

**COLORADO STATE UNIVERSITY**  
**Veterinary Diagnostic Laboratories**  
**Fort Collins – Rocky Ford – Western Slope**

**CHEMISTRY/TOXICOLOGY**

**IMPORTANT:** Time required for testing, as shown in the test schedule below, is **ONLY** an estimate. We make very effort to adhere to these schedules, however, unexpected sample volumes, poor sample quality, equipment failure or other factors beyond our control may impact our ability to meet these timelines. Always collect and submit samples well in advance of **YOUR** deadline to provide us with ample time should problems arise.

<b>TESTS</b>	<b>SUBMISSION</b>	<b>CONTAINER</b>	<b>COOLANT</b>	<b>DEAD-LINE</b>	<b>TIME REQUIRED</b>	<b>SPECIAL COMMENTS</b>
<b>CHEMISTRY</b>						
Alpha-Mannosidase (loco)	2 mL non-hemolyzed serum	1) RTT 2) GTT, PTT	Refrigerated or Frozen	M-F	One-two weeks.	Price discount when Swainsonine requested and 6 ml serum submitted.
Anticoagulant Screen	1) 5 gm stomach contents 2) 5 gm liver 3) 2 mL whole blood 4) 5 g suspected bait	1) Leak proof container 2) Leak proof container 3) GTT, PTT 4) Leak proof container	1) Frozen 2) Frozen 3) Refrigerate 4) Frozen			
Arsenic (As)	1) 10 mL urine 2) 2 mL whole blood 3) 2 g liver 4) 2 g kidney 5) 2 g hair 6) 50 g feed 7) 5 g stomach contents 8) 5 g muscle	1) Leak proof container 2) GTT, PTT 3) Leak proof container 4) Leak proof container 5) Whirlpak 6) Leak proof container 7) Leak proof container 8) GTT, PTT	1) Refrigerate 2) Refrigerate 3) Refrigerated or frozen 4) Refrigerated or frozen 5) Refrigerate 6) Refrigerate 7) Refrigerated or frozen 8) Refrigerated or frozen	M-F	Three day prep. Batched and run weekly or biweekly depending on workload.	No liver biopsies.
Bromide (Br)	1) 1 mL serum 2) 1 mL plasma	1) RTT 2) GTT, PTT	1) Refrigerated or frozen 2) Refrigerated	M-F	One-two weeks.	
Cadmium (Cd)	1) 5 g liver 2) 5 g kidney 3) 2 mL whole blood	1) Leak proof container 2) Leak proof container 3) GTT or PTT	1) Refrigerated or frozen 2) Refrigerated or frozen 3) Refrigerated or frozen	M-F	One-two weeks.	No liver biopsies.
Calcium (Ca)	1) 50 g feed 2) 1 mL ocular fluid 3) 1 cubic centimeter bone	1) Leak proof container 2) RTT or Eyeball 3) Leak proof container	1) Refrigerate 2) Refrigerate 3) Refrigerated or frozen	M-F	One-two weeks.	Prep fee for bone.
Calculi Analysis	Stone(s)	1) Leak proof container	1) Refrigerated or ambient	M-F	One-two weeks.	
Chloride (Cl)	1) 1 mL water 2) 50 g feed	1) Leak proof container 2) Leak proof container	1) Refrigerate 2) Refrigerated or frozen	M-F	One-two weeks.	Prep fee for feed.
Cholinesterase (ACHE)	1) 1 mL whole blood 2) 5 g brain	1) GTT, PTT 2) Leak proof	1) Refrigerate 2) Frozen	M-F	Reported same day as set up.	BRAIN MUST BE FROZEN IMMEDIATELY

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	3) 1 mL serum	container 3) RTT	3) Refrigerate			AND STAY FROZEN. SHIP ON DRY ICE.
Cobalt (Co)	1) 5 g liver 2) 50 g feed 3) 2 mL serum 4) 2 mL whole blood	1) Leak proof container 2) Leak proof container 3) RTT 4) GTT, PTT	1) Refrigerated or frozen 2) Refrigerated or frozen 3) Refrigerate 4) Refrigerate	M-F	One-two weeks.	No liver biopsies.
Copper (Cu)	1) 5 g liver 2) Cut down biopsy: Pea-sized wedge of liver tissue 3) Needle biopsy: three, 1 cm long pieces of liver from a 14 guage needle 4) 2 mL serum 5) 2 mL whole blood 6) 50 g feed	1) Leak proof container 2) Leak proof container 3) Leak proof container 4) RTT 5) GTT, PTT 6) Leak proof container	1) Refrigerated or frozen 2) Refrigerated 3) Refrigerated or ambient 4) Refrigerate 5) Refrigerate 6) Refrigerate	M-F	One-two weeks.	Prep fee for feed and tissue. Liver tissue may be fresh, fixed or embedded in a paraffin block.

