

### Equipment needed for Sampling for Hazardous Materials (SFHM) course

The following table lists the hands-on activities performed during the SFHM course. This list includes the minimum equipment needed to conduct the activity, the equipment used by the E RTP course, and additional information. It does not list the chemicals or other supplies such as sample containers and coolers for sample packing that are used. A variety of containers are required to complete the exercises, including 40-ml VOA vials, 4-oz and 8-oz glass jars, 8-oz amber jars, and 1-liter poly bottles.

All references to specific manufacturers and products do not imply endorsement by the U.S. Environmental Protection Agency (EPA) or its contractors.

<b>Exercise</b>	<b>Generic Instruments*</b>	<b>E RTP Instrument</b>	<b>Minimum Number*</b>	<b>Comment</b>
Groundwater Sampling	Bailers (stainless steel, Teflon, polyethylene); small submersible pump; water level meter; several large (30 gallon) plastic trash cans with lids cut to accept well screen and riser pipe; 2-inch by 3 to 4 foot PVC well screen or shorter screen with riser to make 4 feet total length; Water Quality Meter	Solinst Water level indicator; Cyclone Low Flow pump and controller; YSI Water Quality Meter or equivalent (conductivity, pH, Temperature at a minimum)	1 water level indicator; 1 pump; 1 Water Quality meter; Sufficient trash cans, screens and bailers to set up multiple wells (number depends on class size)	For the exercise, one "well" is setup with the submersible pump feeding a flow-through cell for the water level meter. Additional wells are setup to allow the use of bailers, including ones designed for collecting VOC samples.
Waste sampling	A photoionization detector (PID) and/or CGI/O2 meter with ppm mode; 55-gal steel drums with removable lids and closed end PVC pipe to screw into bung hole; Glass thief tubes; Glass COLIWASAs; Dipstick samplers; Gauze pads for wipe samples plus forceps or tweezers for use with gauze pads	RAE Systems MultiRAE or RKI Eagle; Demonstration equipment includes: Bacon Bomb Sludge Judge Mucksucker samplers	Sufficient number of instruments for the number of drums to be sampled (minimum of one per 2 drums);  1 drum per 5-6 students;  1 thief tube, 1 COLIWASA and 1 Dipstick per 2 drums	PVC pipe is screwed in to the bottom of the bung hole in the drum lid and the lid is placed back on the drum. This pipe may then be filled with water, or water and a layer of vegetable oil, for sample collection using the supplied tools
Surface water and sediment sampling	WILDSCO Gravity Corer; Eckman Dredge; Petite PONAR dredge; Stainless steel pans;	ADDITIONAL Equipment: extended bottle sampler and polyethylene dipper on 5-foot handle	1 each of WILDSCO, Eckman, PONAR, bottle sampler, Beta Sampler, pump and	Students collect one sediment sample and one surface water sample using a method of their choosing.

<b>Exercise</b>	<b>Generic Instruments*</b>	<b>ERTP Instrument</b>	<b>Minimum Number*</b>	<b>Comment</b>
	Stainless steel trowels; Van Dorn Beta Sampler; Large Polyethylene Pan; ISCO peristaltic pump		dipper;  Pans and trowels (1 per 2 -3 students)	They should try the different equipment.
Soil Sampling	Stainless Steel trowels; Folding shovels; Stainless steel pans; EnCore Sampler handles and samplers; PowerStop Sampler handles and syringes; SS Hand augers (bucket auger); Stainless Steel #10 Sieves	Two different styles of bucket augers, one for sand and one for clay soils  Trowels and pans are the same ones used for sediment sampling	2 augers per class, minimum; 1 each trowel, pan and shovel per 2-3 students; 1 each EnCore and PowerStop per student	Students collect samples for VOC analysis using EnCore or PowerStop and collect samples for metals analysis using augers. Gravel is screened out of samples for metals using the sieves.
Decontamination	Buckets, brushes, hand sprayers and laboratory wash bottles		6 of each to set up a decon line for soil trowels	Students decontaminate the trowels and collect an equipment rinsate sample for VOC analysis.
Field screening tests	Microman Repeat Pipettors; Tips for above pipettors (50- 250 microliter range); Differential photometer for use with EIA test kits; Stainless Steel buckets; Polyethylene wash bottles; 1-liter Polyethylene bottles; Dexsil Chlor-n-Oil kits; Copper test kits; Lead Check kits; Dissolved Oxygen; pH testing;	ERTP uses the Strategic Diagnostics, Inc. (SDI), enzyme immune assay (EIA) test kits for Triazine. Other similar (EIA) test kits may be used to demonstrate the principles	Equipment and one kit of each test per each 2-4 students. Only one photometer is required per class.	The field test kit lab is split into two groups. One group runs tests for Triazine in water at ppb levels. The group conducts tests using the water quality test kits for lead, copper, dissolved oxygen, and pH. The same session also conducts PCB testing on simulated PCB oil (vegetable oil and a modified test kit). At the end of the session, the groups change places.

\*If you have questions whether the type and number of equipment you have available are adequate, please contact the External Provider Coordinator, Bruce Potoka, at 513-569-7038