

# Tritium Collection

## from natural waters for low level tritium analysis



### Sample Bottles

Although glass bottles with a PolySeal® cap are preferred, their breakage during collection or transportation is a legitimate concern. Therefore, we only recommend using glass bottles where the suspected tritium content is low (<1 TU). Generally, for most sampling environments, we recommend the use of LDPE bottles instead. All bottles should meet the U.S. Department of Transportation Spec DOT-2 for shipment. Our lab routinely uses 500 cc (16oz.) Nalgene® plastic bottles for sample collection but any comparable bottle will work fine. Generally two 500 cc samples are collected per site; one of the 500 cc bottles is used during the extraction process. The duplicate bottle is useful as a back-up sample. Bottles should be clean and dry, preferably factory fresh. No leakage is permissible; therefore bottles must be leak tight and have quality caps. Test this by holding a filled bottle upside down and squeezing hard. If it is possible to cause leakage, use different bottles. Remember large pressure changes are possible during shipment.

## **Sample Collection**

For the best possible results, always observe the following:

1. During sample collection, a ban on luminescent dials should be observed. These so called “beta lights” contain a small amount of tritium which can interfere with an accurate sample collection.
2. Although glass bottles are preferred, they are very susceptible to breakage during transport. Therefore we prefer to use quality, plastic bottles instead. Nalgene® wide-mouth bottles work well. Collect samples using a 1-liter sample bottle.
3. Using formation water, rinse out the bottle several times.
4. While minimizing the bubbles trapped in the bottle, fill it all the way to the top and screw on the lid. It is best if this can be done underwater. Turn bottle up side down and check for bubbles. Make sure only small bubbles are present.
5. It is not necessary to preserve water samples for tritium analysis, add nothing to the water sample.
6. Make sure the cap is tight, and then rap the lid with black electrical tape. This is not used as an addition seal, but rather is used to prevent the lid from mechanically backing off during shipment.
7. Record sample collection date and time.
8. Although extreme temperature changes should be avoided, it is not necessary to store / ship samples on ice. Do not freeze samples
9. Package for shipping using a sturdy box, which allows for adequate package material. NOTE: If you use glass, each bottle should be bubble-wrapped or placed in its own cardboard compartment within the container. Double boxing with packing in between is also encouraged. Camping coolers, used in place of cardboard boxes, provide an extra degree of protection and can be returned upon request.