	640
p-(Dimethylamino)azobenzene	non-detect	640
p-Chloro-m-cresol	non-detect	640
p-Chloroaniline	non-detect	640
p-Dichlorobenzene	non-detect	640
p-Nitroaniline	non-detect	640

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Table 4. (Continued)
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Nitrophenol	non-detect	640
p-Phenylenediamine	non-detect	640
Parathion	non-detect	640
Pentachlorobenzene	non-detect	640
Pentachloroethane	non-detect	20
Pentachloronitrobenzene	non-detect	640
Pentachlorophenol	non-detect	640
Phenacetin	non-detect	640
Phenol	non-detect	640
Phorate	non-detect	640
Pronamide	non-detect	640
Pyridine	non-detect	640
Safrole	non-detect	640
Tetrachloroethylene	non-detect	20
Tetraethyldithiopyrophosphate	non-detect	640
Toluene	41	-
Trichloroethylene	non-detect	20
Trichlorofluoromethane	non-detect	20
Vinyl Chloride	non-detect	20

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Table 5.
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	1200	-
Total Halogens as Cl^-	non-detect	10
Antimony	5.5	-
Arsenic	non-detect	0.20
Barium	non-detect	20
Beryllium	non-detect	1.0
Cadmium	non-detect	1.0
Chromium	non-detect	2.0
Cobalt	non-detect	4.1
Lead	8.6	-
Manganese	non-detect	1.0
Mercury	non-detect	0.17
Nickel	3.7	-
Selenium	0.11	-
Silver	non-detect	2.0
Thallium	non-detect	20
α,α-Dimethylphenethylamine	non-detect	200
α-Naphthylamine	non-detect	200
ß-Naphthylamine	non-detect	200
1,1,2,2-Tetrachloroethane	non-detect	17
1,1,2-Trichloroethane	non-detect	17
1,1-Dichloroethylene	non-detect	17
1,2,3,-Trichloropropane	non-detect	17
1,2,4,5-Tetrachlorobenzene	non-detect	200
1,2,4-Trichlorobenzene	non-detect	200
1,2-Dibromo-3-chloropropane	non-detect	17
1,2-Dichloroethylene (cis- or trans-)	non-detect	16
1,3,5-Trinitrobenzene	non-detect	200
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	16
1,4-Naphthoquinone	non-detect	200
2,3,4,6-Tetrachlorophenol	non-detect	200
2,4,5-Trichlorophenol	non-detect	200
2,4,6-Trichlorophenol	non-detect	200
2,4-Dichlorophenol	non-detect	200
2,4-Dimethylphenol	non-detect	200
2,4-Dinitrophenol	non-detect	200
2,4-Dinitrotoluene	non-detect	200
2,6-Dichlorophenol	non-detect	200
2,6-Dinitrotoluene	non-detect	200
2-Acetylaminofluorene	non-detect	200
2-Chloroethyl vinyl ether	non-detect	17
2-Chloronaphthalene	non-detect	200
2-Chlorophenol	non-detect	200
2-Picoline	non-detect	200

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Table 5. (Continued)
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3,3'-Dichlorobenzidine	non-detect	200
3-3'-Dimethylbenzidine	non-detect	200
3-Methylcholanthrene	non-detect	200
4,6-Dinitro-o-cresol	non-detect	200
4-Aminobiphenyl	non-detect	200
4-Bromophenyl phenyl ether	non-detect	200
5-Nitro-o-toluidine	non-detect	200
7,12-Dimethylbenz[a]anthracene	non-detect	200
Acetonitrile	non-detect	17
Acetophenone	non-detect	200
Acrolein	non-detect	17
Acrylonitrile	non-detect	17
Allyl chloride	non-detect	17
Aniline	non-detect	200
Aramite	non-detect	200
Benzene	17	-
Benzidine	non-detect	200
Benzo[a]anthracene	300	-
Benzo[a]pyrene	230	-
Benzo[b]fluoranthene	120	-
Benzo[k]fluoranthene	non-detect	200
Bromoform	non-detect	17
Butyl benzyl phthalate	non-detect	200
Carbon disulfide	non-detect	17
Carbon tetrachloride	non-detect	17
Chlorobenzene	non-detect	17
Chlorobenzilate	non-detect	200
Chloroform	non-detect	17
Chloroprene	non-detect	17
Chrysene	300	-
cis-1,3-Dichloropropene	non-detect	17
Cresol (o-, m-, or p-)	non-detect	200
Di-n-butyl phthalate	non-detect	200
Di-n-octyl phthalate	110	-
Diallate	non-detect	200
Dibenz[a,j]acridine	non-detect	200
Dibenzo[a,h]anthracene	110	-
Dichlorodifluoromethane	non-detect	17
Diethyl phthalate	non-detect	200
Dimethoate	non-detect	200
Dimethyl phthalate	non-detect	200
Dinoseb	non-detect	200
Diphenylamine	non-detect	200
Disulfoton	non-detect	200

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Table 5. (Continued)
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Ethyl methacrylate	non-detect	17
Ethyl methanesulfonate	non-detect	200
Famphur	non-detect	200
Fluoranthene	non-detect	200
Fluorene	110	-
Hexachlorobenzene	non-detect	200
Hexachlorobutadiene	non-detect	200
Hexachlorocyclopentadiene	non-detect	200
Hexachloroethane	non-detect	200
Hexachlorophene	non-detect	5000
Hexachloropropene	non-detect	200
Indeno(1,2,3-cd)pyrene	110	-
Isobutyl alcohol	non-detect	17
Isodrin	non-detect	200
Isosafrole	non-detect	200
Kepone	non-detect	400
m-Dichlorobenzene	non-detect	200
Methacrylonitrile	non-detect	17
Methapyrilene	non-detect	200
Methyl bromide	non-detect	17
Methyl chloride	non-detect	17
Methyl ethyl ketone	non-detect	17
Methyl iodide	non-detect	17
Methyl methacrylate	non-detect	17
Methyl methanesulfonate	non-detect	200
Methyl parathion	non-detect	200
Methylene chloride	non-detect	17
N-Nitrosodi-n-butylamine	non-detect	200
N-Nitrosodiethylamine	non-detect	200
N-Nitrosomethylethylamine	non-detect	200
N-Nitrosomorpholine	non-detect	200
N-Nitrosopiperidine	non-detect	200
N-Nitrosopyrrolidine	non-detect	200
Naphthalene	330	-
Nitrobenzene	non-detect	200
o-Dichlorobenzene	non-detect	200
o-Toluidine	non-detect	200
O,O,O-Triethyl phosphorothionate	non-detect	200
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	200
p-(Dimethylamino)azobenzene	non-detect	200
p-Chloro-m-cresol	non-detect	200
p-Chloroaniline	non-detect	200
p-Dichlorobenzene	non-detect	200
p-Nitroaniline	non-detect	200

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Table 5. (Continued)
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Nitrophenol	non-detect	200
p-Phenylenediamine	non-detect	200
Parathion	non-detect	200
Pentachlorobenzene	non-detect	200
Pentachloroethane	non-detect	17
Pentachloronitrobenzene	non-detect	200
Pentachlorophenol	non-detect	200
Phenacetin	non-detect	200
Phenol	non-detect	200
Phorate	non-detect	200
Pronamide	non-detect	200
Pyridine	non-detect	200
Safrole	non-detect	200
Tetrachloroethylene	non-detect	17
Tetraethyldithiopyrophosphate	non-detect	200
Toluene	98	-
Trichloroethylene	non-detect	17
Trichlorofluoromethane	non-detect	17
Vinyl Chloride	non-detect	17

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Table 6.
Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	2700	-
Total Halogens as Cl^-	non-detect	25
Antimony	5.90	-
Arsenic	non-detect	0.22
Barium	non-detect	22
Beryllium	non-detect	1.10
Cadmium	non-detect	1.10
Chromium	non-detect	2.20
Cobalt	non-detect	4.50
Lead	22	-
Manganese	non-detect	1.10
Mercury	non-detect	0.18
Nickel	26	-
Selenium	0.12	-
Silver	non-detect	2.20
Thallium	non-detect	22
α,α-Dimethylphenethylamine	non-detect	910
α-Naphthylamine	non-detect	910
ß-Naphthylamine	non-detect	910
1,1,2,2-Tetrachloroethane	non-detect	34
1,1,2-Trichloroethane	non-detect	34
1,1-Dichloroethylene	non-detect	34
1,2,3,-Trichloropropane	non-detect	34
1,2,4,5-Tetrachlorobenzene	non-detect	910
1,2,4-Trichlorobenzene	non-detect	910
1,2-Dibromo-3-chloropropane	non-detect	34
1,2-Dichloroethylene (cis- or trans-)	non-detect	17
1,3,5-Trinitrobenzene	non-detect	1100
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	17
1,4-Naphthoquinone	non-detect	910
2,3,4,6-Tetrachlorophenol	non-detect	910
2,4,5-Trichlorophenol	non-detect	910
2,4,6-Trichlorophenol	non-detect	910
2,4-Dichlorophenol	non-detect	910
2,4-Dimethylphenol	non-detect	910
2,4-Dinitrophenol	non-detect	910
2,4-Dinitrotoluene	non-detect	910
2,6-Dichlorophenol	non-detect	910
2,6-Dinitrotoluene	non-detect	910
2-Acetylaminofluorene	non-detect	910
2-Chloroethyl vinyl ether	non-detect	34
2-Chloronaphthalene	non-detect	910
2-Chlorophenol	non-detect	910
2-Picoline	non-detect	910

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Table 6. (Continued)
Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3,3'-Dichlorobenzidine	non-detect	910
3-3'-Dimethylbenzidine	non-detect	910
3-Methylcholanthrene	non-detect	910
4,6-Dinitro-o-cresol	non-detect	910
4-Aminobiphenyl	non-detect	910
4-Bromophenyl phenyl ether	non-detect	910
5-Nitro-o-toluidine	non-detect	910
7,12-Dimethylbenz[a]anthracene	non-detect	910
Acetonitrile	non-detect	34
Acetophenone	non-detect	910
Acrolein	non-detect	34
Acrylonitrile	non-detect	34
Allyl chloride	non-detect	34
Aniline	non-detect	910
Aramite	non-detect	910
Benzene	22	-
Benzidine	non-detect	910
Benzo[a]anthracene	760	-
Benzo[a]pyrene	530	-
Benzo[b]fluoranthene	500	-
Benzo[k]fluoranthene	non-detect	910
Bromoform	non-detect	34
Butyl benzyl phthalate	non-detect	910
Carbon disulfide	non-detect	34
Carbon tetrachloride	non-detect	34
Chlorobenzene	non-detect	34
Chlorobenzilate	non-detect	910
Chloroform	non-detect	34
Chloroprene	non-detect	34
Chrysene	930	-
cis-1,3-Dichloropropene	non-detect	34
Cresol (o-, m-, or p-)	non-detect	200
Di-n-butyl phthalate	non-detect	910
Di-n-octyl phthalate	480	-
Diallate	non-detect	910
Dibenz[a,j]acridine	non-detect	910
Dibenzo[a,h]anthracene	480	-
Dichlorodifluoromethane	non-detect	34
Diethyl phthalate	non-detect	910
Dimethoate	non-detect	910
Dimethyl phthalate	non-detect	910
Dinoseb	non-detect	910
Diphenylamine	non-detect	910
Disulfoton	non-detect	910

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Table 6. (Continued)
Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Ethyl methacrylate	non-detect	34
Ethyl methanesulfonate	non-detect	910
Famphur	non-detect	910
Fluoranthene	non-detect	910
Fluorene	480	-
Hexachlorobenzene	non-detect	910
Hexachlorobutadiene	non-detect	910
Hexachlorocyclopentadiene	non-detect	910
Hexachloroethane	non-detect	910
Hexachlorophene	non-detect	22000
Hexachloropropene	non-detect	910
Indeno(1,2,3-cd)pyrene	480	-
Isobutyl alcohol	non-detect	34
Isodrin	non-detect	910
Isosafrole	non-detect	910
Kepone	non-detect	1800
m-Dichlorobenzene	non-detect	910
Methacrylonitrile	non-detect	34
Methapyrilene	non-detect	910
Methyl bromide	non-detect	34
Methyl chloride	non-detect	34
Methyl ethyl ketone	non-detect	34
Methyl iodide	non-detect	34
Methyl methacrylate	non-detect	34
Methyl methanesulfonate	non-detect	910
Methyl parathion	non-detect	910
Methylene chloride	non-detect	34
N-Nitrosodi-n-butylamine	non-detect	910
N-Nitrosodiethylamine	non-detect	910
N-Nitrosomethylethylamine	non-detect	910
N-Nitrosomorpholine	non-detect	910
N-Nitrosopiperidine	non-detect	910
N-Nitrosopyrrolidine	non-detect	910
Naphthalene	1000	-
Nitrobenzene	non-detect	910
o-Dichlorobenzene	non-detect	910
o-Toluidine	non-detect	1200
O,O,O-Triethyl phosphorothionate	non-detect	910
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	910
p-(Dimethylamino)azobenzene	non-detect	910
p-Chloro-m-cresol	non-detect	910
p-Chloroaniline	non-detect	910
p-Dichlorobenzene	non-detect	910
p-Nitroaniline	non-detect	910

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Table 6. (Continued)
Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Nitrophenol	non-detect	910
p-Phenylenediamine	non-detect	910
Parathion	non-detect	910
Pentachlorobenzene	non-detect	910
Pentachloroethane	non-detect	34
Pentachloronitrobenzene	non-detect	910
Pentachlorophenol	non-detect	910
Phenacetin	non-detect	910
Phenol	non-detect	910
Phorate	non-detect	910
Pronamide	non-detect	910
Pyridine	non-detect	910
Safrole	non-detect	910
Tetrachloroethylene	non-detect	34
Tetraethyldithiopyrophosphate	non-detect	910
Toluene	140	-
Trichloroethylene	non-detect	34
Trichlorofluoromethane	non-detect	34
Vinyl Chloride	non-detect	34

