**Collection**

Urine samples are collected for examination purposes using various methods. Regardless of the method, use a clean, dry container that is free from foreign material to collect the urine. Cattle very often will urinate during examinations, so have a suitable container ready. Continuous stroking of the skin just below the vulva of cows will usually induce urination. If necessary, pass a catheter into the bladder of the cow. Since bulls and steers cannot be catheterized, longer observation may be needed to obtain a sample. A collecting urinal may be strapped on male swine, cattle, sheep, or goats to obtain a sample. Catheters can be used on both male and female horses. In male horses, manual pressure on the bladder via the rectum will sometimes induce urination. Close observation will enable collection from dogs and cats, but catheterization can be used successfully. Other collection methods from dogs and cats include applying pressure on the bladder and using a collection cage (with floor drain).

**Physical Examination**

The physical examination of urine includes quantity, specific gravity, color, odor, and consistency. The

quantity measurement refers to the amount urinated in a 24-hour period. This can be accurately determined with a collection cage or a receptacle attached to the animal. The specific gravity of urine is measured with either a refractometer or a urinometer (hydrometer) by filling a urinometer cylinder with the urine. Small and large urinometers and cylinders are available. A change from the normal urine color (light yellow to dark amber) to a red, brownish red, or black color is important for diagnosis of certain diseases. The urine odor can also aid in diagnosing diseases. Mild, strong, sour, and sweet urine odors are associated with certain diseases. Normal horse urine is cloudy to opaque. Urine from other animals is usually clear when collected. The consistency is noted by degrees: clear, cloudy, flocculant, and opaque.

**Chemical Examination**

Chemical examination of urine includes tests for pH (acidity or alkalinity), albumin, sugar, bile, acetone, calcium, bilirubin, and urobilinogen. Simple test kits are available for urinalysisTo determine the acidity of urine use a paper test strip. The test strip is dipped into the urine sample. The urine will react with the paper and turn the paper a certain color depending on its acidity level. The strip is then compared to the color standards on the bottle.

**Microscopic Examination**

Perform microscopic examination of urinary sediment after centrifugation of a urine sample. Classify the

sediments in the urine as organized and unorganized. Organized sediments include epithelial cells, blood cells, mucous threads, and microorganisms, such as bacteria, yeasts, and fungi. Unorganized sediments include fat globules and precipitated crystals. Classify the crystals as those present in alkaline urine and those in acidic urine. Fat globules may be present in urine of either pH range. Carry out all urine collection and examination procedures carefully, and have a veterinarian interpret all test results.