

Florida Public Health Protection Strategies for Cyanobacteria and their Toxins

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Aquatic Toxins Program
Public Health Toxicology Section
Bureau of Epidemiology
Division of Disease Control and Health Protection



Public Health



Susceptible Populations ?



- Elderly
- Immuno-suppressed
- Underlying disease: Asthma
- Pregnant women, fetus
- Children
- People with extended exposure periods

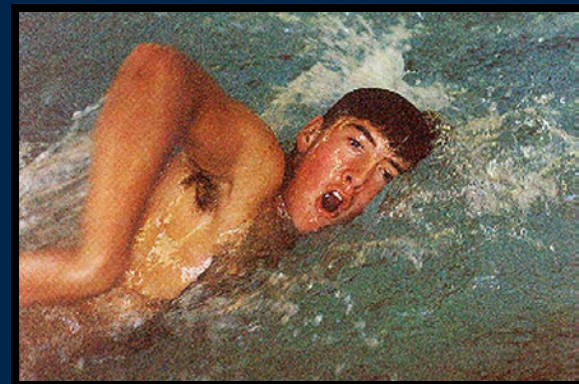
Potential Exposure Pathways



Direct Skin Contact



Ingestion of Food



Incidental Ingestion



Drinking Water



Inhalation of Aerosols

Cyanobacteria Blooms in Florida



Press Release



Charlie Crist
Governor

Ann M. Vissente Ros, M.D., M.P.H.
State Surgeon General

FOR IMMEDIATE RELEASE
June 15, 2010

Contact: Charles Griggs
904-253-1004

HEALTH ADVISORY

JACKSONVILLE, FL—State health officials continue to monitor the most recent fish kill on the St. Johns River. Teams from the Florida Fish and Wildlife Conservation Commission, St. Johns River Water Management District, Florida Department of Environmental Protection, Florida Department of Health, Duval County Health Department and the City of Jacksonville continue to investigate the situation. The cause of the kill has not yet been determined.

Fish kills can be caused by low dissolved oxygen in the water, algal blooms, chemical spills and other events. To ensure the public's safety, the Duval County Health Department advises common-sense precautions and to avoid algae blooms and fish kill areas.

If you see a fish kill of more than a few fish that are dead, dying, acting erratically or have sores:

- Stay away from the immediate area and the fish while those conditions exist.
- Do not eat, use or collect any fish, crabs, other life or items from the immediate area.
- Do not let pets swim in or eat fish from those waters.
- Report the areas of sick or dead fish to the Fish Kill Hotline (Florida Fish and Wildlife Conservation Commission): 800-636-0511.

If you come in contact with the water where there is an algae bloom or where fish are dead, dying, appear sick, or have sores:

- Remove wet clothing and keep separate from other items until it is washed.
- Wash any body part (except the eyes) that comes in contact with the waters, using soap and clean water. Rinse eyes with lots of clear, clean water.
- Use waterproof gloves when handling pets and items that have come in contact with algae and the water.
- Keep your pets away from the algae and do not let them either eat algae or lick their fur after contact with the water.
- See your doctor or health provider if you experience any symptoms that might be caused by exposure to these waters, such as burning eyes, respiratory irritation, or a skin rash.
- Report any illness from exposure to harmful algae to the toll-free Aquatic Toxins Hotline: 888-232-8635.

State and local agencies are continuing to collect samples for analysis in response to reports of fish kills in the St. Johns River.

###

Duval County Health Department

Communications Office • MC-40 • 900 University Boulevard, North • Suite 205 • Jacksonville, Florida • 32211 • (904) 253-1470

In partnership with the City of Jacksonville

Partnerships

Common
Sense
Approach

Actions that
can be taken

Contact
Information

Contact
Information

Contact
Information

Duval County



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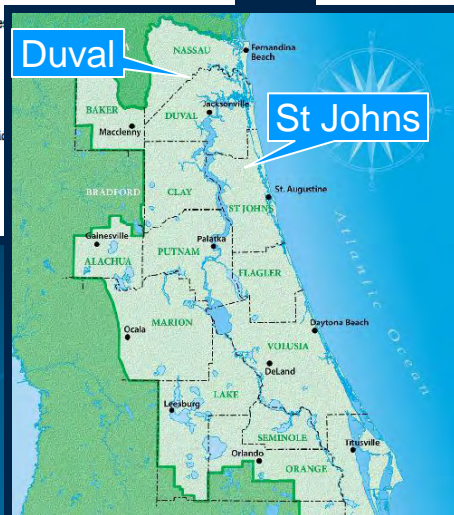
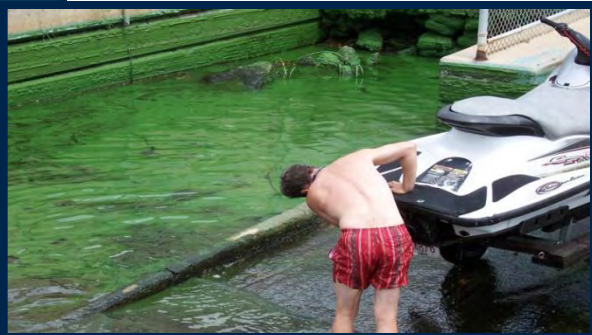
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St Johns County



Charlie Crist
Governor

Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General

FOR IMMEDIATE RELEASE
June 15, 2010

CONTACT: Brenda Fenech-Soler
904-825-5055, Ext. 1004

*** HEALTH ADVISORY ***

ST. AUGUSTINE, FL - State health officials continue to monitor the most recent fish kill on the St. Johns River. Teams from the Florida Fish and Wildlife Conservation Commission, St. Johns River Water Management District, Florida Department of Environmental Protection, Florida Department of Health and the St. Johns County Health Department continue to investigate the situation. The cause of the kill has not yet been determined.

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##

Our Mission: Promote, protect and improve the health of all people in Florida.

Our Vision: A healthier future for the people of Florida.

