

NOSAMS: General Guidelines for Preparing AMS Samples

Sampling Guidelines Handling Samples

When handling samples, wear gloves to avoid imparting any carbon or oils from your skin to the sample. Wet samples invite bacteria to grow. Dry the samples in a low temperature oven (50° C). Visually inspect your samples, with a microscope if possible, and remove any material that does not belong.

Containers

Clear glass or plastic vials and jars are preferred. Aluminum foil is not recommended for sample containers unless you first bake it in a muffle furnace for one hour at 525 degrees Celsius (a carbon residue is left on the surface of foil during production). Place well-labelled containers inside individual plastic bags to prevent sample mixing in case of breakage during shipping.

¹⁴C Contamination - Hot Samples

A sample with an unnaturally high level of ¹⁴C is sometimes called a "hot sample". Hot samples usually result from inadvertent contamination, like using a container that was previously in contact with radiocarbon tracers. Ways to insure clean, uncontaminated samples are discussed in the following document: [[Collection and Handling of Samples for Analysis by AMS](#)]. In addition to compromising your own science, a contaminated sample can mean significant down time for our laboratories as we must rigorously clean or replace any apparatus that the sample came into contact with. In some cases, irreplaceable samples submitted by other investigators are lost. We must be careful to protect the laboratory and samples from contamination for all investigators who use our facility.

Please take the time to investigate the history of the laboratory, equipment or vessel where you collect or prepare samples for ¹⁴C analysis *before* submitting to us. Samples processed in an unknown lab prior to your obtaining them may be ¹⁴C-contaminated. Find out if any work has been done in the vicinity involving ¹⁴C as a tracer (like primary productivity studies). If tracer work is suspected, you may be required to have a swipe sample analyzed by the [Operation Swab group at University of Miami](#). The SWAB group routinely tests land-based labs involved in oceanography for gross levels of contamination. If your work is supported by NSF Oceanography there is no direct charge to your lab for such a swipe or swab test. Once gross contamination has been ruled out using this less sensitive LSC method, AMS-based swipe tests are required to check for contamination at sufficiently low levels.

In some cases an initial assessment of your submission may prompt us to request that you submit swipe samples or a bit of natural sample that we can use as a contamination check. A swipe sample is basically a pre-baked quartz filter that is wetted with alcohol and wiped over a surface. Please follow the NOSAMS [protocol for swipe sampling](#).

Repeated submission of highly contaminated samples is both costly and damaging. If necessary a fee of \$2,500 will be assessed to compensate for down-time and clean-up.

Define your Samples

We expect submitters to prepare samples which are "ready to analyze". This doesn't mean that we'll handle them mindlessly. We just believe that it's best to draw a line between sample definition —the investigator's task— and sample processing. The investigator will always know more about the samples than we do, and s/he should define the sample by removing as much contamination from a sample as possible (e.g., sediment, quartz grains, rootlets) and where there is ample material, by carefully choosing a subsample for AMS analysis. Submit only what you want us to analyze.

Small Samples

If you are not sure, or expect that less than 100 ?g of pure carbon will be extracted in the Sample Prep Lab, please indicate on the NOSAMS Submittal Form whether we may use small sample techniques. Knowing this beforehand will streamline and reduce handling; alternatively leaving this unspecified will delay processing while we seek your decision.

Excess Sample Material

Solid sample material not consumed during analysis is archived at NOSAMS for a two-year period from the date of submission and then discarded. We will return unused portions, if requested and a shipping account is provided. Please provide this information during the submission process.

Excess water samples (DIC and DOC) are archived for one month following analysis and then discarded. If you would like the sample containers returned please provide your request and a shipping account during submission through the Web Portal.

Additional Information

[General Sampling Guidelines](#)

[Contamination Check Sampling Protocol](#)

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