

# Oregon's New Best Management Practices for Cyanobacteria (Blue Green Algae)

May 9, 2013



# Cyanobacteria or Blue Green Algae



# Toxins Health Effects

- Two Primary Types of Toxins
  - Neurotoxins (Nervous system)
  - Hepatotoxins (Liver)

## Typical Toxins found:

- Anatoxin-A
- Cylindrospermopsin
- Microcystin
- Saxitoxin



# Hazardous Algal Blooms (HABs)



# History of HABs in Oregon

- Harmful Algae Bloom Surveillance Program
- Increased monitoring and awareness
- Main focus on Recreational/Health Advisories
- Messages touch upon drinking water issues



# Education and Outreach

- Permanent advisory signs
- Factsheets and poster

## HEALTH ADVISORY

**AVOID POOLS OF WATER IN BEDROCK ALONG THIS RIVER**



Cyanobacteria (blue-green algae) has been found in these pools. This presents a serious health risk because cyanobacteria can produce toxins that cause serious illness in pets, animals and humans.

- Dogs have died after drinking water from these potholes. Autopsies showed they swallowed toxic algae.
- Stay out of rock formations along the shore.
- Avoid water contact. Do not drink the water.
  - Children and pets are at greatest risk.

When in doubt, stay out: don't go in water that is scummy, thick like paint, pea-green or blue-green.

For more information contact Douglas County Health Department: 541-440-357

OHA Harmful Algae Bloom Surveillance program: 1-877-290-6767 or [www.healthoregon.org/HAB](http://www.healthoregon.org/HAB)

Oregon Health Authority



**HEALTH ADVISORY**

**AVOID WATER CONTACT**  
Do not use this water for drinking or cooking

**HARMFUL CYANOBACTERIA (BLUE-GREEN ALGAE) LEVELS**



Activities that don't involve water contact like canoeing, hiking & camping are encouraged

For more information contact Oregon Public Health at 877-290-6400 or [www.healthoregon.org/HAB](http://www.healthoregon.org/HAB)

Oregon Health Authority

## Dog safety alert

Algae are common in fresh waters. One type, blue-green algae, sometimes grows into a large bloom that may contain dangerous toxins.

Dogs have become very sick and even died after swimming in and swallowing water affected by toxic algae.



If you find thick, brightly colored foam or scum at a lake, pond or river, don't let your pet drink or swim in the water!

If your dog goes into the water:  
• Don't let your pet lick its fur.

## HARMFUL ALGAE BLOOMS IN OREGON WATERS

### What is this stuff?

Harmful algae blooms (HABs) are not algae at all. They're actually made of cyanobacteria, also called blue-green algae. Many cyanobacteria species create toxins that can make people and pets sick.

**So, what's the problem? HABs can:**

- Create toxins that can cause illness in humans and animals
- Pollute Oregon lakes and other fresh waters with scums
- Limit recreational activities in lakes, reservoirs and rivers
- Cause challenges for public water suppliers including taste and odor problems and water filtration difficulties

**Why are HABs a health concern?**

- Water contact can cause skin irritation or rash
- Swallowing water can result in diarrhea, cramps, vomiting and diarrhea
- More severe reactions occur when large amounts of water are swallowed
- Children and pets are at the greatest risk