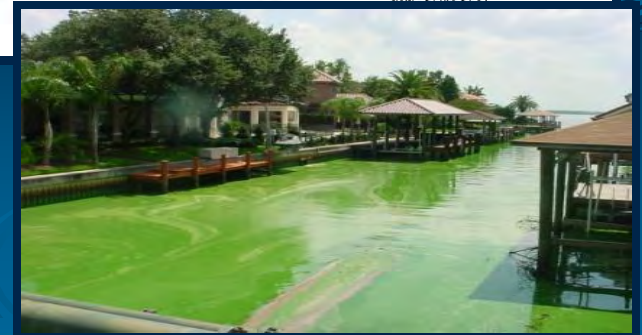
Values: Integrity; Commitment to Service; Respect; Excellence; Accountability; Teamwork; Empowerment



St. Johns County Health Department
1955 US 1 South, Suite 100 • St. Augustine, FL 32086
Phone: (904) 825-5055
Website: www.stjohnschd.org



Public Health
Protecting the Community





PROTECT YOURSELF, YOUR FAMILY, AND YOUR PETS FROM BLUE GREEN ALGAE

Periodically, large amounts of blue-green algae grow – or “bloom” on the Caloosahatchee River. Certain types can release toxins, or poisons, into the water. At these times you will see that the water is discolored or has green scum floating on the surface. At times a bloom may not be noticeable but toxins may still persist at low levels.

For your protection, Lee County recommends these precautions:

1. Don't swim, water ski, or boat in areas where the water is discolored, or where you see foam, scum or mats of algae on the water.
2. If you do swim in water with visible blue green algae, rinse off with fresh water as soon as possible.
3. People with chronic liver disease and pregnant women may be at increased risk.
4. Don't let pets or livestock swim in or drink from areas where water is discolored or where you see foam, scum, or mats of algae on the water.
5. If pets (especially dogs) swim in scummy water, rinse them off immediately – do not let them lick the algae (and toxin) off their fur.
6. Healthy, active fish caught in the river are safe to eat. Do not eat dead or dying fish.
7. Do not eat shellfish (clams, mussels, etc.) harvested from the river.



For further information, please call The Aquatic Toxin Hotline at 1-888-232-8635

Animal Safety Alert

BLUE-GREEN ALGAE BLOOMS

When in doubt, it's best to keep out!



What is a blue-green algae bloom?

Cyanobacteria, sometimes called blue-green algae, are microscopic organisms found naturally in all types of water.

- Blue-green algae grow quickly, or bloom, when the water is warm, stagnant, and full of nutrients.
- Algae blooms usually occur during the summer and fall. However, they can occur anytime during the year.
- When a bloom occurs, scum might float on the water's surface.
- Blooms come in different colors, from green or blue to red or brown.
- As the bloom dies off, you may smell an odor like rotting plants.

What is a toxic bloom?

Sometimes, blue-green algae produce toxins.

- The toxins can be present in the algae or in the water.
- Swallowing water with algae that are producing toxins can cause serious illness.

You cannot tell if a bloom is toxic just by looking at it.



Centers for Disease
Control and Prevention
National Center for
Environmental Health

Animal Impacts - Target Audience: DVMs, Farmers, Pet Owners

Cyanotoxins and the Health Impacts on Pets, Livestock, and Wildlife

Becky Lazensky, MPH;
Andrew Reich, MS, MSPH;
Dr. Stanek, DVM;
and Dr. Blackmore, DVM, PhD



FVMA ADVOCATE

Human Health Impacts – Target Audience: health care providers, residents, visitors, workers

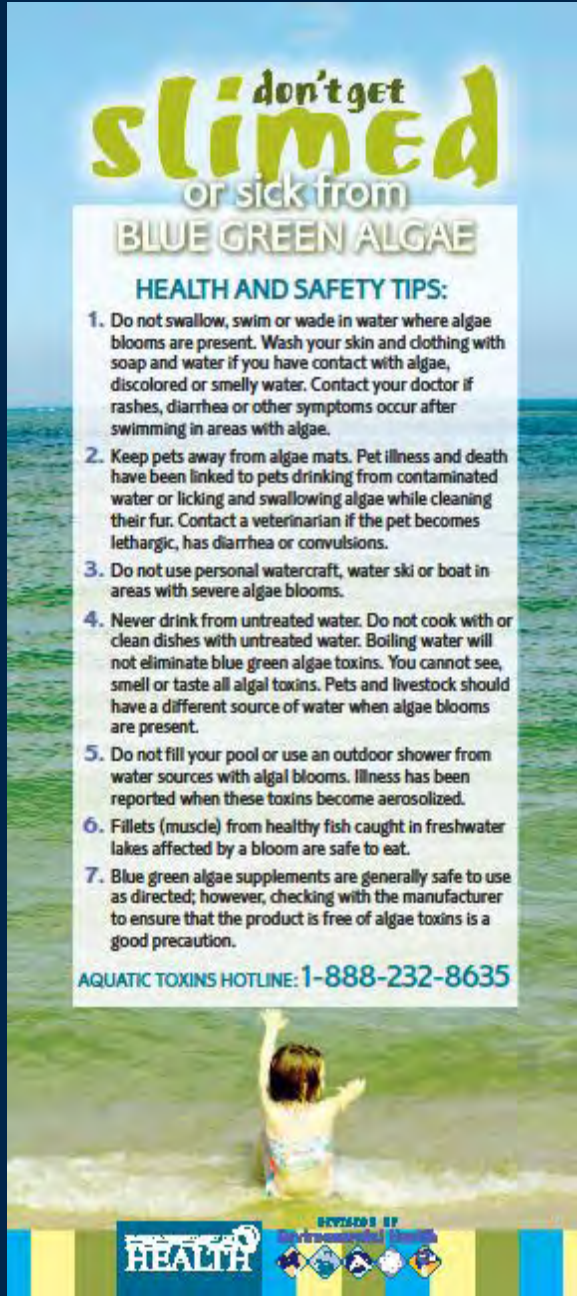


BLUE GREEN ALGAE

have you been **slimed?**

TOP 10 BLUE GREEN ALGAE FACTS

1. Blue green algae, also called cyanobacteria, are tiny organisms naturally found in all types of water.
2. Algal blooms can look like a thick mat or foamy scum. Blooms can change the water color to blue, green, brown, orange, or red and may give off an unpleasant odor.
3. Not all blue green algae are found on the water surface. Some attach to aquatic plants, while some grow along the bottom.
4. Algal blooms can appear year-round but are more frequent in summer and fall.
5. There are hundreds of types of these algae and many are known to produce natural chemicals called toxins.
6. Blue green algae sometimes produce toxins and other times do not. It is not known why this happens. You cannot look at a bloom and tell if it is toxic.
7. Swimming in blooms can result in ear, eye and skin reactions. Reactions are not very common but can also include hay-fever like symptoms and/or flu-like symptoms including diarrhea.
8. Even non-toxic algae can create problems in the water environment. Blooms can remove oxygen from the water causing large fish kills.
9. To learn more about blue green algae issues go to www.myfloridaeh.com and choose aquatic toxins.
10. To report human illness or for questions related to human health call 1-888-232-8635. This is the Aquatic Toxins Hotline staffed by trained medical personnel 24 hours a day, 7 days a week.



