

2010 Grand Lake St. Marys Total Microcystin Toxin Sampling Data

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	Finished Water	Near Intake (ppb)	Safety Island (ppb)	Camp Beach (ppb)	East Beach (ppb)	West Beach (ppb)
1/7/10	1/7/10	Celina-PWS	Celina-PWS	Non-Detect	4.4	-	-	-	-
1/13/10	1/14/10	Celina-PWS	Celina-PWS	Non-Detect	3.1	-	-	-	-
1/21/10	1/21/10	Celina-PWS	Celina-PWS	Non-Detect	3.7	-	-	-	-
1/28/10	1/28/10	Celina-PWS	Celina-PWS	Non-Detect	6.7	-	-	-	-
2/4/10	2/4/10	Celina-PWS	Celina-PWS	Non-Detect	4.5	-	-	-	-
2/11/10	2/11/10	Celina-PWS	Celina-PWS	Non-Detect	3.6	-	-	-	-
2/18/10	2/18/10	Celina-PWS	Celina-PWS	Non-Detect	8.6	-	-	-	-
2/25/10	2/25/10	Celina-PWS	Celina-PWS	Non-Detect	4.3	-	-	-	-
3/3/10	3/4/10	Celina-PWS	Celina-PWS	Non-Detect	2.3	-	-	-	-
3/11/10	3/11/10	Celina-PWS	Celina-PWS	Non-Detect	1.6	-	-	-	-
3/18/10	3/18/10	Celina-PWS	Celina-PWS	Non-Detect	2.4	-	-	-	-
3/24/10	3/25/10	Celina-PWS	Celina-PWS	Non-Detect	2.3	3.5	2.3	3.0	2.3
4/1/10	4/1/10	Celina-PWS	Celina-PWS	Non-Detect	1.5	-	-	-	-
4/8/10	4/8/10	Celina-PWS	Celina-PWS	Non-Detect	6.3	-	-	-	-
4/15/10	4/15/10	Celina - PWS	Celina - PWS	Non-Detect	9.2	-	-	-	-
4/22/10	4/22/10	Celina-PWS	Celina-PWS	Non-Detect	3.5	-	-	-	-

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	Finished Water	Near Intake (ppb)	Safety Island (ppb)	Camp Beach (ppb)	East Beach (ppb)	West Beach (ppb)
4/29/10	4/29/10	Celina-PWS	Celina-PWS	Non-Detect	0.9	-	-	-	-
5/6/10	5/6/10	Celina-PWS	Celina-PWS	Non-Detect	Non-Detect	-	-	-	-
5/13/10	5/13/10	Celina - PWS	Celina - PWS	Non-Detect	1.1	-	-	-	-
5/18/10	5/20/10	ODNR	Celina-PWS	-	0.6	-	0.7	0.8	0.8
5/20/10	5/20/10	Celina-PWS	Celina-PWS	Non-Detect	-	-	-	-	-
5/27/10	5/27/10	Celina-PWS	Celina-PWS	Non-Detect	0.6	-	-	-	-
6/2/10	6/3/10	ODNR	Celina-PWS	-	-	-	0.4	0.4	0.5
6/3/10	6/3/10	Celina-PWS	Celina-PWS	Non-Detect	0.4	-	-	-	-
6/10/10	6/10/10	Celina-PWS	Celina-PWS	Non-Detect	0.1	-	-	-	-
*6/14/10	6/16/10	USGS	Celina-PWS	-	-	-	*Non-Detect	*Non-Detect	*Non-Detect
6/16/10	6/16/10	Celina-PWS	Celina-PWS	Non-Detect	-	-	-	-	-
6/17/10	6/17/10	Celina-PWS	Celina-PWS	Non-Detect	*0.5	-	-	-	-

***Bloom Response Sampling - Microcystin**

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	SE center lake (ppb)	Big Chick Beach (ppb)	St. Marys Boat Club Ramp (ppb)	Celina Pizza Hut (ppb)	Windy Point (ppb)	Monte zuma Boat Ramp (ppb)
*6/14/10	6/16/10	OEPA	Celina-PWS	*Non-Detect	*9.3	*5.4	*12.9	*Non-Detect	*Non-Detect

*** Note:** Analysis of the microcystin samples taken from a large blue-green algae bloom on Grand Lake St. Marys on June 14 shows microcystin was not detected in several samples and ranged between 3.3 ppb and 12.9 ppb in four sampling locations.

