Votorantim Cimentos

St Marys Cement

April 24, 2020

Via Email

Mr. Rob Dickman
Air Quality Division
Michigan Department of Environment, Great Lakes, and Energy
120 West Chapin Street
Cadillac, Michigan 49601-3960

Re: St. Marys Cement U.S. LLC – Violation Notice March 25, 2020

Dear Mr. Dickman:

St Marys Cement U.S. LLC ("St Marys") Charlevoix Cement Plant acknowledges receipt of the above-referenced Violation Notice ("VN"). St Marys understands the VN asserts that St Marys failed to comply with OHAP performance testing requirements under the Portland Cement NESHAP, 40 CFR Part 63, Subpart LLL, by reason of St Marys submittal to the Air Quality Division in November 2019 of a stack test report that the Air Quality Division has deemed unacceptable for the reasons specified in the VN.

St Marys understands and takes seriously its obligations to demonstrate compliance with applicable requirements through conduct of stack testing pursuant to applicable regulations and approved stack test protocols. As St Marys lacks the in-house expertise to conduct required stack testing, it must contract out the work to qualified entities. For purposes of conducting the OHAP performance testing, St Marys contracted with Air Hygiene International Inc. In order to address the issues raised in the VN, St Marys requested Air Hygiene undertake a review of the VN, the underlying stack test report, and all other relevant documentation for the purposes of developing a response to the VN. Accompanying this letter is Air Hygiene's written response together with an amended version of the November 2019 stack test report previously submitted to the Air Quality Division. St Marys incorporates and adopts Air Hygiene's response into its response to the VN and submits the amended stack test for purposes of demonstrating compliance with OHAPs.

St Marys expects that upon review of Air Hygiene's response and the amended November 2019 stack test report that the Air Quality Division will be capable of accepting the stack test as demonstrating compliance with the Portland Cement NESHAP and resolving the VN. Accordingly, with the additional information now provided, St Marys requests the Air Quality

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Division accept that the stack test conducted for OHAPs in September 2019 demonstrated compliance with the Portland Cement NESHAP requirements.

Please feel free to contact us if you have any questions or concerns.

Sincerely,

Matthew Simon
Operations Manager

Attachments – Air Hygiene Response
Revised Stack Test Report (electronic only)

cc: Jenine Camilleri – EGLE AQD
Jeremy Howe – EGLE AQD
Karen Kajiya-Mills – EGLE AQD

April 20, 2020

Ms. Laurie Leaman
St Marys Cement
16000 Bells Bay Road
Charlevoix, MI 49720

Dear Ms. Leaman,

Air Hygiene International, Inc. has reviewed the violation notice issued to St Marys Cement on March 25th, 2020. The violation notice is in relation to the organic hazardous air pollution (OHAP) testing completed on September 5th and 6th of 2019 at St Marys Cement, located in Charlevoix, Michigan.

Regarding this violation notice, Air Hygiene International, Inc. has provided as response to each justification for rejection below for your review.

Sincerely,

Cole McBride
Air Hygiene International, Inc.
Sr. Project Manager
O: 918-307-8865
C: 405-808-9300
cmcbride@airhygiene.com

- **Para-xylene isomer analytic results were not included in report.**

According to the state approved testing protocol, O, P, and M-Xylene were all tested for and reported, with both raw mill on and raw mill off conditions on the Kiln Stack. The original chain of custody for the OHAP charcoal adsorption tubes and condensate samples only listed m-xylene for reporting. This was later corrected as the lab, Bureau Veritas, has retained records and samples. The current report version reports both O-Xylene and M-Xylene.

The violation notice indicated that P-Xylene was not reported. However, the M-Xylene data is a total value reported as a summation of both P-Xylene and M-Xylene. Because of this, Bureau Veritas has updated the laboratory data to clarify this issue. A note was added to the laboratory analysis data on pdf page 200 [attached to this letter] of the current report version to clarify that M and P-Xylene coelute. M-Xylene results will contain P-Xylene results in reported values, unless stated otherwise.