don't get **slimed** or sick from BLUE GREEN ALGAE

HEALTH AND SAFETY TIPS:

1. Do not swallow, swim or wade in water where algae blooms are present. Wash your skin and clothing with soap and water if you have contact with algae, discolored or smelly water. Contact your doctor if rashes, diarrhea or other symptoms occur after swimming in areas with algae.
2. Keep pets away from algae mats. Pet illness and death have been linked to pets drinking from contaminated water or licking and swallowing algae while cleaning their fur. Contact a veterinarian if the pet becomes lethargic, has diarrhea or convulsions.
3. Do not use personal watercraft, water ski or boat in areas with severe algae blooms.
4. Never drink from untreated water. Do not cook with or clean dishes with untreated water. Boiling water will not eliminate blue green algae toxins. You cannot see, smell or taste all algal toxins. Pets and livestock should have a different source of water when algae blooms are present.
5. Do not fill your pool or use an outdoor shower from water sources with algal blooms. Illness has been reported when these toxins become aerosolized.
6. Fillets (muscle) from healthy fish caught in freshwater lakes affected by a bloom are safe to eat.
7. Blue green algae supplements are generally safe to use as directed; however, checking with the manufacturer to ensure that the product is free of algae toxins is a good precaution.

AQUATIC TOXINS HOTLINE: 1-888-232-8635

DEVELOPED BY
FLORIDA HEALTH
Environmental Health

Public Health Surveillance Tools

- EpiCom: Public Health Bulletin Board



- Florida Poison Information Centers
 - Tampa, Jacksonville, Miami
 - Aquatic Toxins Hotline




- Florida Reportable Disease System
 - Merlin



- ESSENCE
 - Syndromic Surveillance
 - Includes Florida Hospital ED and Acute Care Facility data



FDOH EpiCom System


The Florida Department of Health










Forums Inbox Search Active Topics View My Profile Edit Preferences User Manual Dashboard Exit

Welcome **Andrew Reich**
The time now is 11:24:55 AM

Latest Forum Posts
Zoonotic Diseases - [Rabies](#) - Tuesday, September 28, 2010 at 10:37:16 AM
Arboviral Diseases - [2010 Mosquito-borne Disease Summaries](#) - Monday, September 27, 2010 at 2:56:19 PM
Meningitis - [Bacterial Meningitis](#) - Monday, September 27, 2010 at 12:52:39 PM
Zoonotic Diseases - [Rabies](#) - Friday, September 24, 2010 at 7:38:16 AM
Vaccine Preventable Diseases 2010 - [Pertussis](#) - Friday, September 24, 2010 at 7:33:37 AM
Influenza and ILI - not H1N1 - [Influenza Surveillance](#) - Thursday, September 23, 2010 at 5:14:43 PM

Forum Statistics
There are 4998 Posts in 293 Topics in 48 Forums
Last Post on Tuesday, September 28, 2010 at 10:37:16 AM
Last Post by [wslahdy](#)
There are 1169 Forum Members
The Newest Forum Member is [hpartb](#)

Page 1 of 2

Forum	Posts	Last Post
 Zoonotic Diseases		
 2008 Hurricane Season		
 2008 Wildfires		
 2010 Haiti Earthquake		
 Anthrax		
 Antimicrobial Resistance		
 Aquatic Toxins		
 Blue Green Algae	16	Wednesday, June 16, 2010 at 2:55:25 PM By reldhar
 Red Tide	181	Friday, September 17, 2010 at 3:45:24 PM By reldhar

Aquatic
Toxins
“Forum”

Florida Poison Information Centers


1-800-222-1222



- Staffed by doctors, nurses and pharmacists
- Speak with a poison specialist
- Free, confidential service: 24/7, 365
- 3 Centers receive 550-600 total calls/ day
- > 25,000 calls since 1998 on Aquatic Toxins



Merlin: CyanoHAB Outbreak Module



Communicable Disease Reporting

[Home](#) [Search](#) **[Outbreak](#)** [Analysis](#) [Resources](#) [Task](#) [EpiGateway](#) [Essence](#) [FDENS](#) [Help](#) [Log Off](#)

Search:

User Role: **REICHAR**

People
[Profiles](#)
[Contacts](#)
[Aggregate Data](#)

Outbreak Info
Outbreak ID: **1637**
Outbreak Date: **09/22/2011**
Outbreak Type: **SYMPTOM/SYNDROME CLUSTER**
Outbreak Name: **STATE - ILLNESSES ATTRIBUTED TO ALGAL TOXIN EXPOSURES**
County: **STATE**
Outbreak Status: **OPEN**

Environmental
[Environmental](#)
[Settings](#)

Setting Detail
Setting Type: **RECREATIONAL WATER**
Relation to Outbreak:
Facility Name: **AQUATIC TOXINS DISEASE PREVENTION PROGRAM**
Street Address:
Zip: -
City: **State:** **FL** **County:**
Contact Name:
Contact Phone:
Comments:
Cancel **Delete** **Save**

Labs
[Lab Results](#)
[Search ELR](#)

Analysis
[Summary](#)
[Reports](#)
[Statistics](#)
[Export](#)

Admin
[Closure](#)
[Definition](#)
[Event Log](#)
[Survey](#)
[Documents](#)

People Associated with this Setting
No Results Found for the Criteria Selected.

Unique ID for
CyanoHAB

Cyano-HAB
Illness

Tabs Available for Data Entry

ESSENCE: Florida System

Electronic Surveillance System for Early
Notification of Community-based Epidemics

The screenshot shows the ESSENCE - Florida Data Query web application running in Microsoft Internet Explorer. The browser's address bar displays the URL: `https://essenceweb.isf.com/FloridaMPC_5/servlet/DataQueryWizardServlet`. The application's navigation bar includes tabs for History of ESSENCE, Syndrome Definitions, Detector Algorithms, Data Dictionary, and Help. Below these are buttons for Alert List, Event List, Overview Portal, Query Portal, Matrix Portal, Weekly Percent, Map Portal, Bookmarks, and User Admin. A secondary bar contains fields for Bookmark Name, Bookmark Page, and a Create Event button, along with an Add URL to Comment section.

