

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

N7096  
FY2016 Insp

N709634491

FACILITY: Heat Treating Services Corp of America - Plant 1	SRN / ID: N7096
LOCATION: 217 Central Ave, PONTIAC	DISTRICT: Southeast Michigan
CITY: PONTIAC	COUNTY: OAKLAND
CONTACT: Kenneth P. Rogghe P. Rogghe, Corporate Engineering Manager	ACTIVITY DATE: 04/13/2016
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance
SUBJECT: FY 2016 level-2 scheduled annual inspection of Heat Treating Services Corporation of America - Plant # 1	SOURCE CLASS: MINOR
RESOLVED COMPLAINTS:	

N7096 - SAR - 2016 04 13

Heat Treating Services Corporation of America - Plant # 1 (N7096)  
217 Central Ave.  
P.O. Box 430269  
Pontiac, Michigan 48341-2924

htsmi.com

Permit-to-Install: PTI No. 176-01B (FG-HeatTreat, SC I.1 emission limit: 21.2 tpy VOC and corresponding SC II.1 material / production limit: 30,000 tpy metal processed). While Heat Treating Process Line Nos. 1, 2, 4, 5 & 8 are part of the permit, HTP Line Nos. 3 & 7 are not part of the permit because the later lines do not have oil quench tanks. As a result of PTI Mod (PTI No. 176-01A → PTI No. 176-01B), the production limit reduced from 45,000 to 30,000 tpy metal processed and VOC emission limit increased from 6.8 to 21.2 tpy subject to the condition that stack heights are increased as specified in the permit. The changes were necessitated by higher stack tested (Dec 2012) emission factor as stated below. Increased stack height was required due to Rule 225 ambient impact problems.

VNs: March 31, 2011, Violation Notice for exceeding particulate matter limit (PTI No. 176-01, SC1 limit: 8.8 tpy) and quench oil usage limit (PTI No. 176-01, SC2 limit: 2,400 gallons per year). March 23, 2016, Violation Notice for exceeding VOC and production limits (PTI No. 176-01B). However, the March 2016, was based upon incorrect production data that included lines 3 and 7, which are not part of the permit.

PTI Mods: PTI No. 176-01 (particulate matter [PM] SC1 limit: 8.8 tpy and corresponding quench oil usage SC2 limit: 2,400 gallons per year) → PTI No. 176-01A (FG-HeatTreat, SC I.1 emission limit: 6.8 tpy VOC and SC II.1 material / production limit: 45,000 tpy metal processed) as a result of March 31, 2011, VN. Quench oil mist was looked upon as VOC instead of particulate matter based upon definition of VOC → PTI No. 176-01B (FG-HeatTreat, SC I.1 emission limit: 21.2 tpy VOC and SC II.1 material / production limit 30,000 tpy metal processed) as result of higher stack tested (Dec 2012) emission factor of 1.41 pounds of VOC per ton of metal processed Vs interim emission factor of 0.30 pounds of VOC per ton of metal processed (PTI No. 176-01A, FG-HeatTreat, SC VI.2.c). Production limit reduced from 45,000 to 30,000 tpy metal processed and VOC emission limit increased from 6.8 to 21.2 tpy subject to the condition that stack heights are increased as specified in the permit.

PTI voids: PTI Nos. 176-01 (03/27/2012) and 176-01A (10/30/2013)

On February 19 and April 13, 2016, I conducted a level-2 **scheduled** annual inspection of Heat Treating Services Corporation of America – Plant # 1 (“Heat Treating”), a contract heat treating services company predominantly for automotive industry, located at 217 Central Ave., Pontiac, Michigan 48341-2924. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; and PTI No. 176-01B.

During the FY 2016 inspection, Mr. Kenneth P. Rogghe (Phone: 248-322-8817; Cell: 248-343-1450; Fax: 248-836-0260; E-mail: kRogghe@htsmi.com), Corporate Engineering Manager, assisted me.

Also, Ms. Lynn Jankowski (Phone: 248-887-2211; Fax: 248-887-2111; Cell: 313-350-4246; E-mail: lJankowski@qsg-inc.com), Sr. Engineer, assisted me especially with record-keeping and MS Spreadsheet calculations. Mr. David Billings (Phone: 248-887-2211; Fax: 248-887-2111; Cell: 248-417-9053; E-mail: dBillings@qsg-inc.com) of Quality Systems Group, Inc. of Highland, Michigan, was not present. Mr. Billings and Ms. Jankowski are consultants, who are helping Heat Treating to achieve compliance. Ms. Jankowski helps the company with regulations, the permit, spreadsheet calculations, etc.

