



Lead Toxicity and its Effects on Animals and Animal Products

Poisoning by toxic chemicals such as lead can cause serious diseases in people, particularly children, and livestock. Lead is a potent neurotoxin affecting the brain, and it is present and in daily use on many farms. It also persists in the environment for many years.

Lead Sources

Discarded lead-acid batteries are the most common source of lead poisoning in ruminants; the lead and lead salts in batteries are readily eaten by livestock. There are many potential sources including contaminated feed or soil, lead paint, plumbing solder, lead shot, grease, discarded asphalt, and crankcase oil. Lead from these sources can be easily absorbed by animals, particularly when finely ground or exposed to acidic conditions, including silage. Urban soil, due to historical exposure to lead-based paint and industrial processes, may have higher lead levels than rural soil.

Cattle and poultry are most at risk of lead poisoning because they are inquisitive and commonly taste new finds. The risk of lead toxicity can also increase during drought. Hungry livestock may develop pica (consumption of nonfood items), particularly if concurrently suffering trace element or mineral deficiencies. Low pasture cover may increase the likelihood of livestock finding hazardous materials.

Symptoms

Often the first sign of lead poisoning is finding dead animals. When affected animals are observed, they show signs of central nervous system (CNS) damage – they may cease grazing, appear dull and unresponsive, walk aimlessly, or be blind. In some cases these symptoms are accompanied by muscle twitches, paralysis of the tongue, circling, and ‘star-gazing’. Get immediate veterinary advice if your livestock show CNS signs; a rapid and accurate diagnosis is vital to preventing continuing losses.

Diagnosis

Diagnosis of lead poisoning is based on a history of access to lead and clinical signs. Postmortem examination can reveal lead particles in the reticulum of affected ruminants or within the crop of poultry. Elevated blood lead levels can be detected for weeks following abnormal lead intake. Diagnosis can be difficult when animals don’t show signs of toxicity but have elevated blood levels.

Treatment

There are no United States Department of Agriculture (USDA) approved treatments for food producing animals in the United States, and the outlook for any animal that has ingested a large amount of lead is poor. Supportive care, such as injections of thiamine hydrochloride (vitamin B1) or drenching with small amounts of magnesium sulfate (Epsom salts), may help reduce the severity and continued absorption in affected ruminants. Calcium-EDTA has been

used for treatment in animals as well. Work closely with your veterinarian for treatment details.

Contact your local veterinarian if you suspect your animals have been exposed to lead. If you suspect lead poisoning in people, contact your local health provider or your [county’s public health department](#).

Prevention

Secure or fence off areas with garbage, batteries, and farm equipment. Old batteries and any broken/spilled contents should be removed and taken to a recycling facility. Check new grazing areas for potential hazards before turning livestock out.

Testing eggs, backyard poultry, and the environment (dirt, poultry enclosures), particularly in urban areas, can help identify lead exposure or a source. Removing poultry from a contaminated environment, soil remediation (removing topsoil and adding new, uncontaminated soil), or increasing the calcium content in the chickens’ diet (which decreases the absorption of ingested lead) may be options to prevent further exposure. As egg shells from exposed poultry likely contain lead, they should not be used for composting or refeeding to poultry.

Protecting Human Health

Meat and eggs containing elevated lead levels are not suitable for human consumption. Animals recovering from lead toxicity can have elevated lead levels for many months. Even when the source of lead is removed, lead can be released from bone deposits during normal calcium turnover and during calving or egg laying.

Along with strategies to remove sources of lead, periodic testing of eggs or live animals (whole blood samples) may be recommended before slaughter or consumption of animals exposed to lead. Testing for lead in eggs, blood, liver, and kidney can be done at the [California Animal Health and Food Safety \(CAHFS\) Laboratory](#). For more information on eggs, visit: [A question of lead: is it harmful to eat eggs from backyard chickens that have been exposed to lead?](#)

Animal Health and Food Safety Services Animal Health Branch

Headquarters - (916) 900-5002
 Redding District - (530) 225-2140
 Modesto District - (209) 491-9350
 Tulare District - (559) 685-3500
 Ontario District - (909) 947-4462
USDA-APHIS-VS - (916) 854-3950 or (877) 741-3690

For more information, please click the following:
[Animal Health Branch](#)