**How can I keep my family and pets safe?**

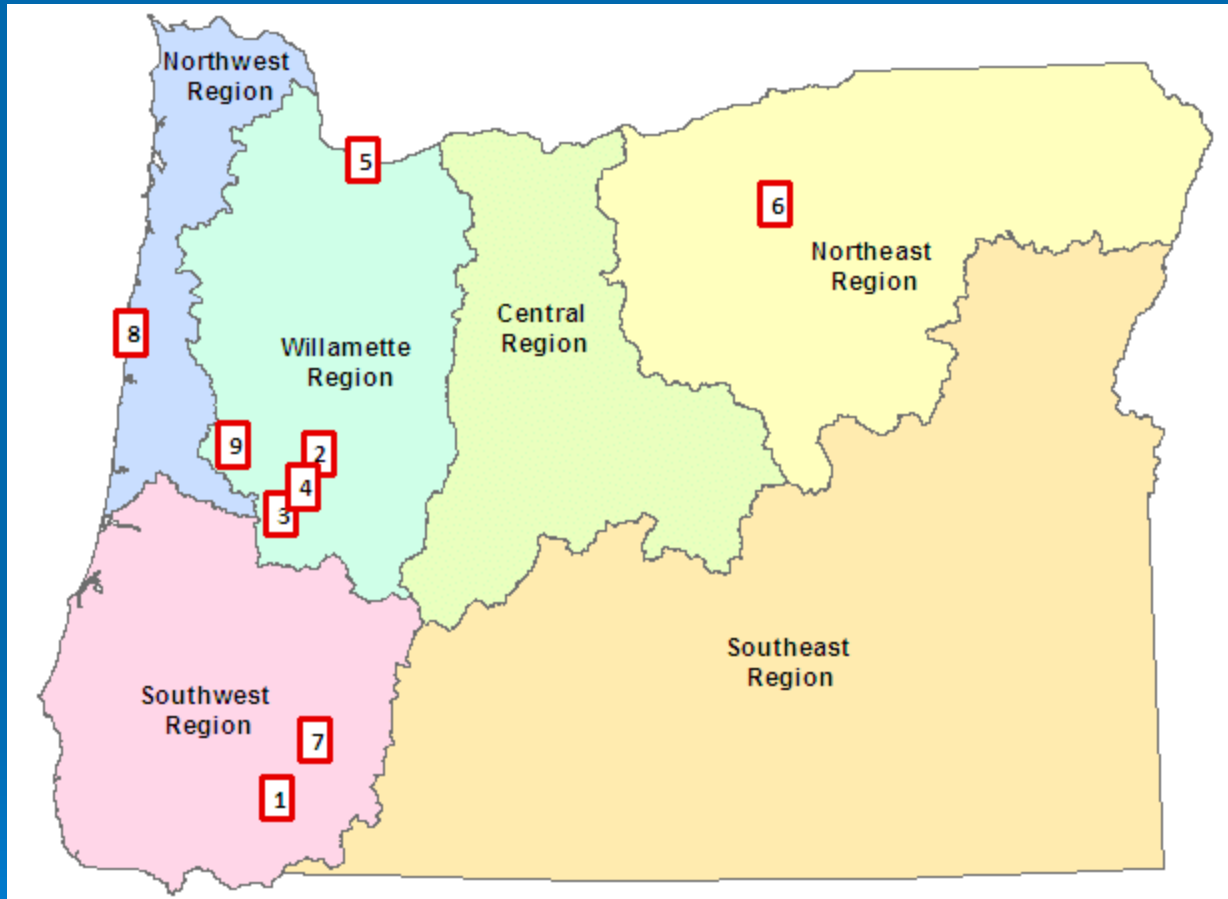
- Do not wade, swim or water ski in waters that have signs of an algae bloom
- Never drink lake or river water
- If you decide to eat fish from affected waters, remove all fat, skin and organs before cooking
- Never cook with natural water from areas suspected to have a harmful algae bloom
- If you or your pet becomes ill, seek medical or veterinary attention immediately

**When in doubt, stay out!**

Know the signs of an algae bloom. Don't go in water that is foamy, scummy, thick like paint, pea-green, blue-green or brownish red.

Learn more about HABs at [healthoregon.org/hab](http://healthoregon.org/hab) or call 1-877-290-6767.

# 2012 Bloom Season Recap



<http://public.health.oregon.gov/HealthyEnvironments/Recreation/HarmfulAlgaeBlooms/Pages/Blue-GreenAlgaeAdvisories.aspx>

# HABS Health Advisory



John A. Kitzhaber, MD, Governor

## News release

[www.oregon.gov/OHA](http://www.oregon.gov/OHA)

**August 28, 2012**

**Media contact:** Jonathan Modie, 971-246-9139, [jonathan.n.modie@state.or.us](mailto:jonathan.n.modie@state.or.us)

**Technical questions:** Rebecca Hillwig, 971-673-0431, [rebecca.hillwig@state.or.us](mailto:rebecca.hillwig@state.or.us)

### **Health advisory issued for Blue Lake** *High algae levels found at Blue Lake near Troutdale*

A health advisory is being issued today due to high levels of blue-green algae in Blue Lake at Blue Lake Regional Park, located three miles northwest of Troutdale in Multnomah County. Water monitoring has confirmed the presence of blue-green algae that can produce toxins. These algae levels are likely to be associated with dangerous cyanotoxin concentrations in the water that can be harmful to humans and animals.

