

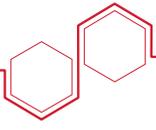


Written Summary of Implemented Process Improvement Actions for Benzo(a)Pyrene and Benzene As Required by Site Specific Standard Approvals for Ruetgers Canada Inc.

April 2019

Submitted by

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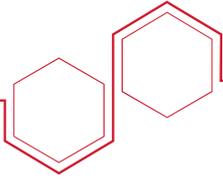
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1 INTRODUCTION

Ruetgers Canada Inc. (Ruetgers) operates a coal tar and petroleum-based material processing facility located at 725 Strathearne Avenue N. in Hamilton, Ontario (the Facility). The Facility takes by-products from the steel manufacturing sector and produces high value products used in the aluminum, chemical, construction, pavement sealer and wood preservation industries. The Ruetgers air emissions control program controls all benzene and B(a)P sources at the Facility. This program was completed in 2013 and resulted in the reduction of benzene and B(a)P emissions by over 99% from historical levels. However, the introduction of the MECP annual standards for both benzene and B(a)P in 2016 required the Facility to submit Site-Specific Standard applications to demonstrate compliance with O. Reg. 419/05. The SSS Applications were submitted in February 2016. Updated documentation requested by the MECP was submitted subsequently as needed (e.g., updated Action Plans). The SSS for benzene and B(a)P were approved on November 21, 2017 (Reference Number 7856-9VDPSR; Approval Numbers 201-17-rv0 and 202-17-rv0).

The following sections associated with the Facility's SSS Approvals or Orders require Ruetgers to prepare a Written Summary of the actions taken each calendar year to implement the Action Plans for B(a)P and benzene:

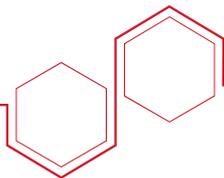
- B(a)P: Condition 5 in Site-Specific Standard Approval Number 201-17-rv0 issued November 21, 2017
- Benzene: Item 4.19 in Order Number 202-17-order-rv0 issued November 21, 2017

This Written Summary of the B(a)P and benzene Action Plans implementation summarizes the calendar years of 2018. This Written Summary presents descriptions of each action taken, date of implementation of each action taken, and dates for the implementation of actions yet to be taken. This Written Summary was submitted electronically to the MECP District Manager as well as the MECP Standards Development Branch (SDB) Director.

2 B(A)P AND BENZENE ACTION PLANS AND IMPLEMENTATION

The Action Plans for B(a)P and benzene were submitted to the MECP as part of the SSS Application in February 2016. Following review and discussions with the MECP, the Action Plans for B(a)P and benzene were updated and resubmitted in September and November 2016, respectively. The SSS Approvals define the Action Plans as those "submitted by the Company as part of its Request, including but not limited to the items summarized in Appendix 1 of this Approval." Appendix 1 of each SSS Approval includes further actions that were not included in the originally submitted Action Plans.

Section 2.1 – 2018 Calendar Year Implemented Actions summarizes the actions taken in 2018 based on both the originally submitted Action Plans (February 2016) and the actions listed in Appendix 1 of each SSS Approval (November 2017).



2.1 2018 Calendar Year Implemented Actions

In 2018, Ruetgers continued to implement Process Improvement Actions that were approved in the B(a)P and benzene Action Plans and included in the SSS Approvals. As of December 2018, Ruetgers completed all the Process Improvement Actions proposed in the original Action plans (February 2016) and actions listed in Appendix 1 of each SSS Approval (November 2017), with the exception of installation of equipment related to continuous monitoring in the Fume Gathering and Incineration (FGI) System as well as the Engineering Reports for the Fume Scrubbing System (FSS), FGI System and Wastewater Treatment Plant.

Details of the implemented actions, dates they were implemented in 2018, actions that have not yet been implemented and their planned implementation dates are summarized in Table 1.

