

DEQ-AQD

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SAGINAW BAY

**Benzene Emissions Management
and
Monitoring Plan (BEMMP)**

**Emission Control System
FGSITESCRUBBERS
2514 Building**

**Dow Silicones Corporation
Midland, Michigan**

February 14, 2018

In 2008, Dow Silicones Corporation (hereinafter, "Dow") received a PTI to add a thermal oxidizer as control for numerous on-site processes. The PTI also allowed Dow to install backup scrubbers for use when the thermal oxidizer is non-operational. Dow currently operates the thermal oxidizer and backup scrubbers under Renewable Operating Permit (ROP) Number MI-ROP-A4043-2008. Table FGSITESCRRUBBERS in the ROP requires Dow to have an approved Benzene Emissions Management and Monitoring Plan (BEMMP) for demonstrating compliance with the 7.1 lb/hr benzene emission limit for FGSITESCRRUBBERS.

To demonstrate compliance with the benzene limit, Dow has installed two online GCs (one on the dry vent stream and one on the wet vent stream) that continuously measure the feed compositions. In addition, a Micromotion coriolis flow meter was installed on both vent lines to measure flow (lb/hr and/or scfm) while venting to FGSITESCRRUBBERS. The GCs grab a vent sample approximately every 30 minutes. Once analysis is completed, the results are loaded onto the Dow network where the data is saved and backed up. On a monthly basis, the data is compiled and the benzene flow rates (on an hourly basis) are checked for compliance. The Dow data acquisition system allows every GC trace to be observed. Using the benzene concentration in conjunction with the average hourly flow rate (during the hour the sample was taken), an hourly benzene emission rate is determined. Since the water scrubbers do not control benzene, it's assumed that all benzene entering the scrubbers leaves the scrubbers through the vent stack. The GCs are dedicated to the Throx/site scrubber system and are constantly sampling the vent streams (even when the Throx is operating).

Dow's PSA (Process Stream Analysis) shop is responsible for maintaining the GCs, and they're available via call-in if the GCs go down on weekends or holidays. The PSA shop also conducts a verification of the calibration for the GCs using a 1.0% mixture of C1 - C5 and 400 ppm benzene sample. If the calibration checks are within acceptable error ($\pm 10\%$), the GCs will not be recalibrated. If the calibration check falls outside the acceptable error, the GCs will be recalibrated by the PSA shop. Scheduled calibration checks will occur on a monthly basis. GC operational and analytical procedures (column type, temperature, and retention times) are documented and can be made available to the Department upon request.

If it's found that Dow has reached a benzene rate of 6.8 lbs/hr at any time while venting to FGSITESCRRUBBERS, the BEMMP will be reopened and modified. This should give Dow enough time to adjust the plan and put additional control parameters in place to reduce the benzene flow while venting to the scrubbers.

Dry and Wet Vent Consolidation Project

