

Information on DEP Laboratory Sampling Kits

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I. Sampling Items Provided by the DEP Laboratory

The DEP Laboratory will send out a sampling kit 1 to 2 weeks prior to the scheduled sampling event. Sampling kits include the following items.

1. COOLERS
2. SAMPLE CONTAINERS: labeled with the appropriate analyses IDs.
3. PACKING LIST: contains a list of the number and type of containers in the kit.
4. FIELD SHEETS for documentation of sample information
5. ZIP-LOC BAGS for packing plastic bottles
6. BUBBLE-WRAP BAGS for packing glass bottles
7. ZIP-LOC BAG for paperwork.
8. LARGE PLASTIC BAGS for packing samples and ice, 2 per cooler
9. TEMPERATURE CONTROL BOTTLE for the DEP Lab to check the cooler temperature upon sample receipt, 1 per cooler
10. RETURN SHIPPING LABELS for shipping cooler back to the lab, 1 per cooler. Note: External customers (non-DEP programs) do not receive return labels.
11. FIELD TEST KIT FOR CYANIDE
If water samples are being collected for CN then a field test kit is provided which contains the test papers and dry chemicals. The preservation solution (NaOH) is not included. For more information on sampling for cyanide see Appendix 2.
12. DEP CHAIN OF CUSTODY FORMS (provided by request only)
Can be used in criminal investigations, in place of field sheets.

Note regarding PRESERVATION SOLUTIONS: Other than a few analyses for which the containers are always pre-preserved, the DEP Laboratory does not routinely provide preservation solutions. The analyses, for which the lab always pre-preserved containers, are identified with a double asterisk ** on the tables.

II. Containers and Preservatives for Chemistry Analyses

A. Description of Tables for Containers and Preservatives

Column A: The information in column A indicates the number of containers that need to be collected at 1 site, for the tests listed in the corresponding row. The tests listed within one row can all be shared out of the same container.

Column B (only for Organics in Aqueous Samples Table): Contains information regarding additional volume for laboratory quality control samples. For some of the organics/pesticide analyses the laboratory requires additional sample containers in order to have enough volume to analyze laboratory quality control samples (matrix spikes, lab dups). Collect additional bottles (number indicated in column B) at one of every ten sites. If there are less than 10 sites then collect additional bottles at 1 site. If the number is 0 in column B then the lab does not need extra containers for lab QC.

Column C: The IDs in column C represent the tests that will be analyzed. The containers provided by the DEP Lab are labeled with the test IDs.

Note: The tests listed within one row can all be shared out of the same container(s).

Column D: Contains a description of the container type.

Column E: Contains sample preservation information.