Mr. Stephen R. Hynes (Phone: 248-452-2315; Fax: 248-858-2242; Cell: 248-568-7558; E-mail: sHynes@htsmi.com), President (Owner), and Mr. Tim Anderson (Phone: 248-452-2317; Fax: 248-858-2517; Cell: 248-343-0790; E-mail: tAnderson@htsmi.com), Plant Manager, Plant #1, did not participate.

Heat Treating Services Corporation of America operates four (4) heat treating plants in Michigan:

1. N7096: Heat Treating Services Corporation of America, Plant #1, 217 Central Ave., Pontiac
2. P0236: Heat Treating Services Corporation of America, Plant #2, 2501 Williams Dr., Waterford
3. N6726: Heat Treating Services Corporation of America, Plant #3, 915 Cesar Chavez (fka Oakland Ave.), Pontiac
4. A0613: Trojan Heat Treating, Plant #4, 809 S. Byron St., Homer (near Jackson), Michigan

Heat Treating (Plant #1) operates five (5) furnaces with quench oil (Line Nos. 1, 2, 4, 5 and 8) and two furnaces without quench oil (Line Nos. 3 and 7, which are not part of the permit). All furnaces are natural gas fired. Because Line Nos. 3 and 7 do not have emissions due to quench oil, they are not part of the permit. As result of AQD's (Ethridge) complaint investigation of April 2001, Heat Treating obtained PTI No. 176-01, which regulated the emissions as a particulate matter and not VOC.

Each regulated heat treating line (Line Nos. 1, 2, 4, 5 and 8) consists of natural gas fired hardening furnace (1500-1800 °F), quench oil bath(150-170 °F, about 6,000 gallon) and natural gas fired tempering furnace (1000-1300 °F). During the permit revisions and December 2012 stack testing, Line No. 8 was considered representative for the purpose of VOC emissions. The emission units are as follows:

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Flexible Group ID
EUHEATTREAT1	Heat treating line 1 – Consists of a 3.35 MMBTU/hr natural gas fired IHE belt furnace with integral oil quench and a tempering oven.	FGHEATTREAT
EUHEATTREAT2	Heat treating line 2 – Consists of a 4.5 MMBTU/hr natural gas fired IHE belt furnace with integral oil quench and a tempering oven.	FGHEATTREAT
EUHEATTREAT4	Heat treating line 4 – Consists of a 5.6 MMBTU/hr natural gas fired SFE belt furnace with integral oil quench and a tempering oven.	FGHEATTREAT
EUHEATTREAT5	Heat treating line 5 – Consists of an 11.75 MMBTU/hr natural gas fired IHE belt furnace with integral oil quench and a tempering oven.	FGHEATTREAT
EUHEATTREAT8	Heat treating line 8 – Consists of an 11.1 MMBTU/hr natural gas fired IHE belt furnace with integral oil quench and a tempering oven.	FGHEATTREAT
FGHEATTREAT: EUHEATTREAT1, EUHEATTREAT2, EUHEATTREAT4, EUHEATTREAT5, EUHEATTREAT8. Because Line Nos. 3 and 7 do not have emissions due to quench oil, they are not part of the permit. The permit revision (PTI No. 176-01 → PTI No. 176-01A) changed oil mist emissions from particulate matter to VOC based upon its definition. The permit was revised again (PTI No. 176-01A → PTI No. 176-01B) due higher stack test (Dec 2012, Line No.8 as representative line) VOC emission factor: 1.41 pounds of VOC per ton of metal processed Vs interim emission factor of 0.30 pounds of VOC per ton of metal processed.		

The parts are received from either customers or foundries. The parts are placed on a conveyor belts. The parts are introduced into a hardening furnace (1500-1800 °F) via a continuously operating conveyor belt. The residence time is 15-90 minutes depending upon the customer specifications. The parts are dropped into quench oil bath (150-170 °F; about 6,000 gallons) to stop hardening. Violent boiling of quench oil occurs and some oil is evaporated due to supply of enormous amount of heat from hot metal parts. Residence time in quench oil is 10-15 minutes. Quench oil is A-1 Quench Oil No. 100 (Wolverine Oil and Supply Co. of Detroit; Phone: 313-931-2236; API Gravity =32; Flash Point [FP] = 365 °F; Boiling Point [BP] = 600°F). Using another conveyor belt, the parts are introduced into tempering furnace (1000-1300 °F). Residence time in a tempering furnace is 60-90 minutes.

