

Appendix 14.3:

Procedure for the Preparation of Field Spiked Wipe Samples

On a routine basis, lead risk assessors should randomly insert spiked samples (samples with known amounts of the analyte(s) of interest) into their submissions for laboratory analysis. Spiked samples help show to what extent the laboratory's analytical method is working, and help assess the accuracy of the method and/or the analyst. Submission of the spiked samples is recommended to determine if the laboratory digestion procedure is capable of achieving recovery rates between 80 and 120% for the specific brand of wipe used in the field. Some reports indicate that recovery rates can be as low as 40% using certain types of wipes. These field spiked samples are in addition to those the laboratory prepares for laboratory's own internal QA/QC program. The samples are not actually prepared in the field, but are manufactured under laboratory conditions. They are then relabeled in the field and inserted into the sample stream in a random and blind fashion. The spikes should be prepared using wipes from the same lot as that used in the field, since recoveries can vary by lot. The lot should be analyzed before use to ensure that there is not background contamination.

As of July 2012, spiked wipe samples using wipe sampling media that meet ASTM E 1792 specifications are available for a price from American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing Programs, LLC: go to <http://admin.aihaaccreditedlabs.org/AccredPrograms/ELLAP/Pages/default.aspx> for further information.

An alternate source of samples available for a price is the National Institute of Standards and Technology (NIST) Standard Reference Materials (SRM) Catalog (<http://www.nist.gov/ts/msd/srm/index.cfm>; search for "Lead in Paint").

The NIST web page, Lead in Paint, Dust, and Soil (powder and sheet forms), "Table 105.13" (<https://www-s.nist.gov/srmors/viewTable.cfm?tableid=55>), describes NIST lead SRMs for these three media. As of July 2012, the catalog said that, "These SRMs and RM have been developed in conjunction with the U.S. EPA to monitor paint, soil, and dust sources of lead." It further describes the lead in dust SRMs as follows: "SRMs 2580, 2581, 2582, and 2589 consist of paint that has been ground and homogenized into a powder, 99+% of which passes a 100mm sieve. SRM 2583 and SRM 2584 consist of dust, 99+% of which passes a 100mm sieve, that was collected in vacuum cleaner bags during cleaning of dwelling interiors. SRM 2583 and SRM 2584 are certified for arsenic, chromium, cadmium, lead, and mercury. SRMs 2584, 2586, and 2587 are dust or soil matrices containing lead from paint." **The list of lead in dust SRMs described under Table 105.13, as of 7/28/2012, some of which may not be available subsequently, is:**

SRM Description

2580	<i>Powdered Paint Nominal 4% Lead</i>
2581	<i>Powdered Paint Nominal 0.5 % Lead</i>
2582	<i>Powdered Paint Nominal 200mg/kg Lead</i>
2583	<i>Trace Elements in Indoor Dust</i>
2584	<i>Trace Elements in Indoor Dust</i>
2589	<i>Powdered Paint Nominal 10% Lead</i>

You may search for individual SRMs at <http://www-s.nist.gov/srmors/>, searching for dust, lead, soil, trace elements, etc. [Accessed 7/28/2012; the sites above may be moved or deleted later.]

The following procedure may be used to prepare spiked wipe samples.

1. If it is necessary to prepare spiked wipe samples, use the same brand of wet wipes that will actually be used in the field.
2. Obtain a NIST Standard Reference Material containing a certified concentration of lead, or a traceable secondary standard with a known amount of lead in dust.
3. Weigh out between 50 and 500 μg of lead (not total dust) to the nearest microgram.
4. Don a new disposable glove to handle each new wipe sample.
5. If tared weighing boats are used, quantitatively transfer all of the material from the boat to the wipe by wiping the boat thoroughly.
6. If glassine paper is used, be certain that the dust transfer was complete.
7. Do not let the wipe touch any other surface. Fold the wipe with the spiked side inward and carefully insert it into a non-sterilized 50 ml centrifuge tube or other hard-shelled container that is identical to the containers that will hold the field samples. The containers holding the spiked samples should be indistinguishable from those holding the field samples so that the analysis can be performed blindly. This means the same container or tube should be used to hold field samples and wipe samples.
8. Have the spiked sample inserted into the sample stream randomly, with at least one spiked sample for each 50 field samples analyzed and one blank for each sample batch.