II. Containers and Preservatives

B. Inorganic Analyses in Aqueous Samples

| A. No. of bottles per site | C. Test ID or Test Description | D. Bottle Type | E. Preservative |
|-------------------------------------|---|--|---|
| Metals | | | |
| 1 | Metals: W-ICP, W-ICPMS, W-HG-H or W-ICP-R, W-ICPMS-R | 500 ml to 1L clear plastic bottle (Use 1L if more than 2 tests are selected) | Nitric acid ¹ |
| 1 | Field Filtered Metals (without mercury): W-ICP-F, W-ICPMS-F | 125 ml to 250 ml clear plastic bottle (Use 250 ml if more than 1 test is selected) | Nitric acid ¹ |
| 1 | Field Filtered Metals with Mercury: W-HG-H-F, W-ICP-F, W-ICPMS-F | 500 ml clear plastic bottle | Nitric acid ¹ |
| Nutrients and Major Anions | | | |
| 1 | Acid Preserved Nutrients: W-NH3, W-NO2NO3, W-TKN, W-TP, W-TOC | Clear plastic bottle* 500 ml for 4 or more tests | Sulfuric acid ² and ice |
| 1 | Acid Preserved, Field Filtered Nutrients: W-NH3-F, W-NO2NO3-F, W-TKN-F, W-TP-F, W-DOC | Clear plastic bottle* 500 ml for 4 or more tests | Sulfuric acid ² and ice |
| 1 | Unpreserved Nutrients and Major Anions: W-ALK, TURBIDITY, W-COLOR, W-NO3-IC, W-SO4-IC, W-CL-IC, W-TDS, W-COND, W-F, W-TSS, W-PO4, W-NO2 etc. | Clear plastic bottle* | Ice |
| 1 | Unpreserved, Field Filtered Nutrients and Major Anions: W-ALK-F, W-SO4-IC-F, W-CL-IC-F, W-PO4-F, W-F-F, W-SI-ICP-F, W-NO2-F etc. | Clear plastic bottle* | Ice |
| 1 | Cyanide: W-CN or W-CN-R | 500 ml Clear plastic bottle | Sodium hydroxide ³ , ice |
| 1 | Sulfide: W-SULFIDE | 125 ml Clear plastic bottle | Zinc acetate, sodium hydroxide ⁴ , ice |
| 1 | Sulfide, field filtered: W-SULFDE-F | 125 ml Clear plastic bottle | Zinc acetate, sodium hydroxide ⁴ , ice |

Note: The tests listed within one row can all be shared out of the same container.

* Bottle size may vary depending on the number and types of tests requested.

¹ Preserve to pH <2. Add 4 ml of 1:1 Nitric Acid:Water per liter of sample. Adjust amount for smaller sample volumes. If using concentrated acid (not dilute 1:1) add 2 ml per liter.

² Preserve to pH <2. Add 4 ml of 1:1 Sulfuric Acid:Water per liter of sample. Adjust amount for smaller sample volumes. Excess acid may cause interference with some nutrients analyses. If using concentrated acid (not dilute 1:1) add 2 ml per liter.

³ Refer to Appendix 1 for details on cyanide preservation.

⁴ Take samples with minimal aeration. Add 7 to 10 drops (0.45 ml) of 2 N Zinc Acetate solution to a 125 ml sample bottle. Add sample to the bottle. Add 3 or 4 drops of a 10 N NaOH solution in order to bring the pH above 9.

NOTE: For aqueous samples all tests ending with “-R” are for EPA SW846 methods (RCRA, Waste).

Tests that don't end with “-R” are for the Clean Water Act methods.

II. Containers and Preservatives, *continued*

C. Organic Analyses in Aqueous Samples

| A. No. of bottles per site | B. Collect additional bottles for lab QC at 1 site | C. LIMS Test ID | D. Bottle Type | E. Preservative |
|---|--|--|--|---|
| Pesticides/Herbicides | | | | |
| 2 | 2 | W-PEST-NP, W-PSCL-PCB or W-PESTNP-R, W-PS-PCB-R | 1L amber glass bottle | Ice |
| 2 | 2 | W-PC-AA-SF, W-NP-AA-SF | 1L amber glass bottle | Ice |
| 2 | 2 | W-CFN-GCNP (Caffeine) | 1L amber glass bottle | Ice |
| 2 | 2 | W-UHB-AA, | 250 ml amber glass vial | Ice |
| 1 | 1 | W-PDQUAT | 1L brown plastic | H ₂ SO ₄ ¹ and ice |
| 1 | 0 | W-ZN-P | 1L amber glass bottle | Ice |
| 2 | 2 | W-AHB-AA-R or W-AHERB-AA | 250 ml amber glass bottle | Ice |
| 2 | 0 | W-CARB** | 40 mL amber glass vial | Monochloro acetic acid ² |
| 2 | 0 | W-FUM | 40 mL amber glass vial | Ice |
| 2 | 0 | W-GLYPH | 40 mL amber glass vial | Ice |
| Base Neutral, Acid Extractables and Petroleum Products | | | | |
| 2 | 2 | W-BNA, W-PAH or W-BNA-R | 1L amber glass bottle | Ice |
| 2 | 2 | W-FL-PRO | 1L amber glass bottle | H ₂ SO ₄ ¹ and Ice |
| 1 | 1 | W-1-4-DIOX (1,4-Dioxane) | 1L amber glass bottle | Sodium Bisulfate ⁵ |
| 2 | 2 | OV-OIL-GRS | 1L wide mouthed glass bottle | H ₂ SO ₄ ¹ and ice |
| Purgeables | | | | |
| 3 | 1 | W-VOC-MS, W-8260B-HP or W-VOC-R | 40 ml glass vial: fill vial to top (no air in vial) | Ice ⁴ |
| 3 | 1 | W-VOC-MS-A** or W-VOC-A-R** | 40 ml glass vial: fill vial to top (no air in vial) | HCl ³ and ice |

