

# FISH & WILDLIFE TOXIN TESTING



What to do when you think wildlife has become intoxicated or you need to test animals for algal toxins

## SUMMARY

If you suspect a wildlife mortality event might be caused by a harmful algal bloom (HAB), save the **source water**. This can be used to look for intact algae or cyanobacteria and narrow down toxin testing. The next specimen to collect, would be stomach contents, if available. For mammalian/avian intoxication, the urine can be used to test for elimination post exposure. Additionally, bile, blood, and organs (kidneys, liver, brain) can be tested. Specimens to be submitted are highly dependent on study goals and site history.

**To request a price sheet with turn-around-times, please contact us:**

PHONE:  
(386) 328-0882

EMAIL:  
[info@greenwaterlab.com](mailto:info@greenwaterlab.com)

## ALL SAMPLES

- 1) After collection, double bag samples to prevent cross-contamination
- 2) Download and fill out our COC: <https://greenwaterlab.com/servicequestionsform.pdf>
- 3) Ship samples
  - a) Pack samples (tightly sealed and individually packed) on ice packs in a cooler
  - b) Make sure samples are labeled with the patient ID and type of sample (e.g. urine)
  - c) Put the filled out COC in a plastic bag in the cooler with samples
  - d) Ship overnight to GreenWater Laboratories

## WHICH SAMPLES DO YOU COLLECT?

### SOURCE

If at all possible, get the source of intoxication (e.g. lake water, surface scum). Collect in 100-250 mL in a plastic bottle. Do not freeze source water; keep refrigerated and send to the lab (< 1 week). If the source is another type sample (e.g. dead fish), freeze the specimen.

### SPECIMEN COLLECTION

\*\*\*WE DO NOT CONDUCT DISSECTIONS\*\*\*

*How the samples are submitted (e.g. individual organs, whole organism) is how they will be processed for testing*

**Stomach contents** (for acute exposure events, wildlife mortality events)

- If available, collect all contents in a bag/bottle and refrigerate

**Urine** (mammals) or cloacal contents

- Collect any urine (0.5 – 50 mL) and freeze (-20 °C)

**Bile or Blood/Plasma/Serum** (optional, research based)

- Collect 0.5 – 10 mL and freeze (-20 °C)

**Organs** (for chronic exposure)

- Excise organs, subsample as needed to acquire 1 – 10 grams
- Individually package each specimen (plastic bags, bottles)
- In order of importance, collect the kidney, liver, and brain
- Freeze organs (-20 °C) immediately after collection

**Fish / Mollusks / Crabs / etc.**

- If human consumption is of concern, send only the fillets/edible portion
  - 1 – 10 grams is sufficient for most tests
- For ecological concerns or chronic exposure studies, the target organ (e.g. liver, kidney), or even the whole organism can be submitted

## WHICH TEST DO YOU CHOOSE?

**For source water** (or **stomach contents** if available):

- Check “**PTOX cyanobacteria screen**” on the COC, which is a microscopy-based test used to identify cyanobacteria/algae
- This sample should be analyzed first so that toxin analysis recommendations can be made and to cut down on toxin testing costs. In the event this sample is not available, ‘blind’ toxin testing can be conducted.

**All specimens** - toxins listed in order of importance for ‘Blind Testing’. Clinical signs and exposure history may also help determine initial choice of toxin test.

Toxin	Method	Detection Limit	Hold Time (-20°C)
Microcystins/Nodularins	MMPB	≤ 5 ng/g	≥ 1 year
Anatoxin-a/Homoanatoxin-a	LC-MS/MS	≤ 50 ng/g	≤ 1 month <sup>a</sup>
Saxitoxins <sup>c</sup>	ELISA	≤ 50 ng/g	≥ 6 months <sup>b</sup>
Cylindrospermopsin	LC-MS/MS	≤ 50 ng/g	≥ 6 months
Guanitoxin (anatoxin-a(s))	ELISA	Qualitative	≤ 1 month <sup>a</sup>
Brevetoxins <sup>c</sup>	ELISA	≤ 250 ng/g	≥ 6 months

<sup>a</sup> = Little is known regarding the holding times of these analytes in animal specimens

<sup>b</sup> = Interconversions may occur

<sup>c</sup> = Predominantly a marine source of intoxication

Ship Samples to: **GreenWater Laboratories/CyanoLab**  
**205 Zeagler Drive, Suite 302**  
**Palatka, FL 32177**