

## Why is my water stained and smelly?

Chlorine was used as the primary disinfectant for drinking water for 100 years or so, but as the science and testing technology evolved, a concern about the negative impacts of disinfection by-products emerged. Disinfection by-products are formed when natural organic matter reacts with chlorine, and they are associated with increases in cancer in both humans and animals. There are also concerns they may impact human reproduction and development.

In order to offset the negative effects of using chlorine continuously as the primary disinfectant, water utilities using surface water are required to use liquid ammonia sulfate and chlorine (chloramine) as the primary disinfectant, but this causes another set of issues:

- The chloramine disinfectant causes a film to build up on the walls of water lines – a process called nitrification. Both the utility's lines and members' personal lines are affected by this.
- The nitrification in the lines then causes another problem: the chlorine portion of chloramine disinfectant becomes ineffective as it is absorbed or locked onto the nitrification on the lines, and the water can become unsafe to drink. Water utilities need to perform "chlorine maintenance" by using free chlorine to remove the nitrification from water lines. Winkler Water Supply is required to do this at least 4 times a year.
- Most of the time, customers are unaware of the change in type of disinfectant, but sometimes the process can discolor the water and create an odor.
- In theory – with a high enough volume and velocity – one flushing should be able to make the water clear again. In our case flushing can make the water clear for a while, but unfortunately as the chlorine maintenance continues to remove the nitrification the water becomes discolored again, and we have to rely upon our members to notify us that the water needs flushing again.

### Boil Notice – NOT Required

The water does NOT need to be boiled. The water – although discolored – is safe to drink. Boiling will not remove the nitrites or staining associated with nitrification.

### Turbidity & High Temperatures

Although they do not cause nitrification, water turbidity and high temperatures are often associated with the times customers notice the staining & odor of chlorine maintenance. Turbidity measures how clear water is, and that measurement for the raw water Winkler Water pumps out of Richland Chambers Reservoir is usually 10 or less. Lately it has been reading in the 60s and 70s.