Note: The tests listed within one row can all be shared out of the same container(s).

**** Containers for these tests are pre-preserved at the DEP Lab**

¹ Preserve to pH <2. Add 4 ml of 1:1 Sulfuric Acid:Water per liter of sample. Adjust amount for smaller sample volumes.

² The laboratory sends out vials that contain the preservative, monochloroacetic acid solution.

³ The laboratory sends out vials that are pre-preserved with 130 ul of 6M HCl per vial. The acid is for bringing the pH to less than 2.

⁴ The hold time is 7 days for the VOC analysis if ice is the preservative (W-VOC-MS, W-VOC-R). The hold time is 14 days for the VOC analysis if the samples are preserved with acid and ice (W-VOC-MS-A, W-VOC-A-R).

⁵ If the sample is chlorinated water then add ~ 50mg/L of sodium sulfite to the bottles before adding the sample. Add the sample. Then add ~ 1 g/L of sodium bisulfate to the sample. Skip the first step if the sample is not from a chlorinated water system or is not suspected to contain chlorine.

NOTE: For aqueous samples all tests ending with “-R” are for EPA SW846 methods (RCRA, Waste). Tests that don’t end with “-R” are for the Clean Water Act Methods.

II. Containers and Preservatives, *continued*

D. Inorganic and Organic Soil/Sediment/Waste Samples

| A. No. of bottles per site | C. Test ID | D. Bottle Type | E. Preservative |
|-------------------------------------|--|--|--------------------|
| 1 | For ALL soil/ sediment/waste tests except for VOC analyses and overflow lab analyses (S-VOC-MS, S-8260B-AA, TCLP-VOC, SPLP-VOC, WAS-VOC-MS and tests starting with OV- (overflow lab)). | Glass jar (fill half full). The glass jar varies in size depending on how many tests are scheduled. For metals or TOC only, a plastic jar may be used. | Ice ² |
| 1 Set | S-VOC-MS, S-8260B-AA (Soil/Sediment tests) If TCLP-VOC analysis is also requested and two 250 ml glass jars are being collected for TCLP analysis then the 250 ml glass jar in this row does not need to be collected. Just collect the EnCore. | 1 Set contains: 1 25 g EnCore sampler and a 250 ml glass jar with septa. Fill jar completely, try to eliminate any air space. | Ice ¹ |
| 2 | TCLP-VOC, SPLP-VOC, WAS-VOC-MS | 250 ml glass jars with septa lid. Fill jars completely, try to eliminate any air space. | Ice ² |
| 1 | OV-: Tests beginning with OV need to be collected in a separate jar since these tests will be analyzed by an outside laboratory. | Glass jar (fill half full). The glass jar varies in size depending on how many tests are scheduled. | Ice |

Note: The tests listed within one row can all be shared out of the same container.

¹ EnCore samplers need to be stored on ice and frozen within 48 hours of collection. See Appendix 2 for information on how to use the EnCore samplers.

When filling the glass jars be sure to wipe the outer lip of the jar before closing. A small amount of grit on the lip can prevent a tight seal.

