



Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques¹

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1. Scope

1.1 This practice covers the collection of dried paint samples or other coatings from buildings and structures. These samples are collected in a manner that will permit subsequent digestion and determination of lead using laboratory analysis techniques such as Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) and Flame Atomic Absorption Spectrometry (FAAS).

1.2 This practice is used to collect samples for subsequent determination of lead on an area basis (milligrams of lead per area sampled) or concentration basis (milligrams of lead per gram of dried paint collected or weight percent).

1.3 This practice does not address the sampling design criteria (that is, sampling plan that includes the number and location of samples) that are used for risk assessment and other purposes. To provide for valid conclusions, sufficient numbers of samples must be obtained as directed by a sampling plan.

1.4 This practice contains notes that are explanatory and are not part of the mandatory requirements of this practice.

1.5 The values stated in SI units are to be regarded as the standard.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 Definitions:

2.1.1 *paint collection container*—a sealable rigid walled container (see Discussion below).

2.1.1.1 *Discussion*—Use of a resealable plastic bag for holding and transporting dried paint samples is not recommended due to the potential losses of paint chips within the plastic bag during laboratory handling. Quantitative removal

and processing of the dried paint samples by the laboratory is significantly improved through the use of sealable rigid walled containers.

2.1.2 *paint collection tray*—any clean, dry, lead-free container for use in catching paint scrapings (see Discussion below).

2.1.2.1 *Discussion*—This practice describes the use of letter-size white paper for making a funnel type collection tray. However, other types of collection trays can be utilized.

2.1.3 *sampling location*—a specific area within a sampling site that is subjected to sample collection. Multiple sampling locations are commonly designated for a single sampling site.

2.1.4 *sampling site*—a local geographical area that contains the sampling locations. A sampling site is generally limited to an area that is easily covered by walking.

2.1.5 *wipe*—disposable towelettes moistened with a wetting agent. These towelettes are used for cleaning sampling equipment. Wipe brands or sources selected for use shall contain insignificant background lead levels (see Discussion below).

2.1.5.1 *Discussion*—Laboratory analysis on replicate blank wipes should be used to determine background lead levels prior to use in the field. Brands of wipes that contain aloe should be avoided due to increased potential of significant background lead in these wipes. Brands of wipes that contain lanolin should also be avoided due to potential increased laboratory processing difficulties that have been reported with such wipes. Background lead levels less than 5 µg per wipe are considered insignificant for most investigative purposes.

3. Summary of Practice

3.1 Dried paint samples are collected from areas of known dimensions using heat gun methods, cold scraping methods or coring methods.

4. Significance and Use

4.1 Prior to initiating a project that involves the removal, cutting, grinding, or burning of painted surfaces, it is necessary to determine whether the paint contains hazardous materials such as lead so as to establish if worker or environmental controls are to be imposed. This practice is intended for the collection of dried paint samples in and around buildings and

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structures for the subsequent determination of lead content. This practice may also be used to collect paint samples from other structures for lead analysis.²

4.2 Laboratory analysis methods are capable of determining the presence and quantity of hazardous materials in a dried paint sample. However, sample collection variability is generally considered to be far higher than laboratory variability. Therefore, it is critical that sample removal be properly controlled to produce representative and meaningful samples.

5. Materials and Equipment

5.1 *Resealable Rigid Walled Containers*—For use as paint collection containers. Screw-top plastic centrifuge tubes are an example of a suitable rigid walled container.

5.2 *Steel or Plastic Measuring Ruler*—Use metric-only rulers with millimetre and centimetre divisions (see **Note 1**).

NOTE 1—Since the unit used to report the amount of lead in dried paint samples is generally milligram per square centimetre, use of nonmetric measuring tools at the sampling site where paint collection is being performed should be avoided.

5.3 *Sampling Templates (Optional)*—Minimum inside dimensions of 2.5 by 2.5 cm (1 in.²), reusable aluminum or steel template of accurately known dimensions (see **Notes 1 and 2**).

NOTE 2—Templates should be thin (less than 3 mm), and be capable of lying flat on a flat surface.

5.4 *Wipes*—See **2.1.5** for definition.

5.5 *White Paper (Letter-Size) or Paper Funnels*—For use in making paint collection trays to capture dried paint scrapings.