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Table 7.
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	170	-
Total Halogens as Cl^-	non-detect	10
Antimony	4.7	-
Arsenic	non-detect	0.14
Barium	non-detect	18
Beryllium	non-detect	0.90
Cadmium	non-detect	0.90
Chromium	non-detect	1.8
Cobalt	non-detect	3.6
Lead	7.0	-
Manganese	non-detect	0.90
Mercury	non-detect	0.11
Nickel	2.4	-
Selenium	0.090	-
Silver	non-detect	1.8
Thallium	non-detect	18
α,α-Dimethylphenethylamine	non-detect	220
α-Naphthylamine	non-detect	220
ß-Naphthylamine	non-detect	220
1,1,2,2-Tetrachloroethane	non-detect	17
1,1,2-Trichloroethane	non-detect	17
1,1-Dichloroethylene	non-detect	17
1,2,3,-Trichloropropane	non-detect	17
1,2,4,5-Tetrachlorobenzene	non-detect	220
1,2,4-Trichlorobenzene	non-detect	220
1,2-Dibromo-3-chloropropane	non-detect	17
1,2-Dichloroethylene (cis- or trans-)	non-detect	16
1,3,5-Trinitrobenzene	non-detect	220
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	16
1,4-Naphthoquinone	non-detect	220
2,3,4,6-Tetrachlorophenol	non-detect	220
2,4,5-Trichlorophenol	non-detect	220
2,4,6-Trichlorophenol	non-detect	220
2,4-Dichlorophenol	non-detect	220
2,4-Dimethylphenol	non-detect	220
2,4-Dinitrophenol	non-detect	220
2,4-Dinitrotoluene	non-detect	220
2,6-Dichlorophenol	non-detect	220
2,6-Dinitrotoluene	non-detect	220
2-Acetylaminofluorene	non-detect	220
2-Chloroethyl vinyl ether	non-detect	17
2-Chloronaphthalene	non-detect	220
2-Chlorophenol	non-detect	220

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Table 7. (Continued)
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
2-Picoline	non-detect	220
3,3'-Dichlorobenzidine	non-detect	220
3-3'-Dimethylbenzidine	non-detect	220
3-Methylcholanthrene	non-detect	220
4,6-Dinitro-o-cresol	non-detect	220
4-Aminobiphenyl	non-detect	220
4-Bromophenyl phenyl ether	non-detect	220
5-Nitro-o-toluidine	non-detect	220
7,12-Dimethylbenz[a]anthracene	non-detect	220
Acetonitrile	non-detect	17
Acetophenone	non-detect	220
Acrolein	non-detect	17
Acrylonitrile	non-detect	17
Allyl chloride	non-detect	17
Aniline	non-detect	220
Aramite	non-detect	220
Benzene	21	-
Benzidine	non-detect	220
Benzo[a]anthracene	140	-
Benzo[a]pyrene	140	-
Benzo[b]fluoranthene	140	-
Benzo[k]fluoranthene	non-detect	220
Bromoform	non-detect	17
Butyl benzyl phthalate	non-detect	220
Carbon disulfide	non-detect	17
Carbon tetrachloride	non-detect	17
Chlorobenzene	non-detect	17
Chlorobenzilate	non-detect	220
Chloroform	non-detect	17
Chloroprene	non-detect	17
Chrysene	140	-
cis-1,3-Dichloropropene	non-detect	17
Cresol (o-, m-, or p-)	non-detect	200
Di-n-butyl phthalate	non-detect	220
Di-n-octyl phthalate	120	-
Diallate	non-detect	220
Dibenz[a,j]acridine	non-detect	220
Dibenzo[a,h]anthracene	140	-
Dichlorodifluoromethane	non-detect	17
Diethyl phthalate	non-detect	220
Dimethoate	non-detect	220
Dimethyl phthalate	non-detect	220
Dinoseb	non-detect	220

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Table 7. (Continued)
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Diphenylamine	non-detect	220
Disulfoton	non-detect	220
Ethyl methacrylate	non-detect	17
Ethyl methanesulfonate	non-detect	220
Famphur	non-detect	220
Fluoranthene	non-detect	220
Fluorene	120	-
Hexachlorobenzene	non-detect	220
Hexachlorobutadiene	non-detect	220
Hexachlorocyclopentadiene	non-detect	220
Hexachloroethane	non-detect	220
Hexachlorophene	non-detect	5500
Hexachloropropene	non-detect	220
Indeno(1,2,3-cd)pyrene	140	-
Isobutyl alcohol	non-detect	17
Isodrin	non-detect	220
Isosafrole	non-detect	220
Kepone	non-detect	440
m-Dichlorobenzene	non-detect	220
Methacrylonitrile	non-detect	17
Methapyrilene	non-detect	220
Methyl bromide	non-detect	17
Methyl chloride	non-detect	17
Methyl ethyl ketone	non-detect	17
Methyl iodide	non-detect	17
Methyl methacrylate	non-detect	17
Methyl methanesulfonate	non-detect	220
Methyl parathion	non-detect	220
Methylene chloride	non-detect	17
N-Nitrosodi-n-butylamine	non-detect	220
N-Nitrosodiethylamine	non-detect	220
N-Nitrosomethylethylamine	non-detect	220
N-Nitrosomorpholine	non-detect	220
N-Nitrosopiperidine	non-detect	220
N-Nitrosopyrrolidine	non-detect	220
Naphthalene	360	-
Nitrobenzene	non-detect	220
o-Dichlorobenzene	non-detect	220
o-Toluidine	non-detect	270
O,O,O-Triethyl phosphorothionate	non-detect	220
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	220
p-(Dimethylamino)azobenzene	non-detect	220
p-Chloro-m-cresol	non-detect	220

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Table 7. (Continued)
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Chloroaniline	non-detect	220
p-Dichlorobenzene	non-detect	220
p-Nitroaniline	non-detect	220
p-Nitrophenol	non-detect	220
p-Phenylenediamine	non-detect	220
Parathion	non-detect	220
Pentachlorobenzene	non-detect	220
Pentachloroethane	non-detect	17
Pentachloronitrobenzene	non-detect	220
Pentachlorophenol	non-detect	220
Phenacetin	non-detect	220
Phenol	non-detect	220
Phorate	non-detect	220
Pronamide	non-detect	220
Pyridine	non-detect	220
Safrole	non-detect	220
Tetrachloroethylene	non-detect	17
Tetraethyldithiopyrophosphate	non-detect	220
Toluene	110	-
Trichloroethylene	non-detect	17
Trichlorofluoromethane	non-detect	17
Vinyl Chloride	non-detect	17

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Table 8.
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Total Nitrogen as N	1800	-
Total Halogens as Cl^-	non-detect	25
Antimony	5.9	-
Arsenic	non-detect	0.22
Barium	non-detect	22
Beryllium	non-detect	1.1
Cadmium	non-detect	1.1
Chromium	non-detect	2.2
Cobalt	non-detect	4.4
Lead	22	-
Manganese	non-detect	1.1
Mercury	non-detect	0.18
Nickel	18	-
Selenium	0.12	-
Silver	non-detect	2.2
Thallium	non-detect	22
α,α-Dimethylphenethylamine	non-detect	700
α-Naphthylamine	non-detect	700
ß-Naphthylamine	non-detect	700
1,1,2,2-Tetrachloroethane	non-detect	34
1,1,2-Trichloroethane	non-detect	34
1,1-Dichloroethylene	non-detect	34
1,2,3,-Trichloropropane	non-detect	34
1,2,4,5-Tetrachlorobenzene	non-detect	700
1,2,4-Trichlorobenzene	non-detect	700
1,2-Dibromo-3-chloropropane	non-detect	34
1,2-Dichloroethylene (cis- or trans-)	non-detect	17
1,3,5-Trinitrobenzene	non-detect	900
1,4-Dichloro-2-butene (cis- or trans-)	non-detect	17
1,4-Naphthoquinone	non-detect	700
2,3,4,6-Tetrachlorophenol	non-detect	700
2,4,5-Trichlorophenol	non-detect	700
2,4,6-Trichlorophenol	non-detect	700
2,4-Dichlorophenol	non-detect	700
2,4-Dimethylphenol	non-detect	700
2,4-Dinitrophenol	non-detect	700
2,4-Dinitrotoluene	non-detect	700
2,6-Dichlorophenol	non-detect	700
2,6-Dinitrotoluene	non-detect	700
2-Acetylaminofluorene	non-detect	700
2-Chloroethyl vinyl ether	non-detect	34
2-Chloronaphthalene	non-detect	700
2-Chlorophenol	non-detect	700

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Table 8. (Continued)
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
2-Picoline	non-detect	700
3,3'-Dichlorobenzidine	non-detect	700
3-3'-Dimethylbenzidine	non-detect	700
3-Methylcholanthrene	non-detect	700
4,6-Dinitro-o-cresol	non-detect	700
4-Aminobiphenyl	non-detect	700
4-Bromophenyl phenyl ether	non-detect	700
5-Nitro-o-toluidine	non-detect	700
7,12-Dimethylbenz[a]anthracene	non-detect	700
Acetonitrile	non-detect	34
Acetophenone	non-detect	700
Acrolein	non-detect	34
Acrylonitrile	non-detect	34
Allyl chloride	non-detect	34
Aniline	non-detect	700
Aramite	non-detect	700
Benzene	3300	-
Benzidine	non-detect	700
Benzo[a]anthracene	610	-
Benzo[a]pyrene	530	-
Benzo[b]fluoranthene	390	-
Benzo[k]fluoranthene	non-detect	700
Bromoform	non-detect	34
Butyl benzyl phthalate	non-detect	700
Carbon disulfide	non-detect	34
Carbon tetrachloride	non-detect	34
Chlorobenzene	non-detect	34
Chlorobenzilate	non-detect	700
Chloroform	non-detect	34
Chloroprene	non-detect	34
Chrysene	610	-
cis-1,3-Dichloropropene	non-detect	34
Cresol (o-, m-, or p-)	non-detect	200
Di-n-butyl phthalate	non-detect	700
Di-n-octyl phthalate	360	-
Diallate	non-detect	700
Dibenz[a,j]acridine	non-detect	700
Dibenzo[a,h]anthracene	360	-
Dichlorodifluoromethane	non-detect	34
Diethyl phthalate	non-detect	700
Dimethoate	non-detect	700
Dimethyl phthalate	non-detect	700
Dinoseb	non-detect	700

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Table 8. (Continued)
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Diphenylamine	non-detect	700
Disulfoton	non-detect	700
Ethyl methacrylate	non-detect	34
Ethyl methanesulfonate	non-detect	700
Famphur	non-detect	700
Fluoranthene	non-detect	700
Fluorene	360	-
Hexachlorobenzene	non-detect	700
Hexachlorobutadiene	non-detect	700
Hexachlorocyclopentadiene	non-detect	700
Hexachloroethane	non-detect	700
Hexachlorophene	non-detect	18000
Hexachloropropene	non-detect	700
Indeno(1,2,3-cd)pyrene	360	-
Isobutyl alcohol	non-detect	34
Isodrin	non-detect	700
Isosafrole	non-detect	700
Kepone	non-detect	1400
m-Dichlorobenzene	non-detect	700
Methacrylonitrile	non-detect	34
Methapyrilene	non-detect	700
Methyl bromide	non-detect	34
Methyl chloride	non-detect	34
Methyl ethyl ketone	non-detect	34
Methyl iodide	non-detect	34
Methyl methacrylate	non-detect	34
Methyl methanesulfonate	non-detect	700
Methyl parathion	non-detect	700
Methylene chloride	non-detect	34
N-Nitrosodi-n-butylamine	non-detect	700
N-Nitrosodiethylamine	non-detect	700
N-Nitrosomethylethylamine	non-detect	700
N-Nitrosomorpholine	non-detect	700
N-Nitrosopiperidine	non-detect	700
N-Nitrosopyrrolidine	non-detect	700
Naphthalene	1300	-
Nitrobenzene	non-detect	700
o-Dichlorobenzene	non-detect	700
o-Toluidine	non-detect	1000
O,O,O-Triethyl phosphorothionate	non-detect	700
O,O-Diethyl O-pyrazinyl phosphothioate	non-detect	700
p-(Dimethylamino)azobenzene	non-detect	700
p-Chloro-m-cresol	non-detect	700

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Table 8. (Continued)
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
p-Chloroaniline	non-detect	700
p-Dichlorobenzene	non-detect	700
p-Nitroaniline	non-detect	700
p-Nitrophenol	non-detect	700
p-Phenylenediamine	non-detect	700
Parathion	non-detect	700
Pentachlorobenzene	non-detect	700
Pentachloroethane	non-detect	34
Pentachloronitrobenzene	non-detect	700
Pentachlorophenol	non-detect	700
Phenacetin	non-detect	700
Phenol	non-detect	700
Phorate	non-detect	700
Pronamide	non-detect	700
Pyridine	non-detect	700
Safrole	non-detect	700
Tetrachloroethylene	non-detect	34
Tetraethyldithiopyrophosphate	non-detect	700
Toluene	25000	-
Trichloroethylene	non-detect	34
Trichlorofluoromethane	non-detect	34
Vinyl Chloride	non-detect	34

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Table 1A.
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	34
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	30
1,1-Dichloro-1-propene	non-detect	30
1,1-Dichloroethane	non-detect	34
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	8.8
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	8.8
1,2,3,4-Tetrachlorobenzene	non-detect	14
1,2,3,5-Tetrachlorobenzene	non-detect	14
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	8.8
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	8.8
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	8.8
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	8.8
1,2,3-Trichlorobenzene	non-detect	14
1,2-Dichloroethane	non-detect	34
1,2-Dichloropropane	non-detect	34
1,3-Dichloro-2-propanol	non-detect	30
1,3-Dichloropropane	non-detect	30
1,3-Propane sultone	non-detect	14
1-Chloronaphthalene	non-detect	14
2,2-Dichloropropane	non-detect	30
2,3,4,5-Tetrachlorophenol	non-detect	14
2,3,4-Trichlorophenol	non-detect	14
2,3,5-Trichlorophenol	non-detect	14
2,3,6-Trichlorophenol	non-detect	14
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	3.5
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	3.5
2,3-Dichloro-1-propene	non-detect	30
2,3-Dichlorophenol	non-detect	14
2,4-D	non-detect	7.0
2,5-Dichlorophenol	non-detect	14
2-Fluoroacetamide	non-detect	14
2-Methylnaphthalene	1200	-
2-Nitropropane	non-detect	30
3,3'-Dimethoxybenzidine	non-detect	14
3,4-Dichlorophenol	non-detect	14
3,5-Dichlorophenol	non-detect	14
3-/4-Chlorophenol	non-detect	14