Swallowing or inhaling water droplets should be avoided, as well as skin contact with water.

Drinking water from Blue Lake is especially dangerous. Oregon Public Health officials advise Blue Lake visitors that toxins cannot be removed by boiling, filtering or treating the water with camping-style filters.

People who may draw in-home water directly from Blue Lake are advised to use an alternative water source because private treatment systems are not proven effective in removing algae toxins. However, public drinking water systems can reduce algae toxins through proper filtration and disinfection. If people on public water systems have questions about treatment and testing, they should contact their water supplier.

Oregon health officials recommend that people who choose to eat fish from waters where algae blooms are present should remove all fat, skin and organs before cooking since toxins are more likely to collect in these tissues.

(more)



# Cyanobacteria in the Headlines

- Don't drink the water: Oregon health officials warn of toxic algae in Dorena Lake (KMTR – 8/2012)
- Blue-green algae toxins fatal for some dogs (KCBY -8/2012)
- Blue-green Algae Found In Oregon Pond (KOBI -8/2012)



# Oregon's BMP for HABs

- Monitoring for HABs
- Sampling and Testing HABs
- Toxic Testing
- Public Notification
- Treatment Options



# BMP Intro

- Why Water Providers should implement BMP
- Exhibit 1 – Health Effects of Cyanobacteria Toxins



# BMP – Monitoring


- Identify water body owner
- Communication & coordination
- Water provider engagement
- Exhibit 2 – Algal Bloom Monitoring Guidelines



# Sampling and Testing HABs

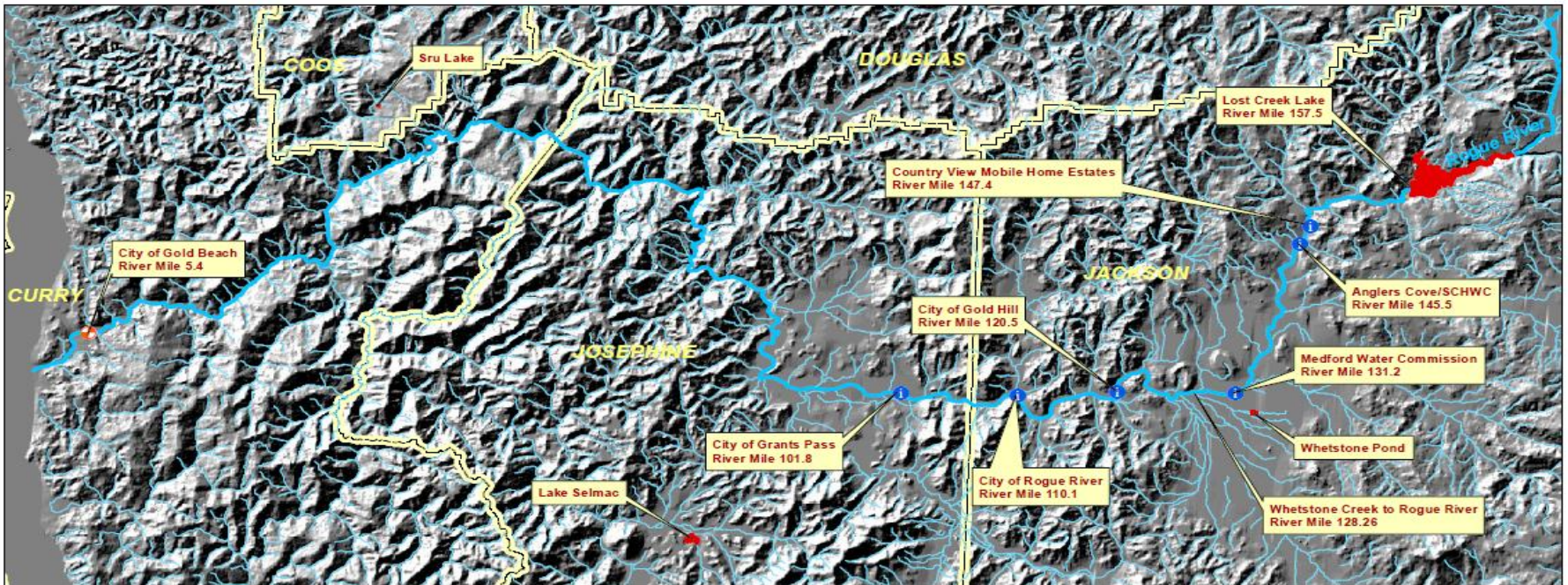
- Exhibit 3 – Identifies which BGA species can develop toxins
- WHO Action Levels – triggers for toxin testing
- Who should testing blooms for toxins

