

MEMORANDUM

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TO: Tom Thompson  
Nuclear Regulatory Commission- Region I

FROM: Heather Armstrong, RSO / *Heather K. Armstrong*  
James Madison University

RE: Decommissioning of Miller Hall Facility- Control #138035

DATE: May 8, 2006

45-1044-01  
03001125

Regarding your questions concerning (1) whether presence/absence of Ra-226 was considered in the final status survey and (2) the size of the areas of elevated contamination, please see responses below.

Quoting the email (dated May 5, 2006) from Dr. Alan Fellman of the Radiation Safety Academy:

"The thinking was going in that it would be highly unlikely that any alpha contamination would be found, therefore the work plan focused on measurements of gross beta activity (as far as coming up with the appropriate DCGL, MDC for measurements and scans, etc.). But we didn't want to ignore the Ra-266 possibility (even though it was remote), so we covered the bases by taking the gross alpha and exposure rate measurements. That said, when counting for alpha only with the gas proportional detector, the background drops from 100-150 cpm to less than 5 cpm, so the associated MDC values drop consistent with the lower background. For example, the MDC of a 30 second gross alpha count (0.5 detection efficiency, 0.25 source efficiency) would be 234 dpm/100 cm<sup>2</sup> (compared to 1,150 dpm/100 cm<sup>2</sup> for gross beta). The scan MDC for the hand held gp detector would be 1,350 dpm/100 cm<sup>2</sup>, again lower than that for gross beta because of the lower background and the higher detection efficiency. For the floor monitor, as with the gross beta numbers, the MDCs are much lower. Regarding the value of N, all nuclides were considered. When you don't have nuclide specific data, MARSSIM does not direct you to calculate a unique N for each nuclide potentially present. You make some assumptions based on historical data and professional judgment and go from there. That is what we did. As for the surface readings that were elevated, they were made with the hand held gp detector which has an active area of 100 cm<sup>2</sup>. According to the field personnel, the actual areas of contamination did not cover the entire 100 cm<sup>2</sup> but were closer to being described as just a few cm<sup>2</sup>."

The Radiation Safety Academy was contracted by JMU to complete the final status survey and corresponding report of the Miller Hall facility.

138035

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