Unlike many other heat treating facilities, Heat Treating does not wash quenched metal parts.

Part of quench oil emissions due to evaporation are burned in the furnaces. Emissions (both products of combustion and VOC) are discharged via stacks. Some stacks of 26 stacks were extended per specifications of the revised permit (PTI No. 176-01B, FG-HeatTreat, SC VIII. 1-26 and SC IX.1)

**March 31, 2011, Violation Notice and PTI revision (PTI No. 176-01 → PTI No. 176-01A)**

AQD issued March 31, 2011, Violation Notice for exceeding particulate emissions and quench oil usage limits (PTI No. 176-01, SC 1 [8.8 tpy PM] & SC 2 [2,400 gal/yr.]). In May 25, 2011, e-mail VN response letter, Heat Treating claimed 38,635 gallon per year usage was due to calculation errors. Spreadsheet formulae errors occurred due to copy / cut / paste operations. Heat Treating claimed that correct oil usage was 5,913 gallons per year, which is also in violation of the usage limit (PTI No. 176-01, SC 2 [2,400 gallons /year]).

During PTI modification, AQD treated emissions as VOC rather than particulate matter consistent with definition of VOC. The revised permit (PTI No. 176-01 → PTI No. 176-01A) limits VOC emissions to 6.8 tons per year (PTI No. 176-01A, SC I.1) and metal production to 45,000 tons per year (PTI No. 176-01A, SC II.1). The emissions are based upon an interim emission factor of 0.3 pounds of VOC per ton metal processed. Heat Treating was required to conduct performance test within 180 days and determine a site-specific emission factor (PTI No. 176-01A, SC V.1). Heat Treating conducted, as required, stack sampling on December 6, 2012, using Line No. 8 as representative line concerning VOC emission factor.

During the required stack testing (PTI No. 176-01A, SC V.1), in addition to stack VOC / PM emissions, fugitive emissions must be accounted for. On March 14, 2012, I observed fugitive visible emissions from furnaces.

**December 2012 stack testing and PTI revision (PTI No. 176-01A → PTI No. 176-01B)**

BTEC, Inc. (BT Environmental Consulting, Inc., 4949 Fernlee Avenue, Royal Oak , Michigan 48073, Phone: 248-548-8070) proposed a stack testing protocol (BTEC Project No. 12-4270.00 July 13, 2012) pursuant to PTI No. 176-01A, FG-HeatTreat, V.1, to determine VOC emission factor versus interim emission factor of 0.30 pounds of VOC per ton of metal processed (PTI No. 176-01A, FG-HeatTreat, VI.2.c). Mr. Tom Maza of AQD-TPU approved the test plan.

On December 6, 2012, BTEC, Inc. conducted a sampling on Line 8 (BTEC Project No. 12-4370.00 January 16, 2013). AQD agreed that Line No. 8 was a representative line for the purposes of emission factor determination. Fugitive emissions were considered negligible during the lengthy stack test plan negotiations. Messrs. Tom Maza and Iranna Konanahalli of AQD observed the sampling. AQD received the stack test report that stated emission factor determined was 1.41 pounds of VOC per ton of metal processed versus interim emission factor of 0.30 pounds of VOC per ton of metal processed (PTI No. 176-01A, FG-HeatTreat, VI.2.c).

Tested emission factor resulted in potential violation of existing permit limits (PTI No. 176-01A (FG-HeatTreat, SC I.1 emission limit: 6.8 tpy VOC and SC II.1 material / production limit: 45,000 tpy metal processed). Hence, Heat Treating proposed a permit revision (PTI No. 176-01A → PTI No. 176-01B) in order to be able to comply with VOC emission limit. This PTI revision application is a request to increase the VOC emission limit from 6.8 TPY to 21.2 TPY due to the higher emission factor determined during stack testing. The Heat Treating agreed to accept a lower metal throughput limit along with the higher emission factor to limit total VOC emissions to 21.2 TPY (PTI No. 176-01A, FG-HeatTreat, SC I.1 emission limit: 6.8 tpy VOC and corresponding SC II.1 material / production limit: 45,000 tpy metal processed → PTI No. 176-01B, FG-HeatTreat, SC I.1 emission limit: 21.2 tpy VOC and corresponding SC II.1 material / production limit 30,000 tpy metal processed). In other words, the production limit reduced from 45,000 to 30,000 tpy metal processed and corresponding VOC emission limit

increased from 6.8 to 21.2 tpy subject to the condition that stack heights are increased as specified in the permit. VOC emission factor of 1.41 pounds of VOC per ton of metal processed may be used in calculations (PTI No. 176-01B, FG-HeatTreat, SC VI.2.c).