All of these numbers are below the World Health Organization's guideline for recreational contact concerns. However, the current algae bloom is *Aphanizomenon gracile*, a different species than the *Planktothrix* that was dominant in the summer of 2009. Cyanobacteria (blue-green algae) are capable of producing a variety of toxins. Because different algae have been identified in recent samples, Ohio EPA is conducting further analysis to determine if public health concerns exist.

2010 Grand Lake St. Marys Total Microcystin Toxin Sampling Data

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	Finished Water	Near Intake (ppb)	Camp Beach (ppb)	East Beach (ppb)	West Beach (ppb)	DNR Ramp (ppb)	
6/23/10	6/23/10	USGS	Celina-PWS	-	-	0.5	1.1	0.7	-	
6/23/10	6/23/10	Celina-PWS	Celina-PWS	Non-Detect	4.7	-	-	-	-	
6/23/10	7/1/10 7/7/10	OEPA	Celina-PWS	-	-	-	-	-	>250 (scum)	
6/28/10	7/1/10	USGS	Celina-PWS	-	-	12.4	9.2	>50	-	
6/28/10	7/1/10	USGS	Celina PWS	-	-	-	-	-	-	
6/29/10	7/1/10 7/7/10	OEPA	Celina-PWS	Non-Detect	>250	-	-	-	-	
6/30/10	7/1/10	Celina-PWS	Celina-PWS	-	5.7	-	-	-	-	
7/5/10	7/7/10	USGS	Celina-PWS	-	-	>250	>250	>250	-	
7/7/10	7/7/10	Celina-PWS	Celina-PWS	Non-Detect	7.6	-	-	-	-	
7/12/10	7/15/10	USGS	Celina-PWS	-	-	>2000*	>2000*	>2000*	-	
7/15/10	7/15/10	Celina-PWS	Celina-PWS	Non-Detect	25.2	-	-	-	-	

*The actual level of microcystin concentration may be several orders of magnitude higher than what is represented by this number. To determine the final endpoint would require multiple dilutions. We are instructing the Celina PWS to determine microcystin concentration just to the point where it is measured over 2,000 ppb (micrograms/liter). This level of microcystin toxin clearly indicates the water is unsafe for human and animal contact, and further dilutions would not change that determination.

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	Finished Water	Near Intake (ppb)	Camp Beach (ppb)	East Beach (ppb)	West Beach (ppb)	Red Algae Bloom Center of Lake (ppb)	Pizza Hut (ppb)
7/19/10	7/21/10	USGS	Celina-PWS	-	-	150 (scum) 13.5 (water)	55 (scum) 19.7 (water)	105 (scum) 26.0 (water)	-	-
7/20/10	7/21/10	Celina PWS	Celina PWS	Non-Detect	2.6	-	-	-	-	-
7/23/10	7/28/10	ODNR	Celina PWS	-	-	-	-	-	Non-Detect	-
7/25/10	7/28/10	USGS	Celina PWS	-	-	5.3 (scum) 14.4 (water)	27.5 (scum) 0.8 (water)	416 (scum) 4.2 (water)	-	-
7/26/10	7/28/10	Ohio EPA	Celina PWS	-	-	1.2	2.0	2.5	-	-
7/27/10	7/28/10	Celina PWS	Celina PWS	Non-Detect	7.8	-	-	-	-	-
8/2/10	8/4/10	USGS	Celina PWS	-	-	18.5 (biomass) 3.2 (water)	35.5 (biomass) 3.5 (water)	81.0 (biomass) 9.1 (water)	-	-
8/4/10	8/4/10	Celina PWS	Celina PWS	Non-Detect	5.1	-	-	-	-	-
8/8/10	8/12/10	USGS	Celina PWS	Non-Detect	2.5	3.2 (biomass) 3.1 (water)	2.2 (biomass) 2.9 (water)	20.2 (biomass) 3.5 (biomass)	-	-
8/18/10	8/19/10	Celina-PWS	Celina-PWS	Non-Detect	0.7	-	-	-	-	-
8/17/10	8/17/10	Ohio EPA	Ohio EPA-DES	-	-	6.7	14	6.7	-	4.1

Sample Collection Date	Sample Process Date	Collected By	Evaluated By	Finished Water	Near Intake (ppb)	Camp Beach (ppb)	East Beach (ppb)	West Beach (ppb)	L-1/ L-2/ L-3 (ppb)
8/19/10	-	Ohio-EPA	Ohio EPA-DES	-	-	-	-	-	2.5/1.8/4.4
8/24/10	8/25/10	Celina-PWS	Celina-PWS	Non-Detect	6.1	-	-	-	-
8/23/10	-	Ohio EPA	Ohio EPA-DES	-	-	4.5	2.6	3.9	-
8/30/10	8/31/10	Ohio EPA	Ohio EPA-DES	-	-	7.5	3.3	1.5	-

