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Your ref:
Our ref: HEM-07-124
Date: October 18, 2007

Subject: Response to 9/12/07 E-Mail to Kurt Hackmann

Dear Mrs. Eaton,

This letter is in response to your September 12 e-mail to me in which you asked several question and offered your assistance with our efforts to obtain records regarding previous operations at the Hematite Site.

We appreciate your offer of assistance, but believe that we now have sufficient data to support building demolition and site remediation. The State's recent approval of the Remedial Investigation provides credence for that belief. Any remaining data gaps that may develop as we progress with the NRC's review of the Decommissioning Plan would best be filled by additional field work instead of historic information. Nevertheless, we would be happy to review any documents that you may have and think would be helpful.

Regarding your questions:

1. What is the farthest distance from the evaporation ponds/pits you have found Technetium 99?

   Answer: Radiological isotope concentrations are reported in picocuries per gram (pCi/g), and are identified with laboratory qualifiers to indicate if the concentration is above or below the minimum detectable concentration (MDC). The detection of an isotope above the MDC does not indicate that the isotope is present at a concentration in excess of a regulatory standard, nor does it indicate that the isotope represents a health concern. It should also be noted that some radiological isotopes are found at naturally occurring concentrations in soil and sediment throughout Missouri.

   With regard to the site investigation activities, Tc-99 has been identified in soil, sediment, and groundwater. The furthest distance from the central site tract that Tc-99 has been detected above the MDC in surface soil is at sample location NB-11 (12.9 pCi/g). This sample location is near the confluence of Site Creek and Lake Virginia Tributary. The furthest distance from the central site tract that Tc-

99 has been detected above the MDC in a sediment sample is at sample location SW-01-SS (255 pCi/g). This sediment sample location is just above the dam for the Site Pond. The furthest distance from the central site tract that Tc-99 has been detected above the MDC in groundwater is at monitoring well BR-01-JC (48.9 pCi/L). This monitoring well is located just west of the Site Pond. Of those detections, the farthest one from the potential source areas is located at BR-01-JC, which is approximately 750 feet from the facility, and all of them are on Westinghouse property.

2. What other fission products, (other than Technetium 99) have you found that have come from the Paducah, Kentucky uranium enrichment plant?

Answer: Section 4.3 of Volume 1 of the Remedial Investigation discusses the radionuclides found in surface water, groundwater, sediments, surface soils, and subsurface soils. Other than Tc-99, radionulcides detected at the site which could be fission products include Americium-241 (Table 4.26) and Plutonium-239 and -240 (Tables 4.27 and 4.31). Additionally, Neptunium-137 has been detected in the former process buildings. Regardless of their source, the Decommissioning Plan will determine what, if anything, needs to be done about those isotopes.

3. As we all know uranium 238 is the primary material that was turned into fuel at the Hematite plant next to our homes. Would you please tell me if you have tested for polonium in the groundwater, soils, and Joachim Creek sediment?

Answer: Polonium analysis was not performed due to the relatively short half-lives of the polonium isotopes in the U-235 and U-238 decay chains. For instance, Po-210 has a half-life of 138 days, Po-214 has a half-life of 164 microseconds, Po-215 has a half-life of 1.78 milliseconds, and Po-218 has a half-life of 186 seconds. These short half-lives compared to the half-lives of U-235 (703.8 10^6 years) and U-238 (4.468 10^9 years) indicate that most of the uranium (if present) would remain as the parent material.

4. Did you also test for polonium 215 which is a daughter product of uranium 235? (because it was also processed at the Hematite uranium plant)

Answer: See response to Question 3.

5.a. Technetium 99 is a very light, free flowing, very transient material. In past meetings Westinghouse has speculated that the contamination of TCE into our water well was a result from leakage from the burial pits. Those pits are known to contain TCE as well as Tc-99. Could you please briefly explain why you think TCE was found in my drinking water well in 2001 but radioactive materials were not found in my family's water well?

Answer: Your statement that the pits are known to contain Tc-99 is incorrect. The data indicates that Tc-99 contamination probably originated at a former storage area next to the South Vault at the rear of the facility, and/or from the former evaporation ponds. TCE is a more mobile contaminant than Tc-99 and other radiological materials. TCE tends to dissolve in water and will flow with the

groundwater, as opposed to Tc-99 which tends to adsorb onto soil particles more readily the TCE. The adsorption of Tc-99 onto soil particles will retard the migration of this contaminant in the subsurface.

5.b. How is it that your monitoring equipment could detect hazardous chemicals but could not detect radioactively hazardous materials like technetium, polonium, and uranium?

Answer: The equipment and methods used in the remedial investigation are fully capable, within the limits of current technology, of detecting both hazardous chemicals and radioactive materials.

6.a. When did you dig up the radioactive contaminated sediment from the evaporation pond that was used for the uranium plant's waste?

Answer: We understand that Combustion Engineering (CE) made several efforts to address the ponds, beginning in 1978. Westinghouse has not undertaken such activities, and will not be able to do so until the Decommissioning Plan is approved by the NRC.

6.b. Where did you send the material and when?

Answer: We understand that CE shipped wastes to properly licensed and permitted disposal facilities, such as those at Barnwell, SC and Clive, UT.

