



## Medicolegal Death Investigation

### Postmortem Toxicology Submission Guidelines

#### General Submission Guidelines:

The Colorado Bureau of Investigation Forensic Services (CBIFS) recognizes that each case is distinctive. These submission guidelines will address typical situations encountered during the medicolegal death investigation but cannot speak to all of the unique circumstances that are often exclusive to a particular case. With this understanding, the CBIFS provides the following information to assist you in the submission of your evidence.

#### Medicolegal Death Investigation (Postmortem)

Medicolegal Death Investigation combines several disciplines for the common goal of determining cause and manner of death. Toxicology, one of those disciplines, relies on specimens being collected as evidence in death investigations. Whether the specimens are collected during an autopsy or retrieved from the hospital as admission samples, they may provide evidence as to what the person was being given or was using prior to his/her demise.

#### Specimen(s) Collection Recommendations:

A sufficient variety and volume of samples are necessary to complete toxicological testing. Too little sample may limit what tests the laboratory can perform. Too little variety of specimens submitted limits the ability of the Toxicologist in interpreting and offering expert opinions of the drugs and their concentrations in respect to aiding in determining the final cause and manner of death.

**Blood Samples** should be collected from at least two different sources of the body for drug concentration interpretation reasons:

1. Central blood, approximately 50-100 mLs of blood can be collected from the heart, chest cavity, jugular, subclavian, etc. and placed in a leak proof container that contains sodium fluoride as an anti-enzymatic preservative. Alternatively, central blood can be collected in multiple gray top vials containing potassium oxalate and sodium fluoride to prevent clotting and preserve the analytes in the sample through enzyme inhibition.
2. A peripheral blood sample from the femoral vein (10 mL) should be collected in a gray top vial (or equivalent) containing potassium oxalate and sodium fluoride to prevent clotting and preserve the analytes in the sample through enzyme inhibition.
3. Additional blood samples to consider submitting are:
  - a. Hospital admission blood samples that are located in the Hospital Laboratory or the blood bank. These samples are generally discarded in a very short amount of time (~7 days or less) and are extremely important as evidence for individuals who survived greater than 24 hours in the hospital.

- b. Harvest blood or Vitreous are samples collected after death, but prior to the donation of organs and tissues for the living.
4. **Carbon Monoxide (CO)** analysis requires a blood sample (central or peripheral) to be ideally collected in a lavender top vial (EDTA) or at worst, a red top vial with no preservatives. Blood collected in a gray top vial is an invalid specimen for CO analysis due to the interference of the sodium fluoride preservative.

**Vitreous Humor** should be collected from both eyes of the decedent and submitted in a single 10 mL red top vial containing no preservative.

**Urine or Bile** as excretion products can be collected in either a 10 mL gray top vial or a 10 mL red top vial containing no preservative. A standard urine cup with lid would also be acceptable.

**Liver, Kidney, Spleen or Brain** (solid tissues) can be collected as a representative sampling into clean containers that contain no preservative. A liver specimen (~100 g) is preferred over all other solid tissues.

**Gastric Contents** can be collected, however, the ENTIRE contents of the decedent's stomach shall be collected and submitted to ensure homogeneity. If only a portion of the gastric contents are submitted, then a total amount of drug that remains in the stomach unabsorbed cannot be determined.

### **Documentation**

The Agency case number and/or decedent's name should be recorded on any item submitted for toxicology testing.

### **Summary:**

These Toxicology guidelines are recommendations of what should be included in the initial evidence submission to the CBIFS. Please see our General Submission Guidelines for an overview of the submission process.

Please feel free to contact us at any time regarding your Toxicology submissions. It is our goal to ensure your understanding, educate you on situations that may be unfamiliar to your agency and to work collaboratively to ensure the citizens of Colorado are served at the highest possible level.