



Vet Call

► by **Bob Larson**, Kansas State University

Lead poisoning

Many times when we think of cattle diseases, we concentrate on infectious diseases caused by bacteria and viruses. We may think of parasites such as worms, lice and flies, but it is also important to remember poisons can cause rapid death and severe illness in cattle. Cattle, especially young calves, can be very curious about unusual items found in their environment. They often explore with their tongues, and mouths will sometimes find and consume improperly disposed of farm or industrial chemicals, electrical transformers and power-line poles, or oil pump jacks.

Watch for lead sources

The most common form of poisoning in cattle is due to eating lead. Common sources of lead include batteries from electric fences and discarded vehicles; construction materials, such as putty, lead plumbing and old paint; old radiators; used crankcase oil; grease from machinery; lead shotgun pellets; and ash from fires where lead-contaminated construction materials were burned. If you ranch in an area with lead mines, the soil and water may also be high in lead.

High levels of lead in the body affect red blood cells, bone marrow and small blood vessels. High lead levels will also cause abnormal signaling between nerve cells and severely damage the kidneys and other organs. In fact, lead can have

many different negative effects on the body because it can interfere with multiple types of enzymes and chemicals necessary for normal body function. Cattle are more sensitive to lead than most other species and don't have to consume very much lead to have very sudden and severe problems.

Many times, the first sign a rancher notices is one or more dead calves within a day or two of being exposed to a source of lead. Other calves (and occasionally older cattle) in the group may appear to be blind, or they may circle or press their heads against solid objects. Cattle may have muscle tremors, teeth grinding, frothing at the mouth or signs of colic. Cattle with any of these symptoms usually die within 12 to 24 hours. Symptoms can be very similar to those of

other diseases, such as grass tetany, polio, nervous coccidiosis, listeriosis, or rabies, so a veterinarian should be called to investigate the problem.

Because cattle are very sensitive to lead,

even small amounts can cause severe disease and death in at least part of the herd. Other species are not as sensitive to lead and may show mild signs of illness when exposed. Occasionally, rather than dying, older cattle or cattle exposed to very low doses of lead may show digestive-tract problems, such as going off feed, becoming constipated or colicky, or having diarrhea. This may be followed by signs of brain or nervous-system problems, such as blindness, head pressing or staggering.

Infertility of both bulls and cows has been reported following exposure to low

levels of lead over a long period of time.

If calves that die due to lead poisoning are necropsied to examine the body organs, the veterinarian may find some reddened intestines or lungs, which may look like a clostridial disease or pneumonia, or nothing indicating the cause of death.

Occasionally, the veterinarian may find evidence of unusual stomach contents, but samples of blood or kidneys are the best samples to diagnose lead poisoning.

Keep lead out of the food chain

It is generally not recommended to treat cattle with signs of lead poisoning because the treatment is unlikely to be successful. Cattle with lead toxicity are not fit for human consumption because high lead

levels can be passed to consumers through the meat. In fact, up to a year or longer after a confirmed lead exposure, cattle that were possibly exposed to lead should have a blood sample tested before they are sold into marketing channels leading to human consumption because they may be carrying high levels of the dangerous mineral.

There is no known use for lead in the human body and no acceptable level in the human diet because of its severe negative effects; therefore, every attempt must be made to keep lead out of the food chain. If lead poisoning is suspected, immediately remove all cattle from the pasture. Treatment begun before signs of disease are noticed may be helpful, and you may choose, with the help of your veterinarian, to treat young calves that were exposed to lead but are not showing signs of poisoning.

There are treatments given by stomach tube to try to flush the lead out of the digestive tract (magnesium sulfate — Epsom salts), high doses of thiamin (a B vitamin), and a compound administered into the bloodstream (calcium-EDTA) to tie up lead circulating in the blood. The treatment of lead poisoning requires multiple treatments per day over several days of therapy and calcium-EDTA administered into the blood is expensive.

This serious problem can be prevented by making sure that your cattle cannot come into contact with old cars or farm equipment, batteries, construction materials, lead paint or old burn piles. Many times, old equipment or trash piles have been present in a pasture for many years with no problems. Then, because something disturbs the trash, a fence is moved or younger cattle are placed in the pasture, cattle can suddenly die of lead poisoning.

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