

MEMO

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From:

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Date:

April 16, 2019

Arcadis Project No.:

MI001454.0007

Subject:

Livonia Transmission Plant
Memorandum Regarding Laboratory Issue Affecting Select Off-site Samples
36200 Plymouth Road, Livonia, Wayne County, Michigan
MDEQ Site ID No. 82002970

On behalf of Ford Motor Company (Ford), this memorandum regarding laboratory issues has been prepared by Arcadis of Michigan, LLC for the Livonia Transmission Plant (LTP) site (the site). As discussed with Michigan Department of Environmental Quality (MDEQ) staff via telephone, Arcadis has been working to resolve three laboratory issues that have resulted in the need to resample select properties. As part of our ongoing quality assurance/quality control (QA/QC) program for the site Eurofins Air Toxics staff have identified several canisters that warrant resampling. These issues have been evaluated and will be rectified via resampling. The purpose of this memorandum is to present context regarding each issue, affected property, and resampling plan. Each issue is discussed in detail below.

1. 1,4-Dioxane False Positives: On April 2, 2019 Eurofins Air Toxics personnel indicated to Arcadis in a memo (attached) that four of the sample canisters supplied for the project were contaminated from a previous usage unrelated to this project leading to false positives for 1,4-dioxane and/or volatile organic compound (VOC) artifacts. Their narrative on the situation is attached for reference. Properties that were affected are presented below.

- 12141 Boston Post had an elevated false positive for 1,4-dioxane in indoor air from sample canister 96106 which was deployed during the collection of indoor air sample IAF-12141BOSTONPOST-02_031219. Additionally, sample canister N0850 was deployed to collect an indoor air sample from the garage of 12141 Boston Post (IAG-12141BOSTONPOST-01_031219) which showed VOC artifacts near the reporting limit. An active mitigation system was completed at this property April 9, 2019 precluding the collection of an additional set of pre-mitigation samples. The two affected samples have been marked as “rejected” in the database while the other samples collected at this property remain. As discussed with the MDEQ all media will be resampled at this property, providing new complete data set (IA, AA, SS) 30-days post mitigation. Resampling is not yet scheduled at this property.
 - 11721 Boston Post showed VOC artifacts near the reporting limit in indoor air sample canister O0308 deployed for the collection of indoor air sample IAF-11721BOSTONPOST-02_031219. The affected sample has been marked as “rejected” in the database while the other samples collected at this property remain. As discussed with the MDEQ all media will be resampled at this property, providing new complete data set (IA, AA, SS). Resampling is not yet scheduled at this property.
 - 11710 Boston Post showed VOC artifacts near the reporting limit in indoor air sample canister O0383 deployed for the collection of indoor air sample IAF-11710BOSTONPOST-01_031319. The affected sample has been marked as “rejected” in the database while the other samples collected at this property remain. As discussed with the MDEQ all media will be resampled at this property, providing new complete data set (IA, AA, SS, SUMP). Resampling is scheduled for April 22, 2019.
2. Canister Usage Policy: On April 3, 2019 the lab contacted Arcadis and asked us to return seven indoor air sample canisters that had been used for non-ambient air sampling applications in the past. The lab has a policy that indoor air samples be used consistently for that application and these seven canisters violated that policy. One of these sample canisters was unused and returned to the laboratory. The remaining six of these sample canisters had already been deployed. Each sample was cancelled prior to analysis and resampling has either been completed, is scheduled, or is unnecessary.

The addresses affected by this issue are presented below.

- 34669 Beacon (3 of the recalled canisters were deployed here). Affected canisters from 34669 Beacon include:
 - Canister 9258 which was intended as sample AA-34669Beacon-01_032619
 - Canister 9281 which was intended as sample IAG-34669Beacon-02_032619
 - Canister O0643/6L0250 which was intended for sample IAF-34669Beacon-01_032619

34669 Beacon will be resampled for all media for the site, providing a new complete data set (IA, AA, SS). Resampling is occurring April 16-17, 2019.

- 11701 Boston Post (1 recalled canister deployed). The affected canister from 11701 Boston Post was canister 9221 which was intended as sample IAF-11701BOSTONPOST-01_032619. This property was resampled April 8, 2019 for all media for the site, providing a new complete data set (IA, AA, SS).
- 11864 Belden Court (1 recalled sample deployed). The affected canister from 11864 Boston Post was canister 9243 which was intended as sample DUP-11864BELDEN-01_032719. Resampling will not occur at this commercial property as there is ample coverage of the building from the other sample canisters including a parent sample from the location of the recalled sample.
- 12333 Belden Court (1 recalled sample deployed here). The affected canister from 12333 Belden Court was canister 9262 which was intended as indoor air sample IAF-12333Belden01_040219. Resampling will not occur at this commercial property as there is ample coverage of the building from the four other indoor air sample canisters deployed at the property.

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3. 1,4-Dioxane Carryover: On April 8, 2019 the lab indicated canister 5650 likely had carryover of 1,4-dioxane from previous usage unrelated to this project, resulting in a false positive in indoor air sample IAF-12124BOSTONPOST-02_022619. This canister is not related to the issue with 1,4-dioxane discussed above. The April 8, 2019 laboratory narrative is attached. The affected sample has been marked as "rejected" in the database while the other samples collected at this property remain. As discussed with the MDEQ all media will be resampled at this property, providing new complete data set (IA, AA, SS). Resampling is occurring April 15-16, 2019.