World Health Organization Provisional Guidelines for Microcystin Toxin:

Recreational Contact = 20 ppb (moderate risk)

Public Drinking Water = 1 ppb

ppb = parts per billion

2010 Grand Lake St. Marys Other Toxin Sampling Data

Follow-Up Toxin Sampling – Other Toxins

Sample Collection Date and Type of Toxins Tested	Sample Process Date	Collected By	Evaluated By	Near Intake (ppb)	Finished Water (ppb)
6/17/10 (Anatoxin, Saxitoxin, Cylindrospermopsin)	6/18/10	Celina-PWS	Green Water Labs	Non-Detect (all three toxins)	Non-Detect (all three toxins)

Follow-Up Toxin Sampling *

Type of Toxins Tested	Sample collection Date	Sample Process Date	Collected By	Evaluated By	West Beach	DNR Boat Ramp
Anatoxin (ppb)	6/23/10	6/24/10	OEPA	Green Water Labs	Non-Detect	Non-Detect
Saxitoxin (ppb)	6/23/10	6/24/10	OEPA	Green Water Labs	0.03	Non-Detect
Cylindrospermopsin (ppb)	6/23/10	6/24/10	OEPA	Green Water Labs	9.0	0.1

Note: *More Sample Results in for Grand Lake St. Marys

This afternoon, Ohio EPA received laboratory results from water samples collected in Grand Lake St. Marys on Wednesday, June 23, 2010. The results showed the presence of cylindrospermopsin, a liver toxin, at the West Beach of the state park. In addition, saxitoxin, a nerve toxin, was found at low levels (just above the detection limit) in the same area. At the boat ramp, there was a very low level of cylindrospermopsin.

Due to the highly unpredictable nature of bluegreen algae and the toxins it can produce, it is impossible to know with certainty if toxins are present in the water on any given day at a particular location. Since there are no national standards or benchmarks for these toxins in water, state officials are advising the public to continue to avoid contact with the water.

Ohio EPA and ODNR have developed a new frequently asked questions document about the recent algae bloom at Grand Lake St. Marys. The document can be found at: http://www.epa.ohio.gov/pic/glsm_algae.aspx.

To see Grand Lake St. Marys water sampling data, visit:
http://www.epa.ohio.gov/portals/35/inland_lakes/glsm_microcystin_data.pdf

Type of Toxins Tested	Sample collection Date	Sample Process Date	Collected By	Evaluated By	Intake	Finished Water
Anatoxin (ppb)	6/29/10	7/1/10	OEPA	Green Water Labs	Non-Detect	Non-Detect
Saxitoxin (ppb)	6/29/10	7/1/10	OEPA	Green Water Labs	Non-Detect	Non-Detect
Cylindrospermopsin (ppb)	6/29/10	7/1/10	OEPA	Green Water Labs	Non-Detect	Non-Detect

Type of Toxins Tested	Sample Collection Date/ Sample Process Date	Collected By/ Evaluated By	Finished Water (ppb)	Intake (ppb)	East Beach (ppb)	West Beach (ppb)	Camp Beach (ppb)
Anatoxin -a	7/6/10 7/8/10	OEPA/ GreenWater Labs			0.1	0.02	Non-Detect
Saxitoxin	7/6/10 7/8/10	OEPA/ GreenWater Labs			0.03	Non-Detect	0.03
Cylindrospermopsin	7/6/10 7/8/10	OEPA/ GreenWater Labs			Non-Detect	Non-Detect	Non-Detect
Anatoxin-a	7/12/10 7/16/10	OEPA/ GreenWater			Non-Detect	Non-Detect	Non-Detect

		Labs					
Saxitoxin	7/12/10 7/14/10	OEPA/ GreenWater Labs			0.07	0.09	0.05
Cylindrospermopsin	7/12/10 7/15/10	OEPA/ GreenWater Labs			Non-Detect	<5.0	Non-Detect
Anatoxin-a	7/19/10 7/21/10	OEPA/ GreenWater Labs			4.0	4.0	3.0
Saxitoxin	7/19/10 7/21/10	OEPA/ GreenWater Labs			Non-Detect	Non-Detect	Non-Detect
Cylindrospermopsin	7/19/10 7/21/10	OEPA/ GreenWater Labs			Non-Detect	Non-Detect	0.7