The main content area is titled "ESSENCE - Florida Data Query" and features a "Current Data Query Selections" section. Below this is a "Next Selections:" section with a dropdown menu. The dropdown menu is open, showing the following options: "Testing - Poison Control Center", "Emergency Room Data by Patient Location", "Emergency Room Data by Hospital Location", "Percentage ER Data by Hospital Location", "Merlin Reportable Diseases", and "Testing - Poison Control Center".

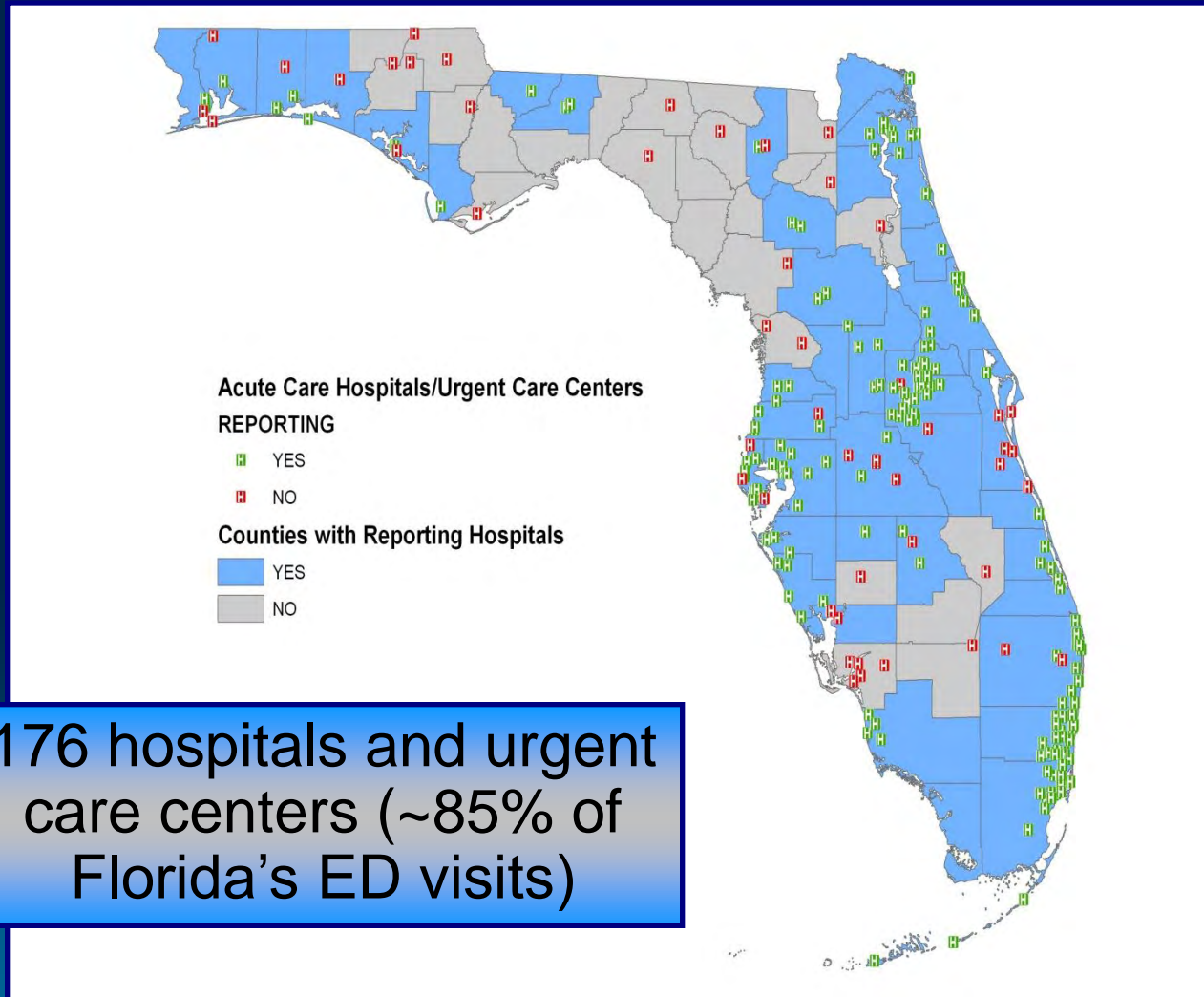
Three blue callout boxes with arrows point to the dropdown menu options:

- A box labeled "Merlin Reportable Disease Database" points to "Merlin Reportable Diseases".
- A box labeled "Florida Poison Control Centers" points to "Testing - Poison Control Center".
- A box labeled "Florida-Based Emergency Room Data" points to "Emergency Room Data by Hospital Location".

The Windows taskbar at the bottom shows several open applications: Start, FPICN Query Builder, Mushroom poisoning, Mushroom_Results, Mushroom_Results, Inbox - Microsoft Out..., ESSENCE-PC, and ESSENCE - Florida. The system clock indicates 3:37 PM.

