Biography:
Dr. Colin Palmer is an Associate Professor of Theriogenology (Animal Reproduction) at the Western College of Veterinary Medicine. Originally from Nova Scotia, Dr. Palmer worked in mixed practices in Ontario and British Columbia and has owned/operated a practice in Saskatchewan. Dr. Palmer along with his wife Kim and children Lauren, Emily and Carter run a herd of purebred Red Angus cattle under the KC Cattle Co. name.

A Breeder's... Veterinary Perspective

Lead Poisoning

Lead is one of the most common causes of poisoning in pastured cattle and is responsible for untold economic losses to the cattle industry every year. For most of us, this is probably a surprising statistic. Surely there are worse things than lead out there?! The use of lead by industry is much less than it used to be. There are no more lead pipes or lead in our gas, but it is still present in many materials and often forgotten about.

For livestock, lead-acid batteries used in vehicles represent the most common source. Old batteries discarded in the field or forgotten dumps, or old vehicles parked in pastures are likely sources. I discovered an abandoned dump on our home pasture several years ago and pulled three old batteries out. Two in the first year and one that appeared two years later pushed up with the spring thaw. Grease, old used oil from the leaded gasoline days, plastics, pesticides, fishing sinkers, metal flashing, tar paper, old shingles, linoleum, caulking material and paint represent a partial list of other sources. Nowadays, lead is no longer used in paint manufacturing, but all paints and varnishes manufactured before 1980 are suspect. Cattle are naturally curious and will lick or chew on almost anything. They are especially attracted to lead and will continue to chew on it because it tastes like salt. That is why it is very common to find fine shards of lead in the forestomach of poisoned cattle pointing to an actual feeding rather than just a lick or two. Once in the stomach the lead is dissolved and absorbed into the blood stream.

Poisonings can be gradual resulting in a variety of clinical signs, or can result in sudden death of otherwise healthy animals. A single cow or calf may be affected or, in extreme cases, 10 or 20 animals may be lost. We recently lost two adult cows to lead poisoning, because I had forgotten about the likely presence of lead-containing paint on older farm implements. For a few years I have been using two tire rims from an old hay wagon as salt or mineral block holders. I like to keep the blocks off of the ground so they don't dissolve as quickly when it rains. My problems did not occur until the salt began to rust the wheels and caused the old paint to flake off. Not replacing the salt blocks until they were nearly out of salt undoubtedly was also a contributing factor. The first cow was sick with what appeared to be pneumonia for a couple of days before dying while the second, a promising 3–year old, was found dead in the pasture. A scraping of paint and rust confirmed the presence of lead on the rim. Now I wish I had just left the salt blocks on the ground; especially considering the recent value of cows

Lead poisoning can be tricky to diagnose since not all of the clinical signs will be manifested in each case and several of the clinical signs may be associated with other conditions. Younger cattle are more likely to display signs of acute lead poisoning: incoordination, blindness, teeth grinding, convulsions, snapping eyelids, salivation and muscle tremors. Older cattle may display more gastrointestinal signs – off-feed, constipation early on with the potential for diarrhea later, teeth grinding and perhaps frothing at the mouth. Depression, blindness, incoordination, and head pressing may also be seen. Cattle having difficulty swallowing may develop pneumonia and some individuals may have an elevated body temperature. Lead can also cross the placenta and be excreted in the milk causing abortion and poisoning of nursing calves. Most animals die within 12 – 24 hours of the onset of clinical signs, less acutely affected animals may take 4 to 5 days to die.

Once an animal shows signs of lead poisoning treatment is not likely to be effective. Injections of thiamin may lessen the nervous signs and drenching with epsom salts may reduce the absorption of lead from the rumen or speed its passage out of the body. Calcium disodium edetate may also help to reduce the amount of calcium in the animal's system. Regardless of the protocol, several days of treatment are usually required.

Post-mortems of sudden or unexplained deaths are always a good idea to protect the herd. Blood, liver and kidney levels as well as lesions in the brain will confirm the diagnosis. Your vet may also identify shards of lead in the forestomach particularly the rumen and reticulum. It is always a good idea to check pastures; especially, new ones for potential hazards. Be leery of those with old cars or farm equipment parked in them.

Several months may be required to clear lead from the body following consumption regardless of whether clinical signs were seen or not. Contaminated cattle entering the foodchain represent a risk to human health and with traceback technology you could be held liable. Blood lead levels can be monitored in exposed cattle to determine when they are safe to enter the food chain. Some animals seem to be able to tolerate lead more than others and may be found to have blood lead concentrations in excess of 0.35 ppm (parts per million), a level consistent with acute poisoning, without clinical signs.

Lead poisoning is often identified on well managed farms probably because they are vigilant. What can be more frustrating than the actual loss is the knowledge that exposure to lead was your fault.