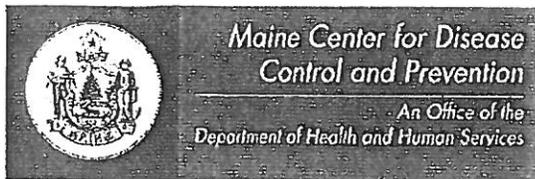


**Documentation from
Maine Department of Health and Human Services**



Paul R. LePage, Governor

Mary C. Mayhew, Commissioner

Department of Health and Human Services
Maine Center for Disease Control and Prevention
286 Water Street
11 State House Station
Augusta, Maine 04333-0011
Tel.: (207) 287-8016; Fax: (207) 287-9058
TTY Users: Dial 711 (Maine Relay)

Tel. (207) 287-2070
April 2, 2013

Drinking Water Program

Fax (207) 287-4172

Patty Aho, Commissioner
Maine Department of Environmental Protection
17 SHS
Augusta, ME 04333

Subject: Auburn Water District's and Lewiston Water Division's application for copper sulfate treatment of Lake Auburn

Dear Ms. Aho:

On February 28, 2013 the Auburn Water District and the Lewiston Water Division (AWD/LWD) requested the Maine CDC Drinking Water Program to review, and, if appropriate, support Auburn WD's application for a discharge license for copper sulfate treatment of Lake Auburn, the sole drinking water source for roughly 40,000 people in the cities of Auburn, Lewiston and surrounding municipalities. Under the provisions of 38 M.R.S. §414-A (1-A), a copper sulfate application license may only be issued by the Department of Environmental Protection (DEP) to a public water system for their source, if the Department of Health and Human Services (DHHS) Division of Health Engineering (since 2005 known as the Division of Environmental Health), determines that the following three conditions exist:

- (1) *An abundant growth of algae producing taste or odor exists to such a degree that the water supply is in danger of becoming unhealthful or unpalatable;*
- (2) *The abundance of algae is a sporadic event. For purposes of this section, "sporadic" means occurring not more than 2 years in a row; and*
- (3) *The algae cannot effectively be controlled by other methods. [1997, c. 794, Pt. A, §22 (AMD).]*

In 1993, the US EPA and the State of Maine recognized the Lake's excellent water quality and both water systems' assertive watershed management program, control of boating activities, and ownership and conservation of key properties around the Lake which taken together removed the requirement to filter the water. However, the water systems must work continuously and pro-actively to make sure that no activities occur that could adversely affect water quality. During the summers of 2011 and 2012, abundant growths of algae (technically not algae, but a family of bacteria called cyanobacteria)¹ compromised water quality, and, in 2012, contributed to a fish kill, as well as increased turbidity at the water intake.

Studies by several consultants suggest that the abundant growths resulted from unusually warm temperatures (early ice out), large precipitation events mobilizing phosphorus, and deep water anoxia and/or mobilization of phosphorus by certain algal species. Regardless of the cause (or causes), both public water systems, and their consultants, determined that it is important to prepare to conduct a pre-emptive strike with an algacide this year, if algal growth conditions and water quality degradation develop. They prepared an application for a pesticide discharge permit and met with a number of state agencies and other interested parties to solicit vital input.

It is important to note that this application is not a requirement of the DHHS Division of Environmental Health or the federal Safe Drinking Water Act. It is a proactive measure proposed by AWD/LWD public water systems to assist them in providing safe water to their customers. The DHHS Division of Environmental Health determines the following findings:

An abundant growth of algae producing taste or odor exists to such a degree that the water supply is in danger of becoming unhealthful or unpalatable.

Cyanobacteria were abundant in the lake in 2011 and 2012, including Gloeotrichia, followed by Anabaena and Microcystis. Their abundance resulted in increases in turbidity at the intake from a typical level of less than 1 NTU to levels around 4 NTU. At these levels, the UV disinfection system is at risk of becoming ineffective, and any increase beyond the observed level (to 5 NTU) would result in a boil water order. In addition, oxygen depletion in the deep, cooler waters resulted in lake trout mortality. A potential threat to public health also exists in a large cyanobacteria event, due to the potential for production of cyanotoxins, which can cause illness or fatality if ingested.

The abundance of algae is a sporadic event. (Occurring not more than two years in a row).

Lake Auburn historically has not experienced abundant algal growths prior to 2011. The increased productivity over the past two years appears to be associated with warm water (early ice out), heavy rain, and wind. These events led to increased phosphorus being mobilized from sediment and deep water and allowing rapid growth of several species of cyanobacteria. This potential application of copper sulfate algaecide is intended to reduce the risk of recurring algae problems and is only the first step in a multi-phased project to maintain water quality in Lake Auburn. The introduction of copper sulfate, as proposed in this permit application, is intended to slow or arrest the development of algae before reaching a point of abundance. The abundance of these particular algae stress the lake systems, higher level organisms and impacts water quality negatively.

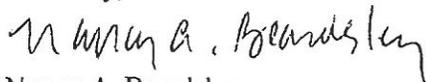
The algae cannot effectively be controlled by other methods.

AWD/LWD's long-term strategy includes additional work in the watershed to reduce phosphorus inputs, as well as a possible in-lake alum treatment in 2014 to reduce phosphorus availability. For the near term (summer 2013), if similar conditions occur, the only effective means for preempting a bloom is to apply an algaecide at the early stages of an algae population increase. If this summer proves shorter and cooler, with no major wind and rain events, then conditions for a bloom may not develop. However, if a long, warm period is followed by heavy rain and wind at the critical time in algae production, a prompt algaecide application is the only means to reduce the likelihood of abundant growth. The public water systems' consultants prepared an alternative analysis that provides a strong argument for why, as part of a multi-phase plan, such preparation for a potential copper sulfate application is the feasible short-term action to protect public health.

The goal of the DHHS Division of Environmental Health's Drinking Water Program is to protect public health through the provision of safe and secure drinking water. The AWD/LWD share that goal and responsibility. The Department and the systems hope that weather conditions do not lead to an abundant algae growth this summer and also recognize that these water systems must be prepared to deal with the contingency, should one occur. As responsible stewards of public health, the Department supports the application, should the turbidity rise as a result of cyanobacteria growth, as long as the chemical meets NSF 60 standards. The chemical application must also be less than 0.10 ppm. The intake shall be inactive during application. Intake water shall be monitored for copper before and after application.

Please contact me or Andy Tolman if you should have any questions about this letter.

Sincerely,



Nancy A. Beardsley
Director, Division of Environmental Health

cc: John Storer, Auburn WD, David Jones, Lewiston Public Works

Note 1: Cyanobacteria were formerly classified as blue-green algae, and are often referred to as algae, along with a number of other types of single-celled aquatic organisms. In some cases, they produce toxins that are harmful or fatal if swallowed.