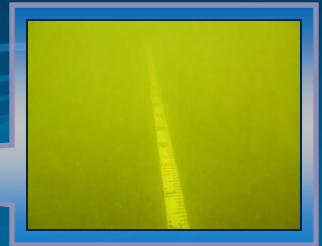
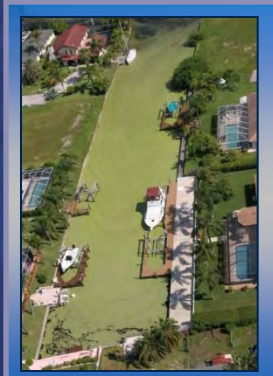
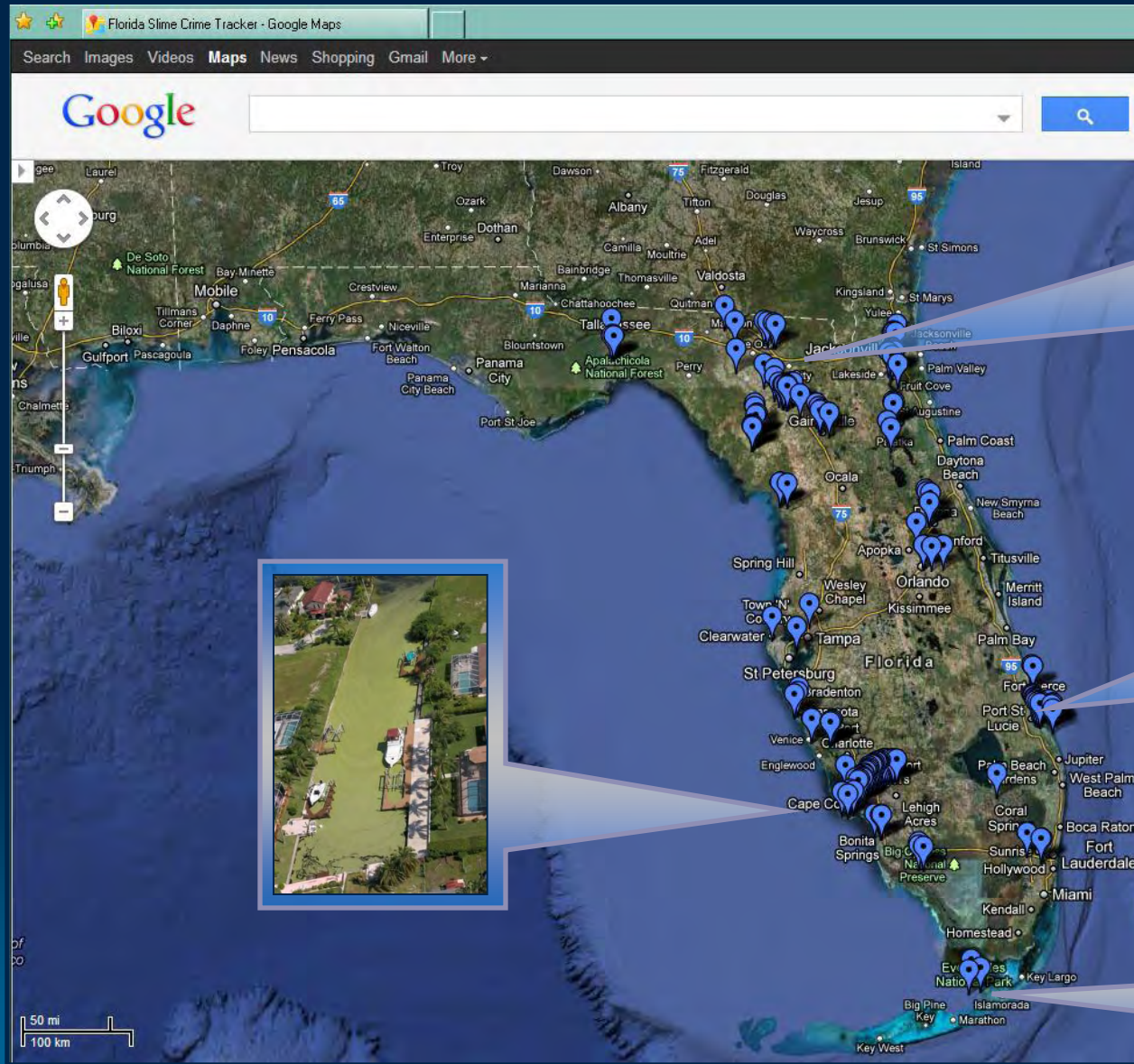
ESSENCE Participating Hospitals

Hospital Emergency Departments and Urgent
Care Centers Reporting



176 hospitals and urgent
care centers (~85% of
Florida's ED visits)

Florida Slime Crime Tracker





NASA Earth Science Division:

Monitoring and Forecasting Cyanobacterial Blooms for
Public Health Protection and Response

