



Understanding Types & Sources of Sample Contamination

Sample contamination is a common concern associated with sample collection. When reporting analytical data at low detection limits, it doesn't take much to contaminate a sample. Having a good sampling strategy can often eliminate unforeseen headaches.

It is the sampler's responsibility to use proper sampling techniques to avoid the risk of sample contamination. The following describes potential risks for sample contamination and ways to prevent it:

Sample bottles: Containers obtained from an unreliable source used to collect samples may contain traces of analytes that may interfere with the requested analysis. If the cleanliness of the container is unknown, it is best to get a new one.

Sample Collection: Consider anything that touches the inside of the bottle other than the sample itself, a possible contaminant. This includes fingers, gloves, sampling devices, faucets, bailers or hoses. If you must use a sampling device to obtain the sample, ensure that it has been properly decontaminated by washing with phosphate free soapy water and rinsing with de-ionized water. (NOTE: Never rinse out the preservatives that are in the containers provided). Do not dry off the device with paper towels as this may introduce artificial contamination.

When sampling for volatile organic compounds, never expose samples to equipment exhaust fumes during sampling or transit. It is best to use trip and field blanks if this is a concern. In addition, samples that contain high and low-level concentrations should be stored in a separate transport container or cooler from other samples. Volatile compounds present in high concentrations have been shown to contaminate low-level samples during transport. Never use electrical or duct tape to seal VOA containers and minimize the use of indelible ink markers.

When sampling for metals, always consider using non-metallic sampling devices. Also consider where the sample is being collected and take field notes to document blowing dust, rusty metal structures, or the type of sampling device used. It has been shown that even microscopic flakes of metal can greatly elevate the results. Even latex gloves and wipes have been shown to cause zinc contamination of samples.

At The Lab: Strict quality controls are employed at ELN including the requirement of using method blanks in analytical batches. If an analyte is detected in the method blank, the value is reported, and the data is flagged appropriately.

It is uncommon for inorganic samples to become contaminated at or above our method detection limit. However, contamination concerns do tend to elevate when extremely low detection limits are requested. The most common low-level metal contaminants are zinc, barium, and copper.

For more information on sample collection strategies or sample contamination, please e-mail us at Info@EnviroLabNetwork.com.