Lead poisoning

Information for livestock owners

Lead is the most commonly reported source of heavy metal poisoning in livestock. Cattle are the most susceptible livestock but lead poisoning can also affect; sheep, goats, horses, birds/poultry and dogs. People, predominantly children, can also be affected by lead poisoning.

Exposure

Animals usually become affected by ingestion of lead. Cattle find lead palatable and will readily chew lead material. Younger animals may be more commonly affected as they are both less tolerant to lead poisoning and more inquisitive. The probability of ingesting lead is increased in cases of extreme drought, or when stock are nutrient deficient as they are more likely to break into areas that have been fenced off, such as house yards and rubbish dump sites. Lead hazards commonly become more visible to stock after fires or during drier periods as pastures length is shorter.

The most frequently reported source of lead poisoning for cattle is discarded lead-acid batteries. Lead that has been exposed to acidic conditions, e.g. lead in batteries, is more readily absorbed in the animals' body and therefore presents a higher risk of poisoning.

Lead based paints also pose a threat to animals as the lead can be ingested from paint tins and objects painted in lead paint. Ashes from burnt objects that had been painted with lead based paints also pose a risk. As the lead particles in the paint are very fine, they are absorbed into the animals' body quickly. Lead may be associated with mine tailings or may also be a normal environmental component.

Further sources of lead include; sump oil, posts painted with sump oil, linoleum, grease, lead weights, lead shots, oil filters, lead light windows and lead fittings used on water pipes. Many lead containing items can be found in rubbish dumps on properties.

Diagnosis

Not all animals that have ingested lead will show signs. A history of exposure to lead is important. Teeth grinding and blindness are the most common signs however, stock may show any of the following:

- Teeth grinding
- Blindness
- Muscle spasms
- Incoordination
- Rolling eyes
- Head pressing
- Tongue paralysis
- Constipation and diarrhoea

Signs may be similar to those exhibited by other diseases which affect the nervous system, including plant poisonings, botulism and emergency animal diseases such as rabies.

Cattle with blindness caused by lead poisoning may have a high stepping gait and wander fence lines.
Depending upon the severity of the poisoning, these symptoms may be followed by death. It is important to exclude other causes of illness and death by a veterinary examination.

A blood sample from the affected animal may confirm lead poisoning. Lead poisoning may not show obvious signs on post-mortem but it is important that a post mortem is done and blood and tissue samples are submitted for testing to rule out other diseases. A sample of fresh muscle and liver and kidney tissues should be collected in addition to the full range of samples.

Prevention and treatment

Lead poisoning can be minimised by restricting the access of livestock to rubbish dumps. All rubbish dumps should be fenced and livestock should not be allowed to graze areas where an existing or old rubbish dump was located. Remove any discarded batteries from paddocks.

Treatment must be administered by a veterinarian and is generally not effective. Once clinical signs are seen, it is often too late for treatment, particularly in cases where the animal has ingested a large amount of lead and the affected animals should be humanely euthanized.

Management of chemical residues and slaughter restrictions

Lead will remain in tissues for a number of months after an animal has been exposed. The rate of decline of lead residue levels is difficult to predict but is fastest in blood, then meat, then offal. Due to implications for human health, the Australian New Zealand Food Standards Code has a set Maximum Level (ML) for lead in the meat and edible offal of cattle, sheep, pigs and poultry. The ML for meat is 0.1 mg/kg and the ML for edible offal (liver and kidney) is 0.5 mg/kg.

Not all stock that have ingested lead will show symptoms, however their lead levels may be higher than the permitted ML. In the event of lead exposure or suspect lead poisoning, all livestock that had access to the lead source should be regarded as contaminated until individual blood tests are done.

The lead ML for blood is 0.05 mg/kg. Stock testing greater than the ML for lead, or in a suspect category, are assigned the National Livestock Identification System (NLIS) lead status of Pb1 and cannot be slaughtered for human consumption. Where the blood level of lead is less than 0.05 mg/kg, the NLIS lead status assigned will be Pb2. NLIS Pb2 status applies for at least 12 months. Cattle can be slaughtered in Australia with discard of the liver and kidneys. They are not eligible for live export as the offal removal requirement cannot be enforced and liver and kidney may enter the food chain. The live export restriction on Pb1 and Pb2 status ensures food safety and product integrity. In some cases, a premise status (PIC or whole herd) may apply. An additional NLIS status is also applied to any device with a chemical or heavy metal contamination risk which notifies the State Department of Agriculture when the cattle are moved off the property under restrictions. Abattoirs, saleyards, export yards and properties are also alerted when animals with a NLIS Pb1 or Pb2 status are moved onto the property.

The detail of individual lead exposure cases will vary resulting in specific case-by-case risk management approaches to lead. The aim of lead residue management is to manage the risk at individual and herd levels according to the known or suspected exposure and the potential half-life of the residue, guided by tests that are indicative and not absolute. The Chief Inspector of Livestock oversees the management of lead exposure cases and will exercise regulatory powers to ensure compliance for optimum animal and national livestock industry outcomes.

The National Residue Survey (NRS) monitors livestock products produced in Australia for harmful residues, including lead, with both random and targeted programs. The same tests are used for diagnostic purposes.

If you suspect that your animals have lead poisoning, contact the Regional Veterinary Officer or Livestock Biosecurity Officer.

For more information contact your regional Animal Biosecurity Office

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