

## AzVDL Toxicology Summary for 1999

Positive results for three common categories of tests were tallied and the results summarized for your information. For the year 1999, there were 42 positive results for strychnine, ethylene glycol and bufotenin (Colorado River toad toxin) from tests that were performed by the AzVDL toxicology section. The breakdown for all types of samples in each category was as follows: **Strychnine** (30 positives, 71% of the total), **ethylene glycol** (10 positive, 24% of the total) and **bufotenin** (2 positive, 5% of the total). Malicious intent is assumed for strychnine and most cases of ethylene glycol poisoning.

Based on samples received, **strychnine** is apparently the toxicant of choice for the malicious poisoning of pets, and sometimes wild or feral birds. Of the specimens analyzed for strychnine, 21 involved stomach contents from dogs; 3 were suspected baits intended for dogs; and 5 were crop contents from birds. The single case involving a cat was secondary poisoning from eating a poisoned rodent.

AzVDL diagnosed **ethylene glycol** much less frequently in 1999 possibly because in-office testing is more common. Positive results using test kits should be verified by more specific laboratory methods. Five positive canine and five positive feline samples were reported. Vomiting is usually a prominent clinical sign of poisoning by this substance. Usually only stomach mucus is available at necropsy. Blood, urine, and stomach mucus are all acceptable specimens for the determination of ethylene glycol. No positive bait samples were found.

When animals are presented for determination of the cause of death, diagnosticians at this laboratory commonly request the determination of **acetylcholinesterase (AChE)** activity. Acetylcholinesterase activity is the method of choice (and is most economical) to screen for exposure to organophosphate and carbamate insecticides. Brain tissue collected at necropsy is the sample of choice. Seventy specimens were analyzed in 1999. Whole blood from the live animal is also suitable. Aldicarb (a carbamate) poisoning was diagnosed in 1 avian and 3 canine samples by acetylcholinesterase screening and GC/MS analysis of stomach contents.

Determination of the **chemical composition of urinary calculi** is also a frequent request. During 1999, 24 samples were received for analysis. Most were calculi removed at surgery from the urinary bladder of dogs (15 total). The composition of the canine calculi was as follows: 9 **struvite**, 5 **calcium oxalate**, and 1 **mixed (calcium oxalate plus calcium carbapatite)**. Five feline-origin samples were received (1 **struvite**, 3 **calcium oxalate**, 1 **uric acid**). Three uroliths (all **uric acid**) were received from reptiles and one (**struvite**) from a bovine.

Fifty-four plasma zinc determinations in both wild and cage birds were performed in 1999. Seventeen of 54 (31%) had elevated levels of plasma zinc (most were cage birds). Whole blood lead levels were determined in 63 avian blood samples. A specimen from a Red-tailed Hawk had clearly toxic levels of whole blood lead (0.23 ppm), and 2 specimens (1 Turkey Vulture, 1 Red-tailed Hawk) had detectable whole blood lead levels (0.06 and 0.12 ppm, respectively). Lead was below the detection limit (0.05 ppm) in the remaining 60 whole blood samples. Raptors and avian scavengers likely are exposed to excessive lead levels by feeding on waterfowl carcasses that contain lead shot in the GI tract or embedded in other tissues.

*(Note: Both lead and zinc levels can be determined on 1 milliliter of heparinized whole blood in a green-top microtainer tube. Do not request zinc determination on samples submitted in standard rubber-stoppered blood tubes as they are often contaminated by stopper-origin zinc).*

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