BACT per Rule 702(a) is no control for these heat treating processes, partly because emissions are less than 7 tons per year but mainly because a cost analysis for a thermal oxidizer for just one of the lines was over \$30,000 per ton; costs would only go up from there once each line is added into the equation (PTI No. 176-01A).

### **Stack Heights**

PTI No. 176-01B, FG-HeatTreat, SC IX.1 requires stack heights be increased (PTI No. 176-01B, FG-HeatTreat, SC VIII. 2, 6, 10, 13 & 19). Heat Treating increased the stack heights accordingly although it took longer than 120 days due to freezing cold weather. Due to higher stack tested (Dec 2012) VOC emission factor of 1.41 pounds of VOC per ton of metal processed versus interim (PTI No. 176-01A, FG-HeatTreat, VI.2.c) VOC emission factor of 0.30 pounds of VOC per ton of metal processed, stack height had to be increased together with increasing VOC emission limit from 6.8 to 21.2 tpy. Correspondingly, production limit reduced from 45,000 to 30,000 tpy metal processed

This new limit (PTI No. 176-01B) was evaluated for Rule 225 purposes assuming all VOC emitted from the quench oil was mineral oil which has an ITSL of 50 ug/m<sup>3</sup> on a 8-hr basis. Based on the current stack parameters (PTI No. 176-01A), modeling showed impacts well above the ITSL for mineral oil. The Heat Treating agreed to install taller stacks for each line for each stack that is associated with the quench oil emissions. Impacts with the taller stacks (PTI No. 176-01B) were less than the ITSL. Additionally, the Heat Treating provided a TAC analysis for those TACs emitted due to combustion because many of the stacks are well below 1.5 times the building height. The previous permit indicated that these stacks were at least 1.5 times the building height. Regardless, the TAC analysis showed all TACs emitted due to combustion of natural gas were well below their respective screening levels. Rule 225 requirements are met.

### **March 03, 2016, Violation Notice**

AQD issued March 03, 2016, Violation Notice for exceeding VOC emission and production limits. This violation occurred because Heat Treating submitted incorrect production records due inclusion of Line Nos. 3 and 7 in production data. Line Nos. 3 and 7 are not part of the permit because the lines in question are not equipped with oil quench system. Of course, this violation should not have been issued. AQD received March 22, 2016, VN response letter from Ms. Lynn Jankowski. As stated below, Ms. Lynn Jankowski submitted correct MS Spreadsheet calculations.

### **PTI No. 176-01B**

Ms. Lynn Jankowski submitted correct MS Spreadsheet calculations. According the MS Spreadsheet calculations, VOC emissions for CY 2015 are less than 18 tons per year and corresponding metal processed is less than 24,800 tons per year (PTI No. 176-01B, FG-HeatTreat, SC I.1 emission limit: 21.2 tpy VOC and corresponding SC II.1 material / production limit: 30,000 tpy metal processed). The production limit excludes Line Nos. 3 and 7 that are not part of the permit because lines in question are not equipped with oil quench system; Line Nos. 3 and 7 do not emit VOC.

The required calculations are performed using MS Spreadsheet (PTI No. 176-01B, FG-HeatTreat, SC VI.1: the required calculations). On monthly basis the required records are kept (PTI No. 176-01B, FG-HeatTreat, SC VI.2: records such as metal processed per month and year, VOC emissions calculations in tons/mo and tons / yr, etc.). The December 6, 2012, stack tested (BTEC, Inc.) emission factor 1.41 pounds of VOC per ton of metal processed is used in the required VOC emissions calculations (PTI No. 176-01B, FG-HeatTreat, SC VI.2.c: 1.41 lbs. VOC / ton).

All stacks that emit VOC were extended about May 2014, although not timely (within 120 days of issuance of the permit [from October 30, 2013]) due to freezing winter weather, to comply with the revised permit (PTI No. 176-01B, FG-HeatTreat, SC VIII.2, 6, 10, 13, 19 and SC IX.1). Rule 225 review (PTI No. 176-01B) ambient impacts were well above the ITSL for mineral oil (ITSL of 50 ug/m<sup>3</sup> on a 8-hr basis) based upon existing stack heights. Hence, Heat treating agreed to increase stack heights.

