## Specific Proposed Modifications of EPA Method 1312 for

## Determination of Kd on SMC Storage Yard Materials

Shieldalloy Metallurgical Corporation (SMC) proposes to use a modified EPA Method 1312 (U.S. EPA, 1990), commonly known as Synthetic Precipitation Leaching Procedure (SPLP), for the determination of distribution coefficients (Kd) for radionuclides between Storage Yard materials (slag and baghouse dust) and infiltrating rainwater. The following specific modifications of the method are proposed to better approximate the leaching of radionuclides from the large dimension waste materials than the unmodified SPLP method or ASTM D-4319 (ASTM, 1993) would provide:

- Site rainwater would be used as the extraction fluid, rather than a pH 4.2 fluid, as the Method specifies for soils east of the Mississippi River.
- Initial tests would be conducted on 1-inch diameter and 4-inch diameter particle sizes of slag, in addition to finely ground (12 mesh) slag, to investigate the potential for a decrease in leachability of radionuclides with increase in particle size. EPA Method 1312 specifies particle size reduction, unless the solid has a surface area per gram of material equal to or greater than 3.1 $cm^2$, or is smaller than 1 cm in its narrowest dimension.
- The testing period for the initial "investigative" tests would be extended from the Method-specified 18 +/- 2 hours to up to 14 days (or longer, if necessary), looking at interim results at 24 hours, 3 days, 7 days, and 14 days, to assess the time of attainment of steady-state. Unmodified (size) baghouse dust would be subjected to the same testing period. The steady-state times for the baghouse dust and the 4-inch slag particles, respectively, would be used for additional samples testing.
- The 1-inch and 4-inch diameter slag would be tumbled in the reaction chamber 3 times/day for 5 minutes each time. The ground slag and baghouse dust would be tumbled continuously for the first 18 hours, followed by tumbling for 2 hours/day for the duration of testing. The Method specifies continuous tumbling for the test, which is limited to 18 +/- 2 hours.
- Eh would be monitored during testing, in addition to the Method-specified pH.

References

ASTM, 1993 (Reapproved 2001). Standard Test Method for Distribution Ratios by the Short-Term Batch Method D 4319-93.

U.S. EPA, 1990. Method 1312: Synthetic Precipitation Leaching Procedure, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW846), Vol. IC, 3rd Ed.

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