

Hi all,

Hopefully I have included the proper DNR, DHHS, and State contacts here. Please feel free to forward to other relevant parties.

On Monday, 5/22, DWQ staff visited the pond (40.7308394,-112.0387727) at Lee Kay Public Shooting Range identified by the dog trainer as a site of likely exposure for the six dogs that died this weekend. Chester, with DNR, and the dog trainer accompanied us. Prior to the onset of illness, the dogs were observed eating shoreline material. On Monday, we observed algal growth along the shoreline and dried algae entrained in mud flakes around the pond. We collected samples of both live and dried material for phycology and cyanotoxin analysis.

We just received back phycology results. **Both the live and dried material was dominantly composed of benthic cyanobacteria from the genus *Microcoleus* with smaller amounts from the genus *Phormidium*.** **Both of these genera are well established as anatoxin producers.** Anatoxin is a potent neurotoxin that has been associated with dog deaths in Utah (i.e., Zion National Park in 2020) and multiple other domestic and international localities. Lethal doses of anatoxin are usually delivered via ingestion, which may have happened here if the dogs ate either live or dried mat material. Benthic cyanobacteria often have a musty smell, which attracts animals.

We are awaiting cyanotoxin results, which will include a measure of one anatoxin congener, anatoxin-a. We hope to receive these by Friday. However, this will not be a surefire determinant if anatoxin was responsible as these molecules can quickly degrade (we sampled several days after exposure) and multiple lethal congeners exist.

I will allow the veterinarian professionals on this email chain to comment on whether symptoms experienced by the dogs align with cyanotoxin poisoning. However, the ingestion of confirmed toxigenic cyanobacteria mats does provide one compelling line of evidence as to the cause of death.

We're here to help with monitoring, response, and mitigation as this situation continues to evolve. We certainly would recommend a careful look at ponds throughout the Range before it is opened back up to dogs. Please don't hesitate to reach out via email or phone with questions. I'll respond to this chain ASAP once we receive cyanotoxin results.

Best wishes,



Hannah Bonner, PhD

Environmental Scientist
Division of Water Quality

M: 385-258-6057

habs.utah.gov



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