- **Naphthalene was not included in the laboratory analysis.**

In the original version of the report the condensate values for naphthalene were missing. Upon further discussion with Bureau Veritas, it was discovered that naphthalene was reported through a surrogate as tentatively identified compound (TIC). Through this TIC surrogate use, Bureau Veritas is able to report naphthalene within a 96% certainty.

BV Labs has provided the following explanation:

"Naphthalene is present in our calibration standards and thus we did calibrate for the analysis. However due to the nature of this compound, the calibration linearity limits are sometimes not achievable. In this case a comment was added to the report (pdf page 208 of the current report) which discussed the percent relative standard deviation being outside the 20% limit for both the initial calibrations and the continuing calibrations. Naphthalene is typically reported as a semi-volatile compound. Therefore, we do not have Method Detection Limits, Precision or Accuracy established for naphthalene for our VOC analysis. Because of this, the values for Naphthalene was reported on the TIC form and not with the rest of the VOC compounds.

All other VOCs reported in the table (table located in the "Quality assurance analyte spiking of collected condensate was not performed" section) are correctly calibrated for and quantified against the calibration curve. Nothing was left out of the first version of the report and later added back. The list of spiked compounds and levels applies only to the laboratory control spike (LCS), the results of which are listed in our QC summary in the Certificate of Analysis."

Current versions of the testing report include all values for naphthalene in both the charcoal tube and condensate portion.

- **Collected condensate containers arrived at the contract laboratory with headspace.**

On PDF Page 208 in General Comments the lab reported 5 of the 6 RAW MILL ON samples with volumes ranging from 38-40 ml that had to be "topped off" prior to analysis. However, a comparison of the RAW MILL OFF to RAW MILL ON data indicates no significant overall difference in results.

Parameter (Table A.6) SIDE A	Run 1 percent diff raw mill off (ppm) vs on (ppm) (%)	Run 2 percent diff raw mill off (ppm) vs on (ppm) (%)	Run 3 percent diff raw mill off (ppm) vs on (ppm) (%)
Benzene	45%	-2%	4%
Toluene	52%	-3%	15%
Styrene	1%	5%	18%
Naphthalene	1%	5%	18%
total-Xylene	44%	14%	19%

Parameter (Table A.6) SIDE B	Run 1 percent diff raw mill off vs on (%)	Run 1 percent diff raw mill off vs on (%)	Run 1 percent diff raw mill off vs on (%)
Benzene	-1%	-4%	8%
Toluene	-13%	-9%	6%
Styrene	-1%	2%	16%
Naphthalene	-1%	2%	16%
total-Xylene	-14%	2%	3%

Only run 1, side A indicates a potential for under-reporting from the RAW MILL ON samples (i.e. difference greater than 20%), at least assuming similar OHAPS outputs under both test conditions.

- **Quality assurance analyte spiking of collected condensate was not performed.**

The current version of the testing report, pdf page 209 [attached to this letter], contains all spiking data for the condensate samples. All spiked samples yielded spike recovery yields well withing the acceptable range established by the laboratory.

BV Labs has provided the following list indicating all spike compounds and spiking values for condensate samples:

Compound	ug/L
Dichlorodifluoromethane	100
Chloromethane	100
Vinyl chloride	100
Bromomethane	100
Chloroethane	100
Trichlorofluoromethane	100
1,1-Dichloroethylene	40
Acetone	200
Iodomethane	200
Carbon Disulfide	200
Methylene chloride	40
trans-1,2-Dichloroethylene	40
1,1-Dichloroethane	40
Methyl ethyl ketone	200
cis-1,2-Dichloroethylene	40
Chloroform	40
1,1,1-Trichloroethane	40
Carbon tetrachloride	40
Benzene	40
1,2-Dichloroethane	40
Trichloroethylene	40
1,2-Dichloropropane	40
Dibromomethane	40

