

DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT
SITE INVESTIGATION & RESTORATION BRANCH

STANDARD OPERATING PROCEDURE
TRIP BLANK SAMPLING

Trip Blanks

Trip blanks generally pertain to volatile organic samples only. Trip blanks are prepared prior to the sampling event in the actual sample containers and are kept with the investigative samples throughout the sampling event. They are then packaged for shipment with the other samples and sent for analysis. There should be one trip blank included in each sample shipping container. At no time after their preparation are the sample containers opened before they reach the laboratory.

Equipment:

Four-40 ml. volatile organic sample vials pre-preserved with Hydrochloric Acid, with labels, waterproof markers, organic free distilled water, cooler and ice.

1. Procure appropriate sample containers.
2. Using organic-free distilled water, slowly fill the pre-preserved VOA vials until the water meniscus is slightly above the top of the vial. Tighten lid, and invert the vial to make sure air bubbles are not present.
3. Place sample container in a cooler with ice to lower the temperature to 4 deg. C.
4. Record sample information on the sample tracking form.
5. Proceed with chain of custody.

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STANDARD OPERATING PROCEDURE
FIELD BLANK SAMPLING

Field Blanks

Field blanks are prepared in the actual sample containers and are kept with the investigative samples throughout the sampling event. They are then packaged for shipment with the other samples and sent for analysis. At no time after their preparation are the sample containers opened before they reach the laboratory.

A field blank is prepared by filling the sample container with distilled, organic free water, exposing to field conditions by adding preservatives and in general treating it as a normal sample. This process is used to determine the effectiveness of laboratory glassware decontamination, the effect of preservatives, reagents, etc. used in the preparation of environmental samples and the effect of exposure to ambient on-site conditions. A minimum of one field blank per glassware type, per site will be obtained.

Equipment:

Four-40 ml. volatile organic sample vials, 1000 ml. polyethylene bottles, amber glass bottles, labels, waterproof markers, organic free distilled water, cooler, ice, filtering equipment. Any or all of the bottles may be pre-preserved with one of the following: HCl, HNO₃, H₂SO₄, NaOH. Do not pre-rinse the bottles.

1. Procure appropriate sample containers.
2. Using organic-free distilled water, slowly fill the pre-preserved VOA vials until the water meniscus is slightly above the top of the vial. Tighten lid, and invert the vial to make sure air bubbles are not present.
3. Using organic-free distilled water, fill all of the bottles designated for the Field Blank taking care not to overflow the bottles. Tighten lids, and dry with paper towels.
4. Label each bottle.
5. Place all samples in a cooler with ice to lower the temperature to 4 deg. C.
6. Record sample information on the sample tracking form.
7. Proceed with chain of custody.

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STANDARD OPERATING PROCEDURE
EQUIPMENT BLANK SAMPLING

Equipment Blanks

Equipment: blanks are defined as samples which are obtained by running analyte free deionized water through sample collection equipment (bailer, pump, auger, etc.) after decontamination and placing it in the appropriate sample containers for analysis. These samples will be used to determine if decontamination procedures have been sufficient. Using the above definition, soil equipment blanks could be called rinsate samples.

Equipment:

Four-40 ml. volatile organic sample vials, 1000 ml. polyethylene bottles, amber glass bottles, labels, waterproof markers, organic free distilled water, cooler, ice, filtering equipment, sampling equipment. Any or all of the bottles may be pre-preserved with one of the following: HCl, HNO₃, H₂SO₄, NaOH. Do not pre-rinse the bottles.

1. Procure appropriate sample containers.
2. Flush organic-free distilled water through/over decontaminated sampling equipment and fill VOA vials using the same procedure as the trip and field blanks.
3. Flush organic-free distilled water through/over decontaminated sampling equipment and fill the remaining bottles using the same procedure as the field blank. If environmental samples include filtered samples (dissolved metals) fill one of the 1000 ml. polyethylene bottles with filtered water (See FS-12). Tighten lids, rinse with distilled water and dry with paper towels.
4. Label all bottles.
5. Place all samples in a cooler with ice to lower the temperature to 4 deg. C.
6. Record sample information on the sample tracking form.
7. Proceed with chain of custody.

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STANDARD OPERATING PROCEDURE
DUPLICATE SAMPLES SAMPLING

Duplicate Samples (Collocated and Replicate Samples)

Collocated samples are independent samples collected in such a manner that they are equally representative of the parameter(s) of interest at a given point in Space and time. Examples of collocated samples include: samples from two air quality analyzers sampling from the same point in a lake, or side-by-side soil core samples.

Collocated samples, when collected, processed, and analyzed by the same organization, provide intralaboratory precision information for the entire measurement system including sample acquisition, homogeneity, handling, shipping, storage, preparation and analysis.

Replicate samples are samples that have been divided into two or more portions at some step in the measurement process. A sample may be replicated in the field or at different points in the analytical process. For field replicated samples, precision information would be gained on homogeneity (to a lesser extent than for collocated samples), handling, shipping, storage, preparation, and analysis. For analytical replicates, precision information would be gained on preparation and analysis. Examples of field replicated samples

Include a soil core sample that has been collected and poured into a common container for mixing before being split and placed in individual sample containers.

Collocated samples can be used to estimate the overall precision of a data collection activity. Sampling error can be estimated by the inclusion of collocated and replicated versions of the same sample. If a significant difference in precision between the two subsets is found, it may be attributed to sampling error. As a data base on field sampling error is accumulated, the magnitude of sampling error can be determined.