

Basic sampling instructions

This guide is meant to help volunteer samplers follow some basic rules to be safe and to improve the quality of their sampling work. Remember that this very short set of instructions can not tell you everything that you need to know to collect samples.

Safety tips to know before you sample:

Avoid working alone in the field. Make sure someone else knows where you are and what you are doing.

Remember that radioactive dusts can be inhaled, ingested, or can be retained on clothing and shoes. You can walk away from external radiation, but radioactive dust may result in lifelong exposures!

Do not use tobacco, eat, or drink while sampling. This rule will help you reduce the chances of ingesting radioactive dusts.

When sampling, wear long sleeved shirts, trousers, and shoes that cover your feet – no sandals.

Use disposable gloves while sampling to reduce cross contamination between samples, and to reduce your exposure to dusts.



Do not bring contaminated samples, used masks and gloves, or dusty clothing into clean environments. Bag your dusty used gear before entering your vehicle or home.

High quality disposable P95 dust masks are recommended for general sampling. See photo below. Old military type masks may be unreliable, or may become contaminated by repeat use.



Radioactive particulate filtering masks are expensive, but provide even better protection. Using these in high risk zones requires training beyond the scope of this sampling guide. The outside of these masks must be cleaned after use and before storage. These masks should be stored in air tight bags. See photo below



The cheap dust mask pictured below is not very effective. It may be better than nothing, but it is less effective than the masks pictured above.



Consider changing your clothing and shoes when sampling is completed. Keep these possibly contaminated materials segregated from other household items and clothing.

Wearing protective gear can make you more likely to suffer heat stroke. Take frequent breaks, and decontaminate sufficiently so that you can find a clean place to drink lots of water.

Make sure that all potentially hazardous samples are labeled. Take smaller samples if materials have high count rates.

Wash hands or better yet, shower, after leaving the field.

Basic instructions for collecting samples:

Samples should be collected in sealed plastic bags. Use double bagging to prevent escape of contaminated material.

For soils, the preferred sample weight is about 30 grams. The sample does not need to be weighed. It is important for us that samples not be too large, or they will become expensive to discard properly. If the sample has a high CPM, then collect a smaller sample.

Automobile and truck engine air filters are a very important sample. If these are collected please take the following steps:

Write down the make, model, and year of the vehicle.

Write down how long the filter was in use, (if you know), and the city where the vehicle is normally used or stored.

Note if the filter is a cabin filter or an engine filter.

These filters may potentially be radioactive. Bag these carefully. Using packing material like newspaper to keep the sample in the center of any shipping box or container.

If any one sample is much hotter than the rest, it may contaminate those other samples. Collect a smaller sample for high activity materials to reduce this potential problem.

Please label all bags, in fact, label everything. Even though you know what something is, your sample may be retested many months or even years after it is collected. Please include a list of samples sent, and note the time, place, and date that samples are collected.

The person collecting the samples should sign their name to the list of samples. A sample worksheet for signatures and sample indexing can be found on the final page of this guide.

Please include a name and email address, so that we can share the test results with you. Samples should be addressed to:

Marco Kaltofen, PE, (Civil, Mass.)
Boston Chemical Data Corp.
2 Summer Street, Suite 14
Natick, MA USA 01760
Tel. 508 934 3114, email: Kaltofen@wpi.edu

Out of respect for the many people who are involved in delivering packages, please do not send large amounts of highly radioactive material. Samples should be small enough and well packaged, so that radiation counters (if you have one) do not show radiation through the sealed package. Using a larger box increases the distance between people and the sample.

Using personal radiation monitors

To make the best use of your new monitoring device, it would be helpful to follow some of these steps.

MEASURE Consistently. Choose a medium, technique or location and measure the same way consistently over time.

KEEP good records. The idea is that someone should be able to reproduce exactly what you did just by reading your notes. Sign and date your data. Use a high quality notebook with numbered pages. Sign and date your entries.

Take multiple measurements. If measurements are made in triplicate, you can calculate your standard deviations. This makes your data much more usable to others.

Collecting enough data to be meaningful means having enough sample volume to have detections in ranges that are within your instruments' sensitivity. We use a 20 LPM air sampler through a 37 mm filter pad to collect 60 to 90 cubic meter air samples, using a 0.45 micron pore size filter. Samples are counted for 1 hr. just after pulling the filter, then again 24 hours after collection to allow natural radon and uranium daughters to decay.

Other scientists are finding that the top 1 cm of dry soils is the best trap for fallout particles on open areas. Be sure to test an identical known area each time, for example, sample using a 10 cm by 10 cm square.

Samples should be dry. Use dry wipes as water can affect the size and shape of the particles that we are trying to capture and analyze. Wear a suitable dust mask (see page 1) to avoid inhaling radioactive dust while you sample.

Use the form on the last page to record the samples you have collected.

Shipping soils to the United States

Soils may not be shipped to the United States without following US Agriculture Department rules.

Samples that can be sent to us include:

Any processed materials such as fill materials which are free from plants, plant parts, or seeds. This would include fill brought in for school yards or construction projects, as long as it was purely mineral matter.

Any sediment, mud or rock from the ocean.

Freshwater mud or peat so long as it is free of plant parts or seeds.

Geologic samples or drill cores, so long as it is free of organic material

We can accept seaweed collected from the oceans if it is fully dried and dead.

Things we can not accept include:

Soil, particularly unprocessed soil or soil containing plant parts or seeds.

Living plants or seeds.

Farm soils are not acceptable unless they have been sieved and had organic material and seeds removed. (Keep and ship the fraction that passes the sieve, and discard or return the fraction that is coarse and contains all of the seeds and plant parts.)

Be aware that sieving is a potentially hazardous processing step for highly contaminated soils, as you may distribute breathable dusts.

Your shipping papers should note which of the allowed materials above apply, such as:

"Geologic sample with no plants or seeds" or "Ocean sediment" or "Processed material free of plant parts and seeds"

Please do not send more than 30 grams of any material, so that we do not exceed our storage permits. Please send even less than this if the sample is "hot".



Chain of Custody
Radioisotope research project

Sample ID	Location	Date sampled	Time sampled	Matrix	Bottle	CPM if known	

Ship to: Marco Kattofen
Boston Chemical Data Corp.
2 Summer Street Suite 14
Natick, MA USA
01760
tel. 508 934 3114
kattofen@wpi.edu

Sampled by:			
Relinquished by:	date	time	
Received by:	date	time	