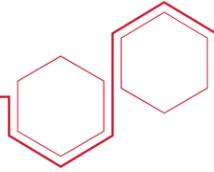
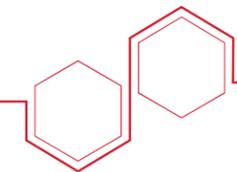


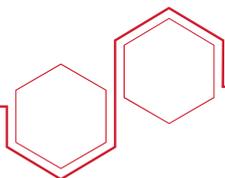
Table 1: Summary of Implemented Action Plan in 2018 for B(a)P and Benzene as per Site-Specific Standard Approvals

Action	Expected Date of Completion	Action Included in Action Plans	Action Implemented in 2018?	Notes
B(a)P				
Implement door closure practices on pitch flaking operation	Dec. 21, 2017	No	No - Unit was closed as of Aug. 10, 2017	—
Solid(flakes) Coal tar pitch production line closing	Oct. 1, 2017	Yes	Yes – Closed as of Aug. 10, 2017	—
Engineering Report of the FSS, including: <ul style="list-style-type: none"> - Engineering Calculations (mass, heat/energy balance) to clarify the system capacity and actual operating parameters, to determine whether or not the existing system has sufficient capacity to handle the volatile organic compounds (VOC) loading at the projected efficiency. - Engineering Calculations (mass, heat/energy balance) to clarify the system capacity to determine whether or not the existing system has sufficient capacity for additional VOCs loading. - To assess situations when the system is overwhelmed and excess vapours are not captured. - To determine additional methods that would be used to direct volatile organic compounds if the system capacity is not sufficient. - To assess further methods to address system efficiency and optimize operations. 	Dec. 31, 2018	No	In progress	Ruetgers is working with an external engineering firm to undertake this engineering study and prepare the FSS Engineering Report. A Work Plan is underway to assess how current FSS operating conditions compare to the original design to assess adequacy and excess capacity and analyse how changes to operating parameters impact the discharge of each contaminant. A draft report is expected by the end May 2019.
Benzene				
Fume Gathering and Incineration System (FGI): Install equipment, implement and maintain a program to continuously monitor and record the temperature, flow rate and residence time of the gaseous stream into the incineration system, as detailed in the steps below:	—	—	—	—
- Plan and arrange for necessary equipment	Dec. 21, 2017	No	In progress	<ul style="list-style-type: none"> - July 2018: measured flow rate and sampled boiler stack exit gases and found inadequate space for new equipment installation. - Ruetgers worked with a third-party instrumentation company to develop an alternative which involved the installation of a flow meter on the after-combustion stack to estimate flow rate and temperature. - Although the above actions were completed by the end of 2018, it was determined that a flow meter is also required for the second boiler to provide proper measuring of the required parameters. The vendor is scheduled to install the other flow meter during the Fall 2019 planned shutdown.
- Install the equipment	Jan. 21, 2018	No	In progress	
- Start to operate the installed equipment to continuously monitor and record the temperature, flow rate and residence time of the gaseous stream into the incineration system	Feb. 21, 2018	No	In progress	



