



IOWA STATE UNIVERSITY
Veterinary Diagnostic Laboratory
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Lead: The unofficial fifth season

Scott Radke, Clinical Assistant Professor

Throughout the year, the ISU VDL receives numerous samples in association with suspected lead poisonings. However, the highest number of these cases is generally associated with the advent of warmer weather and lush green pastures. Come spring and early summer, the turn-out of cattle onto the range brings forth opportunity for growth and development. However, it also brings the discovery of hidden and undesirable heavy metal “treasures”. Aside from spring and summer, this period could best be described as lead season; the unofficial fifth season of the year.

Respiratory and gastrointestinal diseases, as well as predation and starvation, are leading causes of death in young calves. In the event of increased morbidity, mortality, or sudden deaths in the absence of both respiratory and gastrointestinal clinical signs or lesions, lead should be considered a potential suspect. All mammals are susceptible to lead, but ruminants, particularly cattle, are most often affected. Cattle, especially calves, seem to have a knack for locating various sources of lead and getting themselves into trouble. **Ataxia, incoordination, tremoring, bruxism, and blindness may be observed in cattle afflicted by lead.** Individuals may also be observed to wander aimlessly throughout the premises. Intoxicated animals may be found recumbent, unresponsive, exhibiting seizure-like activity, or simply be found dead. Lesions at necropsy are few and usually nonspecific but may include muscle pallor, gastrointestinal irritation, or nephropathy.

Prior to turn-out onto pasture, a thorough walkthrough of the environment should be considered to identify potential sources of lead. Old forgotten batteries along fence lines are the most common culprits. When left out during the winter months, battery casings tend to freeze and crack, exposing the lead plating inside. Other sources of lead include lead-based paint, engine oil, leaded gasoline, and old lead-arsenate pesticides. Premises should also be evaluated for old building foundations. Mortar used in older foundations may contain lead. Flood waters can deposit batteries and other unwanted materials into the environment, so reevaluation of areas should be considered following such natural events. Cows exposed to lead may serve as an additional source to nursing calves as lead is passed in the milk.

Submission of 2 ml of whole blood in a purple top EDTA tube is adequate for evaluation at the ISU VDL. Approximately 50 g (golf-ball) of liver is sufficient for lead analysis. Submission of fresh kidney may also be considered in acute cases. Suspect material, including but not limited to feed and liquids can also be analyzed for the presence of lead. Due to the neurological effects of lead poisoning, submission of fresh and fixed brain should also be considered to rule out other potential infectious or toxicological agents; however, brain alone is not sufficient to rule out lead poisoning.

Evaluation of the environment for sources of lead is recommended. Turn-out of cattle onto grounds containing old automobiles, assorted junk, batteries, and pails of oil and other automobile fluids should be avoided. Removal of or preventative measures to isolate such items should be performed.



References:

Gwaltney-Brant S. 2004. Lead. In Clinical Veterinary Toxicology. Edited by K Plumlee, pp. 204-210. St Louis, Mosby

Payne J. and Livesey C. 2010. "Lead poisoning in cattle and sheep." In practice 32.2: 64-69.

Lemos R. A., et al. 2004. "Lead poisoning in cattle grazing pasture contaminated by industrial waste." Veterinary and human toxicology 46.6: 326-328.



Christine Lee Administration

Chris grew up with five brothers and five sisters on a farm near a small town in southwest Minnesota. Being the second oldest, she spent lots of time dressing, feeding, and playing with real babies.

Most of her career was spent working in medical business offices. She started working at ISU VDL in August 1996, opening tissue mail in the morning and reporting serology results in the afternoon. Less than a year later, she moved to the ISU VDL business office where she transcribed pathologist letters. Somewhere around 2005, she started working with client accounts, student payroll, special billings, and financial reporting, which is what she still does today. While the position does have deadlines, most days are flexible, and she enjoys talking and assisting the ISU VDL clients with questions on their invoices and accounts. She continues to be amazed at the changes and how much the VDL has grown since she started in 1996. She plans to work another year and then retire with her husband, Steve.