5.6 *Masking Tape and Duct Tape*.

5.7 *Waterproof (Indelible) Permanent Marking Pen*.

5.8 *Personal Safety Gear*—Include items such as a first aid kit, safety glasses or goggles, half-mask respirators fitted with organic vapor/HEPA filters, and fire extinguisher (see **Notes 3 and 4**).

NOTE 3—Immediate access to a first aid kit is important due to the large number of cutting tools utilized in this practice.

NOTE 4—Use of respirators and fire extinguisher are recommended for collection of dried paint using the heat-gun method.

5.9 *Cutting and Scraping Tools*:

5.9.1 Sharp-edged razor knife,

5.9.2 Single-edged safety razor blades,

5.9.3 Pocket knife with locking blade,

5.9.4 Rigid blade paint scraper with extra blades,

5.9.5 Flexible putty knife,

5.9.6 Chisels, a variety of wood and cold chisels,

5.9.7 Hammer, and

5.9.8 Sharp-edged coring tool, minimum diameter of 2.5 cm, with a bottle brush for cleaning.

5.10 *Electrical Heat Gun With Extension Cords and Power Source*.

5.11 *Flashlight or Other Lighting Equipment*.

5.12 *Plastic Gloves*—Powderless.

5.13 *Trash Bags*.

6. Procedure

6.1 The ease of collecting dried paint samples is dependent on the condition of the paint and the type of substrate. Some substrates cause more collection difficulties than others. In general, collection of dried paint from brick, concrete, and wood are more difficult than from plaster, drywall, and metal. Cutting tools used for dried paint from one location may not be effective at other locations. Access at the site to a wide variety of paint collection equipment is required to permit collection from different substrates.

6.1.1 Collection of each sample of dried paint requires four major steps: (1) marking the collection area, (2) setting up a paint collection tray, (3) removing the paint, and (4) transferring the collected sample to the paint collection container. Each of these steps is described as follows:

6.2 *Marking the Collection Area* (See **Note 5**):

NOTE 5—If a coring tool removal procedure is to be used, this step can be omitted.

6.2.1 *Template-Assisted Marking Procedure*—Carefully place the clean template on the location surface. Using a razor knife or equivalent cutting tool in one hand while holding the template firmly in place with the other hand, score an outline of the area to be sampled by pulling the cutting tool along the inside edge of the template (cut into the paint). Remove the template and carefully retrace the scored outline with the cutting tool, cutting down to the underlying substrate. Clean the template with a wipe.

6.2.2 *Freehand Marking Procedure*—Using a ruler, carefully draw an outline of the sampling area on the location surface with a permanent marking pen. Be sure to make an outline which is as square as possible to avoid potential area calculation errors. Using a razor knife or equivalent cutting tool, score an outline of the area to be sampled by pulling the knife along the marked outline. Make a second pass along the marked outline with the cutting tool, cutting down to the underlying substrate.

6.3 *Setting Up a Paint Collection Tray* (See **2.1.2**):

6.3.1 *For Vertical Surfaces*—Center a piece of tape along one of the long edges of a clean sheet of white paper. The tape should be slightly shorter than the paper and placed so that sufficient adhesive is available to firmly stick the paper to the painted surface (see **Note 6**). Stick the paper directly below the location to be sampled with the taped edge closest to the scored location. Pull the two lower corners of the paper together and overlap slightly to form a funnel. Use a piece of tape to secure the corners together. Fold the bottom of the newly made funnel up and use a piece of tape to permanently close off the funnel bottom. Be sure no sticky tape surfaces are exposed on the inside of the closed bottom funnel. Test the funnel by tapping it to be sure it will not come undone or come off the surface if jarred during paint removal activities.

NOTE 6—Either masking or duct tape can be successfully used in most locations. However, for extremely dirty surfaces, the area where the tape is to contact the surface may have to be cleaned to achieve good adhesion. Use of a wipe followed by a dry paper towel can generally produce a clean enough surface to get the tape to stick.

6.3.2 *For Horizontal Surfaces (Painted Surfaces Facing Up)*—Tape a clean sheet of white paper

² Guidelines for the Evaluation and Control of Lead-Based Hazards in Housing, U.S. Department of HUD, Washington, DC, June 1995.