Bromodichloromethane	40
cis-1,3-Dichloropropene	40
Methyl isobutyl ketone	200
Toluene	40
trans-1,3-Dichloropropene	40
1,1,2-Trichloroethane	40
Tetrachloroethylene	40
2-Hexanone	200
Dibromochloromethane	40
Ethylene dibromide	40
Chlorobenzene	40
Ethylbenzene	40
1,1,1,2-Tetrachloroethane	40
m/p-Xylene	80
o-Xylene	40
Styrene	40
Bromoform	40
1,1,2,2-Tetrachloroethane	40
1,2,3-Trichloropropane	40
1,3-Dichlorobenzene	40
1,4-Dichlorobenzene	40
1,2-Dichlorobenzene	40

- **Qaulity assurance spiking for the ortho-xylene in the activated carbon collection tubes was not performed.**

As confirmed by the lab, Bureau Veritas, Xylene spiking for adsorption tubes contains all species of Xylenes. The data listed for tube spiking in the current report was labeled M-Xylene. However, this spiking contained all species of the Xylene isomers, O, M, and P. The values are better represented as a total Xylene and as result the report values have been updated and listed as only "xylene" in all corresponding charcoal tube laboratory data.

- **Styrene and Naphthalene spiking in the activated carbon collection tubes did not meet acceptable quality assurance recovery standards.**

We have received a response from the lab regarding this issue. Unfortunately, spike recovery values for the Styrene and Naphthalene are approximately 48% and 21% respectively. Below you will find a table showing recovery values for each spike. The lab indicated that recovery values for these two compounds will rarely reach an acceptable level though the use of the current method. However, it can also be stated that because these values are very low and at or below non-detect values, it is also not possible to state that the recovered end values are incorrect or potentially under reported.

As a point of clarification, for best recovery values the laboratory, BV labs, has suggested EPA Method 0010 for Naphthalene and Method TO-15 (summa cannisters) for Styrene. Use of these other methods would require approval per 63.7(e).

Spiked Tube 1

Analyte	Recovery in µg	Recovery Percentage
Benzene	254.0358	96.9
Toluene	25.0957	96.5
Ethylbenzene	26.6221	102.4
m-Xylene	12.9918	99.8
Styrene	13.0930	48.0
Naphthalene	6.4023	21.3

Spiked Tube 2

Analyte	Recovery in µg	Recovery Percentage
Benzene	263.8508	100.6
Toluene	25.7930	99.2
Ethylbenzene	27.7570	106.7
m-Xylene	13.5480	104.1
Styrene	13.1010	48.0
Naphthalene	6.2778	20.9

- **No analysis regarding breakthrough of the activated carbon collection tubes was performed.**

The adsorption tubes used for this testing contained a front and back half section for capture of OHAPs [see schematic below]. Per EPA Method 18, 8.2.4.1.6, the amount of adsorbent is determined for each section of the tube to minimize breakthrough. Further EPA method 18, 8.2.4.4.2, provides an optional procedure for analyzing each section of the trap if breakthrough is expected to occur.

For this test breakthrough was not expected due to low sample volumes, low sample flow rates, and low stack values. The approved testing protocol did not specify the need to report each section of the trap and therefore, it was not specified to the laboratory to provide each trap section value. If breakthrough is not expected, the laboratory combines the samples to provide a single value, as the method does not require each trap section to be reported. Additionally, the cost and effort to analyze and report each section separately would not yield a different result.

It should also be noted that a condensate trap was added to the sampling train as described in section 8.2.4 of EPA Method 18. Because most of the test compounds are water soluble, these condensate traps act as a "first" section. As a result, the sampling system behaves as if there are 3 sections for collection of material. First the condensate collects target analytes, the front half section of the tube would collect all breakthrough material of analyte and those compounds not soluble in water, and lastly the back half of the tube would collect the remaining material, if any. In the described procedure listed in 8.2.4 of method 18, the trap would act as a reported breakthrough section.

