UREA (NPN) POISONING

Urea is a valuable livestock feed supplement particularly when it comes to improving dry matter digestibility i.e. the ability of animals to digest low quality pasture, hay, straw or stubble. Improved digestibility enables animals to eat more and therefore improve their level of productivity.

There are however significant risks associated with feeding urea and these must be understood before feeding urea to stock.

Forms of Urea

The most common forms of non-protein nitrogen (NPN) in livestock feeds are urea, urea phosphate, sulphate of ammonia, MAP and DAP.

Urea is usually supplied as an ingredient in licks, blocks or liquid feed supplements. Alternatively, low quality hay, straw and stubbles can also be treated with urea (see liquidfeeds.com.au).

In ruminants, nitrogen from urea is released in the rumen as ammonia and is used by rumen microflora to synthesis protein. This protein then becomes available to the animal through the normal process of digestion and absorption. If more urea is consumed than the rumen organisms can metabolize, the ammonia is absorbed into the blood stream. Ammonia in the blood stream is then converted back to urea in the liver. This pathway can be easily overwhelmed causing excess ammonia in the blood or ammonia (urea) toxicity.

Causes of Urea Poisoning

- Sudden introduction to supplements containing high levels of urea.
- Excessive consumption of supplements.
- Irregular consumption of urea-containing supplements.
- Poor mixing.
- Dry licks and blocks becoming wet from rain.
- Feeding urea to starving livestock.
- Feeding urea to livestock when available forage levels are inadequate.
- Not ensuring an adequate supply of fresh drinking water.
- Not ensuring adequate trough space for supplements to avoid bullying and subsequent over-consumption.

Diagnosis of Urea Poisoning

Depending on the level of urea ingestion and the time taken to ingest the supplement, signs of urea toxicity may appear within minutes to several hours after ingestion. Onset and progression may be so rapid that animals may simply be found dead.

Clinically ill animals may display twitching of facial muscles and ears, teeth grinding, excessive salivation, bloat and abdominal pain with forced breathing and a staggering gait.

Indicators of Urea Toxicity

- Access to urea containing supplements.
- Ammonia odour of rumen contents.
- Upon post mortem inspection, white foam may be present in the airway and rumen pH is likely to be high (7.5 -8.0).

A large pool of rumen fluid may be present on the ground near the animal's mouth.

Treatment:

If animals can be handled, a stomach tube should be used to relieve bloat. This should be followed by a drench of 45 litres of cold water followed immediately by a drench of 5 litres of vinegar. Retreatment may be necessary within 24 hours if a relapse occurs.

As a rule of thumb, the rates for sheep are approximately one-tenth those of cattle.

Urea feeding recommendations and fast facts

- Ensure adequate forage.
- Ensure adequate water supply.
- Once introduced to urea supplement, ensure continued supply and avoid livestock running out of supplement.
- Once pasture quality and quantity is adequate remember to gradually wean stock off urea.
- If urea toxicity is suspected, remove supplement immediately.
- Urea doses of 0.25g/kg of body weight can be fatal in stock previously not exposed to urea.
- The presence of starch from grain or sugar from molasses results in superior utilization of urea and reduced risk of toxicity
- Young livestock are more susceptible to urea poisoning than mature livestock.
- Ensure supplements containing urea have adequate intake control features to avoid excessive intake.
- Urea should not contribute more that 40% of the total crude protein intake of supplemented livestock.
- Do not feed urea to horses (horses do however have a much higher tolerance to urea than sheep and cattle.