Refer to SW 846, EPA Method 5035 for additional details on sampling procedures.

² Waste samples, such as those collected from drums, do not need ice preservation.

E. Frequently Requested Biology Analyses

| A. No. of bottles per site | C. Test s | D. Bottle Type | E. Preservative |
|-------------------------------------|---|--|--------------------|
| 1 | CHLSUITE- or CHL-CORR- (Chlorophyll) | 1L brown plastic bottle | Ice |
| 1 | BOD-INHB(=CBOD) or BOD-UNIN | 1L clear plastic bottle | Ice |
| 2* | Microbiology Analyses (Fecal, Total etc.) | 118 ml sterile whirlpak bag with thiosulfate pill for dechlorination | Ice |
| | | | |

* For microbiology tests collect a minimum of 2 bags for up to two tests. If more than two tests are requested then collect 1 whirlpak per test requested.

III. Holding Times for Routinely Requested Analyses in Water Samples

| | |
|--|----------|
| <u>Water Samples</u> | |
| BOD, CBOD, Chlorophyll | 48 hrs |
| Turbidity, Color, Nitrate, Ortho-Phosphate, Nitrite | 48 hrs |
| TDS, TSS, Sulfide | 7 days |
| Alkalinity, Cyanide | 14 days |
| NH ₃ , TKN, TP, NO ₂ NO ₃ , TOC | 28 days |
| SO ₄ , Chloride, Fluoride, Conductivity, Silica | 28 days |
| Mercury | 28 days |
| Metals (except mercury and Cr VI) | 6 months |
| Organics (Pesticides, BNA, Herbicides, TRPH) | 7 days |
| Volatiles (preserved on ice) | 7 days |
| Volatiles (preserved on ice and with acid) | 14 days |
| | |

Appendix 1

Field Preservation for Cyanide in Liquid Samples

There are 2 tests performed prior to preservation with NaOH. Both the tests and the preservation need to be done in the field.

1. Test 1

Chlorine decomposes cyanides. If the sample is suspected of containing chlorine then perform the following test.

Place a drop of sample on potassium iodide-starch test paper. If the paper turns blue then treatment is needed. If there is no color change then go to Test 2.

Sample treatment for chlorine: Add small amounts of ascorbic acid to the sample. Continue adding until the paper no longer turns blue. Add a slight excess of ascorbic acid (approx. half a gram per liter sample).

2. Test 2

Sulfide adversely affects the cyanide analysis. If sulfide is present the sample must be treated in the field. To check for sulfide perform the following test.

Place a drop of sample on lead acetate paper. If the paper turns dark then sulfide is present and the sample needs to be treated in the field. If no sulfide is present then the sample is ready to preserve.

Read the PbCO₃ MSDS sheet, included with kit, for handling and disposal instructions. Avoid contact with skin (wear gloves), inhaling dust and ingestion.

Sample treatment for sulfide: If analysis of particulates is needed filter the particulates and save the filter for recombination with the liquid sample. Add small amounts of lead carbonate to the liquid sample until the test paper no longer turns dark. Filter the precipitate (PbS). See below for disposal of PbS filter. Add the sample particulates, from the initial filtration, back to the liquid sample. Sample is ready to preserve. Proceed to step 3.

Disposal of PbS filter: PbS is a hazardous waste; please dispose of the filter properly. Ship the PbCO₃ bottle back to the lab.

3. Preservation

Add 10 M NaOH to the sample to bring the pH to 12 or higher (add approximately 2 ml per liter of sample).

Appendix 2

Instructions for Using EnCore Samplers

Remove the Encore sampler from the foil pouch and fill each with a plug of soil as directed in the manufacture instructions (see below).

Note: The lab does not routinely provide EnCore T-Handles. Groups that routinely collect soil samples for VOC analysis should order the T-Handles.

Disposable EnCore® Sampler



En Novative Technologies, Inc.

