



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

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June 20, 2016

Ms. Gay M. Fussell, Deputy Director
Westinghouse Electric Company
Hematite Decommissioning Project
3300 State Road P
Festus, MO 63028

Subject: Hematite Decommissioning Project – Submission of Work Plan for Vapor Intrusion Assessment April 2016 HEM-16-45

Dear Ms. Fussell:

The Missouri Department of Natural Resources (the department) has completed review of the subject Vapor Intrusion Work Plan (VIWP). The department also requested a review of the VIWP by the Missouri Department of Health and Senior Services (DHSS). Following are the department comments on the work plan. The DHSS comment letter is enclosed for your reference. Please revise the work plan to reflect the department's comments and DHSS comments. In reference to DHSS comment 5 regarding sampling events, please refer to the department's comment on having four sampling events to ensure each season is represented by a sampling event.

Overall Comment on the work plan: In order to assist in a proper review of the VIWP, please include plan view drawings as well as cross sectional drawings that show locations, depths, and contaminant concentrations in soil and ground water in relation to the building locations. It is also recommend that weather conditions, including indoor and outdoor temperature and barometric pressure be monitored during each sampling event.

- 1) Building 110 proposed sampling: Two sampling locations are proposed, one in the conference room and one in the security officer/entrance area. Each of these areas is relatively large and doors are frequently open resulting in possible vapor dilution. In order to replicate the potential exposure that would occur in a smaller office setting, it is suggested that one of the smaller offices/rooms adjacent to the south-east edge of the building be added as a test location. It is believed that one of the rooms north of the security officers/entry area would be closest to areas once contaminated at significant levels, and possibly closest to higher levels of groundwater contamination. The room should be opened a minimum amount of time during testing to represent possible accumulation of vapors over time.
- 2) Building 115 proposed sampling: The single sample location is acceptable under the described conditions of building use.

- 3) Building 230 proposed sampling: The proposed sample locations seem appropriately located over areas of known soil and groundwater contamination. The department requests one additional location inside an enclosed office space and near a vicinity of known contamination. As noted in Comment 1) doors should be opened a minimum amount of time during testing.
- 4) Building 231 proposed sampling: The single sample location is acceptable under the described conditions of building use.
- 5) Sub-slab and outdoor sampling in addition to indoor air sampling: The department agrees that indoor air sampling as described is useful. However, based on the recommendations of section 6.4.1 of EPA's *OSWER Technical Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, sub-slab and outdoor air samples are also needed. Please identify sub-slab samples at or near indoor air sampling locations, identify outdoor air sampling locations and include appropriate sampling protocols in the VIWP.
- 6) Number of sampling events: To help account for anticipated seasonal and heating/cooling variation four sampling events should be scheduled.
- 7) Additional preliminary evaluation location: The department also requests that Westinghouse conduct a preliminary evaluation of the potential for Vapor Intrusion at the residences adjacent to PW-03-JC and PW-19-JC following USEPA VISL guidance. Data to be included in the 2015 Annual IGMP report should be the basis of that evaluation. It is noted that the 2015 Annual Report, due within 90 days of the 2015 fourth quarter monitoring event, has not yet been submitted.

Please be aware that results derived from VIWP data may indicate the need for additional investigation or mitigation.

If you have any questions, please contact me at (314) 877-3250 or (314) 810-3300, extension 330. Written inquiries can be directed to me at the Missouri Department of Natural Resources, 917 N. Highway 67 Suite 104 Florissant, Missouri 63031.

