

Earthy-Musty Taste and Odor

Algae blooms frequently produce earthy/musty taste and odor compounds such as geosmin and Methyl-Isoborneol (MIB). Both compounds can be detected by human noses at very low levels.

The human nose is extremely sensitive to geosmin and MIB. If you poured a teaspoon of geosmin or MIB into the equivalent of 200 Olympic-sized swimming pools, you would still be able to smell it.

The general threshold for human detection is about 15 ng/L (15 nanograms per liter = 15 parts per trillion). However, people with sensitive pallets can detect these compounds in drinking water when the concentration is as low as 5 ng/L.

Zone 7 uses the thresholds of 4 and 9 ng/L respectively for geosmin and MIB in its water supply to initiate powdered activated carbon (PAC) feed at its surface water treatment plants to improve taste and odor. PAC is only moderately effective in reducing these odors. Zone 7 is moving forward with ozone projects at both treatment plants that will provide another tool for the treatment of algal byproducts.

What are the effects of geosmin and MIB?

Geosmin and MIB produce an earthy/musty smell and taste in drinking water; however, they are **not** harmful at the levels present in drinking water.

What causes increased levels of geosmin and MIB?

During hot, sunny weather, algae like other plants will thrive. The presence of algae in reservoirs and streams, called algal blooms, and the increase in algae population can cause an increase in geosmin and MIB levels above the taste and odor thresholds.

What can be done about geosmin and MIB?

Zone 7 treats all its water to ensure that it is safe to drink and meets all State and federal standards.

Zone 7 also routinely monitors geosmin and MIB levels and uses PAC as needed to reduce the earthy/musty taste and odor. PAC is only marginally effective. Ozonation is the most effective water treatment process in improving taste and odor. Additionally, Ozone is also significantly more effective than other treatment processes, such as PAC, chlorine and chloramines, at treating other algal byproducts such as cyanotoxins, as well as chemicals of emerging concern, including endocrine disruptors, pharmaceuticals and personal care products. Zone 7 is in the process of upgrading its plants by adding ozone treatment over the next few years.

Adding a slice of lemon and/or chilling water can also help to improve the taste of the water.

For additional questions, please contact Gurpal Deol at gdeol@zone7water.com or 925-454-5779.