Memo

To: Mitch Wacksman, Principal Toxicologist, Vapor Intrusion Technical Lead, Arcadis
From: Heidi Hayes, Technical Director, Eurofins Air Toxics
Date: April 2, 2019 (Revised April 4, 2019 to correct typo in sample name)
Re: Laboratory Quality Review Findings – Canister cleanliness assessment

Overview: As part of the laboratory's quality review of sample IAF-12141BOSTONPOST-02_031219, the canister used for sample collection was determined to be contaminated from a previous sample stored in the canister. This previous sample matrix was atypical in terms of composition and concentration and was confirmed to have left a residue on the interior surface of the canister which was not removed despite cleaning and was not identified despite certification. Laboratory tests of this canister as well as a subset of canisters used for the same suspect matrix indicated that VOCs were emitted from the canister surface as a function of storage time and/or humidity. As a consequence, the certification conditions for the canisters with certification analysis generally conducted within 24 hours of cleaning and prepared with UHP nitrogen at moderate humidity levels did not reflect the cleanliness of the canisters under field conditions.

Testing Summary: The laboratory verified that even after the subsequent sample collection and a second round of canister cleaning, the residue was still detected when the canister was filled with a blank sample prepared with UHP nitrogen at higher humidity levels (~60%RH) and stored for 3 days. Analysis of the blank samples were conducted on the TO-15 SIM/Low level unit to evaluate cleanliness levels, specifically evaluating the presence of VOC artifacts previously identified in the suspect matrix which included Trichloroethene (TCE), Tetrachloroethene (PCE), and 1,4-Dioxane. The blank sample prepared in canister 96106 used to collect sample IAF-12141BOSTONPOST-02_031219 contained TCE and PCE above the project reporting limit, with the concentration of 1,4-Dioxane in the sample blank over 100 times the project reporting limit after cleaning. While canister 96106 generated the highest level of artifacts in the blank sample analyzed, the other canisters tested showed concentrations for one or more of the VOC artifacts near the reporting limit in the blank sample after the second round of cleaning, post sample collection.

Data Quality Impact: The testing results indicate that the accuracy of the reported concentrations of project samples collected in this set of contaminated canisters is compromised. Review of the specific set of contaminated canisters shows that the following Arcadis Ford LTP samples are likely impacted and concentrations reported are in question:

Lab ID	Sample ID	Canister Physical ID
1903439-02A	IAF-12141BOSTONPOST-02_031219	96106
1903439-03A	IAG-12141BOSTONPOST-01_031219	N0850
1903380-02A	IAF-11721BOSTONPOST-02_031219	O0308
1903444-02A	IAF-11710BOSTONPOST-01_031319	O0383

We have initiated a Corrective Action Request (CAR# J42G376693) and will be providing additional details regarding our short-term, long-term and preventative action taken.

Memo**To: Mitch Wacksman, Principal Toxicologist, Vapor Intrusion Technical Lead, Arcadis****From: Heidi Hayes, Technical Director, Eurofins Air Toxics****Date: April 8, 2019****Re: Laboratory Quality Review Findings – Canister cleanliness assessment**

Overview: As a result of the laboratory finding that a set of canisters previously containing matrix with extremely atypical composition and concentrations appeared to leave a residue on the surface of the canister potentially affecting reported 1,4-Dioxane concentrations, a list of samples was provided by the client to evaluate if other samples exceeding $1 \mu\text{g}/\text{m}^3$ could have been impacted by canister performance.

Investigation Summary: Canister histories were evaluated for each of the listed samples and 1,4-Dioxane concentrations of the previous samples were reviewed. In addition to the samples previously outlined in the laboratory memo originally dated 4/2/19, the laboratory identified a possible issue with canister 5650. This canister had been recently transferred from the inventory of our sister laboratory Eurofins Test America. Per Test America, the previous ambient air sample collected in this canister had a 1,4-Dioxane concentration of approximately $29 \mu\text{g}/\text{m}^3$, nearly the same concentration of $32 \mu\text{g}/\text{m}^3$ reported in the project sample IAF-12124BOSTONPOST-02_022619. While the previous concentration did not initially raise a flag in terms of possible bias or artifact from residue emissions in the subsequent sample, the similarity between the two concentrations from independent, unrelated samples prompted further investigation. When the canister history was expanded to review the 1,4-Dioxane concentration for the previous three samples, all three samples contained 1,4-Dioxane in the range of approximately 22 to $50 \mu\text{g}/\text{m}^3$. This consistent concentration of 1,4-Dioxane measured in the last four unrelated samples collected in canister 5650 is extremely suspicious given that 1,4-Dioxane is not a ubiquitous compound and it is not routinely detected in air samples.

Data Quality Impact: Given this canister history information in conjunction with the previous lab tests outlined in the 4/2/19 memo indicating that 1,4-Dioxane exhibits unexpected persistence in a canister even after cleaning multiple times, the validity of the reported 1,4-Dioxane concentration of $32 \mu\text{g}/\text{m}^3$ for sample IAF-12124BOSTONPOST-02_022619 is in question.