Sincerely,

HAZARDOUS WASTE PROGRAM



Ben L. Moore, P.E.
Federal Facilities Section

BM: rl

Enclosure: MDHSS May 24, 2016 Comment Letter

c: Tiffany Drake, Missouri Department of Natural Resources
Timothy Blackwell, Missouri Attorney's General Office
Jim Smith, U.S. Nuclear Regulatory Commission
Mike LaFranzo, U.S. Nuclear Regulatory Commission
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Peter Lyskowski
Acting Director



Jeremiah W. (Jay) Nixon
Governor

May 24, 2016

Ben Moore
Project Manager, Federal Facilities Section
Missouri Department of Natural Resources
917 N. Highway 67, Ste 104
Florissant, MO 63031

Re: Missouri Department of Health and Senior Services' comments on the *Draft Work Plan for Vapor Intrusion Assessment, Hematite Decommissioning Project*, Festus, Missouri, April 2016

Dear Mr. Moore:

The Missouri Department of Health and Senior Services (DHSS) received your request dated May 5, 2016, to review and comment on the April 2016 version of *Draft Work Plan for Vapor Intrusion Assessment* for the Hematite Decommissioning Project.

DHSS has the following comments regarding the vapor intrusion investigation at the site:

- 1. Conceptual Site Model (p. 2):** As recommended in section 6.2 of the United States Environmental Protection Agency's (EPA'S) *OSWER Technical Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (2015), please include a scaled map that illustrates the extent of subsurface (groundwater and/or soil gas) contamination in relation to the current buildings and other landmarks (e.g., process buildings, burial pits, evaporation pond) on the site. Please also show locations of underground utilities and other preferential pathways, if available.

Please also show the locations of groundwater monitoring wells and/or soil gas sampling points on the site and discuss the groundwater and/or soil gas monitoring results that pertain to vapor intrusion. Information important to the vapor intrusion evaluation includes contaminant concentrations in shallow groundwater and soil gas and the direction of groundwater flow.

- 2. Target Analyte List (p. 3):** The work plan identifies tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride as target analytes in the vapor intrusion investigation. DHSS recommends targeting all potential breakdown products of PCE and TCE, including dichloroethylene (DCE). Analysis of all breakdown products will allow a more thorough evaluation of the potential health risks of vapor intrusion. The presence of DCE in indoor air could also be an indicator of a complete vapor intrusion pathway.
- 3. Investigation Approach (p. 3):** DHSS understands that indoor air sampling locations were chosen to minimize disruption of office work in the occupied buildings. However, sampling in open areas rather

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than office spaces may not capture maximum exposures in those buildings, especially if connecting doors are often closed. DHSS recommends adding sampling locations in office spaces in both buildings.

4. **Indoor Air Sampling (p. 9):** As recommended in section 6.4.1 of EPA's *OSWER Technical Guidance for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*, DHSS recommends concurrent sampling of indoor air, subsurface soil gas, and ambient (outdoor) air. Soil gas and indoor air sampling points should be collocated. Concurrent sampling will allow assessment of vapor intrusion pathways in an efficient and timely manner. It will also allow evaluation of the potential for future exposures, for example if contaminant concentrations are low in indoor air but not in sub-slab soil gas.
5. **Indoor Air Sampling (p. 9):** DHSS recommends at least three vapor intrusion sampling events within a year due to seasonal changes in vapor intrusion rates. Multiple seasonal factors may affect vapor intrusion, including temperature, barometric pressure, wind, rain, and use of heating and cooling systems. Restricting sampling to only two events may not adequately capture the effects of all those factors.
6. **Indoor Air Sampling (p. 9):** While conducting indoor air sampling, please record the name and location of any chemicals of potential concern or products that may contain those chemicals that are being used or stored in any of the facility buildings.
7. **Data Evaluation (p. 11):** Please include a decision matrix that shows subsurface soil gas and indoor air screening levels and action levels and corresponding actions for each chemical of potential concern. DHSS recommends selection of action levels equal to a hazard quotient of 1 or target cancer risk of 1E-5, whichever is lower.
8. Please reference the quality assurance project plan (QAPP) and health and safety plan, and include relevant details of the vapor intrusion sampling in those plans.

Thank you for the opportunity to comment on the document. If you have questions or comments, please contact Elizabeth Semkiw of my staff at (573) 751-6102.

Sincerely,



Jonathan Garoutte, Chief
Bureau of Environmental Epidemiology

JG/ES/mp

c: Division of Community and Public Health