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Table 1A.
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3-Nitroaniline	non-detect	670
4,4'-methylene-bis(2-chloroaniline)	non-detect	14
4-Aminopyridine	non-detect	14
4-Chlorophenyl phenyl ether	non-detect	670
6-Propyl-2-thiouracil	non-detect	14
Acenaphthene	non-detect	670
Acetone cyanohydrin	non-detect	14
Allyl alcohol	non-detect	30
Ammonium vanadate	non-detect	32
Anthracene	non-detect	670
Aroclor-1016	non-detect	1.4
Aroclor-1221	non-detect	1.4
Aroclor-1232	non-detect	1.4
Aroclor-1242	non-detect	1.4
Aroclor-1248	non-detect	1.4
Aroclor-1254	non-detect	1.4
Aroclor-1260	non-detect	1.4
Arsenic acid	non-detect	0.27
Arsenic pentoxide	non-detect	0.22
Arsenic trioxide	non-detect	0.19
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	14
Benzenethiol	non-detect	30
Benzyl chloride	non-detect	14
Bis(2-chloroethoxy)methane	non-detect	670
Bis(2-chloroethyl)ether	non-detect	670
Bis(2-ethylhexyl)phthalate	non-detect	670
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	34
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	4.2
Chlordane	non-detect	14
Chloride	6.2	-
Chloroethane	non-detect	34
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6

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Table 1A.
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Cyanogen Chloride	non-detect	103
Di-selenium-tetra-sulfide	non-detect	830
Dibenzofuran	non-detect	670
Dibromochloromethane	non-detect	34
Endosulfan I	non-detect	1.4
Endosulfan II	non-detect	1.4
Endothall	non-detect	14
Endrin	non-detect	1.4
Endrin aldehyde	non-detect	1.4
Endrin ketone	non-detect	1.4
Epichlorohydrin	non-detect	30
Ethyl carbamate	non-detect	14
Ethylene glycol monoethyl ether	non-detect	14
Ethylenethiourea (2-Imidazolidinethione)	non-detect	14
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.4
Heptachlor epoxide	non-detect	2.8
Lead acetate	non-detect	13
Lead phosphate	non-detect	9.2
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	14
Methomyl	non-detect	7.0
N-Nitrosodiphenylamine	non-detect	670
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	8.2
Nicotine	non-detect	14
Octachlorodibenzodioxin	non-detect	18
Octachlorodibenzofuran	non-detect	18
Osmium tetroxide	non-detect	41
Phenanthrene	non-detect	670
Phenylthiourea	non-detect	7.0
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	30
Pyrene	non-detect	670
Selenium dioxide	non-detect	0.20
Selenium sulfide	non-detect	0.31
Silver Cyanide	non-detect	2.6

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Table 1A.
Gasoline - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Silvex	non-detect	7.0
Strychnine	non-detect	14
Tetra-selenium-tetra-sulfide	non-detect	1600
Tetraethyl lead	non-detect	11
Thallium acetate	non-detect	18
Thallium carbonate	non-detect	16
Thallium chloride	non-detect	17
Thallium nitrate	non-detect	18
Thallium oxide	non-detect	15
Thallium sulfate	non-detect	17
Thioacetamide	non-detect	7.0
Thiofanox	non-detect	14
Thiourea	non-detect	7.0
Toluene-2,4-diamine	non-detect	7.0
Toluene-2,6-diamine	non-detect	7.0
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	0.37
alpha-BHC	non-detect	1.4
beta-BHC	non-detect	1.4
delta-BHC	non-detect	1.4
gamma-BHC (Lindane)	non-detect	1.4
m-Dinitrobenzene	non-detect	670
p-Toluidine	non-detect	14
trans-1,3-Dichloropropene	non-detect	34

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Table 2A.
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	34
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	30
1,1-Dichloro-1-propene	non-detect	30
1,1-Dichloroethane	non-detect	34
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	75
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	75
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	75
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	75
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	75
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	75
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	34
1,2-Dichloropropane	non-detect	34
1,3-Dichloro-2-propanol	non-detect	30
1,3-Dichloropropane	non-detect	30
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	30
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	30
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	30
2,3-Dichloro-1-propene	non-detect	30
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	6.0
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	3400	-
2-Nitropropane	non-detect	30
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	1200

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Table 2A.
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	1200
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	1200
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	30
Ammonium vanadate	non-detect	28
Anthracene	non-detect	1200
Aroclor-1016	non-detect	1.2
Aroclor-1221	non-detect	1.2
Aroclor-1232	non-detect	1.2
Aroclor-1242	non-detect	1.2
Aroclor-1248	non-detect	1.2
Aroclor-1254	non-detect	1.2
Aroclor-1260	non-detect	1.2
Arsenic acid	non-detect	0.23
Arsenic pentoxide	non-detect	0.18
Arsenic trioxide	non-detect	0.16
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	30
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	1200
Bis(2-chloroethyl)ether	non-detect	1200
Bis(2-ethylhexyl)phthalate	non-detect	1200
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	34
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	3.6
Chlordane	non-detect	12
Chloride	non-detect	5.0
Chloroethane	non-detect	34
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	370

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Table 2A.
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Dibenzofuran	non-detect	1200
Dibromochloromethane	non-detect	34
Endosulfan I	non-detect	1.2
Endosulfan II	non-detect	1.2
Endothall	non-detect	100
Endrin	non-detect	1.2
Endrin aldehyde	non-detect	1.2
Endrin ketone	non-detect	1.2
Epichlorohydrin	non-detect	30
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	12
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.2
Heptachlor epoxide	non-detect	2.4
Lead acetate	non-detect	22
Lead phosphate	non-detect	15
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	12
Methomyl	non-detect	6.0
N-Nitrosodiphenylamine	non-detect	1200
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	7.0
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	150
Octachlorodibenzofuran	non-detect	150
Osmium tetroxide	non-detect	40
Phenanthrene	860	-
Phenylthiourea	non-detect	6.0
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	30
Pyrene	non-detect	1200
Selenium dioxide	non-detect	0.21
Selenium sulfide	non-detect	0.34
Silver Cyanide	non-detect	2.6
Silvex	non-detect	6.0
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	710

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Table 2A.
No.2 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Tetraethyl lead	non-detect	18
Thallium acetate	non-detect	15
Thallium carbonate	non-detect	14
Thallium chloride	non-detect	14
Thallium nitrate	non-detect	16
Thallium oxide	non-detect	12
Thallium sulfate	non-detect	15
Thioacetamide	non-detect	6.0
Thiofanox	non-detect	100
Thiourea	non-detect	6.0
Toluene-2,4-diamine	non-detect	6.0
Toluene-2,6-diamine	non-detect	6.0
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	0.32
alpha-BHC	non-detect	1.2
beta-BHC	non-detect	1.2
delta-BHC	non-detect	1.2
gamma-BHC (Lindane)	non-detect	1.2
m-Dinitrobenzene	non-detect	1200
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	34

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Table 3A.
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	17
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	29
1,1-Dichloro-1-propene	non-detect	29
1,1-Dichloroethane	non-detect	17
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	72
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	72
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	72
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	72
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	72
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	72
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	17
1,2-Dichloropropane	non-detect	17
1,3-Dichloro-2-propanol	non-detect	29
1,3-Dichloropropane	non-detect	29
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	29
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	29
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	29
2,3-Dichloro-1-propene	non-detect	29
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	5.7
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	1000	-
2-Nitropropane	non-detect	29
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	200

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Table 3A.
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	200
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	200
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	29
Ammonium vanadate	non-detect	68
Anthracene	non-detect	200
Aroclor-1016	non-detect	1.1
Aroclor-1221	non-detect	1.1
Aroclor-1232	non-detect	1.1
Aroclor-1242	non-detect	1.1
Aroclor-1248	non-detect	1.1
Aroclor-1254	non-detect	1.1
Aroclor-1260	non-detect	1.1
Arsenic acid	non-detect	0.43
Arsenic pentoxide	non-detect	0.35
Arsenic trioxide	non-detect	0.30
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	29
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	200
Bis(2-chloroethyl)ether	non-detect	200
Bis(2-ethylhexyl)phthalate	non-detect	200
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	17
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	6.9
Chlordane	non-detect	11
Chloride	non-detect	5.0
Chloroethane	non-detect	17
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	1300

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Table 3A.
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Dibenzofuran	non-detect	200
Dibromochloromethane	non-detect	17
Endosulfan I	non-detect	1.1
Endosulfan II	non-detect	1.1
Endothall	non-detect	100
Endrin	non-detect	1.1
Endrin aldehyde	non-detect	1.1
Endrin ketone	non-detect	1.1
Epichlorohydrin	non-detect	29
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	110
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.1
Heptachlor epoxide	non-detect	2.3
Lead acetate	non-detect	34
Lead phosphate	non-detect	24
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	110
Methomyl	non-detect	57
N-Nitrosodiphenylamine	non-detect	200
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	13
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	140
Octachlorodibenzofuran	non-detect	140
Osmium tetroxide	non-detect	40
Phenanthrene	250	-
Phenylthiourea	non-detect	57
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	29
Pyrene	non-detect	200
Selenium dioxide	non-detect	0.35
Selenium sulfide	non-detect	0.56
Silver Cyanide	non-detect	2.6
Silvex	non-detect	5.7
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	2400

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Table 3A.
No.4 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Tetraethyl lead	non-detect	29
Thallium acetate	non-detect	30
Thallium carbonate	non-detect	26
Thallium chloride	non-detect	27
Thallium nitrate	non-detect	30
Thallium oxide	non-detect	24
Thallium sulfate	non-detect	28
Thioacetamide	non-detect	57
Thiofanox	non-detect	100
Thiourea	non-detect	57
Toluene-2,4-diamine	non-detect	57
Toluene-2,6-diamine	non-detect	57
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	0.75
alpha-BHC	non-detect	1.1
beta-BHC	non-detect	1.1
delta-BHC	non-detect	1.1
gamma-BHC (Lindane)	non-detect	1.1
m-Dinitrobenzene	non-detect	200
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	17

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Table 4A.
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	21
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	26
1,1-Dichloro-1-propene	non-detect	26
1,1-Dichloroethane	non-detect	21
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	64
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	64
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	64
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	64
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	64
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	64
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	21
1,2-Dichloropropane	non-detect	21
1,3-Dichloro-2-propanol	non-detect	26
1,3-Dichloropropane	non-detect	26
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	26
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	26
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	26
2,3-Dichloro-1-propene	non-detect	26
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	5.1
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	4200	-
2-Nitropropane	non-detect	26
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	980

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Table 4A.
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	980
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	980
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	26
Ammonium vanadate	non-detect	590
Anthracene	non-detect	980
Aroclor-1016	non-detect	1.0
Aroclor-1221	non-detect	1.0
Aroclor-1232	non-detect	1.0
Aroclor-1242	non-detect	1.0
Aroclor-1248	non-detect	1.0
Aroclor-1254	non-detect	1.0
Aroclor-1260	non-detect	1.0
Arsenic acid	non-detect	0.39
Arsenic pentoxide	non-detect	0.31
Arsenic trioxide	non-detect	0.27
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	26
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	980
Bis(2-chloroethyl)ether	non-detect	980
Bis(2-ethylhexyl)phthalate	non-detect	980
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	21
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	6.1
Chlordane	non-detect	10
Chloride	non-detect	5.0
Chloroethane	non-detect	21
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	1400

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Table 4A.
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Dibenzofuran	non-detect	980
Dibromochloromethane	non-detect	21
Endosulfan I	non-detect	1.0
Endosulfan II	non-detect	1.0
Endothall	non-detect	100
Endrin	non-detect	1.0
Endrin aldehyde	non-detect	1.0
Endrin ketone	non-detect	1.0
Epichlorohydrin	non-detect	26
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	100
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.0
Heptachlor epoxide	non-detect	2.0
Lead acetate	non-detect	110
Lead phosphate	non-detect	79
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	100
Methomyl	non-detect	50
N-Nitrosodiphenylamine	non-detect	980
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	330
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	130
Octachlorodibenzofuran	non-detect	130
Osmium tetroxide	non-detect	40
Phenanthrene	860	-
Phenylthiourea	non-detect	50
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	26
Pyrene	610	-
Selenium dioxide	non-detect	0.40
Selenium sulfide	non-detect	0.63
Silver Cyanide	non-detect	2.6
Silvex	non-detect	5.1
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	2600

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Table 4A.
No.6 Fuel Oil - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Tetraethyl lead	non-detect	94
Thallium acetate	non-detect	26
Thallium carbonate	non-detect	23
Thallium chloride	non-detect	24
Thallium nitrate	non-detect	27
Thallium oxide	non-detect	21
Thallium sulfate	non-detect	25
Thioacetamide	non-detect	50
Thiofanox	non-detect	100
Thiourea	non-detect	50
Toluene-2,4-diamine	non-detect	50
Toluene-2,6-diamine	non-detect	50
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	11
alpha-BHC	non-detect	5.0
beta-BHC	non-detect	5.0
delta-BHC	non-detect	1.0
gamma-BHC (Lindane)	non-detect	1.0
m-Dinitrobenzene	non-detect	980
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	21

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Table 5A.
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	17
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	29
1,1-Dichloro-1-propene	non-detect	29
1,1-Dichloroethane	non-detect	17
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	68
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	68
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	68
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	68
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	68
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	68
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	17
1,2-Dichloropropane	non-detect	17
1,3-Dichloro-2-propanol	non-detect	29
1,3-Dichloropropane	non-detect	29
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	29
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	29
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	29
2,3-Dichloro-1-propene	non-detect	29
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	5.4
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	1000	-
2-Nitropropane	non-detect	29
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	200

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Table 5A.
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	200
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	200
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	29
Ammonium vanadate	non-detect	28
Anthracene	non-detect	200
Aroclor-1016	non-detect	1.1
Aroclor-1221	non-detect	1.1
Aroclor-1232	non-detect	1.1
Aroclor-1242	non-detect	1.1
Aroclor-1248	non-detect	1.1
Aroclor-1254	non-detect	1.1
Aroclor-1260	non-detect	1.1
Arsenic acid	non-detect	0.38
Arsenic pentoxide	non-detect	0.31
Arsenic trioxide	non-detect	0.27
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	29
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	200
Bis(2-chloroethyl)ether	non-detect	200
Bis(2-ethylhexyl)phthalate	non-detect	200
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	17
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	6.1
Chlordane	non-detect	11
Chloride	non-detect	5.0
Chloroethane	non-detect	17
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	650
Dibenzofuran	non-detect	200

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Table 5A.
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Dibromochloromethane	non-detect	17
Endosulfan I	non-detect	1.1
Endosulfan II	non-detect	1.1
Endothall	non-detect	100
Endrin	non-detect	1.1
Endrin aldehyde	non-detect	1.1
Endrin ketone	non-detect	1.1
Epichlorohydrin	non-detect	29
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	100
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.1
Heptachlor epoxide	non-detect	2.3
Lead acetate	non-detect	30
Lead phosphate	non-detect	21
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	100
Methomyl	non-detect	50
N-Nitrosodiphenylamine	non-detect	200
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	10
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	140
Octachlorodibenzofuran	non-detect	140
Osmium tetroxide	non-detect	40
Phenanthrene	300	-
Phenylthiourea	non-detect	50
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	29
Pyrene	300	-
Selenium dioxide	non-detect	0.28
Selenium sulfide	non-detect	0.45
Silver Cyanide	non-detect	2.6
Silvex	non-detect	5.4
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	1200
Tetraethyl lead	non-detect	25
Thallium acetate	non-detect	26

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Table 5A.
Composite 246 50th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Thallium carbonate	non-detect	23
Thallium chloride	non-detect	24
Thallium nitrate	non-detect	26
Thallium oxide	non-detect	21
Thallium sulfate	non-detect	25
Thioacetamide	non-detect	50
Thiofanox	non-detect	100
Thiourea	non-detect	50
Toluene-2,4-diamine	non-detect	50
Toluene-2,6-diamine	non-detect	50
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	0.55
alpha-BHC	non-detect	1.1
beta-BHC	non-detect	1.1
delta-BHC	non-detect	1.1
gamma-BHC (Lindane)	non-detect	1.1
m-Dinitrobenzene	non-detect	200
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	17

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Table 6A.

Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	34
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	30
1,1-Dichloro-1-propene	non-detect	30
1,1-Dichloroethane	non-detect	34
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	74
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	74
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	74
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	74
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	74
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	74
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	34
1,2-Dichloropropane	non-detect	34
1,3-Dichloro-2-propanol	non-detect	30
1,3-Dichloropropane	non-detect	30
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	30
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	30
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	30
2,3-Dichloro-1-propene	non-detect	30
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	6.0
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	3200	-
2-Nitropropane	non-detect	30
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	910

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Table 6A.

Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	910
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	910
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	30
Ammonium vanadate	non-detect	150
Anthracene	non-detect	910
Aroclor-1016	non-detect	1.2
Aroclor-1221	non-detect	1.2
Aroclor-1232	non-detect	1.2
Aroclor-1242	non-detect	1.2
Aroclor-1248	non-detect	1.2
Aroclor-1254	non-detect	1.2
Aroclor-1260	non-detect	1.2
Arsenic acid	non-detect	0.42
Arsenic pentoxide	non-detect	0.34
Arsenic trioxide	non-detect	0.29
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	30
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	910
Bis(2-chloroethyl)ether	non-detect	910
Bis(2-ethylhexyl)phthalate	non-detect	910
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	34
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	6.7
Chlordane	non-detect	12
Chloride	non-detect	5.0
Chloroethane	non-detect	34
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	1200

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Table 6A.

Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Dibenzofuran	non-detect	910
Dibromochloromethane	non-detect	34
Endosulfan I	non-detect	1.2
Endosulfan II	non-detect	1.2
Endothall	non-detect	100
Endrin	non-detect	1.2
Endrin aldehyde	non-detect	1.2
Endrin ketone	non-detect	1.2
Epichlorohydrin	non-detect	30
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	110
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.2
Heptachlor epoxide	non-detect	2.4
Lead acetate	non-detect	74
Lead phosphate	non-detect	53
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	110
Methomyl	non-detect	55
N-Nitrosodiphenylamine	non-detect	910
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	300
Nicotine	non-detect	1300
Octachlorodibenzodioxin	non-detect	150
Octachlorodibenzofuran	non-detect	150
Osmium tetroxide	non-detect	40
Phenanthrene	820	-
Phenylthiourea	non-detect	55
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	30
Pyrene	600	-
Selenium dioxide	non-detect	0.34
Selenium sulfide	non-detect	0.54
Silver Cyanide	non-detect	2.6
Silvex	non-detect	6.0
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	2400

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Table 6A.

Composite 246 90th Percentile - Combined Results

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Tetraethyl lead	non-detect	63
Thallium acetate	non-detect	29
Thallium carbonate	non-detect	25
Thallium chloride	non-detect	26
Thallium nitrate	non-detect	29
Thallium oxide	non-detect	23
Thallium sulfate	non-detect	27
Thioacetamide	non-detect	55
Thiofanox	non-detect	100
Thiourea	non-detect	55
Toluene-2,4-diamine	non-detect	55
Toluene-2,6-diamine	non-detect	55
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	2.7
alpha-BHC	non-detect	1.2
beta-BHC	non-detect	1.2
delta-BHC	non-detect	1.2
gamma-BHC (Lindane)	non-detect	1.2
m-Dinitrobenzene	non-detect	910
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	34

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Table 7A.
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	17
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	29
1,1-Dichloro-1-propene	non-detect	29
1,1-Dichloroethane	non-detect	17
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	64
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	64
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	64
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	64
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	64
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	64
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	17
1,2-Dichloropropane	non-detect	17
1,3-Dichloro-2-propanol	non-detect	29
1,3-Dichloropropane	non-detect	29
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	29
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	26
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	26
2,3-Dichloro-1-propene	non-detect	29
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	5.7
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	1000	-
2-Nitropropane	non-detect	29
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100

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Table 7A.
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3-/4-Chlorophenol	non-detect	100
3-Nitroaniline	non-detect	220
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	220
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	220
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	29
Ammonium vanadate	non-detect	31
Anthracene	non-detect	220
Aroclor-1016	non-detect	1.1
Aroclor-1221	non-detect	1.1
Aroclor-1232	non-detect	1.1
Aroclor-1242	non-detect	1.1
Aroclor-1248	non-detect	1.1
Aroclor-1254	non-detect	1.1
Aroclor-1260	non-detect	1.1
Arsenic acid	non-detect	0.27
Arsenic pentoxide	non-detect	0.22
Arsenic trioxide	non-detect	0.19
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	29
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	220
Bis(2-chloroethyl)ether	non-detect	220
Bis(2-ethylhexyl)phthalate	non-detect	220
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	17
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	4.2
Chlordane	non-detect	11
Chloride	2.6	-
Chloroethane	non-detect	17
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0

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Table 7A.
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Cyanogen Bromide	non-detect	6.6
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	420
Dibenzofuran	non-detect	220
Dibromochloromethane	non-detect	17
Endosulfan I	non-detect	1.1
Endosulfan II	non-detect	1.1
Endothall	non-detect	100
Endrin	non-detect	1.1
Endrin aldehyde	non-detect	1.1
Endrin ketone	non-detect	1.1
Epichlorohydrin	non-detect	29
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	14
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.1
Heptachlor epoxide	non-detect	2.3
Lead acetate	non-detect	26
Lead phosphate	non-detect	18
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	14
Methomyl	non-detect	7.0
N-Nitrosodiphenylamine	non-detect	220
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	8.2
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	130
Octachlorodibenzofuran	non-detect	130
Osmium tetroxide	non-detect	40
Phenanthrene	250	-
Phenylthiourea	non-detect	7.0
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	29
Pyrene	140	-
Selenium dioxide	non-detect	0.26
Selenium sulfide	non-detect	0.41

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Table 7A.
Composite All 50th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Silver Cyanide	non-detect	2.6
Silvex	non-detect	5.7
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	810
Tetraethyl lead	non-detect	22
Thallium acetate	non-detect	18
Thallium carbonate	non-detect	16
Thallium chloride	non-detect	17
Thallium nitrate	non-detect	18
Thallium oxide	non-detect	15
Thallium sulfate	non-detect	17
Thioacetamide	non-detect	7.0
Thiofanox	non-detect	100
Thiourea	non-detect	7.0
Toluene-2,4-diamine	non-detect	7.0
Toluene-2,6-diamine	non-detect	7.0
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	0.37
alpha-BHC	non-detect	1.2
beta-BHC	non-detect	1.2
delta-BHC	non-detect	1.1
gamma-BHC (Lindane)	non-detect	1.1
m-Dinitrobenzene	non-detect	220
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	17

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Table 8A.
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
1,1,1-Trichloroethane	non-detect	34
1,1,2-Trichloro-1,2,2-trifluoroethane	non-detect	30
1,1-Dichloro-1-propene	non-detect	30
1,1-Dichloroethane	non-detect	34
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	non-detect	74
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	non-detect	74
1,2,3,4-Tetrachlorobenzene	non-detect	100
1,2,3,5-Tetrachlorobenzene	non-detect	100
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	non-detect	74
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	non-detect	74
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	non-detect	74
1,2,3,7,8-Pentachlorodibenzo-p-furan	non-detect	74
1,2,3-Trichlorobenzene	non-detect	100
1,2-Dichloroethane	non-detect	34
1,2-Dichloropropane	non-detect	34
1,3-Dichloro-2-propanol	non-detect	30
1,3-Dichloropropane	non-detect	30
1,3-Propane sultone	non-detect	100
1-Chloronaphthalene	non-detect	100
2,2-Dichloropropane	non-detect	30
2,3,4,5-Tetrachlorophenol	non-detect	100
2,3,4-Trichlorophenol	non-detect	100
2,3,5-Trichlorophenol	non-detect	100
2,3,6-Trichlorophenol	non-detect	100
2,3,7,8-Tetrachlorodibenzo-p-dioxin	non-detect	30
2,3,7,8-Tetrachlorodibenzo-p-furan	non-detect	30
2,3-Dichloro-1-propene	non-detect	30
2,3-Dichlorophenol	non-detect	100
2,4-D	non-detect	6.7
2,5-Dichlorophenol	non-detect	100
2-Fluoroacetamide	non-detect	100
2-Methylnaphthalene	2500	-
2-Nitropropane	non-detect	30
3,3'-Dimethoxybenzidine	non-detect	100
3,4-Dichlorophenol	non-detect	100
3,5-Dichlorophenol	non-detect	100
3-/4-Chlorophenol	non-detect	100

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Table 8A.
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
3-Nitroaniline	non-detect	700
4,4'-methylene-bis(2-chloroaniline)	non-detect	100
4-Aminopyridine	non-detect	100
4-Chlorophenyl phenyl ether	non-detect	700
6-Propyl-2-thiouracil	non-detect	100
Acenaphthene	non-detect	700
Acetone cyanohydrin	non-detect	100
Allyl alcohol	non-detect	30
Ammonium vanadate	non-detect	86
Anthracene	non-detect	700
Aroclor-1016	non-detect	1.3
Aroclor-1221	non-detect	1.3
Aroclor-1232	non-detect	1.3
Aroclor-1242	non-detect	1.3
Aroclor-1248	non-detect	1.3
Aroclor-1254	non-detect	1.3
Aroclor-1260	non-detect	1.3
Arsenic acid	non-detect	0.41
Arsenic pentoxide	non-detect	0.34
Arsenic trioxide	non-detect	0.29
Barium Cyanide	non-detect	3.7
Benzal chloride	non-detect	100
Benzenethiol	non-detect	30
Benzyl chloride	non-detect	100
Bis(2-chloroethoxy)methane	non-detect	700
Bis(2-chloroethyl)ether	non-detect	700
Bis(2-ethylhexyl)phthalate	non-detect	700
Bromide	non-detect	5.0
Bromodichloromethane	non-detect	34
Calcium Cyanide	non-detect	1.8
Calcium chromate	non-detect	6.6
Chlordane	non-detect	13
Chloride	2.7	-
Chloroethane	non-detect	34
Copper Cyanide	non-detect	1.7
Cyanide	non-detect	1.0
Cyanogen Bromide	non-detect	6.6

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Table 8A.
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Cyanogen Chloride	non-detect	8.6
Di-selenium-tetra-sulfide	non-detect	1200
Dibenzofuran	non-detect	700
Dibromochloromethane	non-detect	34
Endosulfan I	non-detect	1.3
Endosulfan II	non-detect	1.3
Endothall	non-detect	100
Endrin	non-detect	1.3
Endrin aldehyde	non-detect	1.3
Endrin ketone	non-detect	1.3
Epichlorohydrin	non-detect	30
Ethyl carbamate	non-detect	100
Ethylene glycol monoethyl ether	non-detect	100
Ethylenethiourea (2-Imidazolidinethione)	non-detect	110
Fluoride	non-detect	3.0
Heptachlor	non-detect	1.3
Heptachlor epoxide	non-detect	2.7
Lead acetate	non-detect	74
Lead phosphate	non-detect	53
MNNG (N-Metyl-N-nitroso-N'-nitroguanidine)	non-detect	110
Methomyl	non-detect	54
N-Nitrosodiphenylamine	non-detect	700
Nickel Cyanide	non-detect	3.5
Nickel carbonyl	non-detect	46
Nicotine	non-detect	100
Octachlorodibenzodioxin	non-detect	150
Octachlorodibenzofuran	non-detect	150
Osmium tetroxide	non-detect	40
Phenanthrene	730	-
Phenylthiourea	non-detect	54
Potassium Cyanide	non-detect	2.5
Potassium Silver Cyanide	non-detect	2.9
Propargyl alcohol	non-detect	30
Pyrene	600	-
Selenium dioxide	non-detect	0.34
Selenium sulfide	non-detect	0.53
Silver Cyanide	non-detect	2.6

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Table 8A.
Composite All 90th Percentile - Combined Results
(VOC non-detects from Composite 246)

Chemical Name	Concentration Limit (mg/kg at 10,000 BTU/lb)	Minimum Detection Limit (mg/kg)
Silvex	non-detect	6.7
Strychnine	non-detect	100
Tetra-selenium-tetra-sulfide	non-detect	2300
Tetraethyl lead	non-detect	63
Thallium acetate	non-detect	28
Thallium carbonate	non-detect	25
Thallium chloride	non-detect	26
Thallium nitrate	non-detect	29
Thallium oxide	non-detect	23
Thallium sulfate	non-detect	27
Thioacetamide	non-detect	54
Thiofanox	non-detect	100
Thiourea	non-detect	54
Toluene-2,4-diamine	non-detect	54
Toluene-2,6-diamine	non-detect	54
Vanadium pentoxide	non-detect	18
Zinc Cyanide	non-detect	2.3
Zinc phosphide	non-detect	1.7
alpha-BHC	non-detect	1.4
beta-BHC	non-detect	1.4
delta-BHC	non-detect	1.3
gamma-BHC (Lindane)	non-detect	1.3
m-Dinitrobenzene	non-detect	700
p-Toluidine	non-detect	100
trans-1,3-Dichloropropene	non-detect	34

