MEMO

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Date:

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Arcadis Project No.:

MI001454.0007

Subject:
Livonia Transmission Plant
Response to MDHHS request for information on air purifiers units (APUs)
36200 Plymouth Road, Livonia, Wayne County, Michigan
EGLE Site ID No. 82002970

On behalf of Ford Motor Company (Ford), this memorandum regarding indoor air purifying units (APU) has been prepared by Arcadis of Michigan, LLC for the Livonia Transmission Plant (LTP) site (the site). The Michigan Department of Health and Human Services (MDHHS) requested information about how "Ford is planning to ensure that the carbon filters in the APU's will remain fresh?" through an email transmitted by Brandon Alger of the Michigan Department of Environment, Great Lakes and Energy (EGLE) on April 24, 2019.

Arcadis selected and deployed residential APUs (AllerAir AirMedic Pro 6 HD Vocarb) based on availability of filters composed of permanganate impregnated alumina and granular activated carbon (GAC) to pre-emptively address potential vapor intrusion of vinyl chloride at certain properties. The APUs were deployed at residences where other elements of the interim pre-emptive mitigation were expected to require additional time to complete or locations where flooding had occurred within the crawl space or basement. The purpose of the APUs are to provide interim treatment to be protective of human health. Information provided by the vendor indicated that the longevity of the filter media was expected to be 2 to

5 years for the GAC and 2 to 3 months for the permanganate impregnated alumina. Arcadis has conservatively replaced the filter media on a 2-month schedule to this point.

Arcadis has continued to focus on ways to improve the longevity of the reactive media and reduce the logistical issues associated with filter changeouts for the residents. The initial APUs consisted of a blend of media including both a sorptive media (GAC) and an oxidant impregnated media (activated alumina impregnated with 8% potassium permanganate) for the destruction of volatile organic compounds (VOCs) potentially present in the air stream.

To reduce the impact of frequent media changeouts on the residents, Arcadis contacted other manufacturers of alternative media that treat VOCs and specifically target vinyl chloride. Arcadis has worked with several manufacturers in the past for supplying this media. One of the more common media options that have been and are continued to be used is potassium permanganate impregnated zeolite (PPZ). Media consumption modeling was completed using conservative concentrations of site-related VOCs to estimate the longevity of the PPZ media that was selected to replace the original media. The vinyl chloride concentration was selected based on the residential indoor air screening level of 1.6 micrograms per cubic meter ($\mu g/m^3$) as a conservative measure, although the maximum vinyl chloride concentration detected in indoor air to date is an estimated value ("J-flagged") of 0.20 J $\mu g/m^3$. The other VOC concentrations below are representative of an average of reporting limits and detected concentrations in indoor air calculated with validated date spanning September 19, 2018 to March 22, 2019. The modeling completed assumes continuous operation of the APUs at 50 cubic feet for minute (cfm) with approximately 50 pounds of PPZ media in the filter.

According to vendor's modeling software the theoretical daily usage rate of the PPZ is approximately 0.2 lbs per day. By switching the filter media to PPZ (50 pounds of PPZ per unit), the recommended change out frequency would be approximately 4 – 6 months, when these units are operated at 50 cfm. This longer change out frequency will reduce the disruption to the residents while providing the treatment for vinyl chloride and site related VOCs.

Arcadis will conservatively change out the media on a 4-month interval to minimize disruptions to the residents.