

**MINNESOTA DEPARTMENT OF TRANSPORTATION
USED OIL BURNER SAMPLING
ON-SPEC OIL ANALYSIS
Metro District**

**Forest Lake
Oakdale**

**Prepared by:
Minnesota Department of Transportation
Office of Environmental Services
Environmental Modeling and Testing Unit**

October 2016

INTRODUCTION

Enclosed in this report are the results of the sampling of used oil collected at the Minnesota Department of Transportation (MNDOT) Metro Truck Station facilities. Used oil from vehicles is placed in Lube Cube storage tanks at each of the truck stations. The Lube Cubes are connected to building heaters that burn the used oil for heat recovery.

The sampling of used oil at the Metro District facilities was conducted by personnel from the MNDOT Office of Environmental Stewardship. For additional information, contact Harold Bottolfson at (651) 366-5812. The laboratory analysis was performed by Pace Analytical and Test America Laboratories.

The results of the laboratory analysis from the samples taken at the Metro District Truck Stations show the burner oil to be within the on spec limits.

Purpose

The purpose of the sampling and analysis is to insure that the used motor oil that is burned in heating units meets MPCA rules for such practices. The oil must meet the following limits to be classified as on-spec:

- Flashpoint 100 degrees Fahrenheit minimum
- Arsenic 5 parts per million (PPM) maximum
- Cadmium 2 PPM maximum
- Chromium 10 PPM maximum
- Lead 100 PPM maximum
- Total Halogens 1000 PPM maximum

Procedures

The oil was sampled from the storage tank with a Coliwasa sampler. The Coliwasa sampler is a 70" long polypropylene tube that is 1" diameter. The sampler has caps at each end that can be opened and closed by using a control rod that runs through the length of the tube. During the sampling, the end caps were opened and the coliwasa was slowly lowered into the tank so that a vertical column sample could be obtained. The sampler was lowered to the top of the sludge layer so that only the oil to be burned would be sampled. The oil from the sampler was placed in sample bottles provided by Pace Analytical and Test America Laboratories, which were contracted to analyze the samples. As the sample was released into the bottle, it was carefully observed for any discolorations or changes in the composition of the material. Notes were taken of the procedures during the sampling process.

Laboratory analysis methods for each of the listed parameters are as follows:

PARAMETER	METHOD
Flashpoint	EPA Method 1010 Flashpoint Closed Cup
Metals	EPA Method 6010C Met ICP
Total Halogens	EPA Method 9076 Chlorine, Total

Results

The observation notes taken during the sampling are as follows:

1. The oil removed from the tank with the coliwasa did not show segments or layering.
2. The oil removed did not have any unusual odors and seemed consistent with the look and smell of used oil.

MN/DOT Metro District
Used Oil Sampling Laboratory Results
(Values in PPM)

Sample Location	Date	Flashpoint (F)	Arsenic	Cadmium	Chromium	Lead	Total Halogens
Forest Lake	9/13/2016	190	< 1.1	< 0.91	< 0.45	< 0.91	158
Oakdale	9/12/2016	194	< 1.2	< 0.96	< 0.48	<0.96	< 100
On Spec Limits		100 Minimum	5 Maximum	2 Maximum	10 Maximum	100 Maximum	1000 Maximum

***Values in Red are Off Spec**

Sample Location	Date	Tank Serial Number	Tank Size (Gals)	Tank Gauge Reading	Measured Level
Forest Lake	9/13/2016	N/A	950	885 Gals	45"
Oakdale	9/12/2016	656244	650	45"	

Forest Lake Used Oil Container



Oakdale Used Oil Container



Minnesota Department of Health Chain of Custody

**Minnesota Department of Transportation
Chain of Custody for Department of Health Samples**



Collector: Harold Bottolfson PROGRAM CODE: DD
 Collector's Phone Number: 651-366-5812 MATRIX CODE: OT
 Project Name: On-Spec Oil Testing

Sampling Location	MN/DOT District Truck Stations				
Field Comments	Subcontract Total Halogens to Test America. Subcontract Flashpoint and RCRA Metals to Pace.				
Unique Sample ID	Oakdale Used Oil	Forest Lake Used Oil			
Date Collected	9/12/2016	9/13/2016			
Time Collected	12:45	12:30			
Number of Containers	3	3			
Arsenic EPA Method 6010C Met ICP	X	X			
Chromium EPA Method 6010C Met ICP	X	X			
Cadmium EPA Method 6010C Met ICP	X	X			
Lead EPA Method 6010C Met ICP	X	X			
Total Halogens EPA Method 9076 Chlorine, Total	X	X			
Flashpoint EPA Method 1010 Flashpoint Closed Cup	X	X			
Temperature (°C)					

Samplers Signature *[Signature]*

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Relinquished by:	Date	Accepted by:	Date
<i>[Signature]</i>	9-13-16 13:08	<i>[Signature]</i> MDH	9/13/16 13:08

**Minnesota Department of Health
Laboratory Results**

Final Report
 Analytical Results

Project: DD	Collected by: Harold Bottolfson	Reported: 09/27/16 11:17
Project name: OES		

MDH Sample Number: 16I0661-02

Location: Forest Lake Used Oil

Site ID: MN/DOT District Truck Stations

Comments: Subcontract Total Halogens to Test America. Subcontract FlashPoint and RCRA Metals To Pace

Collect date: 9/13/16

Collect time: 12:30

Matrix: Solid and Chem. Mat.

The following results were produced by the Pace Analytical Services, Inc.

Subcontract

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	Z-01	<	1.1	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Cadmium	Z-01	<	0.91	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Chromium	Z-01	<	0.45	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Lead	Z-01	<	0.91	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Flash Point	Z-01	190		deg F	1	[none]	09/20/16 00:00	09/20/16 00:00	See attached report.

The following results were produced by the TestAmerica Nashville

Subcontract

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Total Organic Halides	Z-01	158	100	ug/g	1	[none]	09/22/16 00:00	09/22/16 00:00	See attached report.

FINAL REPORT

Report ID: 09272016111712

Authorized by:

*The results in this report apply only to the samples analyzed.
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Paul Moyer, Environmental Laboratory Manager
 Public Health Laboratory, Minnesota Department of Health

Final Report
 Analytical Results

Project: DD	Collected by: Harold Bottolfson	Reported: 09/27/16 11:17
Project name: OES		

MDH Sample Number: 16I0661-01

Location: Oakdale Used Oil
 Site ID: MN/DOT District Truck Stations
 Comments: Subcontract Total Halogens to Test America. Subcontract FlashPoint and RCRA Metals To Pace

Collect date: 9/12/16
 Collect time: 12:45
 Matrix: Solid and Chem. Mat.

The following results were produced by the Pace Analytical Services, Inc.

Subcontract

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Arsenic	Z-01	<	1.2	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Cadmium	Z-01	<	0.96	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Chromium	Z-01	<	0.48	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Lead	Z-01	<	0.96	mg/kg	1	[none]	09/20/16 00:00	09/21/16 00:00	See attached report.
Flash Point	Z-01	194		deg F	1	[none]	09/20/16 00:00	09/20/16 00:00	See attached report.

The following results were produced by the TestAmerica Nashville

Subcontract

Analyte	Analyte Qualifier(s)	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Total Organic Halides	Z-01	<	100	ug/g	1	[none]	09/22/16 00:00	09/22/16 00:00	See attached report.

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