Below is a comparison of the water fraction ppm to tube fraction ppm to further prove this explanation.

Parameter (Table A.6) SIDE A	Run 1 water fraction ppm / tube fraction ppm (%)	Run 2 water fraction ppm / tube fraction ppm (%)	Run 3 water fraction ppm / tube fraction ppm (%)
Benzene	0.054%	0.055%	0.077%
Toluene	0.225%	0.175%	0.164%
Styrene	0.343%	0.345%	0.315%
Naphthalene	at RDL	at RDL	at RDL
Total-Xylenes	2.256%	1.451%	1.546%

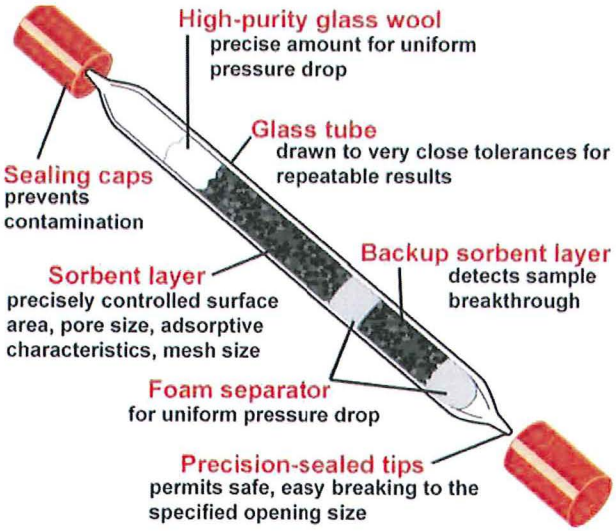
Parameter (Table A.6) SIDE B	Run 1 water fraction ppm / tube fraction ppm (%)	Run 2 water fraction ppm / tube fraction ppm (%)	Run 3 water fraction ppm / tube fraction ppm (%)
Benzene	0.040%	0.036%	0.052%
Toluene	0.201%	0.186%	0.195%
Styrene	0.341%	0.358%	0.320%
Naphthalene	at RDL	at RDL	at RDL
Total-Xylenes	1.994%	1.627%	1.869%

Similarly, Tables A.8 and A.9 yield...

Parameter (Table A.6) SIDE A	Run 1 water fraction ppm / tube fraction ppm (%)	Run 2 water fraction ppm / tube fraction ppm (%)	Run 3 water fraction ppm / tube fraction ppm (%)
Benzene	0.086%	0.047%	0.047%
Toluene	0.411%	0.182%	0.205%
Styrene	0.371%	0.390%	0.406%
Naphthalene	at RDL	at RDL	at RDL
Total-Xylenes	3.743%	1.767%	1.995%

Parameter (Table A.6) SIDE B	Run 1 water fraction ppm / tube fraction ppm (%)	Run 2 water fraction ppm / tube fraction ppm (%)	Run 3 water fraction ppm / tube fraction ppm (%)
Benzene	0.120%	0.083%	0.077%
Toluene	0.177%	0.184%	0.234%
Styrene	0.339%	0.394%	0.422%
Naphthalene	at RDL	at RDL	at RDL
Total-Xylenes	1.735%	1.769%	2.158%

In all cases the water fraction never exceeds 3.8% (xylenes being the most prone to pass through the carbon) and in the cases of other parameters never exceeds 0.41%.


High-purity glass wool
precise amount for uniform pressure drop
Glass tube
drawn to very close tolerances for repeatable results
Sealing caps
prevents contamination
Backup sorbent layer
detects sample breakthrough
Sorbent layer
precisely controlled surface area, pore size, adsorptive characteristics, mesh size
Foam separator
for uniform pressure drop
Precision-sealed tips
permits safe, easy breaking to the specified opening size