### Conclusion

Heat Treating resolved March 31, 2011, Violation Notice via PTI modification: PTI No. 176-01 → PTI No. 176-01A. Heat Treating revised the permit again (PTI No. 176-01A → PTI No. 176-01B) to accommodate higher VOC emission factor of Dec 2012 stack test (1.41 lbs. / ton tested Vs. 0.30 lbs. / ton interim). Heat Treating is in compliance with revised permit (PTI No. 176-01B).

FYI: March 31, 2011, Violation Notice.

March 31, 2011

Mr. Stephen R. Hynes, President  
Heat Treating Services Corporation of America  
217 Central Ave.  
P.O. Box 430269  
Pontiac, Michigan 48341-2924

SRN: N7096, Oakland (63) County

Dear Hynes:

### **VIOLATION NOTICE**

On February 17 and March 11, 2011, the Department of Environmental Quality (DEQ), Air Quality Division (AQD), conducted an inspection of Heat Treating Services Corporation of America ("Heat Treating") located at 217 Central Ave., Pontiac, Michigan. The purpose of this inspection was to determine Heat Treating's compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the administrative rules and the conditions of Permit to Install (PTI) number 176-01.

During the inspection, staff observed the following:

Process Description	Rule/Permit Condition Violated	Comments
Heat treating process	Permit to Install No.	During CY 2010, Heat Treating's net

line nos. 1, 2, 4, 5, 8  Line nos. 3 & 7 are not part of the permit because the lines do not have oil quench tanks.	176-01, Special Condition Nos.1 & 2	quench oil usage (purchased – reclaimed - disposed of) of 38,635 gallons per year exceeded the permit limit of 2,400 gallons per 12-month period. 8.8 tons per year particulate matter (PM) limit (SC1) corresponds to 2,400 gallons per year usage. Hence, particulate matter emissions also exceeded the limit $[(8.8 / 2400) * 38,635 = 142 \text{ tons / yr}]^{\Delta}$
<p><math>\Delta</math> According to Rule 336.1211(1), a stationary source that has a potential to emit (PTE) 100 tons or more of any regulated air pollutant (criteria air pollutant [Pb, SO<sub>2</sub>, NO<sub>x</sub>, CO, O<sub>3</sub>, VOC], NSPS-regulated pollutant, etc.), is subject to Rule 336.1210 (Renewable Operating Permit). Heat Treating shall demonstrate immediately (no later than Apr 25, 2011) that the PTE for particulate matter emissions is below 100 tpy. There may be errors in the permit. In that case, Heat Treating shall revise the permit (PTI No. 176-01 → PTI No. 176-01A) to correct the errors. If some PM emissions are burnt off as claimed, that information must be incorporated into the permit.</p> <p>If PTE for PM <math>\geq</math> 100 tons per year, Renewable Operating Permit application shall be submitted immediately.</p>		

Under the State of Michigan's Air Pollution Control law and the federal Clean Air Act, a Renewable Operating Permit (ROP) program has been developed and implemented in Michigan. This program requires major sources of air emissions to obtain a facility-wide air use permit. This permit serves as a mechanism for consolidating and clarifying all air pollution control requirements which apply to the source. Rule 210(5) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451), requires major sources to submit an application to the Department of Environmental Quality (DEQ), Air Quality Division (AQD) not more than 12 months after a stationary source commences operation as a major source, as defined by Rule 211(1)(a) of Act 451.

Please initiate actions necessary to correct the cited and **submit a written response to this Violation Notice by April 21, 2011 (which coincides with 21 calendar days from the date of this letter)**. The written response should include: the dates the occurred; an explanation of the causes and duration of the ; whether the ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the and the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

If Heat Treating believes the above observations or statements are inaccurate or do not constitute violations of the applicable legal requirements cited, please provide appropriate factual information to explain your position.

Thank you for your attention to resolving the cited above and for the cooperation that was extended to me during my inspection of Heat Treating. If you have any questions regarding the or the actions necessary to bring this facility into compliance, please contact me at the number listed below or the DEQ/AQD, Southeast Michigan District, 27700 Donald Court, Warren, MI 48092-2793 .

Sincerely,

Iranna Konanahalli

Air Quality Division

586-753-3741

ISK / VLL

cc: Mr. Kenneth P. Rogghe, Corporate Engineering Manager  
Ms. Teresa Seidel, DEQ  
Mr. Thomas Hess, DEQ  
Mr. Christopher Ethridge, DEQ  
Mr. Steve Weis, DEQ

NAME IS HennahallDATE 05/12/2016 SUPERVISOR CJE