# Water Provider Toxin Testing

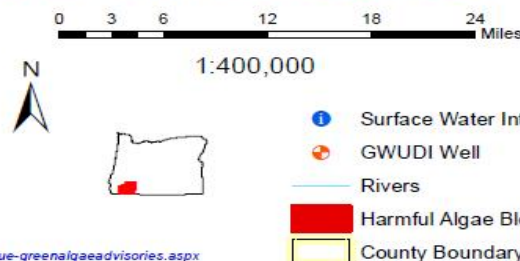
- Weekly raw and finished water testing at intakes
  - Exhibit 3 – Identifies which toxins to test for
  - Link to Labs that test for toxins
  - HABs maps
  - When testing can be terminated
- 

# HABs Maps - Potential Impacted Public Water Systems

## DRAFT Rogue River Harmful Algae Blooms - Potentially Impacted Downstream Public Water Systems



Public Water System Contact Information			
PWS Name	PWS No.	Phone #	River Mile
COUNTRY VIEW ESTATES WS	01403	541-687-7581	147.4
ANGLERS COVE/SCHWC	01483	541-878-2498	145.5
MEDFORD WATER COMMISSION	00513	541-774-2440	131.2
CITY OF GOLD HILL	00333	541-890-3679	120.5
CITY OF ROGUE RIVER	00712	541-582-4401	110.1
CITY OF GRANTS PASS	00342	541-474-6353	101.8
CITY OF GOLD BEACH	01059	541-247-7459	5.4



Other Relevant Contacts		
Organization	Contact	Phone/Email
U.S. Army Corps of Engineers	Christie Johnson	541-942-5631 <a href="mailto:christie.l.johnson@usace.army.mil">christie.l.johnson@usace.army.mil</a>
U.S. Forest Service	Al Johnson	541-225-6431 <a href="mailto:ajohnson@fs.fed.us">ajohnson@fs.fed.us</a>
DEQ TMDL Rogue Basin Coordinator	Bill Meyers	541-776-6272 x253 Medford <a href="mailto:meyers.bill@deq.state.or.us">meyers.bill@deq.state.or.us</a>

**Harmful Algae Bloom Location**

The Bloom locations are represented in red; in many cases the locations are connected by tributaries downstream from the original Bloom. The confluences with the major drinking water sources are denoted in red text (within river miles). In most cases river miles are estimated from USGS 7.5 minute quadrangles.

# OHA Drinking Water Acute Toxicity Values for Toxins

Cyanotoxin	Anatoxin-a ( $\mu\text{g/L}$ )	Cylindrospermopsin $\mu\text{g/L}$	Microcystin $\mu\text{g/L}$	Saxitoxin ( $\mu\text{g/L}$ )
Guideline Value	3	1	1	3

- If toxin are found in finished water about toxicity values water provider must contact OHA.



