

**Michigan Department of Community Health
Bureau of Laboratories
Division of Chemistry and Toxicology, Trace Metals Section**

11/04

Soil Sampling Procedure for Housing

Soil samples for lead analysis are collected using a coring device. The coring tool is used to sample soil usually to about 1/2 inch deep.

1. Materials and Supplies:

- a. Core sampling device: Standard soil coring device. Other similar core sampling devices may be used, such a disposable plastic syringes with the end cut off. The plunger is used to remove the soil from the syringe body.
- b. Disposable wipes
- c. Non-sterilized 5" x 8" plastic ziplock baggies: Unless baggies are 4 mil industrial strength, they must be double bagged.
- d. Non-sterilized non-powdered disposable gloves: For example, Action Scientific (800-678-1033) No. A-105
- e. Floor Plan & Property Sketch
- f. Environmental Lead Sampling Requisition (DCH-0558, March 2004). This is a form designed for intelligent character recognition for scanning capabilities.
- g. Pre-printed labels or permanent ink pen
- h. Trash bag or other receptacle (do not use pockets or trash containers at the residence).

2. Collection Technique General Description:

Soil samples are typically collected with a coring device. The device may be used in either of two ways:

Most coring cones come with a "T" handle, which can be attached to the top of the coring tool or probe. This allows the operator to push the tool into the ground. The top of the coring tool can be twisted with the "T" handle as it is pushed into the ground in order to allow the cutting edge of the soil probe to cut through roots and packed earth. In softer soils, a disposable new plastic syringe at least 1/2 inch in

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diameter can be used for each composite sample.

The other method for using the coring tool is to attach a hammer device to the top of the coring tool. To utilize the coring tool in this manner, the hammer device is first attached to the top of the coring tool and the tip of the probe is placed on the ground where the sample is to be collected. The hammer is then raised and allowed to fall while it is guided by the operator's hands. The hammer attachment may be the most appropriate tool when the nature of the soils is hard and compacted. Otherwise the "T" handle is easier to use.

Collection:

The soil samples are collected by driving or pushing the coring tool into the ground about 1/2 inch deep. The tool is then moved gently from side to side to loosen a plug of soil. The tool is then pulled from the ground and the soil sample is pushed so that the upper part of the soil plug lies between one inch marks made on the coring device. The top one-half inch of the soil sample is then cut from the core with a stainless steel knife or cutting tool provided for that purpose. This top one-half inch section of the soil core is then transferred to a sample container. All sub-samples are collected in this manner.

Composite Sample:

The collection of subsamples from the sampling line is referred to a "composite" sample. After collecting a composite sample, the soil probe should be decontaminated or discarded if disposable core samples are used. This process consists of wiping the end of the probe with wet wipes until no more visible dirt is removed from the probe.

3. Bare Soil Sampling Procedures:

- a. Soil sampling is not recommended when the ground is frozen.
- b. The location of soil samples should be recorded on the exterior site plan sketch.
- c. Perimeter Sampling Location: One composite soil sample should be collected so that at least 5 and no more than 10 different aliquots of surface soil are collected from the building perimeter. The aliquots should be collected from all sides of the building where bare soil is present. Each spot should be at least 2 feet distant from each other and 2 feet away from the foundation, unless the bare soil is closer than 2 feet.

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- d. Play Area Sampling Locations: a second composite sample should consist of at least 5 and no more than 10 aliquots collected along an X-shaped grid in the child's principle play area. Each spot should be at least 1 foot distant from each other. The soil where the aliquots are collected must be bare.
 - e. The core sampling device should be used to deliver the top 1/2 inch of soil from each spot to the baggie. No special effort should be made to collect visible paint chips. If paint chips are present, they should not be avoided and should be included in the sample. When sampling play areas, the inspector should make an effort to avoid including grass, twigs, stones, and other gross debris in the sample.
 - f. When all aliquots of the composite sample have been placed in the baggie, the baggie should be ziplocked. If the baggie is not 4 mil industrial weight, the sample should be double bagged. A label with the sample number should be affixed to the baggie. The number should be recorded on the soil plat form showing the approximate location of each sample on the laboratory sampling request, and the soil collection field data form.
 - g. The core sampler should be cleaned with a disposable wipe after each composite sample is collected. If a disposable core sampler is used, it can be used for all sub-samples, but not new composite samples unless it is cleaned thoroughly.
4. Trash Disposal:
- After sampling, remove the glove; put all contaminated gloves and sampling debris used for the sampling period into a trash bag. Remove the trash bag when leaving the dwelling. Do not throw away gloves or wipes inside the dwelling unit where they could be accessible to young children, resulting in a suffocation hazard.
5. Inspector Decontamination:
- After sampling, wash hands thoroughly with plenty of soap and water before getting into the car. A bathroom in the dwelling unit may be used for this purpose, with the owner's or resident's permission. If there is no running water in the dwelling unit, use wet wipes to clean the hands. During sampling, inspectors must not eat, drink, smoke or otherwise cause hand to mouth contact.
6. Form Completion:
- Fill out the Environmental Lead Sampling Request for Soil completely. The sample numbers on the sample container must be the same as those on the laboratory submittal request form.

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Chain of custody requirements should be followed if applicable.

Fees: Although the MDCH lab is non-commercial, the fee for testing environmental lead samples is \$10.00. Fee based samples will only be accepted from Counties with accredited inspectors. A check payable to the State of Michigan must be submitted with each specimen. The name of the client, or a list of clients must be submitted with the check if the name is different from the payee. Attach the check to the Environmental Lead Sampling Request. A quarterly billing for the testing services may also be arranged with the laboratory. Local public health departments are exempt from a fee when submitting "public health" related samples. Public health related samples are environmental lead testing follow-up specimens for a lead poisoned client, or investigation of a contaminated site of public health concern.

7. Quality Assurance/Quality Control:

Any questions or problems concerning environmental lead sampling and results should be directed to:

Michigan Department of Community Health
Manager, Trace Metals Laboratory
PO Box 30035
3350 Martin Luther King Blvd.
Lansing, MI 48909
(517) 335-8244
(517) 335-9776, fax

8. Lead Hazard Identification:

The U.S. Environmental Protection Agency (EPA) has completed a health-based standard for leaded dust, 40 CFR 745 Subpart D (Title IV, section 403). In accordance with Michigan administrative rules R325.9912(5), R325.9912(6) the following lead levels became effective for lead hazard control activities in the state of Michigan on March 6,2001.

Hazard Determination and Clearance Level:

Bare soil, play areas: >400 µg/g Bare soil, other parts of yard: >1200 µg/g

9. Reference: *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, U.S. Department of Housing and Urban Development, June, 1995. Copies of the Guidelines are available for a small handling fee from HUD USER at 1-800-245-2691.