

OUR WATER IS SAFE TO DRINK

On Friday, June 17, 2016, a copper sulfate treatment was applied to Tuxedo Lake by Solitude Lake Management (formerly known as Allied Biological). Several days after the copper sulfate treatment, Jeff Voss and I discussed the appearance of Tuxedo Lake. Chris Doyle, biologist at Solitude Lake Management, was called by Jeff Voss on June 21, 2016 as Chris has been dealing with Tuxedo Park lakes for many years. On June 23, 2016, Chris stated the following:

"Attached are the results of the samples we collected on Tuesday, June 21st. The counts are very low, and the algae cells we observed were dead/dying, with damaged chloroplasts. Since blue-green algae have gas vesicles to give them buoyancy, I think what you are seeing in the water column are dead algae cells, but still retaining buoyancy due to these gas vesicles. They should drop out in a few days." (As we all can see, the dead algae cells have dropped and Tuxedo Lake is clearing up.)

During this time frame, Joan Riccardi, resident of Tuxedo Park, and I had a discussion regarding Tuxedo Park lakes and five questions resulted. Thank you Joan for your input. The questions were sent to Chris Doyle.

Here are questions (from Mayor Guinchard and Joan Riccardi) and answers by Chris Doyle (Solitude Lake Management) regarding Tuxedo Lake:

Q: With the same weather conditions effecting all three bodies of water in Tuxedo Park, how come Tuxedo Lake, the largest and deepest body of water, continues to have the worse algae blooms?

A: Tuxedo Lake is an algae dominated system. This is due to the restricted littoral zone (the area of the lake that plants can occupy). Most of the lake is too deep to support aquatic plant growth. The other two basins have increased littoral zone and therefore more aquatic plants. These plants compete with algae cells for nutrients. Without a suitable basis of plant growth, any excess nutrients go to algae production, typically unicellular in the case of Tuxedo Lake.

Q: Tuxedo Lake flows into the Pond and then the Wee Wah, yet both bodies of water looked free from a bloom today even though their depths are below normal.

Why would this be so? The Wee Wah typically does not show an algae bloom until late July -mid August. Tuxedo Lake has been showing algae blooms on and off for a couple of years now . Could something specific to Tuxedo Lake, separate from the unusually warm and dry winter, be feeding these blooms?

A: It depends on flow patterns. Lately since we have not had much rain, I would assume there is reduced flow to the other basins. That, coupled with increased plant growth in the smaller basins, could be limiting the algae growth here vs. Tuxedo Lake. As you know, historically, blooms will occur in the basins later in the season.

Q: Typically these blooms first appear at the southern end of Tuxedo Lake and in the coves near the western side of the dam spillway of Tuxedo Lake as well as the Village boat club. Why are they appearing in these areas? Could this have anything to do with the town's mulch pile runoff?

A: The localization of algae blooms could be triggered by nutrient inputs. I would refer to the Princeton Hydro report from a few years ago to review the inlets and what kind of nutrient loading they could be causing. Unicellular algae is also at the whim of the wind and water currents. It's not uncommon to not

see a bloom in the open water, but due to wind or water movement, an intense bloom could occur along shoreline, or in a cove. I believe we observed that late last year. If the wind is blowing North to South, that could be why the bloom appears more intense in the southern reach of the basin, and possibly giving the appearance that is the origin.

Q: Why is the entire body of Tuxedo Lake now having this chronic problem instead of just its southern edges?

A: See above for a possible explanation. Again, I'm not convinced (based on the limited data I've seen) that this is a chronic algae problem. Historically, Tuxedo Lake requires 1-2 low dose algaecide applications per year to maintain suitable conditions. I have many clients that rely on 4-6+ algaecide applications per year and still never get a water clarity anywhere near 7.0 feet, for example.

Q: Why is the milfoil growing at such aggressive rates? Typically the milfoil would not be matting on a Lakes surface so soon in the summer season. This is surely exasperated by the lack of winter and culling but what nutrients in the water is accelerating its additional growth?

A: The mild winter favored Eurasian water milfoil growth this year. We observed active growth earlier and more robust at numerous sites in NJ and NY, which necessitated earlier and more aggressive control measures this season at several locations. I discussed this with Alan last year (due to the increased abundance and matting you observed late last year in the smaller basins), and the potential need for increased hand pulling efforts, earlier in the season in 2016. Or even the use of herbicides to control the milfoil. Also, the more milfoil present will lead to increased abundance and spreading since its primary mode of reproduction is fragmentation. I assume the hand pullers have not been on site yet? And yes, increased nutrients in the water column will also favor increased milfoil growth, especially earlier in the season before the native plants have emerged. As the milfoil reaches the surface, it mats (canopying) which shades out lower growing desirable native plants, giving the invasive milfoil yet another advantage (which equals increased growth).

On June 24th, I called the O.C. Health Department regarding whether or not there was an issue with the quality of our drinking water. They proceeded to look at the results of the tests, and on June 27th confirmed that all was fine.

Please note that daily tests are done regarding Tuxedo Park drinking water. Our lake is tested when necessary. All appropriate agencies are in touch with Jeff Voss and appropriate tests and inspections are carried out. Trustee McHugh is in charge of CSLAP.

Please feel free to call Mayor Guinchard if you have any further questions at (845) 351-4745, ext. 5.