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Appendix D

MDL Data

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METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = Gasoline							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Dichlorodifluoromethane	40	38	35	41	41	38	37	7
Chloromethane	57	57	54	60	60	56	57	7
Vinyl Chloride	56	57	54	59	59	54	56	6
Bromomethane	56	63	70	65	72	66	64	16
Chloroethane	54	59	55	57	60	53	55	9
Trichlorofluoromethane	50	52	116	52	58	74	52	76
1,1-Dichloroethene	53	53	51	53	53	52	53	3
Acetone	68	65	62	64	61	59	59	10
Iodomethane	54	55	53	55	54	54	54	2
Carbon disulfide	78	80	76	80	81	76	77	6
Allyl chloride	53	54	52	55	53	54	53	3
Methylene chloride	56	50	50	53	51	49	52	7
trans-1,2-Dichloroethene	53	55	53	55	54	54	53	2
1,1-Dichloroethane	46	47	48	48	47	48	47	2
cis-1,2-Dichloroethene	54	53	54	53	53	54	53	2
2-Butanone	54	50	49	50	47	50	47	7
Methacrylonitrile	49	42	44	43	43	44	43	7
Chloroform	46	45	46	47	45	47	45	2
1,2-Dichloroethane	47	46	47	48	47	48	46	2
Vinyl acetate	45	45	45	45	46	44	45	1
1,1,1-Trichloroethane	48	49	49	49	49	48	49	1
Carbon tetrachloride	50	51	50	52	51	50	50	2
Benzene	81	82	81	83	83	81	81	2
Trichloroethene	53	52	52	53	53	52	52	2
1,2-Dichloropropane	47	47	47	47	47	46	47	1
Dibromomethane	49	48	48	48	48	48	48	2
Methyl methacrylate	51	51	51	50	51	51	51	1
Bromodichloromethane	47	45	46	46	46	45	45	2
2-Chloroethylvinyl ether	26	25	26	24	25	24	25	2
cis-1,3-Dichloropropene	48	46	47	46	46	46	46	2
trans-1,3-Dichloropropene	45	44	44	44	44	44	44	2
Ethyl methacrylate	45	43	44	44	44	44	44	2
1,1,2-Trichloroethane	43	41	42	41	42	42	41	2
Dibromochloromethane	44	41	42	41	42	42	42	3
Bromoform	45	42	42	42	41	43	43	4
1,1,2,2-Tetrachloroethane	44	43	43	42	42	44	44	2
Acrolein	405	431	353	415	395	381	406	79
Acetonitrile	66	70	66	68	67	67	69	5
Acrylonitrile	56	46	43	47	45	44	49	14
Propionitrile	47	46	44	45	44	46	46	3
Isobutanol	111	46	46	43	44	44	47	79
p-Dioxane	49	47	46	46	47	47	48	4
cis-1,4-Dichloro-2-butene	45	41	41	42	41	42	42	4
trans-1,4-Dichloro-2-butene	46	45	45	44	44	46	45	3
4-Methyl-2-pentanone	48	47	47	48	48	47	47	1
Toluene	257	266	262	266	264	262	260	10
Tetrachloroethene	56	56	55	56	56	54	54	3
2-Hexanone	49	46	46	45	45	46	45	4
1,2-Dibromoethane	50	49	49	49	49	49	50	2
Chlorobenzene	49	49	48	48	49	49	48	1

METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = Gasoline							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Ethylbenzene	94	94	94	94	95	94	94	1
m,p-Xylene	132	133	130	132	132	132	131	2
o-Xylene	111	112	110	110	111	112	111	2
Styrene	50	49	48	48	48	49	49	1
1,2,3,-Trichloropropane	53	51	52	51	51	52	43	10
Pentachloraethane	44	43	44	43	43	44	44	2
1,3-Dichlorobenzene	45	44	44	44	44	45	44	1
1,4-Dichlorobenzene	44	43	43	43	43	44	44	2
1,2-Dichlorobenzene	44	43	44	42	43	43	43	2
1,2-Dibromo-3-chloropropane	45	43	43	42	44	43	43	3
1,2,4-Trichlorobenzene	43	42	42	42	43	43	43	1

Comments:

1) All values are in ug/Kg

2) Spiked amount = 50ug/Kg

3) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = No.2							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Dichlorodifluoromethane	29	32	37	38	36	37	37	10
Chloromethane	42	44	44	46	42	43	44	4
Vinyl Chloride	41	43	43	45	42	43	44	4
Bromomethane	46	49	54	52	48	58	45	15
Chloroethane	44	52	49	48	48	49	50	8
Trichlorofluoromethane	127	134	137	136	130	137	140	14
1,1-Dichloroethene	44	45	44	46	43	45	46	3
Acetone	60	59	58	57	60	57	57	4
Iodomethane	45	47	47	47	45	47	48	3
Carbon disulfide	64	67	67	67	63	67	68	6
Allyl chloride	45	46	46	45	46	46	47	3
Methylene chloride	44	46	45	45	44	45	46	2
trans-1,2-Dichloroethene	49	51	50	50	49	50	51	3
1,1-Dichloroethane	43	45	44	44	44	43	44	2
cis-1,2-Dichloroethene	49	50	49	49	50	49	49	1
2-Butanone	50	49	50	51	53	49	48	5
Methacrylonitrile	49	45	45	46	47	43	44	6
Chloroform	46	46	47	46	47	45	46	2
1,2-Dichloroethane	50	51	50	50	50	48	50	2
Vinyl acetate	41	42	41	40	39	41	41	3
1,1,1-Trichloroethane	44	45	46	45	44	45	45	2
Carbon tetrachloride	45	46	47	46	45	47	46	2
Benzene	120	124	124	121	120	123	122	6
Trichloroethene	50	50	51	49	50	50	49	2
1,2-Dichloropropane	47	48	48	47	48	47	47	1
Dibromomethane	49	48	49	48	50	50	48	2
Methyl methacrylate	60	60	61	60	61	59	59	2
Bromodichloromethane	45	46	46	45	47	45	47	2
2-Chloroethylvinyl ether	25	25	25	24	25	25	24	2
cis-1,3-Dichloropropene	48	48	48	47	48	47	46	2
trans-1,3-Dichloropropene	47	47	47	47	48	47	46	2
Ethyl methacrylate	50	50	49	48	51	48	48	4
1,1,2-Trichloroethane	45	48	47	47	46	47	46	3
Dibromochloromethane	43	45	45	45	46	45	45	3
Bromoform	40	42	42	42	42	42	42	2
1,1,2,2-Tetrachloroethane	53	55	53	54	53	54	52	2
Acrolein	450	470	438	438	403	483	453	80
Acetonitrile	48	53	50	50	46	53	51	8
Acrylonitrile	34	34	32	31	31	33	33	3
Propionitrile	37	39	38	37	38	38	38	2
Isobutanol	111	122	119	118	109	125	123	19
p-Dioxane	44	45	43	42	42	44	44	3
cis-1,4-Dichloro-2-butene	42	43	43	43	44	45	43	3
trans-1,4-Dichloro-2-butene	43	53	43	50	42	52	44	15
4-Methyl-2-pentanone	49	49	50	50	49	50	50	1
Toluene	419	427	426	422	416	425	426	13
Tetrachloroethene	52	54	54	54	53	54	55	3
2-Hexanone	46	46	48	47	48	46	46	2
1,2-Dibromoethane	46	47	48	48	47	47	47	1
Chlorobenzene	49	49	49	49	49	49	49	1

METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = No.2							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Ethylbenzene	170	170	173	172	171	172	173	4
m,p-Xylene	247	245	249	249	248	246	248	4
o-Xylene	211	211	212	214	212	212	213	3
Styrene	52	52	53	53	53	52	53	1
1,2,3,-Trichloropropane	42	41	42	42	42	42	42	1
Pentachloraethane	42	40	42	42	41	41	41	2
1,3-Dichlorobenzene	45	45	46	46	46	45	46	1
1,4-Dichlorobenzene	44	45	45	45	45	45	45	1
1,2-Dichlorobenzene	43	43	44	44	44	43	44	2
1,2-Dibromo-3-chloropropane	44	46	47	45	44	43	47	5
1,2,4-Trichlorobenzene	43	46	53	46	44	44	44	11

Comments:

1) All values are in ug/Kg

2) Spiked amount = 50ug/Kg

3) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = No.6							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Dichlorodifluoromethane	48	44	38	49	50	44	44	13
Chloromethane	54	52	42	53	51	49	48	12
Vinyl Chloride	53	51	43	53	52	49	49	11
Bromomethane	53	64	47	73	52	52	63	29
Chloroethane	50	53	48	52	56	50	49	8
Trichlorofluoromethane	52	52	45	53	51	52	50	8
1,1-Dichloroethene	51	50	46	51	50	51	51	5
Acetone	49	51	50	49	52	51	50	3
Iodomethane	51	50	48	51	50	50	51	3
Carbon disulfide	52	52	46	52	50	51	50	7
Allyl chloride	51	51	48	51	49	51	51	3
Methylene chloride	50	50	50	51	49	51	51	3
trans-1,2-Dichloroethene	50	49	49	49	48	50	50	2
1,1-Dichloroethane	50	50	51	51	50	51	51	2
cis-1,2-Dichloroethene	47	46	47	47	47	47	47	2
2-Butanone	49	50	48	49	51	47	47	5
Methacrylonitrile	47	48	47	48	48	48	46	2
Chloroform	50	50	49	50	50	51	50	2
1,2-Dichloroethane	49	50	49	50	50	50	49	2
Vinyl acetate	50	50	50	51	51	51	51	1
1,1,1-Trichloroethane	48	50	50	50	49	50	50	2
Carbon tetrachloride	49	49	50	49	49	49	51	2
Benzene	51	51	51	51	51	51	52	2
Trichloroethene	50	50	50	50	50	51	50	1
1,2-Dichloropropane	51	51	51	51	52	50	51	2
Dibromomethane	47	47	47	47	48	47	48	2
Methyl methacrylate	49	49	48	48	49	47	48	3
Bromodichloromethane	49	50	49	50	51	49	49	2
2-Chloroethylvinyl ether	54	54	51	53	54	52	52	4
cis-1,3-Dichloropropene	51	50	49	50	51	49	50	2
trans-1,3-Dichloropropene	50	51	49	50	51	48	49	4
Ethyl methacrylate	48	49	46	48	50	47	47	4
1,1,2-Trichloroethane	49	49	47	49	51	48	48	4
Dibromochloromethane	49	49	47	49	50	49	47	3
Bromoform	46	46	45	45	46	45	43	4
1,1,2,2-Tetrachloroethane	49	50	48	48	50	48	47	3
Acrolein	37	55	50	32	51	62	48	32
Acetonitrile	46	47	47	46	43	46	47	4
Acrylonitrile	48	48	49	47	48	49	49	2
Propionitrile	44	45	46	44	45	45	44	2
Isobutanol	47	47	44	45	45	45	43	5
p-Dioxane	47	46	46	45	46	45	45	2
cis-1,4-Dichloro-2-butene	48	46	46	45	47	45	44	4
trans-1,4-Dichloro-2-butene	44	45	44	43	45	43	43	2
4-Methyl-2-pentanone	50	50	49	49	50	49	49	1
Toluene	52	53	54	53	53	54	54	3
Tetrachloroethene	48	49	51	50	49	50	51	3
2-Hexanone	50	51	50	51	50	51	50	2
1,2-Dibromoethane	47	48	47	48	47	48	47	1
Chlorobenzene	49	49	49	49	49	50	49	1

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METHOD DETECTION LIMIT STUDY BY GCMS 8240 - VOA

	Fuel = No.6							
Compound	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Ethylbenzene	50	50	50	51	49	51	49	2
m,p-Xylene	53	54	53	54	53	53	53	1
o-Xylene	51	51	52	51	52	51	51	1
Styrene	49	49	49	49	49	49	48	1
1,2,3,-Trichloropropane	57	59	46	49	49	48	56	16
Pentachloraethane	46	49	46	48	48	48	46	4
1,3-Dichlorobenzene	50	51	48	50	50	49	48	3
1,4-Dichlorobenzene	49	50	48	49	50	49	48	3
1,2-Dichlorobenzene	48	49	47	48	49	47	46	4
1,2-Dibromo-3-chloropropane	46	47	44	45	46	46	44	3
1,2,4-Trichlorobenzene	46	47	44	46	45	45	44	4

Comments:

1) All values are in ug/Kg

2) Spiked amount = 50ug/Kg

3) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

US EPA ARCHIVE DOCUMENT

METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = Gasoline							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Acenaphthene	24	25	25	24	25	23	25	2
Acenaphthylene	21	21	22	20	21	20	21	1
Acetophenone	17	18	20	13	19	18	18	7
2-Acetylaminofluorene	15	17	18	17	16	18	16	3
4-Aminobiphenyl	19	20	20	19	20	20	20	1
Aniline	27	21	27	21	17	15	21	14
Anthracene	25	24	24	24	24	24	24	1
Aramite	15	14	17	16	15	16	15	3
Benzidine	16	17	19	18	15	19	16	5
Benzo[a]anthracene	19	19	19	19	19	19	19	0.3
Benzo[a]pyrene	19	19	18	19	18	19	18	0.4
Benzo[b]fluoranthene	16	17	16	17	17	15	17	2
Benzo[g,h,i]perylene	14	15	19	18	15	20	15	7
Benzo[k]fluoranthene	23	21	21	21	22	21	21	2
Benzyl Alcohol	19	19	18	18	19	18	19	2
Bis(2-chloroethoxy)methane	17	17	18	17	16	18	16	2
Bis(2-chloroethyl)ether	12	11	18	15	11	9	26	18
Bis(2-chloroisopropyl)ether	6	6	6	6	7	6	6	1
Bis(2-ethylhexyl)phthalate	15	15	17	16	15	16	15	2
4-Bromophenyl phenyl ether	23	23	24	23	23	23	23	2
Butyl benzyl phthalate	16	17	18	17	17	17	17	1
Di-n-butylphthalate	20	19	20	19	20	19	19	1
4-Chloroaniline	27	29	30	29	29	28	30	4
Chlorobenzilate	17	17	19	18	17	18	17	2
4-Chloro-3-methylphenol	23	24	23	22	23	24	24	2
2-Chloronaphthalene	19	20	21	20	20	21	20	2
2-Chlorophenol	13	12	11	12	12	11	13	2
4-Chlorophenyl phenyl ether	19	19	20	19	20	19	20	1
Chrysene	20	20	19	20	20	20	20	1
Diallate	19	19	21	19	19	20	19	2
Dibenz[a,j]acridine	15	15	19	18	14	19	15	7
Dibenzo[a,h]anthracene	15	15	18	17	14	19	14	6
Dibenzofuran	19	20	20	19	20	20	20	1
1,2-Dichlorobenzene	14	14	13	13	14	13	14	1
1,3-Dichlorobenzene	17	18	18	16	18	17	17	2
1,4-Dichlorobenzene	18	17	17	18	18	18	18	2
3,3'-Dichlorobenzidine	18	18	19	19	18	18	18	1
2,4-Dichlorophenol	29	30	29	29	29	28	30	2
2,6-Dichlorophenol	26	27	27	27	26	27	27	1
Diethyl phthalate	19	19	19	18	19	18	19	2
Dimethoate	15	16	18	17	15	18	15	5
p-Dimethylaminoazobenzene	17	17	19	18	17	18	17	2
7,12-Dimethylbenz[a]anthracene	20	20	18	19	20	18	20	3
3-3'-Dimethylbenzidine	15	15	16	16	15	16	15	2
a,a-Dimethylphenethylamine	0	0	0	0	0	0	0	ND
2,4-Dimethylphenol	21	19	21	21	20	21	20	2
Dimethyl phthalate	19	19	20	18	19	18	19	2
m-Dinitrobenzene	19	20	21	19	21	20	21	3
4,6-Dinitro-2-methylphenol	14	15	16	16	16	17	17	3
2,4-Dinitrophenol	11	13	14	13	14	14	15	4
2,4-Dinitrotoluene	18	19	19	18	19	19	20	2
2,6-Dinitrotoluene	17	18	18	17	19	17	19	2
Dinoseb	13	15	16	15	16	16	16	3
Diphenylamine	25	26	26	25	25	25	25	1
Disulfoton	18	19	20	19	19	19	19	2
Ethylmethanesulfonate	27	29	25	28	28	8	30	24
Famphur	16	15	23	23	15	23	15	13
Fluoranthene	22	22	21	21	22	20	22	3
Fluorene	23	23	23	23	23	22	23	1
Hexachlorobenzene	23	23	24	23	23	24	23	2

