Protecting livestock from blue-green algae poisoning

What is blue-green algae?

Blue-green algae are bacteria (cyanobacteria) that usually occur in low numbers in Australia's waterways, and which have no detrimental effects under normal conditions. However, given certain conditions, these bacteria can multiply rapidly resulting in 'algal blooms'. In these situations, the bacteria release toxins in levels that have the potential to kill large numbers of livestock very quickly.

What causes algal blooms?

Algal blooms are more likely during the warmer months due to higher temperatures and longer daylight hours. High levels of nutrients in water supplies, particularly phosphorous and nitrogen, and slower moving (or stagnant) waterways, will also provide an ideal environment for the bacteria to replicate.

Detecting a blue-green algal bloom

A blue-green algal bloom will often be visible on the surface of the affected water supply, and although its appearance may vary from pale green to dark brown, it is frequently described as appearing like green paint. An 'earthy' smell may or may not be detected. It is possible the algae on the surface of contaminated water supplies will move in response to the direction of the wind, and be found accumulated on certain sides of water sources such as dams. It is also possible that algae may be present but not visible (i.e. under the surface of the water) at times.

In comparison to blue-green algae, other algal blooms may look more like green mats, and can be pulled from the dam in long strings. Usually there will be no smell associated with these algae.

Blue-green algae toxicity in livestock

Blue-green algae can produce neurotoxins, which affect the nervous system, and hepatotoxins, affecting the liver. Depending on the toxicity of the bloom and the concentration of the toxin, between a few mouthfuls and many litres of water may be ingested before livestock show signs of poisoning. Animals that have consumed the toxin will appear unwell very quickly. They may initially appear depressed and weak, show signs of tremors, have a staggering gait, and then become recumbent, convulse and die. Acutely affected animals will often die within 24 hours of ingesting the toxin.
Those animals that do not die immediately will often have severe liver damage, leading to jaundice and severe photosensitisation over the following days. Those animals that recover are likely to show signs of chronic ill thrift. There is no specific treatment for blue-green algae toxicity, and most animals will die.

Laboratory testing of the water supply for the presence of blue-green algae, and a post-mortem examination of affected animals by a veterinarian will assist to confirm the diagnosis. Externally, the muzzles, feet and legs of deceased animals may be stained green by algae. Typical post mortem findings include clumps of greenish algae in the oesophagus and stomach, severe liver damage and internal bleeding.

Water samples for testing for the presence of blue-green algae must be collected and stored appropriately to ensure accurate results are obtained.

**Protect livestock from blue-green algae toxicity**

If an algal bloom is suspected, access to the contaminated water source should be removed immediately, and an alternate supply of water provided. If absolutely no other water source is available, where stock water is piped, foot valves or inlet pipes could be moved as far below the surface of the water source as possible, where concentrations of blue-green algae may be lower. This may reduce the amount of algae pumped into stock troughs. This alternative continues to pose a potential risk to stock and they should be monitored very closely for signs of toxicity.

Water samples can be collected from suspected water sources and tested for the presence of blue-green algae. It is essential to remember that the actual toxin may remain in the water source for a period after the actual algae has vanished. Testing for the actual toxin is of limited availability and expensive.

Chemical water treatments that kill algae are an option but are generally not recommended as these treatments allow the release of preformed toxins into the water, potentially making the water even more toxic. If an algicide is used, manufacturers’ instructions must be followed carefully, and stock removed from the water source until toxin is no longer present in the water. Treating water with copper sulfate is not recommended as it can increase the risk of copper toxicity, particularly in sheep.

Water may remain toxic for a period after an algal bloom has visibly disappeared. Generally, stock should not be allowed access to affected water for at least two weeks after a bloom is no longer present. Stock should be monitored closely when re-introduced to such a water source. Care should be taken if using blue-green algae affected water for irrigation purposes, and it should only be used if an alternative water source is not available. Livestock should not graze pastures that have been irrigated with blue-green algae contaminated water for at least seven days after irrigating the pasture.