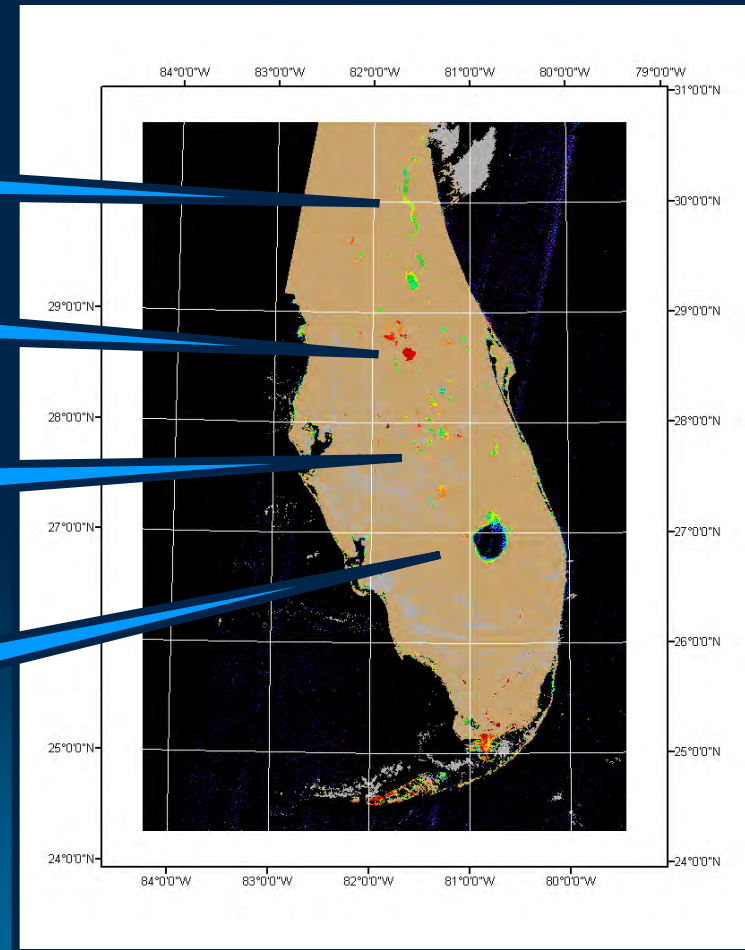


St. Johns River

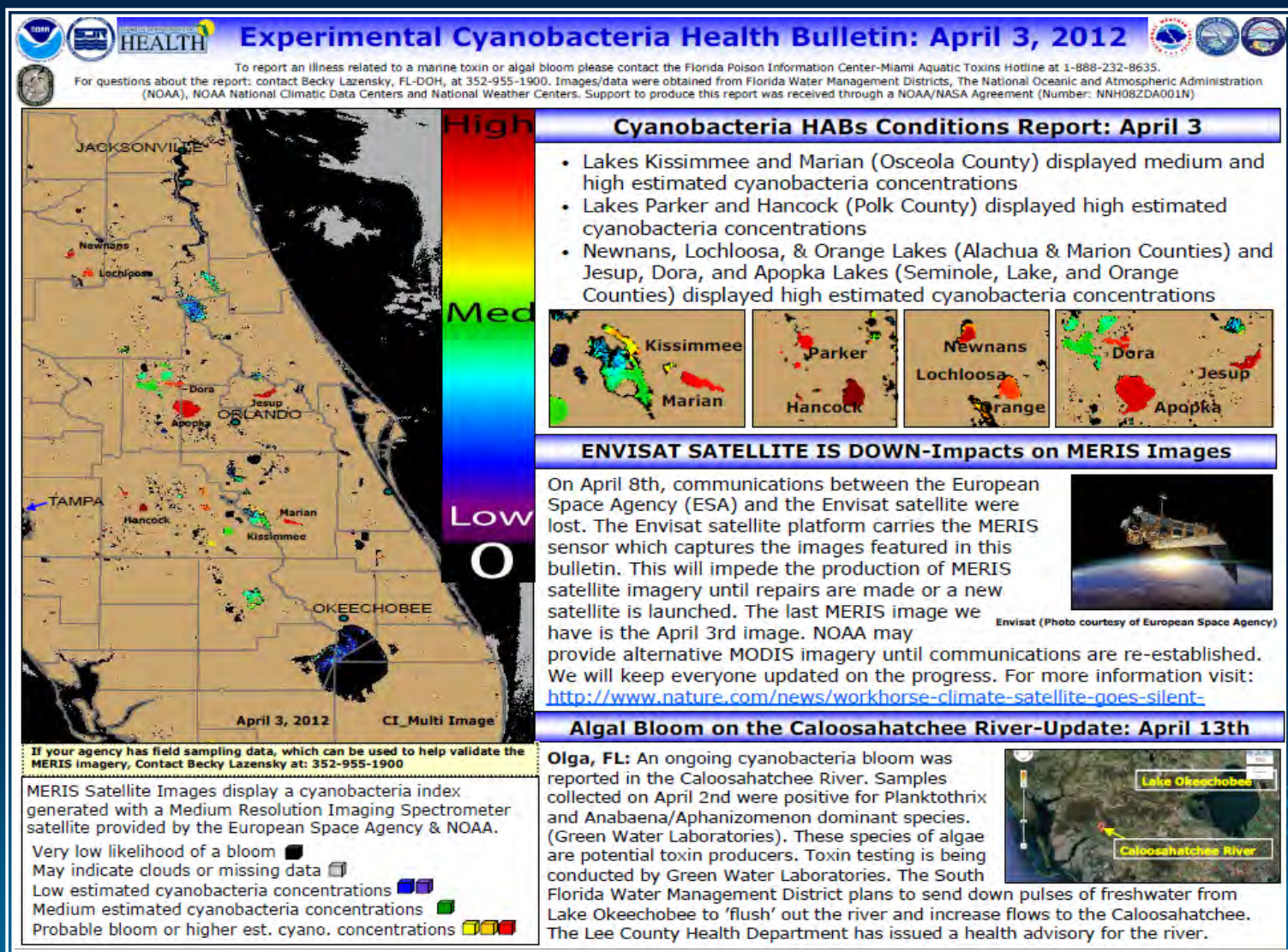
Lake Apopka

Lake Istokpoga

Lake Okeechobee



Satellite Health Bulletins: Example



FDOH Cyanobacteria Tracking Website

Harmful Algal Bloom Tracking Module

Welcome to the Florida Harmful Algal Bloom (HAB) Online Tracking Module. This site is designed to collect algal bloom data into a secure electronic database.

PRIVACY DISCLAIMER: This site should not be used to collect HIPAA protected health information or any other information that could identify the name and address of a private citizen or details about a person's health status. This includes symptoms and health complaints related to a bloom, contact the Florida Department of Health's Aquatic Toxins Disease Prevention Branch, at: 850-245-4187.

- Format for all dates and times is MM/DD/YYYY and HH:MM AM/PM EST
- Size limit for attachments is 15MB per submission and up to 60MB cumulatively (initial submission plus re-submissions)
- (*) Indicates the field is required

Descriptive Bloom ID*

Format: AgencyName_Date_WaterBody

-Note: Use the name of the agency you represent- Examples: FDOH, CHD, FDEP, FDACS, FWC/FWRI, etc.

Name of Water Body

To protect privacy, do not report blooms that occurred in a water body with a single residence located next to the bloom location

Collects information on the location of bloom events, environmental conditions, site visit observations, & laboratory results.

Searchable Database of Bloom Records

Bloom Contact ID

-- Any --

Descriptive Bloom ID

-- Any --

Name of Water Body

-- Any --

Bloom Recorder's First Name

-- Any --

Bloom Recorder's Last Name

-- Any --

Date Record Was Added

-- Any --

Date Record Was Last Modified

-- Any --

Date Bloom Was Seen

-- Any --

Contains a Searchable Database for Retrieving Data

<http://www.caspio.com>

Resource Guide for Public Health Response to HABs in Florida

ISSN 1550-1448

FISH AND WILDLIFE RESEARCH INSTITUTE TECHNICAL REPORTS

Resource Guide for Public Health Response to Harmful Algal Blooms in Florida

Based on Recommendations of the
Florida Harmful Algal Bloom Task Force Public Health Technical Panel