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = Gasoline							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Hexachlorobutadiene	24	24	25	24	24	26	24	2
Hexachlorocyclopentadiene	13	13	16	15	14	15	14	4
Hexachloroethane	54	191	23	29	27	16	28	195
Hexachlorophene	0	0	0	0	0	0	0	ND
Hexachloropropene	19	20	21	21	20	23	21	4
Indeno(1,2,3-c,d)pyrene	18	18	22	21	17	23	18	8
Isodrin	20	20	20	19	20	20	20	1
Isophorone	16	20	17	16	20	20	17	6
Isosafrole	13	13	24	25	19	27	26	19
Kepone	26	25	29	30	24	29	24	8
Methapyrilene	18	18	19	19	18	18	17	2
Methyl parathion	16	15	19	17	15	18	16	5
3-Methylcholanthrene	18	18	18	18	18	18	18	1
Methylmethanesulfonate	28	26	26	28	27	27	31	6
2-Methylnaphthalene	256	249	272	264	248	285	252	44
2-Methylphenol	24	27	25	27	27	22	28	7
4-Methylphenol	19	18	18	17	18	18	18	2
Naphthalene	207	201	232	210	207	240	190	55
1,4-Naphthoquinone	15	14	15	15	15	14	16	2
1-Naphthylamine	22	22	23	21	22	20	22	3
2-Naphthylamine	23	24	23	22	24	22	23	2
2-Nitroaniline	17	17	17	17	18	16	18	2
3-Nitroaniline	22	23	21	21	23	21	23	2
4-Nitroaniline	26	26	24	24	25	22	26	5
Nitrobenzene	22	56	17	14	19	21	26	44
2-Nitrophenol	19	20	21	20	21	21	21	2
4-Nitrophenol	31	13	14	19	11	13	21	21
4-Nitroquinoline-1-oxide	6	7	10	9	7	10	7	5
N-Nitroso-di-n-butylamine	22	23	24	22	22	23	22	2
N-Nitrosodiethylamine	20	20	14	19	16	17	17	7
N-Nitrosodiphenylamine	21	20	21	20	20	20	20	2
N-Nitrosodi-n-propylamine	39	29	25	26	13	14	21	28
N-Nitrosomethylethylamine	9	11	12	12	12	12	13	3
N-Nitrosomorpholine	70	70	34	19	19	16	32	74
N-Nitrosopiperidine	20	20	19	21	21	21	22	3
N-Nitrosopyrrolidine	14	14	13	14	13	13	14	2
5-Nitro-o-toluidine	22	22	22	21	23	20	23	3
Di-n-octylphthalate	16	16	15	16	16	15	16	1
Parathion	18	18	19	19	18	19	19	2
Pentachlorobenzene	20	20	21	20	20	20	21	1
Pentachloronitrobenzene	22	22	23	22	22	22	22	1
Pentachlorophenol	18	18	18	18	18	18	18	1
Phenacetin	20	20	20	20	20	19	20	1
Phenanthrene	20	21	21	20	21	20	21	1
Phenol	18	16	15	15	17	13	17	5
p-Phenylenediamine	14	15	15	15	14	15	14	2
Phorate	15	15	16	15	15	15	15	1
2-Picoline	8	14	15	19	21	18	20	14
Pronamide	19	19	20	19	19	19	19	1
Pyrene	20	20	21	21	20	20	20	1
Pyridine	8	7	9	11	8	9	9	4
Safrole	17	17	18	17	18	19	18	2
Sulfotep	20	20	22	21	20	21	20	3
1,2,4,5-Tetrachlorobenzene	20	20	20	19	20	21	20	1
2,3,4,6-Tetrachlorophenol	23	23	22	22	23	22	24	2
Thionzin	19	20	21	20	20	20	20	2
o-Toluidine	28	21	24	21	26	18	27	12
1,2,4-Trichlorobenzene	23	23	23	23	23	24	23	1
2,4,5-Trichlorophenol	16	17	19	16	17	18	17	3
2,4,6-Trichlorophenol	24	25	24	24	25	23	25	2

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = Gasoline							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
O,O,O-Triethylphosphorothioate	18	18	19	18	18	18	17	2
1,3,5-Trinitrobenzene	12	14	14	14	14	14	15	4

Comments:

1) All values in ug/Kg
2) Spiked amount = 100ug/Kg
3) ND = Not detected
4) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

US EPA ARCHIVE DOCUMENT

METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Acenaphthene	149	134	143	143	137	145	147	17
Acenaphthylene	131	125	131	126	134	129	125	11
Acetophenone	68	78	68	64	71	65	64	15
2-Acetylaminofluorene	114	108	109	111	115	111	113	8
4-Aminobiphenyl	117	119	111	119	117	117	121	10
Aniline	102	113	111	100	104	104	99	17
Anthracene	101	106	103	108	108	100	100	11
Aramite	114	108	110	120	117	115	114	13
Benzidine	94	97	97	92	98	98	97	7
Benzo[a]anthracene	111	107	108	111	112	112	112	7
Benzo[a]pyrene	102	103	103	102	103	102	102	2
Benzo[b]fluoranthene	111	98	105	108	105	106	101	13
Benzo[g,h,i]perylene	132	140	133	125	140	141	141	19
Benzo[k]fluoranthene	91	102	103	91	91	87	96	19
Benzyl Alcohol	94	98	99	93	87	88	88	16
Bis(2-chloroethoxy)methane	110	87	109	112	112	113	105	29
Bis(2-chloroethyl)ether	91	101	96	93	85	94	96	16
Bis(2-chloroisopropyl)ether	62	66	69	65	64	64	64	7
Bis(2-ethylhexyl)phthalate	110	106	105	120	107	110	108	16
4-Bromophenyl phenyl ether	120	118	122	123	118	115	120	8
Butyl benzyl phthalate	111	102	105	116	108	109	106	14
Di-n-butylphthalate	131	132	134	132	128	131	126	8
4-Chloroaniline	119	111	114	115	113	117	114	9
Chlorobenzilate	119	112	116	124	116	118	114	12
4-Chloro-3-methylphenol	71	64	75	68	71	66	71	12
2-Chloronaphthalene	127	131	129	135	127	127	128	10
2-Chlorophenol	66	71	69	67	68	70	67	6
4-Chlorophenyl phenyl ether	110	100	111	107	110	106	99	15
Chrysene	115	111	113	115	115	115	114	5
Diallate	108	109	113	111	107	119	111	12
Dibenz[a,j]acridine	110	115	109	103	114	113	116	15
Dibenzo[a,h]anthracene	108	115	113	107	119	119	117	16
Dibenzofuran	121	108	114	117	116	129	111	22
1,2-Dichlorobenzene	101	108	107	102	100	99	98	13
1,3-Dichlorobenzene	82	118	106	95	103	104	102	35
1,4-Dichlorobenzene	114	92	101	98	73	86	87	40
3,3'-Dichlorobenzidine	105	100	101	102	103	104	107	8
2,4-Dichlorophenol	105	103	108	110	105	114	110	11
2,6-Dichlorophenol	103	98	109	102	107	100	103	12
Diethyl phthalate	80	76	81	80	77	83	82	8
Dimethoate	102	107	106	105	108	102	110	9
p-Dimethylaminoazobenzene	127	117	120	134	126	126	123	17
7,12-Dimethylbenz[a]anthracene	98	94	101	104	97	95	97	11
3-3'-Dimethylbenzidine	115	113	113	107	112	112	108	8
a,a-Dimethylphenethylamine	0	0	0	0	0	0	0	ND
2,4-Dimethylphenol	117	102	111	114	117	121	117	20
Dimethyl phthalate	88	87	86	86	88	90	88	5
m-Dinitrobenzene	78	72	77	81	76	75	79	9
4,6-Dinitro-2-methylphenol	97	103	100	100	106	109	100	13
2,4-Dinitrophenol	93	92	88	88	92	90	91	6
2,4-Dinitrotoluene	82	80	80	77	86	80	80	9
2,6-Dinitrotoluene	101	106	106	107	106	98	104	10
Dinoseb	118	129	121	122	120	117	119	12
Diphenylamine	118	112	119	116	122	115	115	10
Disulfoton	132	137	136	134	129	130	132	10
Ethylmethanesulfonate	106	114	107	106	100	102	107	13
Famphur	207	161	190	154	209	216	212	80
Fluoranthene	138	141	137	143	139	135	132	11
Fluorene	149	116	136	149	148	147	144	38
Hexachlorobenzene	142	147	141	145	140	138	134	13

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Hexachlorobutadiene	148	147	156	144	150	147	141	15
Hexachlorocyclopentadiene	53	50	60	52	60	57	65	17
Hexachloroethane	89	104	93	86	90	93	87	19
Hexachlorophene	0	0	0	0	0	0	0	ND
Hexachloropropene	139	140	138	136	139	143	136	8
Indeno(1,2,3-c,d)pyrene	102	106	100	97	107	109	103	14
Isodrin	155	160	163	152	155	153	151	13
Isophorone	138	158	135	139	135	132	142	28
Isosafrole	141	136	132	129	137	138	138	13
Kepone	50	59	36	33	10	26	24	51
Methapyrilene	120	127	120	121	119	115	114	13
Methyl parathion	158	159	150	155	152	153	158	11
3-Methylcholanthrene	109	110	112	105	113	113	114	10
Methylmethanesulfonate	166	180	171	171	166	158	161	23
2-Methylnaphthalene	276	284	281	268	278	271	289	22
2-Methylphenol	70	79	73	73	77	75	73	9
4-Methylphenol	88	94	84	83	90	91	89	12
Naphthalene	199	197	197	196	198	206	194	12
1,4-Naphthoquinone	0	0	0	0	0	0	0	ND
1-Naphthylamine	79	81	80	79	78	78	76	5
2-Naphthylamine	97	95	96	95	94	98	97	5
2-Nitroaniline	73	74	72	72	76	77	77	7
3-Nitroaniline	68	69	67	69	68	64	66	5
4-Nitroaniline	100	91	96	101	105	102	99	14
Nitrobenzene	83	76	80	82	84	81	82	8
2-Nitrophenol	96	107	102	94	96	96	98	15
4-Nitrophenol	59	67	64	59	60	61	58	10
4-Nitroquinoline-1-oxide	24	22	25	24	28	26	25	6
N-Nitroso-di-n-butylamine	0	0	0	0	0	0	0	ND
N-Nitrosodiethylamine	123	128	121	116	117	112	114	17
N-Nitrosodiphenylamine	94	90	95	99	98	97	92	10
N-Nitrosodi-n-propylamine	79	73	83	83	74	83	82	14
N-Nitrosomethylethylamine	146	157	145	145	139	133	133	26
N-Nitrosomorpholine	55	56	54	56	58	55	56	4
N-Nitrosopiperidine	130	109	130	122	136	134	123	29
N-Nitrosopyrrolidine	73	73	79	77	71	69	72	11
5-Nitro-o-toluidine	94	91	96	93	97	96	98	8
Di-n-octylphthalate	115	101	102	133	99	94	97	43
Parathion	156	163	151	161	149	148	155	17
Pentachlorobenzene	114	101	107	106	116	109	95	23
Pentachloronitrobenzene	103	110	107	113	108	106	110	10
Pentachlorophenol	122	132	122	129	118	121	122	15
Phenacetin	157	163	151	156	152	152	154	13
Phenanthrene	102	98	109	104	102	108	108	13
Phenol	91	96	97	91	89	88	88	12
p-Phenylenediamine	0	0	0	0	0	0	0	ND
Phorate	84	86	86	86	84	83	82	5
2-Picoline	174	187	189	172	176	172	170	24
Pronamide	105	104	108	112	106	104	105	9
Pyrene	127	120	123	133	129	131	122	15
Pyridine	108	82	101	105	99	97	84	32
Safrole	72	85	75	70	72	76	78	15
Sulfotep	162	165	158	166	158	156	161	12
1,2,4,5-Tetrachlorobenzene	108	98	98	99	110	104	91	21
2,3,4,6-Tetrachlorophenol	114	109	112	115	114	108	104	12
Thionzin	96	94	95	97	82	89	98	18
o-Toluidine	106	111	104	112	109	109	102	11
1,2,4-Trichlorobenzene	114	109	116	108	119	117	112	13
2,4,5-Trichlorophenol	104	104	92	95	108	105	100	18
2,4,6-Trichlorophenol	98	100	100	100	100	95	99	6

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
O,O,O-Triethylphosphorothioate	145	116	146	144	148	147	142	35
1,3,5-Trinitrobenzene	101	103	104	103	100	102	113	14

Comments:

1) All values in ug/Kg
2) Spiked amount = 100ug/Kg
3) ND = Not detected
4) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

