7209

Department of Energy
Office of Legacy Management

November 12, 2009

Mr. Timothy Fischer
U.S. Environmental Protection Agency
Region V-SRF-6J
77 W. Jackson Blvd.
Chicago, IL 60604-3590

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Fischer and Mr. Schneider:

Subject: **Correction to the 2006, 2007, and 2008 Isotopic Data for the Fernald Air Monitoring Program**

Quarterly analytical results for U-234, U-235, U-238, Th-228, Th-230, Th-232, and Ra-226, as reported in the 2006, 2007, and 2008 Site Environmental Reports (SERs), were calculated using an improper value for the total dissolution volume. The analytical laboratory only reported one total volume. This volume was assumed to be the total dissolution volume, which would be the sum of the three monthly aliquots for 2007 and 2008 (bimonthly aliquots for 2006) that were combined to form the composite total sample volume for the quarterly analysis. However, each of the monthly aliquots in 2007 and 2008 had 2 mL of solution removed for the monthly uranium analysis and each of the bimonthly aliquots for 2006 had 15 mL of solution removed for the bimonthly uranium and monthly thorium analysis. Regardless of the year, this volume was omitted from the total dissolution volume reported by the laboratory. The following example will illustrate the incorrect and correct calculations.

For 2007 and 2008, each monthly filter was dissolved in acid to produce a total dissolution volume of 50 mL for each sample. The aliquot for total uranium analysis (2 mL) was removed from this 50 mL, which leaves a volume of 48 mL for each sample. This was repeated for the next two months of the quarter, which leaves three monthly samples of 48 mL to form the quarterly composite sample for isotopic analysis. The laboratory combined the three samples and reported a total volume of 144 mL. However, the true total dissolution volume was 150 mL, as the laboratory omitted the 6 mL removed for total uranium analysis. Therefore, reported results in the 2007 and 2008 SER are approximately 4 percent too low (i.e., 144/150 = 0.96; 100 – 96 = 4 percent).

2597 B 3/4 Road, Grand Junction, CO 81503	☐	3600 Collins Ferry Road, Morgantown, WV 26505
1000 Independence Ave., S.W., Washington, DC 20585	☐	11025 Dover St., Suite 1000, Westminster, CO 80021
10995 Hamilton-Cleves Highway, Harrison, OH 45030	☐	955 Mound Road, Miamisburg, OH 45342
232 Energy Way, N. Las Vegas, NV 89030	☐	
REPLY TO: Harrison Office		

When the corrected values for 2008 are plotted against the uncorrected results presented in the 2008 SER (Figure 1), it is evident that the slightly higher revised values are within the analytical uncertainty (i.e., error bars) of the uncorrected results. Corrected results will be of a similar magnitude for 2007. Therefore, there is no significant change to the conclusions presented in the 2007 and 2008 SERs.

In regard to 2006 data, each month two biweekly filters were collected and each filter was dissolved in acid to produce a total dissolution volume of 50 mL for each sample. An aliquot was removed for biweekly total uranium and isotopic thorium analysis (15 mL from the 50 mL), which leaves a volume of 35 mL for each sample. This is repeated for the next two months of the quarter, which produces six biweekly samples of 35 mL to form the monthly composite sample for isotopic analysis. The laboratory combined the six samples and reported a total volume of 210 mL. However, the true total dissolution volume is 300 mL, as the laboratory omitted the 90 mL removed for total uranium and isotopic thorium analysis. Therefore, reported results in the 2006 SER are approximately 30 percent too low (i.e., 210/300 = 0.7; 100 – 7 = 30 percent). Figure 2 provides a graphical view of the changes.

Although the 2006 increase in the isotopic values is 30 percent greater than initially reported, this increase does not produce a significant change in the NESHAP compliance ratios for the isotopes. The 2006 maximum dose was 0.17 mrem/yr, which are nearly two orders of magnitude below the 10 mrem/yr limit (Appendix D of 2006 SER). Therefore, a 30 percent increase in the maximum dose (0.17 + 0.051 = 0.22 mrem/yr) will still be well below the NESHAP compliance limit.

Sincerely,

Jane Powell

Jane Powell
Fernald Preserve Site Manager
DOE-LM-20.1

cc: (electronic)
T. Pauling, DOE
F. Johnston, Stoller
G. Lupton, Stoller
K. Voisard, Stoller
C. White, Stoller
Project File (Thru W. Sumner)
Administrative Records (Thru W. Sumner)