Florida Fish and Wildlife
Conservation Commission



FWRI Technical Report TR-14

2009

Background

Responsibility

Databases

Surveillance

Regulations

Outreach

Management

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<http://www.myfloridaeh.com/medicine/aquatic/resourceguidepublichealth.pdf>

http://research.myfwc.com/education/view_article.asp?id=20125

Medical Fact Sheets

Medical Fact Sheet Harmful Algae Bloom Series



DIVISION OF
Environmental Health

Blue-Green Algae Toxin (Cyanotoxin) Illness

FLORIDA DEPARTMENT OF HEALTH

Version 2 – 10/03/2007

CAUSATIVE AGENT: Blue-green algae toxin (cyanotoxin) illness results from exposure to the toxins associated with organisms known as cyanobacteria. Their complexity, diversity and number of species involved makes the assessment of health impacts an emerging research and medical issue. Species of blue-green algae that form HABs in marine and fresh water include *Microcystis aeruginosa*, *Anabaena circinalis*, *Anabaena flos-aquae*, *Aphanizomenon flos-aquae*, *Cylindrospermopsis raciborskii*, *Lyngbya wollei* and *Oscillatoria*. Exposure can occur through ingestion of contaminated drinking water, inadvertent ingestion via recreational water activities, use of contaminated dietary supplements and possibly from inhalation of aerosols containing cyanotoxins and dermal contact with algae and/or surface water. The cyanotoxins belong to diverse groups of chemical substances with specific toxic mechanisms including neurotoxins (anatoxin-a, anatoxin-a(s), saxitoxin, neosaxitoxin), hepatotoxins (microcystins, nodularins, cylindrospermopsin), tumor promoters (microcystins) and dermatotoxins (include aphyssiatoxins and lyngbyatoxin, (also potent tumor promoters and protein kinase C activators) and lipopolysaccharides, aka LPS (also gastroenteritis and possibly causing dermatitis).

SIGNS/SYMPTOMS: Skin contact has been reported to produce rash, hives, or skin blisters (especially on the lips and under swimsuits). Inhaling water droplets from irrigation or water-related recreational activities have been reported to cause runny eyes and nose, a sore throat, asthma-like symptoms, or allergic reactions. Ingestion can cause acute, severe gastroenteritis (including diarrhea, vomiting); liver toxicity (nausea, vomiting and acute liver failure); kidney toxicity, and neurologic effects such as salivation, muscle cramps, twitching, paralysis and cardiac or respiratory failure (these are the symptoms most often seen in dogs who have been exposed to anatoxin). There is poor understanding of the health effects from chronic exposures.

ONSET/DURATION: With exposure to neurotoxic cyanotoxins, symptoms can appear within minutes to few hours of exposure, but may take up to 36 hours to manifest themselves. Hepatotoxin symptoms can appear rapidly within hours, but may occur as late as several days following exposure to high amounts of cyanotoxins.

DIAGNOSIS: Diagnosis is based on a clinical evaluation of symptoms and exposure history. Environmental samples should include assessment by microscopic identification of cyanobacteria and analytical testing by HPLC/MS and ELISA. Increased serum levels of liver enzymes have been associated with hepatic injury after cyanotoxin ingestion. Clinical laboratory tests are not presently available for the diagnosis of cyanotoxin poisoning in humans. Research efforts are underway to assess the potential to detect certain cyanotoxins in blood.

TREATMENT: In general, the only treatment available for exposure to the blue green algal toxins is supportive medical treatment after complete removal from exposure. If the exposure was oral, administration of activated carbon to decrease gut absorption may be efficacious if given within hours of exposure. Artificial respiration with exposure to the neurotoxins (such as saxitoxin) should also be considered. Based on past outbreaks, monitoring of volume, electrolytes, liver and kidney function should all be considered in the case of acute gastroenteritis associated with some of the blue green algal toxins.

RISK GROUPS: All persons are susceptible to cyanobacteria. However, young children, the elderly and those individuals with underlying immunologic, neurologic, hepatic or kidney disease may be at increased risk. Effects on pregnancy and fetal health is unknown. Animals drinking raw water contaminated with toxin-producing cyanobacteria are especially prone to acute poisonings.

PREVENTATIVE MEASURES: Avoid contact with water or algae if visibly present (foam, scum, or mats of algae). Restrict swimming, boating and other activities in blooms. If exposed, rinse off with fresh water as soon as possible. Pets or livestock should not swim in or drink from areas where the water has. If pets (especially dogs) do swim in scummy water, rinse them off immediately—do not let them lick the algae (and toxins) off their fur. Algaecides may temporarily increase the amount of toxins in the water.

REPORTING REQUIREMENTS: None. At present, cyanotoxin illness is not a reportable disease in Florida. To improve their surveillance of this illness, the Florida Department of Health asks health care providers to report suspect cases to the Aquatic Toxin Hotline at 1-888-232-8635 or the Aquatic Toxins Program at the Florida Department of Health.

ADDITIONAL INFORMATION

Aquatic Toxins Hotline (24/7 medical information): 1-888-232-8635
The Florida Department of Health's Aquatic Toxins Program at www.myfloridaeh.com

AQUATIC TOXINS PROGRAM

Protecting Florida's citizens and visitors from Harmful Algal Blooms and related illnesses through
RESEARCH ♦ SURVEILLANCE ♦ EDUCATION

Cyanotoxin Case Definitions

Note: Cyanotoxin illness is currently not reportable in Florida, however suspect cases are requested to be reported to the Aquatic Toxins Hotline to improve surveillance.

Developed and Proposed by North Carolina Department of Health
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Occupational & Environmental Epidemiology Branch

Microcystin Poisoning

Possible case: Confirmed exposure (ingestion OR immersion) to water with confirmed bloom of cyanobacterial species capable of microcystin production AND clinical evidence of hepatic dysfunction [e.g., painful hepatomegaly; aminotransferase (AST/ALT) level at least 2 times normal] developing within 48 hours of exposure AND other causes of hepatic dysfunction have been excluded.

Probable case: Meets criteria for "possible case" AND there is laboratory documentation of microcystin toxin in water.

Confirmed case: Meets criteria for "probable case" AND/OR positive assay for microcystin toxin in clinical specimen (blood or tissue)

Cylindrospermopsin Poisoning

Possible case: Confirmed exposure (ingestion OR immersion) to water with confirmed bloom of cyanobacterial species capable of cylindrospermopsin production AND development of at least one of the following within 48 hours:

- clinical evidence of hepatic dysfunction [e.g., painful hepatomegaly; aminotransferase (AST/ALT) level at least 2 times normal]
- GI symptoms (e.g., nausea, vomiting, diarrhea, abdominal cramps)
- Proteinuria, hematuria, or other signs of acute renal damage.

Probable case: Meets criteria for "possible case" AND laboratory documentation of cylindrospermopsin toxin in water.