# Public Notification

- Exhibit 4 – Talking Points
- Exhibit 5 – Public Notice Template for finished water exceedances of toxicity values

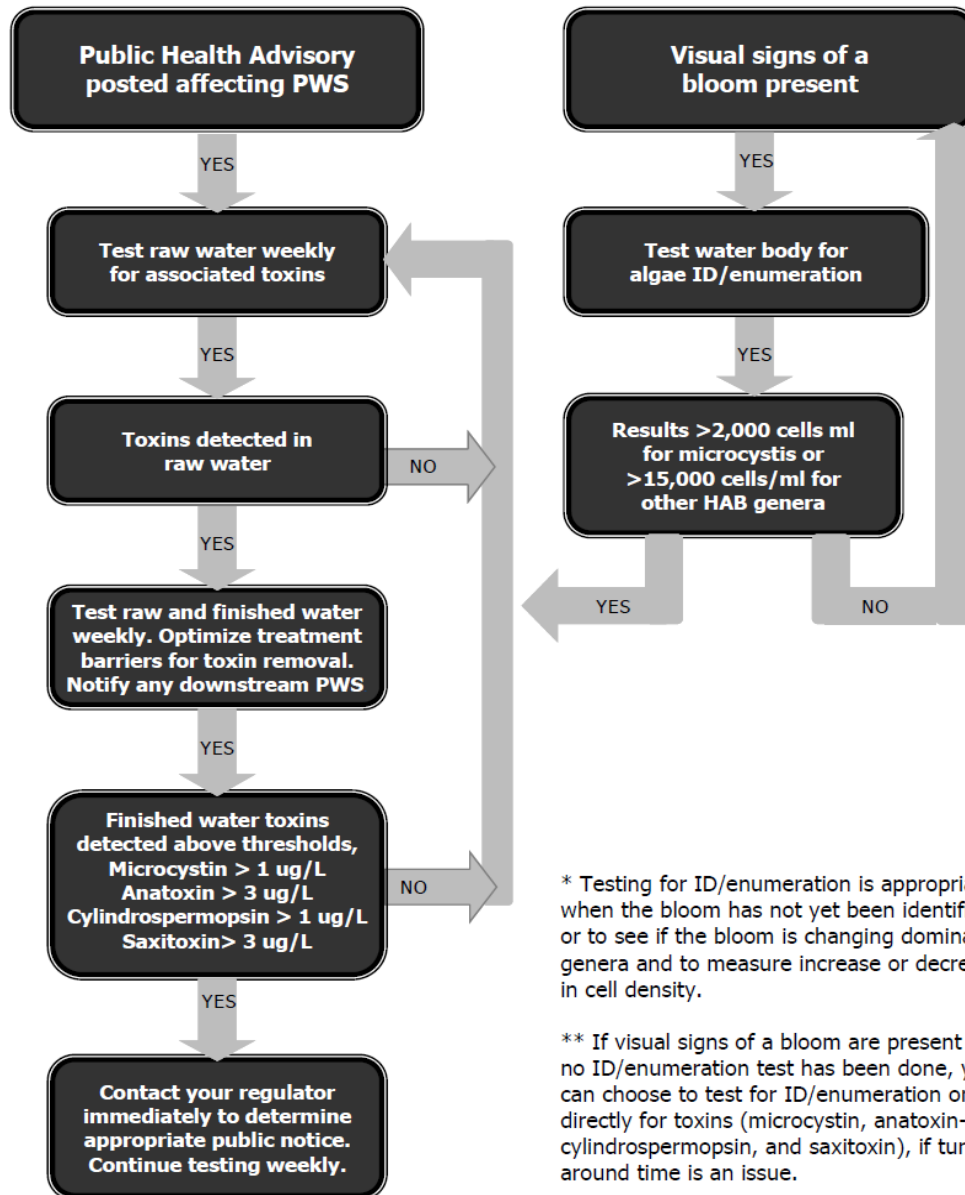


# Treatment Options

- Reduce Intro of Algal Cells into process
- Reduce intact algal cells – Prevent Lysing
- Reduce or Remove Algal Toxins by Oxidation or Adsorption



## Harmful Algae Bloom Response Flow Chart for Public Water



# OHA DWP website

- OHA Resources
- Treatment Information
- Other Resources

# New Developments – Toxin Based Monitoring

## ➤ Pros

- Less chance of having an advisory
- Advisories likely to be shorter in duration
- More precise assessment of risk to recreationists & drinking water

## ➤ Cons

- Expensive compared to cell counts
- More labor intensive for waterbody managers

**Kimberly Swan**

**Water Resource Manager**

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