From USEPA/Ombudsman I.G. report on Uniontown IEL

Appendix B

Details on Testing Sensitivity

Sensitivity refers to how small an amount of a substance can be reliably measured during the analysis for that substance (the minimum detectable amount), and can vary for each analysis. For example, the MCL for tritium is 20,000 pCi/L and the detection limit is 1,000 pCi/L. The minimum detectable amount for tritium during the 2000-2001 analysis ranged from 550.10 to 665.20 pCi/L, which was under the required detection limit. However, over the last 15 years, tritium in rainwater and snow melt (naturally occurring) has only been 40-60 pCi/L. Consequently, to determine whether tritium is naturally occurring versus man-made, the analysis would need to be sensitive enough to detect 40 pCi/L (or less) of tritium.

As shown in Table B-1, we found that the minimum detectable amount from the 2000-2001 analyses sometimes exceeded the detection limit set in the regulations for that analysis, but was still less than the MCL. Thus, the results were sensitive enough to show if the MCL was exceeded. Since MCLs were not exceeded for IEL, the radionuclides do not pose an unacceptable health risk that needs to be addressed by EPA under CERCLA, and do not require cleanup actions.

Table B-1:
Minimum Detectable Amount Versus Detection Limit

Radionuclide	No. of Analyses Performed	No. Exceeding Limit	Detection Limit Applied (pCi/L)	Range of Those Exceeding Limit
Gross alpha	74 *	25	3.00	3.18 to 9.69
Gross beta	74 *	18	4.00	4.24 to 11.15
Technetium	9	9	5.00	15.48 to 23.39
Radium-228	9	6	1.00	1.05 to 1.49
Radium-226	32	3	1.00	1.08 to 1.36
Strontium	9	3	2.00	2.38 to 4.97
* Plutonium	64	0	1.50	
Thorium	96	0	1.50	
Tritium	41	0	1,000.00	
Total	408	64		

* The samples screened for gross alpha and gross beta were filtered, and both the suspended and dissolved portions were analyzed. In counting the number of analyses, the analyses of the suspended and the dissolved portion were considered separate analysis. However, this count excluded the analysis performed during the first round of testing if the total gross alpha/beta screening level for the monitoring well was not exceeded.

* Detection limit was way too high for Pu - should be .001 or less. T.99 data was [illegible]