

About alum treatments

While studying the effects of aeration on Sweeney Lake, the potential use of aluminum sulfate (alum) to improve water quality was also examined. As indicated on page 3 of this handout, modeling showed that the use of alum would decrease phosphorus levels in the lake. (Twin Lake received alum in 2015 to help maintain excellent water quality.) Alum treatments are costly, however, so planning for a treatment will take time and coordination of resources. The paragraphs below provide answers to some frequently asked questions about alum.

What does alum do and how does it work?

Alum (aluminum sulfate) is derived from aluminum. It has been used in water purification and wastewater treatment for centuries and in lake restoration for decades. The chemical reduces the growth of algae by trapping phosphorus in the lake sediments. To treat a lake, alum is injected several feet below the water's surface. Upon contact with the water it becomes aluminum hydroxide, taking the form of a fluffy substance called floc. This floc works to improve water quality in two ways:

1. As it settles to the bottom of the lake, the floc interacts with phosphorus to form aluminum phosphate, an insoluble compound. In this state the phosphorus can no longer be used by algae for food. Other suspended particles are also collected by the floc, leaving the water noticeably clearer.

2. On the bottom of the lake, the floc forms a layer which binds with phosphorus as it is released from the sediment. This produces a "blanket" over the sediment, reducing internal loading.

How long does it take to complete alum treatment and how quickly are results seen?

Alum treatments are generally made either in the late fall or early spring over a period of 7–10 days. Lake transparency will increase dramatically, even within a few hours. Reductions in algae should be noticeable within one year.

How long will the alum treatment last?

Because Sweeney Lake receives a significant amount of its phosphorus from internal loading, the treatment could maintain water-quality improvements for as long as 15 to 20 years.

Is alum safe?

Yes. There is no evidence to suggest that aluminum ingested in water poses a health threat. Water treatment plants throughout the United States use hundreds of thousands of tons of alum annually and many municipalities use it for wastewater treatment. Upon settling to the bottom of the lake the floc is harmless to aquatic plants and animals. The Food and Drug Administration, the U.S. Environmental Protection Agency, and leading medical experts all concur that aluminum is not a risk factor for any diseases or health conditions.



Photos of Spring Lake before (left) and after alum treatment (right) by the Prior Lake-Spring Lake Watershed District