Blue-Green Algae (Cyanobacteria) in Livestock Watering Sources

February 2026

Cyanobacteria, commonly known as blue-green algae, are naturally occurring bacteria in all surface water sources. Cyanobacteria may become a concern under conditions that allow them to multiply and form large populations, potentially impacting livestock and human health. Species commonly found in Saskatchewan have the potential to produce neurotoxins (brain) and hepatotoxins (liver), which could result in livestock death or illness.

Maintaining a healthy dugout or naturally occurring water source is a delicate balance. Ideal conditions for cyanobacterial overgrowth include sunlight, warm weather with little wind where dissolved oxygen is reduced (<4 mg/L), allowing cyanobacteria to outcompete beneficial bacteria which require oxygen to survive. High phosphorous (>20-30 µg/L), either because of natural sediment or eutrophication (nutrient loading) provides cyanobacteria with their food source. Cyanobacteria also tend to prefer alkaline environments (pH 7.5-10).

Prevention

While there is no silver bullet to preventing cyanobacterial overgrowth, there are several ways to reduce the risk by implementing the CRPN Method:

- Construction: construct dugouts where high-nutrient runoff will not occur; deep dugouts prevent overheating of water sources; flatten spoil piles and seed to grass to prevent re-entry of organic matter; consider constructing swales where sloped topography is required for runoff accumulation.
- Restrict direct livestock access to prevent nutrient overloading in water sources.
- Phosphorous Management: application of coagulants such as aluminum sulfate to water sources will destabilize cyanobacteria and drag phosphorous to the bottom of the water source. Some aquatic plants, like duckweed, also serve to absorb excess phosphorous in the water, preventing the formation of cyanobacteria.
- Novel Approaches: the application of pond dyes, pond conditioners, shade balls, aeration, and dredging may aid in creating conditions where cyanobacteria are unable to thrive.

Treatment

It is important to use algaecide products approved for use in water, and to follow label recommendations.

The most common and cost-effective products available include liquid and granular copper sulfate products of varying concentration. Hydrogen peroxide treatment is also an option, but more costly and difficult to source.

- Granular copper sulfate should be applied using the bag-and-string method
- Liquid copper sulfate should be applied evenly on the water's surface

If there is concern of a cyanobacterial bloom reforming, follow up two to three days post algaecide treatment with a coagulant such as aluminum sulfate to remove phosphorous from the top of the water column where cyanobacteria proliferate.

CAUTION

Wait 10-14 days following algaecide treatment before allowing livestock to drink from the water source. As cyanobacteria die, they release potential toxins which take 10 to 14 days to dissipate.

Cyanobacteria Species Identification Flow Chart

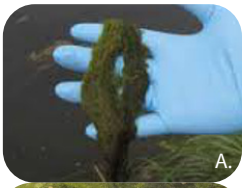
Step 1. Determine whether the species is filamentous or planktonic.

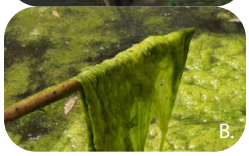
Planktonic

- Falls through your fingers or sticks like scum.
- Turns to mush when squeezed between the fingers.
- The bloom is suspended throughout the water column. *Determine using a glass jar.*

Filamentous

- Can be held in your hands like a mat.
- Looks like cotton when squeezed.
- More abundant near the water's edge.
- Feels silky or slippery. *Determine using a glass jar.*





Step 2.

Potentially Toxic

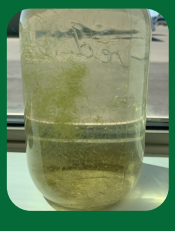
- *It looks like pea soup.*
- *It smells like a pig pen*
- *It appears "paint-like" on the water's surface.*

Anabaena or Microcystis
Potentially Toxic

Potentially Toxic

- *Looks like tiny grass clippings.*

Aphanizomenon
Potentially Toxic



Safe

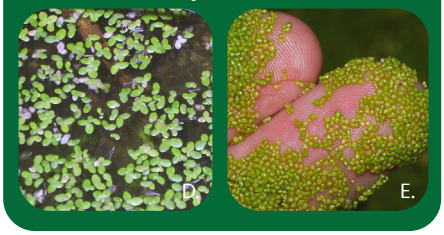
- *Looks foamy.*
- *Is bright green or red.*
- *Changes color in the sunlight.*

Euglena
Caution

Safe

- *Underside has 1-2 small roots.*
- *Floats on the water's surface.*
- *Looks like small green peas or lily pads.*

Duckweed or Watermeal
Safe – Aquatic Plants



Green Euglena species are safe. Red Euglena species have the potential to produce toxins similar to fire ant venom.

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Cyanobacteria Toxin Testing

Cyanobacteria most commonly produce two toxins in Saskatchewan: Microcystis and Anatoxin. Testing for these toxins can be done through select laboratories.

It is important to remember these results represent toxin concentration at the time of sampling and may not represent the total possible concentration at other points in time. As such, it is recommended to positively identify a cyanobacteria bloom and treat with an algaecide if confirmed.

For accurate results, samples submitted for testing should be frozen as soon as possible to preserve any toxins present.

For more information on cyanobacteria, or to bring in a sample for testing, contact the Agriculture Knowledge Centre at 1-866-457-2377. A Premise Identification (PID) number is required to access ministry services.