7. Did you ever find a certified map or records of the contents of the burial pits?

Answer: As we said at the public meeting, the burial pit records that we have are those which apparently were used for nuclear material control and accounting. We are not aware of any certified maps.

8. Was the company required to keep records of the concentrations of radioactive gases, and particulate materials that were present in each of the individual factory production areas?

Answer: The site has been characterized by sampling and analysis for a comprehensive variety of chemical and radiological materials. The facility's license has included requirements for monitoring and maintaining records of contamination levels.

9. At the meeting it was noted that "The federal government did not approve the consent decree based on federal preemption concerns." Would you please explain that?

Answer: As Ben Moore noted at the public meeting, the Consent Decree was in part written with the State's understanding that the MDNR had regulatory authority for both non-radiological and radiological contaminants. The Court ruled that the NRC has exclusive regulatory authority over the Hematite Site's radiological contaminants because of preemption by the federal Atomic Energy Act, and that the Court therefore could not ratify the Consent Decree as it was written.

10. Of the site characterization, what contaminants and their concentrations have been found?

Answer: That information is too voluminous to report in this forum, but it is contained in the Remedial Investigation Report. As noted at the public meeting, the Remedial Investigation and its supporting documents are available for the public to review and copy at the Festus Public Library. The MDNR is working to put those documents on its web site, and they are hosting a public workshop to review them in more detail.

11. If CERCLA selects the remedy as a part of the Record of Decision, and CERCLA is an EPA process, I would like to know what the facility scored as part of the Hazardous Ranking Score or HRS?

Answer: To our knowledge, no formal Hazard Ranking System (HRS) Score site has been published for the Site by either EPA or MDNR. We are not aware of the score of any informal ranking conducted by either agency.

12.a. Are the monitoring samples (done by Westinghouse) or quality controls done simultaneously with someone other than the company itself?

Answer: The RI sampling efforts were performed by an outside consultant (SAIC). Quality control samples (trip blanks, field duplicates, matrix spike/matrix spike duplicates) were collected by SAIC to ensure data quality and usability. In addition, personnel from the Missouri Department of Natural Resources conducted oversight activities throughout the RI and collected split samples as a check of the laboratory analyses.

Westinghouse is required by its NRC License to monitor environmental pathways to the air, water and soil. Our personnel perform that monitoring, which includes the collection of various samples in accordance with site procedures. Some samples are analyzed on site, while others are sent to independent, certified laboratories for analysis. The NRC conducts routine inspections of our facility and our environmental monitoring program to ensure license and procedural compliance and data quality.

Westinghouse also maintains a groundwater sampling program in accordance with MDNR requirements. Those samples are also taken by our personnel or contracted companies and are sent to independent, certified laboratories for analysis. MDNR oversees those operations to ensure work plan and procedural compliance. Their oversight includes the collection and analysis of their own samples and splitting our samples to ensure data quality.

12.b. Who is overseeing the quality controls, DNR or NRC?

Answer: MDNR performed regulatory oversight during the RI efforts. In addition, MDNR personnel collected split samples as a check of our contractor's laboratory analyses. The NRC also performed oversight during some of the RI

field work, and evaluates the effectiveness of our quality assurance program in the course of its inspections.

13. Have there been any radioactive materials detected in the tributaries?

Answer: Radioactive materials were detected in the un-named tributaries on either side of the central site tract, and those detections were on Westinghouse property. Tc-99 and other potential fission products were not detected in any surface water samples, including those tributaries. Uranium activity in samples taken from the Joachim Creek is comparable to upstream values. Surface water and sediment samples were collected during the RI from the Site Pond, Site Creek, Lake Virginia Tributary, Joachim Creek, and Northeast Site Creek (an intermittent stream fed by rainwater runoff). The concentrations of radiological isotopes found in surface water and sediment samples are provided in the RI report, Appendix H, Tables H.7 and H.9, respectively.

14. How far has technetium migrated away from the plant?

Answer: Technetium has not migrated beyond Westinghouse property. Please refer to our response to Question 1 for further details.

15. What human health assessment model did you use for our family who was drinking TCE and PCE that has migrated from the Hematite uranium facility into our drinking water well?

Answer: The approved human health risk assessment followed EPA guidance to build conservative theoretical models for bounding risk analysis.

16. Was the past fish kill in Joachim creek a factor in your ecological risk assessment?

Answer: We recently saw an article about a fish kill upstream of our facility, apparently the result of an event in the DeSoto area. We are otherwise not aware of a past fish kill in this area. Such events are not a factor in the ecological risk assessment.

17. It was noted at the last meeting that the plume of contaminants is being drawn away from our neighborhood, can you please describe the phenomenon of retardation----that is when the soil adsorbs the concentrations on the surface?

Answer: Natural soil adsorption tends to impede or retard the migration of contaminants. According to the Hutchinson encyclopedia, adsorbtion is a process in which a gas or liquid is taken up at the surface of another substance, most commonly a solid. It involves molecular attraction at the surface, and should be distinguished from absorption (in which a uniform solution results from a gas or liquid being incorporated into the bulk structure of a liquid or solid).

I hope this information is helpful, if you need any other clarification please let me know.

Sincerely,

E. Kurt Hackmann
Decommissioning Project Director

cc:

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