Confirmed case: Meets criteria for "probable case" AND positive assay for cylindrospermopsin toxin in clinical specimen (blood or tissue)

ADDITIONAL INFORMATION:

Florida Department of Health: www.myfloridaEH.com under Food and Waterborne Surveillance Program; Aquatic Toxins Program
Aquatic Toxins Hotline (24/7 medical information): 1-888-232-8635

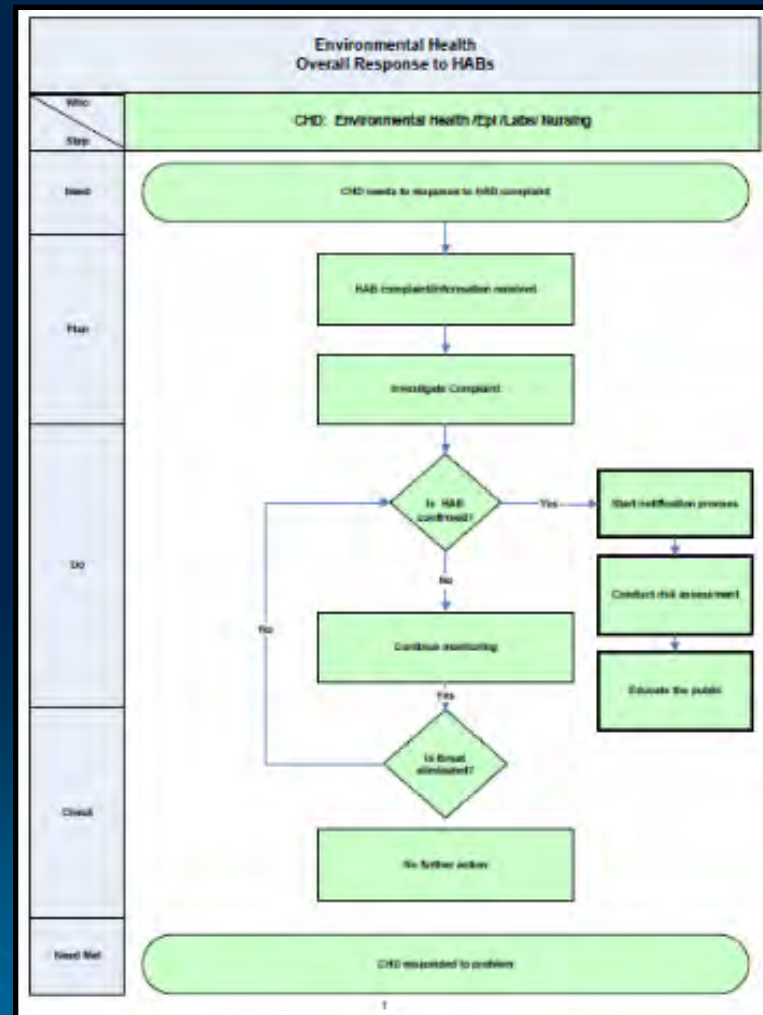
Developing Local Health Department HAB Response Plans

Manual for Harmful Algal Bloom (HABs) Public Health Response Plan Development at County Health Departments



Florida Department of Health
Bureau of Environmental Public Health Medicine
Aquatic Toxins Program

September 2000



FDOH Sharepoint Tackle Box

Orientation
Materials

Resource
Guide

Process
Maps

County
Specific
Information

County Corner

Tackle Box for CHD HAB Response Development

 New Document |  Upload Document |  New Folder |  Filter |  Edit in Datasheet

Type	Name	Modified	 Modified By
	A. Overview of HAB Planning Process - PDF	5/6/2010 2:21 PM	Reich, Andy
	B. HAB Tackle Box Overview 10-13-09 PDF	5/6/2010 10:45 AM	Reich, Andy
	C. HABS101 - PDF	5/6/2010 10:45 AM	Reich, Andy
	D. HAB CHD Risk Assesment Tool Interactive PDF	8/4/2010 2:17 PM	Reich, Andy
	E. Manual for HAB Planning - PDF	5/6/2010 10:46 AM	Reich, Andy
	F. Resource Guide for Public Health Response in Florida - PDF	5/6/2010 10:46 AM	Reich, Andy
	G. Process Mapping by FDOH Performance Improvement - PowerPoint	5/6/2010 10:46 AM	Reich, Andy
	H. Foodborne Outbreak Flow Chart - PDF	5/6/2010 10:47 AM	Reich, Andy
	I. Generic HAB Response Maps - Red Tide, Saxitoxin, Ciguatera, Cyanobacteria and Education and Outreach - PDF	5/6/2010 10:48 AM	Reich, Andy
	J. Generic HAB Response Maps - Red Tide, Saxitoxin, Ciguatera, Cyanobacteria and Education and Outreach - VSD	5/6/2010 10:48 AM	Reich, Andy
	K. DEFINITIONBOXES_Ciguatera - PDF	5/6/2010 10:48 AM	Reich, Andy
	L. DEFINITIONBOXES_Blue Green Algae - Cyanobacteria - PDF	5/6/2010 10:49 AM	Reich, Andy
	M. DEFINITIONBOXES_Saxitoxin - PDF	5/6/2010 10:49 AM	Reich, Andy
	N. DEFINITIONBOXES_Red Tide-Brevetoxins - PDF	5/6/2010 10:49 AM	Reich, Andy
	O. Performance Measures for Responding to HABs in Florida - PDF	5/6/2010 2:28 PM	Reich, Andy
	P. Glossary of Key Terms and Concepts for HAB Plan Development - PDF	5/6/2010 2:26 PM	Reich, Andy
	Q. Evaluation Form HABs Response Plan v2 - PDF	5/6/2010 2:27 PM	Reich, Andy
	R. Summary Cover Sheet HAB Planning - PDF	5/6/2010 2:27 PM	Reich, Andy
	Additional Documents	8/3/2010 4:27 PM	Reich, Andy
	CHD - Brevard	7/23/2010 1:15 PM	Reich, Andy
	CHD - Duval	7/23/2010 1:16 PM	Reich, Andy
	CHD - Palm Beach	7/23/2010 1:17 PM	Reich, Andy
	CHD - Santa Rosa	7/23/2010 1:21 PM	Reich, Andy
	CHD - Wakulla	8/5/2010 2:58 PM	Reich, Andy
	CHD - Walton	7/23/2010 1:24 PM	Reich, Andy
	CHD Lake	8/20/2010 2:11 PM	Reich, Andy
	Florida LakeWatch	5/17/2010 2:12 PM	Reich, Andy
	Florida Red Tide Historical Database FWRI	5/14/2010 2:19 PM	Reich, Andy

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