US EPA ARCHIVE DOCUMENT

METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Acenaphthene	149	134	143	143	137	145	147	17
Acenaphthylene	131	125	131	126	134	129	125	11
Acetophenone	68	78	68	64	71	65	64	15
2-Acetylaminofluorene	114	108	109	111	115	111	113	8
4-Aminobiphenyl	117	119	111	119	117	117	121	10
Aniline	102	113	111	100	104	104	99	17
Anthracene	101	106	103	108	108	100	100	11
Aramite	114	108	110	120	117	115	114	13
Benzidine	94	97	97	92	98	98	97	7
Benzo[a]anthracene	111	107	108	111	112	112	112	7
Benzo[a]pyrene	102	103	103	102	103	102	102	2
Benzo[b]fluoranthene	111	98	105	108	105	106	101	13
Benzo[g,h,i]perylene	132	140	133	125	140	141	141	19
Benzo[k]fluoranthene	91	102	103	91	91	87	96	19
Benzyl Alcohol	94	98	99	93	87	88	88	16
Bis(2-chloroethoxy)methane	110	87	109	112	112	113	105	29
Bis(2-chloroethyl)ether	91	101	96	93	85	94	96	16
Bis(2-chloroisopropyl)ether	62	66	69	65	64	64	64	7
Bis(2-ethylhexyl)phthalate	110	106	105	120	107	110	108	16
4-Bromophenyl phenyl ether	120	118	122	123	118	115	120	8
Butyl benzyl phthalate	111	102	105	116	108	109	106	14
Di-n-butylphthalate	131	132	134	132	128	131	126	8
4-Chloroaniline	119	111	114	115	113	117	114	9
Chlorobenzilate	119	112	116	124	116	118	114	12
4-Chloro-3-methylphenol	71	64	75	68	71	66	71	12
2-Chloronaphthalene	127	131	129	135	127	127	128	10
2-Chlorophenol	66	71	69	67	68	70	67	6
4-Chlorophenyl phenyl ether	110	100	111	107	110	106	99	15
Chrysene	115	111	113	115	115	115	114	5
Diallate	108	109	113	111	107	119	111	12
Dibenz[a,j]acridine	110	115	109	103	114	113	116	15
Dibenzo[a,h]anthracene	108	115	113	107	119	119	117	16
Dibenzofuran	121	108	114	117	116	129	111	22
1,2-Dichlorobenzene	101	108	107	102	100	99	98	13
1,3-Dichlorobenzene	82	118	106	95	103	104	102	35
1,4-Dichlorobenzene	114	92	101	98	73	86	87	40
3,3'-Dichlorobenzidine	105	100	101	102	103	104	107	8
2,4-Dichlorophenol	105	103	108	110	105	114	110	11
2,6-Dichlorophenol	103	98	109	102	107	100	103	12
Diethyl phthalate	80	76	81	80	77	83	82	8
Dimethoate	102	107	106	105	108	102	110	9
p-Dimethylaminoazobenzene	127	117	120	134	126	126	123	17
7,12-Dimethylbenz[a]anthracene	98	94	101	104	97	95	97	11
3-3'-Dimethylbenzidine	115	113	113	107	112	112	108	8
a,a-Dimethylphenethylamine	0	0	0	0	0	0	0	ND
2,4-Dimethylphenol	117	102	111	114	117	121	117	20
Dimethyl phthalate	88	87	86	86	88	90	88	5
m-Dinitrobenzene	78	72	77	81	76	75	79	9
4,6-Dinitro-2-methylphenol	97	103	100	100	106	109	100	13
2,4-Dinitrophenol	93	92	88	88	92	90	91	6
2,4-Dinitrotoluene	82	80	80	77	86	80	80	9
2,6-Dinitrotoluene	101	106	106	107	106	98	104	10
Dinoseb	118	129	121	122	120	117	119	12
Diphenylamine	118	112	119	116	122	115	115	10
Disulfoton	132	137	136	134	129	130	132	10
Ethylmethanesulfonate	106	114	107	106	100	102	107	13
Famphur	207	161	190	154	209	216	212	80
Fluoranthene	138	141	137	143	139	135	132	11
Fluorene	149	116	136	149	148	147	144	38
Hexachlorobenzene	142	147	141	145	140	138	134	13

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Hexachlorobutadiene	148	147	156	144	150	147	141	15
Hexachlorocyclopentadiene	53	50	60	52	60	57	65	17
Hexachloroethane	89	104	93	86	90	93	87	19
Hexachlorophene	0	0	0	0	0	0	0	ND
Hexachloropropene	139	140	138	136	139	143	136	8
Indeno(1,2,3-c,d)pyrene	102	106	100	97	107	109	103	14
Isodrin	155	160	163	152	155	153	151	13
Isophorone	138	158	135	139	135	132	142	28
Isosafrole	141	136	132	129	137	138	138	13
Kepone	50	59	36	33	10	26	24	51
Methapyrilene	120	127	120	121	119	115	114	13
Methyl parathion	158	159	150	155	152	153	158	11
3-Methylcholanthrene	109	110	112	105	113	113	114	10
Methylmethanesulfonate	166	180	171	171	166	158	161	23
2-Methylnaphthalene	276	284	281	268	278	271	289	22
2-Methylphenol	70	79	73	73	77	75	73	9
4-Methylphenol	88	94	84	83	90	91	89	12
Naphthalene	199	197	197	196	198	206	194	12
1,4-Naphthoquinone	0	0	0	0	0	0	0	ND
1-Naphthylamine	79	81	80	79	78	78	76	5
2-Naphthylamine	97	95	96	95	94	98	97	5
2-Nitroaniline	73	74	72	72	76	77	77	7
3-Nitroaniline	68	69	67	69	68	64	66	5
4-Nitroaniline	100	91	96	101	105	102	99	14
Nitrobenzene	83	76	80	82	84	81	82	8
2-Nitrophenol	96	107	102	94	96	96	98	15
4-Nitrophenol	59	67	64	59	60	61	58	10
4-Nitroquinoline-1-oxide	24	22	25	24	28	26	25	6
N-Nitroso-di-n-butylamine	0	0	0	0	0	0	0	ND
N-Nitrosodiethylamine	123	128	121	116	117	112	114	17
N-Nitrosodiphenylamine	94	90	95	99	98	97	92	10
N-Nitrosodi-n-propylamine	79	73	83	83	74	83	82	14
N-Nitrosomethylethylamine	146	157	145	145	139	133	133	26
N-Nitrosomorpholine	55	56	54	56	58	55	56	4
N-Nitrosopiperidine	130	109	130	122	136	134	123	29
N-Nitrosopyrrolidine	73	73	79	77	71	69	72	11
5-Nitro-o-toluidine	94	91	96	93	97	96	98	8
Di-n-octylphthalate	115	101	102	133	99	94	97	43
Parathion	156	163	151	161	149	148	155	17
Pentachlorobenzene	114	101	107	106	116	109	95	23
Pentachloronitrobenzene	103	110	107	113	108	106	110	10
Pentachlorophenol	122	132	122	129	118	121	122	15
Phenacetin	157	163	151	156	152	152	154	13
Phenanthrene	102	98	109	104	102	108	108	13
Phenol	91	96	97	91	89	88	88	12
p-Phenylenediamine	0	0	0	0	0	0	0	ND
Phorate	84	86	86	86	84	83	82	5
2-Picoline	174	187	189	172	176	172	170	24
Pronamide	105	104	108	112	106	104	105	9
Pyrene	127	120	123	133	129	131	122	15
Pyridine	108	82	101	105	99	97	84	32
Safrole	72	85	75	70	72	76	78	15
Sulfotep	162	165	158	166	158	156	161	12
1,2,4,5-Tetrachlorobenzene	108	98	98	99	110	104	91	21
2,3,4,6-Tetrachlorophenol	114	109	112	115	114	108	104	12
Thionzin	96	94	95	97	82	89	98	18
o-Toluidine	106	111	104	112	109	109	102	11
1,2,4-Trichlorobenzene	114	109	116	108	119	117	112	13
2,4,5-Trichlorophenol	104	104	92	95	108	105	100	18
2,4,6-Trichlorophenol	98	100	100	100	100	95	99	6

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.2							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
O,O,O-Triethylphosphorothioate	145	116	146	144	148	147	142	35
1,3,5-Trinitrobenzene	101	103	104	103	100	102	113	14

Comments:

1) All values in ug/Kg
2) Spiked amount = 100ug/Kg
3) ND = Not detected
4) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.6							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Acenaphthene	105	105	120	115	116	120	121	22
Acenaphthylene	112	110	116	119	116	121	124	16
Acetophenone	94	97	116	117	119	117	117	34
2-Acetylaminofluorene	116	113	122	120	107	104	104	24
4-Aminobiphenyl	104	108	106	118	80	81	74	53
Aniline	110	113	134	134	133	132	132	33
Anthracene	100	86	100	90	94	97	88	17
Aramite	123	125	151	141	144	131	140	32
Benzidine	94	98	113	107	104	96	108	22
Benzo[a]anthracene	169	179	205	189	181	189	203	40
Benzo[a]pyrene	170	161	210	122	175	200	178	90
Benzo[b]fluoranthene	138	135	150	166	168	156	153	40
Benzo[g,h,i]perylene	101	101	177	158	169	172	148	102
Benzo[k]fluoranthene	64	87	119	101	75	108	105	61
Benzyl Alcohol	98	96	115	112	114	112	112	25
Bis(2-chloroethoxy)methane	96	97	105	104	100	101	102	11
Bis(2-chloroethyl)ether	87	97	95	95	99	104	104	18
Bis(2-chloroisopropyl)ether	88	90	108	105	107	106	106	26
Bis(2-ethylhexyl)phthalate	135	134	146	145	138	131	150	23
4-Bromophenyl phenyl ether	108	108	115	116	110	109	110	10
Butyl benzyl phthalate	134	128	164	161	138	145	165	48
Di-n-butylphthalate	113	115	118	118	115	114	116	7
4-Chloroaniline	84	77	92	94	96	97	96	23
Chlorobenzilate	147	136	185	160	156	163	179	53
4-Chloro-3-methylphenol	101	104	111	112	113	112	108	15
2-Chloronaphthalene	92	103	122	133	109	132	140	56
2-Chlorophenol	88	90	100	100	100	100	100	16
4-Chlorophenyl phenyl ether	107	107	117	115	113	118	119	15
Chrysene	314	374	436	322	292	309	339	156
Diallate	67	73	80	74	79	76	74	14
Dibenz[a,j]acridine	91	84	148	126	134	93	103	77
Dibenzo[a,h]anthracene	111	102	142	131	136	137	111	50
Dibenzofuran	101	100	110	105	106	109	98	14
1,2-Dichlorobenzene	92	94	103	103	104	103	103	16
1,3-Dichlorobenzene	102	107	113	110	109	107	120	18
1,4-Dichlorobenzene	86	86	98	103	102	104	92	25
3,3'-Dichlorobenzidine	96	109	106	118	94	95	98	28
2,4-Dichlorophenol	109	111	128	127	124	129	129	26
2,6-Dichlorophenol	101	103	110	112	111	113	112	15
Diethyl phthalate	113	113	132	127	121	130	129	24
Dimethoate	52	36	63	61	63	54	60	30
p-Dimethylaminoazobenzene	58	60	114	78	53	55	52	71
7,12-Dimethylbenz[a]anthracene	75	64	75	73	79	69	63	19
3-3'-Dimethylbenzidine	104	101	123	113	92	96	98	34
a,a-Dimethylphenethylamine	71	71	66	73	67	66	66	9
2,4-Dimethylphenol	111	114	140	136	137	137	144	41
Dimethyl phthalate	111	111	122	115	116	119	120	13
m-Dinitrobenzene	0	0	0	0	0	0	0	ND
4,6-Dinitro-2-methylphenol	0	0	0	0	0	0	0	ND
2,4-Dinitrophenol	63	58	85	79	81	71	68	31
2,4-Dinitrotoluene	0	0	0	0	0	0	0	0
2,6-Dinitrotoluene	81	81	81	72	92	122	91	51
Dinoseb	84	53	106	76	87	84	68	52
Diphenylamine	108	103	124	114	110	114	116	21
Disulfoton	103	100	128	122	115	116	118	31
Ethylmethanesulfonate	107	109	121	124	116	119	116	19
Famphur	0	0	0	0	0	0	0	ND
Fluoranthene	109	104	91	86	86	94	82	31
Fluorene	111	110	119	116	116	126	124	19
Hexachlorobenzene	94	110	104	93	99	103	93	21

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.6							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
Hexachlorobutadiene	108	109	118	117	116	118	118	14
Hexachlorocyclopentadiene	35	29	53	45	38	38	41	24
Hexachloroethane	75	70	86	88	90	85	84	24
Hexachlorophene	0	0	0	0	0	0	0	ND
Hexachloropropene	85	85	106	106	102	102	104	30
Indeno(1,2,3-c,d)pyrene	90	86	151	162	147	144	147	97
Isodrin	147	139	101	111	151	106	112	66
Isophorone	109	109	131	133	126	130	130	33
Isosafrole	111	112	120	121	120	127	127	20
Kepone	0	0	0	0	0	0	0	ND
Methapyrilene	80	73	92	97	89	83	91	26
Methyl parathion	56	50	65	67	69	57	64	21
3-Methylcholanthrene	122	119	137	125	123	132	108	29
Methylmethanesulfonate	155	154	200	191	190	189	192	60
2-Methylnaphthalene	145	152	158	155	155	155	160	15
2-Methylphenol	96	98	116	114	115	115	115	28
4-Methylphenol	120	118	89	91	92	90	90	44
Naphthalene	115	115	123	132	130	131	132	25
1,4-Naphthoquinone	0	0	0	0	0	0	0	ND
1-Naphthylamine	76	75	84	57	82	62	57	37
2-Naphthylamine	61	54	63	55	65	65	65	14
2-Nitroaniline	95	101	124	118	106	116	120	34
3-Nitroaniline	75	73	116	110	81	97	88	53
4-Nitroaniline	81	78	86	78	84	87	82	11
Nitrobenzene	104	96	114	104	105	101	102	17
2-Nitrophenol	105	113	126	125	126	124	127	27
4-Nitrophenol	79	75	116	102	111	121	113	58
4-Nitroquinoline-1-oxide	0	0	0	0	0	0	0	ND
N-Nitroso-di-n-butylamine	118	108	129	123	134	124	125	26
N-Nitrosodiethylamine	102	102	121	117	115	116	116	24
N-Nitrosodiphenylamine	103	103	123	126	120	122	120	30
N-Nitrosodi-n-propylamine	91	94	87	121	121	112	126	51
N-Nitrosomethylethylamine	138	137	115	112	107	111	111	41
N-Nitrosomorpholine	41	41	41	45	47	41	40	8
N-Nitrosopiperidine	108	108	137	135	134	135	138	43
N-Nitrosopyrrolidine	91	96	116	162	105	105	108	75
5-Nitro-o-toluidine	98	102	101	95	102	107	104	12
Di-n-octylphthalate	113	107	119	116	109	108	106	16
Parathion	110	95	124	128	100	94	93	46
Pentachlorobenzene	111	111	117	112	110	118	115	11
Pentachloronitrobenzene	16	29	27	31	25	24	79	66
Pentachlorophenol	122	118	134	127	122	115	111	24
Phenacetin	103	100	106	94	104	104	99	13
Phenanthrene	165	152	170	166	164	173	169	22
Phenol	93	94	106	105	106	107	106	19
p-Phenylenediamine	0	0	0	0	0	0	0	ND
Phorate	71	71	104	107	67	73	106	59
2-Picoline	149	149	177	173	170	168	170	35
Pronamide	84	74	97	81	84	86	81	22
Pyrene	252	229	311	282	255	266	294	87
Pyridine	38	43	44	43	43	45	48	9
Safrole	80	82	143	85	97	87	100	69
Sulfotep	121	123	139	136	129	127	133	21
1,2,4,5-Tetrachlorobenzene	102	102	114	107	106	112	115	18
2,3,4,6-Tetrachlorophenol	90	74	94	82	89	96	87	23
Thionzin	105	87	120	107	104	117	108	34
o-Toluidine	81	81	90	91	94	92	92	17
1,2,4-Trichlorobenzene	100	101	107	107	106	108	108	10
2,4,5-Trichlorophenol	135	142	160	144	130	151	155	34
2,4,6-Trichlorophenol	78	73	91	89	87	98	104	34

