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Mr. James A. Saric, Remedial Project Manager
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DOE-0076-06

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East 5th Street
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Dear Mr. Saric and Mr. Schneider:

RADON CONTROL DURING SAFE SHUTDOWN OF SILOS 1 AND 2 REMEDIATION FACILITIES

As has been discussed during recent status reports, bulk transfer of Silo material from the Transfer Tank Area (TTA), as well as bulk treatment and packaging in the Waste Treatment and Packaging (WT&P) facility, are nearing completion and initial safe shutdown activities are in process in both facilities. At this final stage in Silo 1 and 2 remediation, the Radon Control System (RCS) has effectively met its designed function of controlling radon emissions during storage and remote handling of Silo material. It has become evident, however, that minimizing radon emissions and personnel exposures during safe shutdown activities such as manned entry and manual material removal requires capacity and operational flexibility beyond the designed capability of the RCS. The purpose of this letter is to clarify the planned approach for control of radon emissions during final operation and subsequent safe shutdown of the RCS, TTA, and WT&P facilities.

TTA Safe Shutdown Radon Control Approach

TTA Tank 1B has been emptied and turned over for decontamination and decommissioning. Tank 2B contains a heel of less than 4 inches of Silo material as well as water accumulated during recent sluicing operations. Tank 2A contains approximately 1 foot of surrogate covered with a small amount of Silo material, while Tank 1A contains only a one-foot layer of contaminated surrogate. Bulk transfer of material from the remaining TTA tanks to the WT&P Facility will be completed this week and will be followed by manned entry into the tanks for removal of residual silo material and contaminated surrogate.

The RCS was not designed to provide active ventilation of a TTA tank sufficient to support manned entry during manual material retrieval. During residue removal in TTA Tank 1B, it became evident that the maximum RCS flow (approximately 800 CFM) drawn from the top of the tank did not provide sufficient ventilation to minimize radon concentrations and worker exposure at the tank floor during manned entry. During manned entry into each of the three remaining TTA tanks (estimated to require two days per tank) maximum RCS flow will be supplemented by additional ventilation from portable HEPA-filtered air filtration devices (AFD's). One or more AFD's will draw ventilation through hoses positioned at the bottom of the tank being cleaned and discharge to the TTA second deck in order to maintain radon levels at the bottom of the tank as low as reasonably achievable during manned entry. Continuous monitoring will be maintained throughout the decontamination and residue / surrogate removal evolution in each tank to continuously evaluate breathing-zone radon levels and ensure worker protection.

Radon emissions at the previously established discharge threshold for the RCS stack (6000 pCi/l radon at a maximum flow of 12,000 CFM) were modeled to produce a fenceline impact less than 3% of the permitted limit of 0.5 pCi/l above background annual average. Based upon current radon concentrations in the TTA tanks, the radon concentration in the exhaust from the TTA second deck during supplemental ventilation is not expected to exceed 1000 pCi/l with an expected maximum flow of 5000 CFM. The combined radon discharge from the RCS stack and the supplemental ventilation in the TTA facility during the short duration of manned entry will be less than 10 percent of the previously-established discharge threshold for the RCS stack.

Upon completion of the residue removal evolution, each TTA tank will be isolated from the RCS.

WT&P Safe Shutdown Radon Control Approach

Final bulk processing of Silo material in the WT&P facility is currently being completed in parallel with safe shutdown of the TTA. By the time transfer of Silo material from the TTA to the WT&P facility is completed, it is expected that bulk processing will have been completed such that the contents of the WT&P process vessels (receipt tanks, feed tanks, flush/supernatant tanks) will consist of a nominal one-inch residual heel of silo material in each tank, along with excess water awaiting treatment in the Silos Wastewater Treatment facility. At this point, the radon source-term requiring RCS treatment (bulk quantities of Silo material) will have been removed. The WT&P facility will be isolated from the RCS and shutdown of the RCS will be initiated.

Ventilation of the WT&P facility during subsequent removal of the remaining residual heel will be provided by the WT&P HVAC system. As each tank is breached for manned entry to remove residual heel material, ventilation provided by the WT&P HVAC system will be supplemented as necessary by portable AFD's. All emissions will be exhausted through the Remediation Facility Exhaust Stack. Continuous radon and particulate monitoring will be maintained throughout this period to demonstrate actual emissions well below the stack limits previously applied to the RCS stack.

Emissions from the Remediation Facility exhaust stack at the 6000 pCi/l stack limit previously applied to the RCS stack would product a fenceline impact less than 3% of the permitted level of 0.5 pCi/l annual average above background. The radon concentration in the Remediation Facility Exhaust stack discharge during final residue removal and safe shutdown activities is not expected to exceed 200 pCi/l, significantly below the 6000 pCi/l stack limit.

The radon control approach detailed above represents the most effective means of achieving our joint goal of minimizing exposure and dose to workers during the final stages of Silos 1 and 2 remediation while maintaining compliance with all Applicable or Relevant and Appropriate Requirements (ARAR's) and environmental protection requirements.

If you have any questions regarding this transmittal, please contact me at (513) 648-3139.

Sincerely,

Johnny Reising

Johnny W. Reising
Director

cc:

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