



Missouri Department of Health and Senior Services

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August 16, 2013

Shawn Muenks, Program Manager
Federal Facilities Section, RRAU Unit
Hazardous Waste Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO. 65102-0176

Re: Comments from the Missouri Department of Health and Senior Services on the document *Bridgeton Landfill North Quarry Contingency Plan – Part 2; Appendix D and E; July 26, 2013.*

Dear Mr. Muenks:

The Missouri Department of Health and Senior Services (DHSS) reviewed Appendix D, *Isolation Barrier Schedule and Gamma Cone Penetration Test*, and Appendix E, *Gamma Cone Penetration Test (GCPT) Health and Safety Plan (HSP)*. DHSS comments are provided for each appendix below.

I) Appendix D

A. General Comment

1. The definition of radiological impacted material (RIM) must be established to determine the potential for exposure to radiation, radiation protection levels, monitoring requirements, and regulatory requirements. All will depend on the detected concentration of radiation in the area being investigated. In order to make these decisions, site-specific data will be required. DHSS recommends including gamma scan and laboratory-confirmed activity levels for each of the 8 radionuclides and progeny listed in Appendix D. The HSP should contain a contingency plan to address exposure to radionuclides in the event RIM is encountered. Provide in the HSP contingency all applicable dose standards and monitoring requirements accordingly.

The potential for exposure to non-RIM hazardous waste also exists. Comment 4 of Appendix E below further discusses the need to characterize for and provide contingency planning in the event exposure to non-RIM hazards occurs.

B. Section-specific comments

1. Section 5.4.2, *Radiological Controls*, identify throughout this and other applicable sections of the HSP specific federal regulations governing exposure to ionizing radiation being applied to this project. Otherwise, provide a section specifically addressing exposure to RIM and what regulations will apply for worker protection.

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2. Section 6, *Training*, does not mention Hazardous Waste Operations and Emergency Response (HAZWOPER) training as being required. DHSS recommends that the HSP require HAZWOPER training.

II) Appendix E

A. Section-specific comments

1. For Section 3, *Proposed Investigation*, gamma scans being proposed for surface and subsurface investigation of RIM are not sensitive to thorium-230 (Th-230). Surrogate identification may be necessary. Verification of equilibrium between parent and progeny should be confirmed through laboratory analysis.

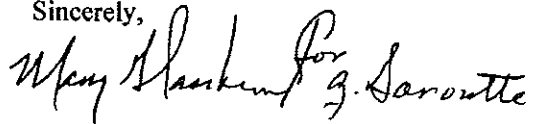
Section 3 further states that "The approximate limits of the materials containing materials higher than the standard for unrestricted use (5 pCi/g above background) were delineated in the 2011 Supplemental Feasibility Study. The general approach is to increase the number of observations in situ to verify that the selected alignment for the thermal barrier is located outside of areas of RIM." If attempting to verify exposure rates based upon surface soil compliance standards using gamma detectors, realize that this will be hard to achieve because of the low exposure rates (one to a few micro roentgen per hour) required to be detected. Exposure rates of this magnitude may even be below background. Because of this, multiple laboratory samples may be required to confirm radionuclide activity. Please discuss what approach will be used to address this concern.

2. For Section 3, vegetation at this site may be contaminated with radionuclides. When ground, the vegetation may cause exposure from external, inhalation, or incidental ingestion of dust. Vegetation samples should be analyzed by a laboratory to identify radionuclide activity. Pending laboratory results, restrictions on clearing and disposal of the vegetation may be warranted.
3. Section 3 does not provide a definition of RIM. This section refers to 5 picocuries per gram (pCi/g) as a standard used in the supplemental feasibility study from 2011 (see Appendix E, comment 1 above), but does not directly state whether 5pCi/g above background is being implied. Please clarify.
4. Section 5.3, *Chemical Hazards*, does not mention the potential for encountering hazardous waste, putrefiable waste, and landfill gases during the GCPT exercise. No action plan has been provided to investigate, characterize, and abate potential exposure to chemicals. Methodology to monitor for encroachment into contaminated soils or detecting vapors emitted from within borings should be provided. The HSP should discuss the potential for exposures, and include a contingency plan to protect workers from exposure. Worker protection standards must be met in the event these potential hazards are encountered. Update the HSP accordingly.

Muenks, Shawn
August 16, 2013
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If you have questions or comments, please contact Andrew McKinney at (573) 751-6102.

Sincerely,

A handwritten signature in cursive script that reads "Jonathan Garoutte". The signature is written in black ink and is positioned above the printed name.

Jonathan Garoutte, Chief
Bureau of Environmental Epidemiology

JG/DW/AM/mp