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Cyanide (CN)	1) 50 g feed 2) 5 mL whole blood 3) 5 g lung 4) 5 g liver	1) Leak proof container 2) GTT, PTT 3) Leak proof container 4) Leak proof container	1) Frozen 2) Frozen 3) Frozen 4) Frozen	M-F	Reported same day as set up.	MUST BE FROZEN IMMEDIATELY AND STAY FROZEN.
Glutathione Peroxidase (GSH. Px)	1) 1 mL whole blood	1) GTT, PTT	Refrigerate	M-F	One-two weeks.	Ship cold within two days of collection.
Iron (Fe)	1) 5 g liver 2) Cut down biopsy: Pea-sized wedge of liver tissue 3) Needle biopsy: three, 1 cm long pieces of liver from a 14 guage needle 4) 2 mL non-hemolyzed serum 5) 2 mL non-hemolyzed plasma 6) 50 g feed	1) Leak proof container 2) Leak proof container 3) Leak proof container 4) RTT 5) GTT, PTT 6) Leak proof container	1) Refrigerated or frozen 2) Refrigerate 3) Refrigerated or ambient 4) Refrigerate 5) Refrigerate 6) Refrigerate	M-F.	One-two weeks.	Prep fee for feed and tissue. Liver tissue may be fresh, fixed or embedded in a paraffin block.
Lead (Pb)	1) 0.5 ml whole blood, no serum or plasma 2) 5 g kidney 3) 5 g liver 4) 5 mL urine 5) 5 g stomach contents	1) GTT, PTT 2) Leak proof container 3) Leak proof container 4) Leak proof container 5) Leak proof container	1) Refrigerate 2) Refrigerated or frozen 3) Refrigerated or frozen 4) Refrigerated or frozen 5) Refrigerated or frozen	M-F.	Blood result reported same day as set up. Tissues one week.	5) Useful for monitoring EDTA therapy for lead poisoning.  No liver biopsies.
Magnesium (Mg)	1) 1 mL ocular fluid 2) 5 g liver 3) 50 g feed	1) RTT, Eyeball 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerate 3) Refrigerate	M-F	One-two weeks.	Prep fee for feed and tissue.
Manganese (Mn)	1) 5 g liver 2) 50 g feed 3) 2 mL serum 4) 2 mL whole blood	1) Leak proof container 2) Leak proof container 3) RTT 4) GTT, PTT	1) Refrigerated or frozen 2) Refrigerated 3) Refrigerate 4) Refrigerate	M-F	One-two weeks.	No liver biopsies.
Mercury (Hg)	1) 5 g liver 2) 5 g kidney 3) 2 mL whole blood 4) 5 g muscle 5) 5 g stomach contents 6) 5 mL urine	1) Leak proof container 2) Leak proof container 3) GTT, PTT 4) Leak proof container 5) Leak proof container 6) Leak proof container	1) Refrigerated or frozen 2) Refrigerated or frozen 3) Refrigerate 4) Refrigerated or frozen 5) Refrigerated or frozen 6) Refrigerated or frozen	Five day prep on all samples.	One-two weeks.	No serum, plasma or liver biopsies.
Molybdenum (Mo)	1) 5 g liver 2) 50 g feed 3) 2 mL serum 4) 2 mL whole blood	1) Leak proof container 2) Leak proof container 3) RTT 4) GTT, PTT	1) Refrigerated or frozen  3) Refrigerate 4) Refrigerate	M-F	One-two weeks.	No liver biopsies.

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Nitrate (NO <sub>3</sub> )	1) 50 mL water 2) 50 g feed 3) 1 mL serum or plasma 4) 1 mL ocular fluid	1) Leak proof container 2) Leak proof container 3) RTT, GTT, PTT 4) RTT, Eyeball	1) Refrigerate 2) Refrigerate 3) Refrigerate 4) Refrigerate	M-F	One-two weeks.	
Non-Esterified Fatty Acids	1) 1 mL serum or plasma	1) RTT, PTT	1) Refrigerate	1) M-F	1) 1-2 weeks	Heparinized samples are unacceptable. Blood should be drawn prior to offering fresh feed. Sampling seven animals per feeding group is recommended. Minimum submission: 10 sera.
pH	1) 50 mL water 2) 3 mL rumen fluid	1) Leak proof container 2) Leak proof container.	1) Refrigerate 2) Refrigerated or frozen	M-F	Reported same day as set up.	
Phosphorus (P)	1) 1 ml non-hemolyzed serum or plasma 2) 50 g feed 3) 1 cubic cm bone	1) RTT, PTT, GTT 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerate 3) Refrigerated or frozen	M-F	One-two weeks.	Prep fee for feed and bone.