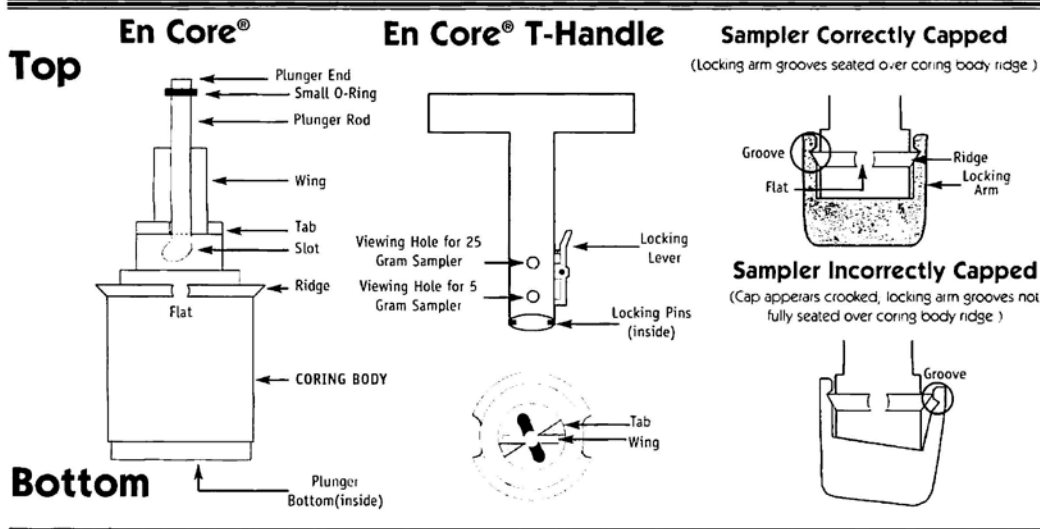
1241 Bellevue Street
Green Bay, WI 54302
Phone: 920-465-3960 • Fax: 920-465-3963
Toll Free: 888-411-0757
www.ennovativetech.com

NOTE:

1. En Core® Sampler is a SINGLE USE device. It cannot be cleaned and/or reused.
2. En Core® Sampler is designed to store soil. Do not use En Core Sampler to store solvent or free product!
3. En Core® Sampler must be used with En Core® T-Handle and/or En Core® Extrusion Tool exclusively. (These items are sold separately.)

Sampling Procedures

Using The En Core® T-Handle



BEFORE TAKING SAMPLE:

1. Hold coring body and push plunger rod down until small o-ring rests against tabs. This will assure that plunger moves freely.

2. Depress locking lever on En Core T-Handle. Place coring body, plunger end first, into open end of T-Handle, *aligning the (2) slots on the coring body with the (2) locking pins in the T-Handle*. Twist coring body clockwise to lock pins in slots. Check to ensure Sampler is locked in place. Sampler is ready for use.

TAKING SAMPLE:

3. Turn T-Handle with T-up and coring body down. This positions plunger bottom flush with bottom of coring body (ensure that plunger bottom is in position). Using T-Handle, push Sampler into soil until coring body is completely full. When full, small o-ring will be centered in T-Handle viewing hole. Remove Sampler from soil. Wipe excess soil from coring body exterior.

4. Cap coring body while it is still on T-handle. *Push* cap over flat area of ridge *and twist* to lock cap in place. **CAP MUST BE SEATED TO SEAL SAMPLER** (see diagram).

PREPARING SAMPLER FOR SHIPMENT:

5. Remove the capped Sampler by depressing locking lever on T-Handle while twisting and pulling Sampler from T-Handle.
6. Lock plunger by rotating extended plunger rod fully counter-clockwise until wings rest firmly against tabs (see plunger diagram).
7. Attach completed tear-off label (from En Core Sampler bag) to cap on coring body.
8. Return full En Core Sampler to zipper bag. Seal bag and put on ice.