



Sampling Instructions for Low Level Mercury (EPA 1631E)

The purpose of this document is to provide proper techniques for the collection, storage and shipment of samples in a way that minimizes contamination from external sources. Please read all instructions prior to sampling.

POSSIBLE SOURCES OF CONTAMINATION:

1. Sampling equipment- Including bailers, sample tubing, and pump tubing
2. Gloves
3. Clothing
4. Sample containers
5. Breath from technicians with mercury amalgam teeth fillings
6. Precipitation
7. Dirt, dust and airborne vapor

MAINTAINING SAMPLE INTEGRITY:

1. Samples must be free of headspace; make sure the vials are filled to overflowing before capping.
2. Samples must be maintained at $4^{\circ}\text{C} \pm 2^{\circ}$ until preserved by the laboratory.
3. Samples submitted for dissolved mercury analysis, must be filtered within 24 hours of sampling. If samples cannot be received by the laboratory within 24 hours of collection, then the samples must be filtered in the field.
 - Associated Field Blanks must be filtered at the same time as the samples, and at the same location.
4. All samples must be preserved by the laboratory or analyzed within **48 hours** of sample collection.

EQUIPMENT LIST:

1. Multiple pairs of mercury free (powder free) gloves
2. Contaminant free sampling attire
3. Cooler
4. Sample kit consisting of 4 - 60mL, mercury free vials, non-preserved and double bagged.
5. Double bagged Field Blank kit consisting of 2- 60mL glass vials filled with mercury free water, and 1 - 60mL glass empty vial with a septa cap.
6. Sharpie or marker
7. Sample labels for external ziplock bags
8. Filters (if needed) - 0.45 μm , 15mm diameter capsule filters with sterile syringe, for dissolved mercury. If dissolved mercury is needed, filtration can be done at the lab if the samples are received within 24 hours of sampling. If not, filtration of the sample and Field Blank must be done in the field.
9. If the sample is to be a composite sample, then at least 3 sample kits should be requested, and one kit should be filled for each sample time.

CLEAN HANDS/DIRTY HANDS SAMPLING TECHNIQUE:

The sampling procedure requires two people; one person is designated as *Dirty Hands* and the other as *Clean Hands*. Change gloves frequently. If the cleanliness of gloves is in question, change them.

1. *Dirty Hands* handles the following items:
 - a. Cooler

- b. Labels
 - c. Bubble pack bags
 - d. Outer ziplock bags
 - e. Sampling equipment that does not come in direct contact with the sample
2. *Clean Hands* handles the following items:
- a. Inner ziplock bags
 - b. Sample bottles
 - c. Equipment that comes in direct contact with the sample (tubing, filtering syringe)

SAMPLING PROCEDURE FOR FIELD BLANKS (MUST BE SUBMITTED WITH SAMPLES):

NOTE: If dissolved mercury is needed, the Field Blank must also be filtered.

1. Ensure sampling site is protected from airborne sources of mercury such as dust or precipitation. If not, change sample location or time, or provide a sheltered clean area for sample collection.
2. *Dirty Hands*
 - a. Put on clean gloves and sufficient protective clothing to ensure that dust and other debris is not transferred from the technician to the sample.
3. *Clean Hands*
 - a. Put on clean gloves and sufficient protective clothing to ensure that dust and other debris is not transferred from the technician to the sample.
 - b. Do not touch anything that may contaminate your gloves.
4. *Dirty Hands*
 - a. Open cooler and remove kit labeled "Field Blank Kit" and its bubble pack bag.
 - b. Complete label on the outer ziplock bag.
 - c. Open outer bag and hold it open so *Clean Hands* technician can reach inside.
5. *Clean Hands*
 - a. Do not touch outer bag.
 - b. Open inner bag and remove one full water vial and the empty vial with the septa cap.
 - c. Remove the caps and pour the reagent water from the full vial into the empty vial with the septa cap under the same conditions that the samples will be collected.
 - d. Replace the caps and return the filled vial to the inner ziplock, discard the empty container and the extra filled vial if not needed due to spillage.
 - e. Close the ziplock while squeezing the inner bag to expel the air, complete the seal and push the inner bag inside of the outer bag.
6. *Dirty Hands*
 - a. Close outer ziplock while squeezing the outer bag to expel the air and then complete the seal.
 - b. Place the double bagged bottle kit in the bubble pack bag and seal the bag closed.
 - c. Place the kit in the cooler.

SAMPLING PROCEDURE FOR SAMPLES:

*NOTE: If dissolved mercury is needed, and samples cannot be received by the lab within 24 hours of collection, samples must be field filtered using a syringe and capsule filter into the sample containers. Samples for total mercury must be preserved by the lab within **48 hours**.*

1. *Dirty Hands*
 - a. Put on clean gloves.
2. *Clean Hands*
 - a. Put on clean gloves.
 - b. Do not touch anything that may contaminate your gloves.
3. *Dirty Hands*
 - a. Set up sampling equipment, open cooler and remove sample kit and its bubble pack bag.
 - b. Complete label on outer ziplock bag.
 - c. Open outer bag and hold it open so the *Clean Hands* technician can reach inside.
4. *Clean Hands*

- a. Do not touch outer bag.
 - b. Open inner bag, remove a sample vial, remove cap and collect sample, filling completely.
 - c. Replace cap and return the sample vial to inner ziplock bag. *Repeat for all vials in bag.*

 - d. Close the inner ziplock while squeezing the inner bag to expel the air, complete the seal, and push the inner bag inside the outer bag.
5. *Dirty Hands*
- a. Close outer ziplock while squeezing the bag to expel the air, and then complete the seal.
 - b. Place the double bagged bottle kit in the bubble pack bag, seal the bubble bag.
 - c. Place the kit in the cooler.

QUESTIONS:

If you encounter any problems, or have questions, please contact your project manager for assistance.