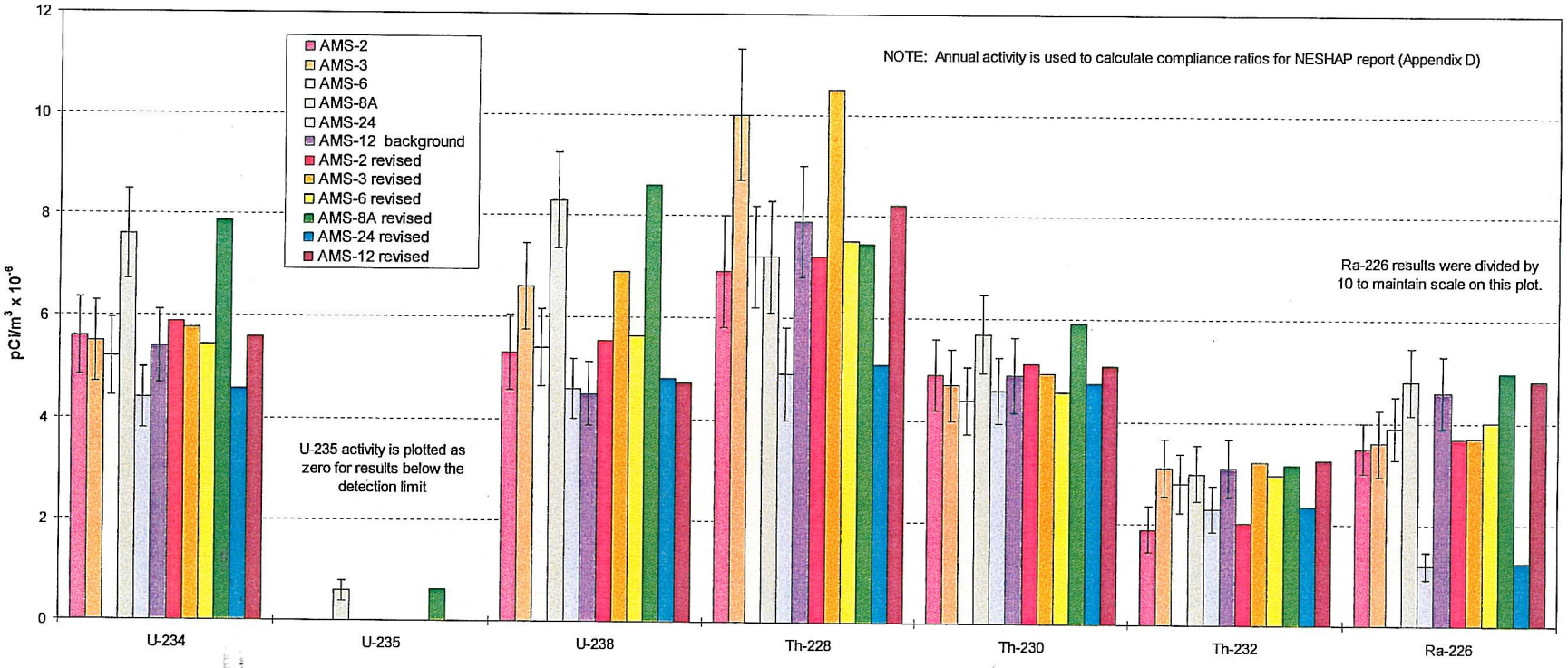

FIGURE 1. Results reported in Figure 5-3 of the 2008 SER (bars with error lines) were revised using the correct total solution volume. The slight increase in activity for the revised value is contained within the analytical uncertainty of the initial reported result (i.e., within the spread of the error lines)

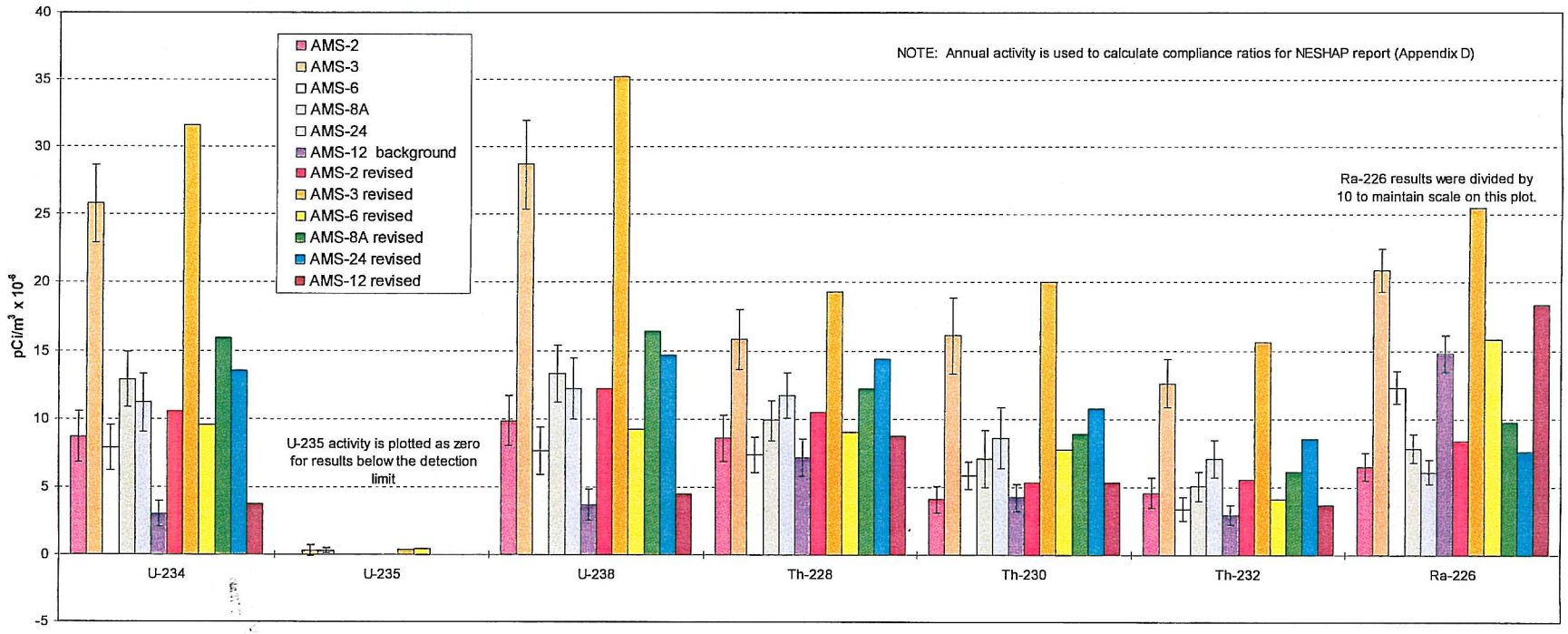

FIGURE 2. Initial 2006 and revised 2006 results. The increase in activity for the revised value is above the analytical uncertainty of the initial reported result, but the additional activity is insignificant with respect to the NESHAP compliance ratio.

7209