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Platinum (Pt)	1 mL serum or plasma	RTT, GTT, PTT	Refrigerate	M-F	One-two weeks.	
Potassium (K)	1) 1 mL ocular fluid 2) 1 mL urine 3) 50 g feed	1) RTT, Eyeball 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerate 3) Refrigerate	M-F	One-two weeks.	Prep fee for feed.
Selenium (Se)	1) 3 mL whole blood 2) 5 g liver 3) 5 g kidney 4) 1 g hoof 5) 1 g hair 6) 3 mL serum 7) 5 g muscle 8) 50 g feed	1) GTT, PTT 2) Leak proof container 3) Leak proof container 4) Leak proof container 5) Leak proof container 6) RTT 7) Leak proof container 8) Leak proof container	1) Refrigerate 2) Refrigerated or frozen 3) Refrigerated or frozen 4) Refrigerate 5) Refrigerate or ambient 6) Refrigerate 7) Refrigerated or frozen 8) Refrigerate	M-F	Three day prep. Batched and run weekly or biweekly depending on workload.	Whole blood preferred over serum/plasma.  Take hoof sample at site of abnormal growth.  No liver biopsies.
Sodium (Na)	1) 1 mL ocular fluid 2) 1 mL urine 3) 5 g brain 4) 50 g feed	1) RTT, Eyeball 2) Leak proof container 3) Leak proof container 4) Leak proof container	1) Refrigerate 2) Refrigerate 3) Frozen 4) None	M-F	One-two weeks.	Prep fee for feed.
Strychnine	1) 5 g stomach contents 2) 10 mL urine 3) 5 g suspected bait	1) Leak proof container 2) Leak proof container 3) Leak proof container	1) Refrigerated or frozen 2) Refrigerated or frozen 3) Refrigerated or frozen	M-F	One-two weeks.	
Sulfate (SO <sub>4</sub> )	1) 50 mL water 2) 50 g feed 3) 50 g rumen contents	1) Leak proof container 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerate 3) Refrigerate or frozen	M-F	One-two weeks.	
Swainsonine (loco)	1) 4 mL non-hemolyzed serum 2) 4 mL non-hemolyzed plasma	1) RTT 2) GTT, PTT	1) Refrigerate 2) Refrigerate	M-F	One-two weeks.	Price discount when alpha-Mannosidase requested and 6 ml serum submitted.
TDS (Total Dissolved Solids)	1) 50 mL water	1) Leak proof container	1) Refrigerate	M-F	Reported same day as set up.	
Thallium (Tl)	1) 5 g liver 2) 5 g kidney 3) 5 mL urine	1) Leak proof container 2) Leak proof container 3) Leak proof container	1) Refrigerated or frozen 2) Refrigerated or frozen 3) Refrigerated or frozen	M-F	One-two weeks.	Prep fee for tissue.  No liver biopsies.
Urea (ammonia)	1) 50 g feed 2) 2 mL serum	1) Leak proof container	1) Refrigerated or frozen	M-F	One-two weeks	Serum and rumen contents must be frozen immediately

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	3) 50 g rumen content	2) RTT 3) Leak proof container	2) Frozen 3) Frozen			and stay frozen. Ship on dry ice.
Vitamin A	1) 1 mL non-hemolyzed serum 2) 5 g liver 3) 50 g feed	1) RTT 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerated or frozen 3) Refrigerate	M-F	One-two weeks.	Ran with vitamin E. Price discount when vitamin E requested also.  No liver biopsies.

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Vitamin E	1) 1 mL non-hemolyzed serum 2) 5 g liver 3) 50 g feed	1) RTT 2) Leak proof container 3) Leak proof container	1) Refrigerate 2) Refrigerated or frozen 3) Refrigerate	M-F	One-two weeks.	Ran with vitamin A. Price discount when vitamin A requested also.  No liver biopsies.
Zinc (Zn)	1) 1 mL non-hemolyzed serum 2) 5 g liver 3) Cut down biopsy: Pea-sized wedge of liver tissue 4) Needle biopsy: three, 1 cm long pieces of liver from a 14 guage needle 5) 50 g feed	1) RTT 2) Leak proof container 3) Leak proof container 4) Leak proof container 5) Leak proof container	1) Refrigerate 2) Refrigerated or frozen 3) Refrigerate 4) Refrigerated or ambient 5) Refrigerate	M-F	One-two weeks.	Submit serum or heparinized plasma; remove as soon as possible from cells. Prep fee for feed and tissue. Liver tissue may be fresh, fixed or embedded in a paraffin block.