Type of Toxins Tested	Sample Collection Date	Collected By/ Evaluated By	Finished Water (ppb)	Intake (ppb)	East Beach (ppb)	West Beach (ppb)	Camp Beach (ppb)	Red Algae Bloom Center of Lake (ppb)
Anatoxin -a	7/20/10	OEPA/ GreenWater Labs	Non-Detect	2.0	-	-	-	-
Saxitoxin	7/20/10	OEPA/ GreenWater Labs	Non-Detect	Non-Detect	-	-	-	-
Cylindrospermopsin	7/20/10	OEPA/ GreenWater Labs	Non-Detect	Non-Detect	-	-	-	-
Anatoxin-a	7/23/10	ODNR/ GreenWater	-	-	-	-	-	6

		Labs						
Saxitoxin	7/23/10	ODNR/Green Water Labs						Non-Detect
Cylindrospermopsin	7/23/10	ODNR/Green Water Labs						Non-Detect
Anatoxin-a	7/26/10	OEPA/GreenWater Labs	-	-	1.2	0.9	0.8	-
Saxitoxin	7/26/10	OEPA/GreenWater Labs	-	-	-	-	-	-
Cylindrospermopsin	7/26/10	OEPA/GreenWater Labs	-	-	-	-	-	-

Type of Toxins Tested	Sample Collection Date	Collected By/ Evaluated By	Finished Water (ppb)	Intake (ppb)	East Beach (ppb)	West Beach (ppb)	Camp Beach (ppb)	Pizza Hut Dock (ppb)
Anatoxin-a	8/2/10	USGS/ Green Water Labs	-	-	15	10	3	-
Saxitoxin	8/2/10	USGS/ Green Water Labs	-	-	Non-Detect	Non-Detect	Non-Detect	-
Cylindrospermopsin	8/2/10	USGS/ Green Water Labs	-	-	Non-Detect	Non-Detect	Non-Detect	-
Anatoxin-a	8/8/10	USGS/ Green Water Labs	-	-	10	6	6	-
Cylindrospermopsin	8/8/10	USGS/ Green Water Labs	-	-	Non-Detect	Non-Detect	Non-Detect	-
Saxitoxin	8/8/10	USGS/ Green Water Labs	-	-	Non-Detect	Non-Detect	Non-Detect	-

Anatoxin-a	8/17/10	Ohio EPA/ GreenWater	-	-	0.4	0.6	0.5	-
Cylindrospe rmopsin	8/17/10	Ohio EPA/Ohio EPA- DES	-	-	0.062	Non- Detect	Non- Detect	Non-Detect
Saxitoxin	8/17/10	Ohio EPA/Ohio EPA- DES	-	-	Non- Detect	Non- Detect	Non- Detect	Non-Detect
Anatoxin-a	8/23/10	Ohio EPA/Ohio EPA- DES	-	-	0.2	0.3	0.2	-

Type of Toxins Tested	Sample Collection Date	Collected By/ Evaluated By	Finished Water (ppb)	Intake (ppb)	East Beach (ppb)	West Beach (ppb)	Camp Beach (ppb)	L-1 (ppb)
Anatoxin-a	8/19/10	Ohio EPA (NWDO)/Ohio EPA-DES	-	-	-	-	-	Non-Detect
Cylindrospe rmopsin	8/19/10	Ohio EPA (NWDO)/Ohio EPA-DES	-	-	-	-	-	Non-Detect
Saxitoxin	8/19/10	Ohio EPA (NWDO)/Ohio EPA-DES	-	-	-	-	-	Non-Detect
Anatoxin-a	8/23/10	Ohio EPA/Ohio EPA-DES	-	-	-	-	-	-
Cylindrospe rmopsin	8/23/10	Ohio EPA/Ohio EPA DES	-	-	Non-Detect	Non-Detect	Non-Detect	-
Saxitoxin	8/23/10	Ohio EPA/Ohio EPA DES	-	-	Non-Detect	Non-Detect	Non-Detect	-
Anatoxin-a	8/30/10	Ohio EPA/Ohio EPA DES						
Cylindrospe rmopsin	8/30/10	Ohio EPA/Ohio EPA DES	-	-	Non-Detect	Non-Detect	Non-Detect	-
Saxitoxin	8/30/10	Ohio EPA/Ohio EPA DES	-	-	Non-Detect	Non-Detect	Non-Detect	-