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Report of ...

Manganese (Mn) Emission Testing

Performed for the ...

Walbec Group
Waukesha, Wisconsin

On the ...

Payne and Dolan, Inc.
Control 25 Baghouse Exhaust
Iron River, Michigan

June 15, 2023

Project #: 276.03

By...

Network Environmental, Inc.
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(SRN #N6297)
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I. INTRODUCTION

Network Environmental, Inc. was retained by the Walbec Group of Waukesha, Wisconsin to conduct a compliance emission study on their (Payne and Dolan, Inc. SRN #N6297) Portable Control 25 asphalt plant located in Iron River, Michigan. The purpose of the study was to meet the Manganese (Mn) emission testing requirements of EGLE Air Permit No. 218-97D.

The following is a list of the applicable emission limits for the baghouse exhaust:

Emission Limit(s)

Manganese (Mn): 3.1 ug/M³

The following reference test methods were employed to conduct the emission sampling:

- Manganese (Mn) – U.S. EPA Reference Method 29
- Exhaust Gas Parameters – U.S. EPA Reference Methods 1 through 4

The sampling was performed on June 15, 2023 by Stephan K. Byrd and David D. Engelhardt of Network Environmental, Inc.. Assisting with the study were Mr. Zach Leitner, Mr. James Mertes of the Walbec Group and the operating staff of the facility. Mr. Daniel J. Droste of the Michigan Department of Environment, Great Lakes and Energy (EGLE) - Air Quality Division was present to observe the sampling and source operation.

II. PRESENTATION OF RESULTS

**II.1 TABLE 1
MANGANESE (Mn) EMISSION RESULTS
CONTROL 25 BAGHOUSE EXHAUST
PAYNE AND DOLAN, INC.
IRON RIVER, MI**

Sample	Date	Time	Air Flow Rate DSCFM ⁽¹⁾	Concentration	Mn Mass Emission Rate
				ug/M ³ ⁽²⁾	Lbs/Hr ⁽³⁾
1	6/15/23	08:50-10:05	25,066	89.99	8.45E-03
2	6/15/23	11:22-12:33	25,987	90.23	8.78E-03
3	6/15/23	14:35-15:48	24,869	90.63	8.44E-03
Average			25,307	90.28	8.55E-03

(1) DSCFM = Dry Standard Cubic Feet Per Minute (STP = 68 °F and 29.92 in. Hg)

(2) ug/M³ = Micrograms Per Dry Standard Cubic Meter

(3) Lbs/Hr = Pounds Per Hour

III. DISCUSSION OF RESULTS

The results of the testing are summarized in Table 1 (Sections II.1) as follows:

Table 1 – Manganese (Mn) Emission Results

- Sample
- Date
- Time
- Air Flow Rate (DSCFM) – Dry Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg)
- Mn Concentration (ug/M³) – Micrograms Per Dry Standard Cubic Meter
- Mn Mass Emission Rates (Lbs/Hr) – Pounds Per Hour

IV. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location was on the 50 x 48 inch exhaust at a location 2.5 duct diameters downstream and 1 duct diameter upstream from the nearest disturbances. There are 5 sample ports.

Prior to the sampling, a preliminary cyclonic/turbulent flow check was conducted on the exhaust stack. The sampling location met the requirements of Method 1. Twenty-Five (25) sampling points (5 per port) were used for the isokinetic sampling. The sampling point dimensions for the isokinetic sampling were as follows:

<u>Sample Point</u>	<u>Dimension (Inches)</u>
1	4.80
2	14.40
3	24.00
4	33.60
5	43.20

IV.1 Manganese (Mn) – The Mn emission sampling was conducted by employing U.S. EPA Method 29. This is an out of stack filtration method, where the sampling probe and filter are heated at 250 °F (plus or minus 25 °F).

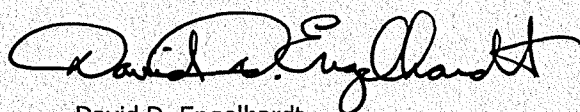
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Each sample was 62.5 minutes in duration. The samples were collected isokinetically on quartz filters, and in a nitric acid/hydrogen peroxide solution.

The nozzle/probe rinses, filters and nitric acid/hydrogen peroxide solutions were analyzed for Mn by inductively coupled argon plasma/mass spectrophotometry (ICAP/MS) analysis in accordance with Method 29. All the quality assurance and quality control procedures listed in the method were incorporated in the sampling and analysis. Figure 1 is a diagram of the sampling train.

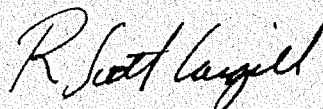
IV.2 Exhaust Gas Parameters – The exhaust gas parameters (air flow rate, temperature, moisture and density) were determined in conjunction with the other sampling by employing U.S. EPA Methods 1 through 4. Air flow rates, temperatures and moistures were determined using the isokinetic sampling trains. Integrated bag samples were collected off of the isokinetic sampling trains and analyzed by Orsat in order to determine the oxygen (O₂) and carbon dioxide (CO₂) content of the exhaust to determine gas density.

This report was prepared by:



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Temperature Sensor

Probe

Stack Wall

Nozzle

Filter

Sample Tubing

Heated Filter Box

Impinger Train

Silica Gel Dryer

Impingers

Ice Bath

Vacuum line

Thermometers

Orifice

By-Pass Valve

Main Valve

Vacuum Gauge

Manometer

Dry Gas Meter

Air Tight Pump

Figure 1

Manganese (Mn) Sampling Train

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