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METHOD DETECTION LIMIT STUDY RESULTS BY GCMS 8270 - SVOC

	Fuel = No.6							
Compound	**Rep.#1**	**Rep.#2**	**Rep.#3**	**Rep.#4**	**Rep.#5**	**Rep.#6**	**Rep.#7**	**MDL**
O,O,O-Triethylphosphorothioate	116	116	124	124	122	123	125	12
1,3,5-Trinitrobenzene	0	0	0	0	0	0	0	ND

Comments:

1) All values in ug/Kg
2) Spiked amount = 100ug/Kg
3) ND = Not detected
4) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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Results for Method Detection Limit Study - Metals

Metal	Rep.#1	Rep.#2	Rep.#3	Rep.#4	Rep.#5	Rep.#6	Rep.#7	MDL	Units	True Value
Antimony	0.57	0.47	0.62	0.38	0.50	0.34	0.23	**0.43**	mg/L	0.5
Arsenic	9.81	8.58	8.47	9.51	6.63	7.07	9.95	**4.13**	ug/L	10
Barium	1.02	1.07	0.91	0.82	0.96	0.80	0.71	**0.53**	mg/L	1
Beryllium	0.109	0.109	0.109	0.110	0.110	0.111	0.110	**0.002**	mg/L	0.1
Cadmium	0.112	0.108	0.121	0.117	0.117	0.116	0.121	**0.015**	mg/L	0.1
Chromium	0.415	0.447	0.450	0.472	0.440	0.428	0.471	**0.066**	mg/L	0.5
Cobalt	0.284	0.282	0.264	0.283	0.296	0.270	0.288	**0.034**	mg/L	0.2
Lead	0.780	0.787	0.810	0.802	0.821	0.843	0.852	**0.085**	mg/L	1
Manganese	0.041	0.044	0.041	0.042	0.042	0.040	0.042	**0.0039**	mg/L	0.05
Nickel	0.217	0.216	0.222	0.218	0.220	0.217	0.222	**0.008**	mg/L	0.2
Selenium	13.50	11.39	13.61	14.24	13.06	10.52	13.13	**4.17**	ug/L	10
Silver	0.175	0.178	0.180	0.179	0.171	0.167	0.163	**0.020**	mg/L	0.2
Thallium	0.77	0.77	0.65	0.74	0.67	0.66	0.60	**0.21**	mg/L	1

Comments:

1) Since the procedure used for these metals was 3040 Dissolution in Xylene, the above MDL was performed in xylene as the common matrix.

2) MDL = t x sd
Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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RESULTS FOR METHOD DETECTION LIMIT STUDY - MERCURY

	Fuel = Gasoline							
Metal	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Mercury	0.03	0.02	0.02	0.02	0.02	0.02	0.02	**0.012**

	Fuel = No.2							
Metal	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Mercury	0.03	0.04	0.04	0.04	0.04	0.05	0.04	**0.018**

	Fuel = No.6							
Metal	**Rep.1**	**Rep.2**	**Rep.3**	**Rep.4**	**Rep.5**	**Rep.6**	**Rep.7**	**MDL**
Mercury	0.04	0.03	0.03	0.03	0.04	0.03	0.04	**0.017**

Comments:

1) Units = ug Total

2) True Value of Spike = 0.100 ug

3) MDL = t x sd

Where t is the student-t statistic for the 99% confidence limit for n-1 degrees of freedom and sd is the standard deviation in the seven replicate analyses

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Appendix E

Quality Assurance Results

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Appendix E SURROGATE RECOVERY DATA - SEMI-VOLATILE

Sample ID	2-Fluorophenol	Phenol-d_6	Nitrobenzene-d_5	2-Fluorobiphenyl	2,4,6-Tribromophenol	Terphenyl-d_{14}
2011	14.2	50.6	63.8	86	29.4	73
2012	24.4	79.8	64	80.2	35.2	72.2
2013	D	D	D	D	D	D
2014	D	D	D	D	D	D
2015	9.1	48.2	45	77	63.4	77.1
2016	13.9	74.5	48	78.8	66	74.1
2017	16.8	48.8	56.6	90.2	27.4	92.4
2018	22.6	92.6	65.6	94.2	51.8	88.4
2019	93.7	76.3	134	118	103	103
2020	114	96.5	150	123	110	113
2021	106	102	154	114	138	107
2022	100	121	128	125	109	113
2023	114	102	134	108	148	111
2024	100	101	145	94.5	86.2	101
2025	106	83.8	112	117	98.6	112
2026	119	107	165	102	108	103
2027	101	90.5	114	109	127	103
2028	113	101	141	96.4	113	107
2029	104	108	109	111	114	105
2030	84.3	89.6	98.9	99.6	93.4	110
2031	88.5	89.8	99.6	103	94.3	109
2032	101	100	96.1	101	100	120
2033	99.4	75.5	27.7	94.8	79.3	100
2034	125	113	60.9	91.7	131	116
2230	75.4	72.8	78.9	87.4	62.1	87.1
2231	88.8	77.1	92.3	104	92.8	111
2232	112	106	76.3	93.2	90.9	94.7

D = Surrogate Diluted Out. Sample diluted due to high concentration of target compounds.

Appendix E SURROGATE RECOVERY DATA - VOLATILE

Sample ID	1,2-Dichloroethane-d_4	Toluene-d_8	Bromofluorobenzene
2011	95	114	90
2012	95	115	91
2013	100	105	98
2014	100	111	92
2015	100	111	92
2016	103	95	102
2017	106	100	106
2018	106	97	102
2019	94	101	95
2020	94	102	95
2021	108	101	108
2022	101	97	99
2023	112	95	108
2024	110	96	104
2025	104	101	103
2026	106	95	105
2027	101	103	101
2028	125	79	110
2029	88	93	86
2030	95	101	94
2031	96	97	94
2032	91	101	90
2033	97	102	98
2034	93	95	91
2230	108	96	112
2231	102	105	102
2232	101	106	99

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Appendix E QC SUMMARY - METALS

Sample ID	Metal	Analysis		Spiked Sample % Recovery
		Initial	Duplicate	
2018	Cobalt	BQL	BQL	97
2028	Cobalt	0.49	0.58	106
2029	Cobalt	BQL	BQL	105
2034	Cobalt	BQL	BQL	101
2018	Beryllium	BQL	BQL	81.2
2028	Beryllium	BQL	BQL	100
2029	Beryllium	BQL	BQL	102
2034	Beryllium	BQL	BQL	104
2018	Silver	BQL	BQL	110
2028	Silver	BQL	BQL	132
2029	Silver	BQL	BQL	135
2034	Silver	BQL	BQL	126
2018	Cadmium	BQL	BQL	102
2028	Cadmium	BQL	BQL	107
2029	Cadmium	BQL	BQL	110
2034	Cadmium	BQL	BQL	106
2018	Manganese	BQL	BQL	99.2
2028	Manganese	BQL	BQL	99.8
2029	Manganese	BQL	BQL	102
2034	Manganese	BQL	BQL	98.8
2018	Selenium	BQL	BQL	94.4
2028	Selenium	BQL	BQL	116
2029	Selenium	11	17	76.3
2034	Selenium	BQL	BQL	85.7
2018	Arsenic	BQL	BQL	76.3
2028	Arsenic	BQL	BQL	102
2029	Arsenic	BQL	BQL	70.2
2034	Arsenic	BQL	BQL	96.9
2018	Nickel	BQL	BQL	104
2028	Nickel	BQL	BQL	95.9
2029	Nickel	1.39	1.39	116
2034	Nickel	0.30	0.28	96.9
2018	Lead	BQL	BQL	120
2028	Lead	0.65	0.67	93
2029	Lead	0.84	0.85	100
2034	Lead	2.8	2.7	84

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Appendix E QC SUMMARY - METALS (continued)

Sample ID	Metal	Analysis		Spiked Sample % Recovery
		Initial	Duplicate	
2018	Antimony	BQL	BQL	96
2028	Antimony	BQL	BQL	92
2029	Antimony	BQL	BQL	92
2034	Antimony	0.78	1.10	109
2018	Chromium	BQL	BQL	120
2028	Chromium	BQL	BQL	104
2029	Chromium	BQL	BQL	107
2034	Chromium	BQL	BQL	97
2018	Thallium	BQL	BQL	128
2028	Thallium	BQL	BQL	126
2029	Thallium	BQL	BQL	128
2034	Thallium	BQL	BQL	124
2018	Barium	BQL	BQL	85
2028	Barium	BQL	BQL	80
2029	Barium	BQL	BQL	75
2034	Barium	BQL	BQL	72
2018	Mercury	BQL	BQL	47
2028	Mercury	BQL	BQL	45
2029	Mercury	BQL	BQL	36
2034	Mercury	BQL	BQL	38

Units in mg/L
BQL = Below Quantitative Limit

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Appendix F

Constituents Not in Final Rule

Appendix F Table 1: Constituents Not in Final Rule

The following is a list of constituents for which EPA proposed specifications, but will not be including in the final rule. Listed next to the constituent is the reason why it does not appear in the final rule.

Chemical Name	Reason why not in final rule
1,2-Dichloroethylene (cis- or trans-)	covered by isomers
1,4-Dichloro-2-butene (cis- or trans-)	covered by isomers
Fluorene	not on Appendix VIII
1,1,2-Trichloro-1,2,2-trifluoroethane	not on Appendix VIII
1,1-Dichloro-1-propene	not on Appendix VIII
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	not on Appendix VIII
1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	not on Appendix VIII
1,2,3,4-Tetrachlorobenzene	not on Appendix VIII
1,2,3,5-Tetrachlorobenzene	not on Appendix VIII
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	not on Appendix VIII
1,2,3,6,7,8-Hexachlorodibenzo-p-furan	not on Appendix VIII
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	not on Appendix VIII
1,2,3,7,8-Pentachlorodibenzo-p-furan	not on Appendix VIII
1,2,3-Trichlorobenzene	not on Appendix VIII
1,3-Dichloropropane	not on Appendix VIII
1-Chloronaphthalene	not on Appendix VIII
2,2-Dichloropropane	not on Appendix VIII
2,3,4,5-Tetrachlorophenol	not on Appendix VIII
2,3,4-Trichlorophenol	not on Appendix VIII
2,3,5-Trichlorophenol	not on Appendix VIII
2,3,6-Trichlorophenol	not on Appendix VIII
2,3,7,8-Tetrachlorodibenzo-p-furan	not on Appendix VIII
2,3-Dichloro-1-propene	not on Appendix VIII
2,3-Dichlorophenol	not on Appendix VIII
2,5-Dichlorophenol	not on Appendix VIII
2-Methylnaphthalene	not on Appendix VIII
3,4-Dichlorophenol	not on Appendix VIII
3,5-Dichlorophenol	not on Appendix VIII
3-/4-Chlorophenol	not on Appendix VIII
3-Nitroaniline	not on Appendix VIII
4-Chlorophenyl phenyl ether	not on Appendix VIII
Acenaphthene	not on Appendix VIII
Ammonium vanadate	covered by metals
Anthracene	not on Appendix VIII
Arochlor-1016	covered by total PCBs
Arochlor-1221	covered by total PCBs
Arochlor-1232	covered by total PCBs

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Chemical Name	Reason why not in final rule
Arochlor-1242	covered by total PCBs
Arochlor-1248	covered by total PCBs
Arochlor-1254	covered by total PCBs
Arochlor-1260	covered by total PCBs
Arsenic acid	covered by metals
Arsenic pentoxide	covered by metals
Arsenic trioxide	covered by metals
Barium Cyanide	covered by metals
Bromide	not on Appendix VIII
Bromodichloromethane	not on Appendix VIII
Calcium Cyanide	covered by total cyanide
Calcium chromate	covered by metals
Chloride	not on Appendix VIII
Chloroethane	not on Appendix VIII
Copper Cyanide	covered by total cyanide
Cyanogen Bromide	covered by total cyanide
Cyanogen Chloride	covered by total cyanide
Di-selenium-tetra-sulfide	covered by metals
Dibenzofuran	not on Appendix VIII
Dibromochloromethane	not on Appendix VIII
Fluoride	not on Appendix VIII
Lead acetate	covered by metals
Lead phosphate	covered by metals
Nickel Cyanide	covered by total cyanide
Nickel carbonyl	covered by metals
Octachlorodibenzodioxin	not on Appendix VIII
Octachlorodibenzofuran	not on Appendix VIII
Osmium tetraoxide	covered by metals
Phenanthrene	not on Appendix VIII
Potassium Cyanide	covered by total cyanide
Potassium Silver Cyanide	covered by total cyanide
Pyrene	not on Appendix VIII
Selenium dioxide	covered by metals
Selenium sulfide	covered by metals
Silver Cyanide	covered by total cyanide
Tetra-selenium-tetra-sulfide	covered by metals
Tetraethyl lead	covered by metals
Thallium acetate	covered by metals
Thallium carbonate	covered by metals
Thallium chloride	covered by metals
Thallium nitrate	covered by metals
Thallium oxide	covered by metals

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Chemical Name	Reason why not in final rule
Thallium sulfate	covered by metals
Vanadium pentoxide	covered by metals
Zinc Cyanide	covered by metals
Zinc phosphide	covered by metals
alpha-BHC	not on Appendix VIII
beta-BHC	not on Appendix VIII
delta-BHC	not on Appendix VIII

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