Together, they plan on traveling and spending more time with their four grown children, thirteen grandchildren and one great-grandchild. In their free time, they love to spend time outside walking or working in their gardens, but when you find Steve on the golf course, Chris will be busy in her sewing room, quilting or embroidering.

STAFF HIGHLIGHT

PAY INVOICES ONLINE

NEW CLIENT WEB PORTAL FEATURE:
[VETMED.IASTATE.EDU/VDL](https://vetmed.iastate.edu/vdl)

Clients have historically been able to search and filter to see what invoices need to be paid or have been paid by selecting an invoice status on the search invoices page; however, **now ISU VDL clientele can easily pay any outstanding invoices on the Client Web Portal via credit card or check.**

This new feature allows clients to easily filter for specific invoices by typing any keywords into the Site, Owner, Clinic, Veterinarian, or Reference fields found at the top of the page which allows ISU VDL clientele to pick and choose which invoices they want to pay giving greater flexibility for their specific billing needs. PDF copies of individual invoices can also be downloaded to your personal computer and saved and/or printed for any future needs.

The screenshot shows the 'IOWA STATE UNIVERSITY Veterinary Diagnostic Laboratory' web portal. At the top right, there is a 'USERNAME [Logout]' link. Below the header is a navigation menu with 'My Cases', 'Affiliate Cases', 'Submissions', 'Invoices', 'Shipping', and 'Tools'. The 'Invoices' tab is active, showing a 'Search Invoices' section with filters for 'Pay Invoices', 'Pay C.C. Payments', and 'Past Check Ledgers'. There are input fields for 'Statement Code Range' (0000000 to 0000001), 'Accession', 'Clinic', 'Veterinarian', 'Center', and 'Invoice Status' (set to 'All'). 'Search' and 'Reset' buttons are present. Below the filters, it shows '< Page 1 of 1 > 0 items'. At the bottom, there is a table with columns: Invoice #, Statement, Accession, Invoice Amount, Owner, Site, Reference, Clinic, Veterinarian, and Download PDF.

1

CREDIT CARD (preferred method)



To pay with a credit card, users will click on "Pay Invoices" under the Invoices tab. Once you have selected the invoices you want to pay, click pay by credit card at the bottom of the screen. You will then be directed to a secure platform, Touch Net, where you can enter your credit card information and finish the payment process. You can print a confirmation of your payment or see all invoice transactions on the past credit card payments tab.

2

CHECK



To pay by check, users can select a number of invoices to create a statement of remittance. **These statements will need to be printed and then mailed in with the check.** All statements of remittance can be found on the past check ledgers tab if needed.

✓ **PAYMENT COMPLETE**

We encourage you and/or your staff to watch the ISU VDL Web Portal training modules for a full tutorial of the functionality of our Client Web Portal (<https://vetmed.iastate.edu/vdl/web-based-tools>). If you have any additional questions about paying your invoices online, please contact ISU VDL Client Services at 515-294-1950 (Dr. Katie Woodard or Jordan Kraft) or ISU VDL Billing at 515-294-1950 (Chris Lee or Kris Wilson).

ANNOUNCEMENTS:

Upcoming University Holidays:

Independence Day — Friday, July 3rd
Saturday, July 4th

Labor Day — Monday, September 7th

HATS will be receiving drop-offs as normal on July 3rd and 4th and Monday, September 7th.

TBD

PLACEHOLDER TEXT ISU VDL EZ Ship facilitates easier shipping to the ISU VDL while also providing significant cost savings to our clients. Shipping costs are assessed once the shipping label is scanned by UPS and charges are placed on the case invoice (or split evenly among the cases within that box).

It is extremely important that the required weight field be as close to the actual weight as possible. Packages with a grossly incorrect label weight will be price adjusted as necessary. This notice is for those packages that are significantly over what was described on the label, example being the label says 5 pounds and the actual package weight was 20 pounds. Additionally, packages over 50 pounds will be charged on an individual basis, and those shipping costs will vary in price depending on package weight.

Questions?

Please contact ISU VDL Client Services
515-294-1950 — isuvdl@iastate.edu