<p>Engineering Report of the FGI System, including:</p> <ul style="list-style-type: none"> - Engineering Calculations (mass, heat/energy balance) to clarify the system capacity and actual operating parameters, to determine whether or not the existing system has sufficient capacity to handle the VOCs loading at the projected efficiency. - Engineering Calculations (mass, heat/energy balance) to clarify the system capacity to determine whether the existing system has sufficient capacity for additional VOCs loading. - To assess situations when the system is overwhelmed and excess vapours are not captured. - To determine additional methods that would be used to direct volatile organic compounds if the system capacity is not sufficient. - To assess further methods to address system efficiency and optimize operations. 	Dec. 31, 2018	No	In progress	Ruetgers is working with an external engineering firm to undertake this study and prepare the FGI System Engineering Report. A Work Plan is underway to assess how current FGI System operating conditions compare to the original design to assess adequacy and excess capacity and analyse how changes to operating parameters impact VOC destruction. A draft report is expected by the end May 2019.
<p>Engineering Report of the Wastewater Treatment Plant (WWTP): Assess Wastewater Plant operations and options to increase benzene removal efficiency and decrease benzene emissions to the atmosphere.</p>	Dec. 31, 2018	No	In progress	<p>Ruetgers is working with an external consultant to undertake this engineering study and prepare the WWTP Engineering Report. Ruetgers is currently evaluating and implementing improvements to the WWTP as it relates to benzene, which contribute to fulfilling the engineering assessment of the WWTP required by the Site-Specific Standard.</p> <ul style="list-style-type: none"> - Ruetgers is currently installing a vacuum pump on New Unit Distillation (started the commissioning of the New Unit vacuum pump during the week of March 25, 2019) which Ruetgers estimates will eliminate up to 30% of the contaminated water that currently goes to the WWTP, and in turn, the benzene loadings typically directed to the WWTP. - A vacuum pump will be installed on Old Unit Distillation based on successful performance of the vacuum pump on the New Unit Distillation. - Ruetgers is in the process of assessing different methods of reducing phenol loadings being sent to the WWTP and has recently completed a technology benchmark analysis that resulted in a reduction in both phenol and benzene. Ruetgers will be submitting a Pilot Project Environmental Compliance Approval to the MECP to obtain approval to conduct a plant trial of this technology towards confirming its ability to remove both phenol and benzene.
B(a)P and Benzene				
Update and implement Standard Operating Procedures (SOP) for the Coal tar pitch production line	Dec. 21, 2017	No	No – Unit was closed as of Aug. 10, 2017	—
Improve cleaning practices at the Facility to minimize emissions	Dec. 21, 2017	No	No – Unit was closed as of Aug. 10, 2017	—
<p>Fume Scrubbing System (FSS):</p> <ul style="list-style-type: none"> - Increase frequency of adding new scrubber oil - Increase temperature control - Use appropriate quality scrubbing oil 	Dec. 21, 2017	Yes	Yes – Complete as of Q1-Q2 2016	—

Liquid (product) Coal tar pitch handling improvements:	—	—	—	—
- Improving seal on unloading stations	Dec. 21, 2017	Yes	Yes – Complete as of Dec 20, 2017 for tar unloading; Mar 28, 2018 for pitch unloading	—
- Automate and improve draw of fumes	Dec. 21, 2017	Yes	Yes – Complete as of Jan 20, 2018	—
- Add new control system to control pressure on tank TK-77	Dec. 21, 2017	Yes	Yes – Complete as of Jan 20, 2018	—
- Improving seal on rinsing stations	Dec. 21, 2017	Yes	Yes – Complete as of Jan 28, 2018	—
- Improve seal on loading equipment for tanker trucks	Jan. 1, 2018	Yes	Yes – Complete as of Mar. 16, 2018	—
- Replacing loading arms for rail cars	Mar. 31, 2018	Yes	Yes – Complete as of July 9, 2018	—
- Update SOPs for ventilation, pumps	Mar. 31, 2018	Yes	Yes – Complete as of Q3 2018	—



2.2 LDAR Program

As part of the Action Plan for benzene submitted in November 2016, Ruetgers proposed to submit a LDAR plan to the MECP for approval during the second quarter of 2017 and begin its implementation following its approval. As per the benzene Order, the LDAR plan (referred to as the Component Leak Survey Plan) does not require MECP approval and its compliance date is April 1, 2018 (second quarter of 2018).

Ruetgers completed the Component Identification component on January 21, 2018 and revised on March 16, 2018. Although not a requirement of the benzene Order, Ruetgers submitted the Component Identification to the MECP, so that any recommendations could be incorporated into the document. Ruetgers completed three LDAR Leak Surveys in 2018. The results from these surveys are summarize in Table 2.

Table 2: Summary of 2018 LDAR Leak Surveys

Date Completed	Detected Components	Leaked Points	Repaired Points	Delayed Repair
April 2018	434	12	8 tightened packing or close valve tighter	4 require shutdown
August 2018	619	7	3 tightened packing	4 require shutdown
November 2018	580	11	4 tightened packing, 1 tightened screw, 1 plugged, 2 replaced valve, 1 closed valve completely	2 require shutdown

Sincerely



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