

## **Standard Operating Procedure 215**

### **Collecting Soil Samples for Laboratory Analysis**

#### *Purpose*

Use this procedure to collect soil or other solid media samples for laboratory analysis. Proper sample collection technique will improve the accuracy of results and will help avoid cross contamination.

#### *Safety Equipment*

- Wear nitrile gloves to reduce the incidence of skin contact with potentially contaminated soil and to reduce the risk of cross-contamination.
- Refer to the site-specific Health and Safety Plan for other safety concerns and applicable personal protective equipment.

#### *Required Equipment*

- Laboratory sample containers
- Clean cooler(s)
- Temperature blank bottle
- Trip blank for VOC sampling (SOP 327)
- Ice or frozen cold-packs
- Electronic scale
- Permanent marker
- Sealable bags
- Laboratory chain-of-custody form
- Sampling syringe (if necessary)

*Procedure*

1. Several days before field work is scheduled to begin, call or FAX the laboratory or other lab supply source to order sample containers. Be sure to order extra bottles to allow for breakage, extra samples, etc. If you are unsure of the required sample volumes or proper laboratory sample containers for specific analytical parameters, ask that a written description be included with the bottle order which clarifies sample requirements.
2. Before you leave for the field, be sure that you have the appropriate sample containers and that extra containers are included. Be sure you are aware of sample volume and container requirements.
3. Place ice or a frozen cold pack into each sample cooler before collecting any samples. Double-bag the ice in sealable gallon bags to avoid potential contact of water in the cooler with sample containers.
4. Place a temperature blank into each cooler and under the ice.
5. If some samples may be analyzed for GRO, BETX, or VOCs, include a trip blank in each cooler as described in SOP 327.
6. Before taking a sample, put on a new pair of nitrile gloves.
7. A sample taken for volatile organic analysis is to be taken immediately after the soil is exposed (i.e., directly from the probe sleeve or auger split spoon, excavation side wall, hand auger, etc.). Do not disturb or mix a VOC sample. Never collect a sample from the sealable bag used for organic vapor screening (SOP 212). Samples for DRO are to be collected second and samples for non-VOC or non-DRO analysis are taken last.
8. Prior to VOC (step 9) or DRO (step 10) sample collection the scale must be verified to read a mass of greater than 50 grams within one gram of the expected result. Place a weight of known mass (calibration mass or pre-weighed bottle) on the scale and verify the reading. If the reading is within one gram of the expected result the scale is usable. Record the weight verification on the Field Log. If the reading is more than one gram from the expected weight the scale must be re-calibrated (see SOP 218 if applicable) or a scale that is verified to be correct must be used.

9. Samples collected for GRO, BTEX, or VOCs need to be placed into one pre-weighed glass container containing the preservative methanol and one plastic vial (if necessary). Depending on the laboratory the glass container will have a capacity of either 60 ml or 40 ml. 60 ml containers must be filled with approximately 25 grams of soil (can be between 20 and 35 grams) and 40 ml containers must be filled with approximately 10 grams of soil (can be between 8 and 11 grams). Place one glass container on the scale and zero the scale. Carefully add approximately 25 (or 10) grams (depending on laboratory requirements) of soil to the container. During filling, do not mix or aerate the sample. If necessary, use a dedicated syringe to collect the sample and place it into the sample container. Sample containers with more than 35 (or 11) grams of soil or less than 20 (or 8) grams of soil may be rejected or flagged as outside testing parameters by the laboratory. In addition, if there is no non-volatile analysis, fill a plastic vial with soil to be used by the lab to calculate the moisture content of the soil. The soil in the plastic vial need not be weighed.
10. Samples collected for DRO need to be placed in two pre-weighed glass containers with *no methanol* and one plastic vial (if necessary), using the procedure described in step 9, above.
11. Samples for non-volatile analysis (i.e., metals, PCBs, pesticides, semi-VOCs, etc.) are to be thoroughly mixed prior to sampling. Place the sample in a resealable plastic bag and shake the bag for at least 10 seconds. Sample containers should be filled, but not packed, with soil from the bag.
12. Before placing the lid back on the sample container, clean the jar threads to assure a tight seal.
13. After collecting soil samples, use a permanent marker to label the sample containers with the project name, sample identifier including depth interval, time, date, and your initials.
14. Place the filled sample containers for each location in their own sealable bag. Larger, more fragile containers should be placed in bubble wrap to avoid breakage. Place the sample containers and bags into the cooler immediately. Cover all samples with ice.
15. When all samples are collected, complete the laboratory chain-of-custody form and arrange for shipment to the contract laboratory (as described by SOP 620 –

Chain of Custody Procedures, SOP 630 – Sample Shipping – Peer or Local Carrier, and SOP 640 – Sample Shipping – Overnight Carrier).