

WEST BASIN MUNICIPAL WATER DISTRICT

SEPTEMBER 4, 2002 – Water Resources
McDonald, Little
SEPTEMBER 23, 2002 - Board Meeting
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INFORMATION CALENDAR

WATER QUALITY UPDATE – GEOSMIN AND 2-METHYLISOBORNEOLSUMMARY:

Metropolitan Water District (MWD) has distributed three recent press releases regarding unpleasant taste and odor in tap water served to the public. These press releases have subsequently generated a lot of discussion and questions regarding taste and odor issues, namely the cause of the taste and odor and how long it will last. MWD has confirmed that two naturally occurring compounds called Geosmin and 2-Methylisoborneol (MIB) have caused the taste and odor problems. But what exactly are these compounds?

What are Geosmin and MIB?

Geosmin and MIB are naturally occurring compounds produced by some species of blue-green algae as metabolic by-products. They are formed when there is a build-up of blue-green algae during the warm summer months and also during drought conditions and low-lake levels.

In order to produce Geosmin and MIB, the blue-green algae require light, nutrients, and sometimes a substrate to attach to.

What Problems do Geosmin and MIB Cause?

Geosmin produces an earthy odor, MIB produces a musty odor, and together they cause earthy-musty taste and odor problems.

Much of the Geosmin and MIB produced is retained in the blue-green algae cells. Some of these blue-green algae are carried to drinking water treatment plants where the cells rupture during treatment processes, and release the Geosmin and MIB. Also, some treatment methods carried out in lakes can actually cause cell ruptures and rather severe, but short spikes of Geosmin and MIB.

How is the Taste and Odor Problem Treated?

Once produced, the earthy-musty tastes and odors are difficult to remove and destroy. However, preventative maintenance against Geosmin and MIB that's been produced, but not yet released its taste and odor includes copper sulfate applied as an in-lake treatment. Copper sulfate essentially kills off the Geosmin and MIB producing blue-green algae with a more benign non-producing algae.

At home, consumers can refrigerate an open a chilled pitcher of water to minimize the taste and odor.

How Frequently do Geosmin and MIB Occur?

Seasonally with weather patterns and blooms of blue-green algae. MWD has dealt with regular outbreaks of Geosmin and MIB since the early 1980s, with most occurrences in the warm summer or fall months.

How Long Could the Taste and Odor Problem Last?

The taste and odor outbreaks can last up to several weeks depending on the amount of blue-green algae present, the success of in-lake treatments, and if enough conditions are present for additional blue-green algae blooms.

At What Levels do Consumers Detect the Taste and Odor Problems?

Sensitive individuals can detect Geosmin and MIB between five and ten parts per trillion. One part per trillion is equivalent to one drop in enough water to fill the Rose Bowl. However, consumers not previously exposed to Geosmin and MIB taste and odors may be more sensitive.

Conclusions

Although Geosmin and MIB are typically present in low concentrations in many reservoirs and canals throughout Southern California, production to levels causing taste and odor issues occurs most frequently in the summer months. MWD has successfully dealt with Geosmin and MIB blooms for years and has developed an early warning monitoring program. MWD also provides in-lake treatments with copper sulfate, and operational options if taste and odor should pass out of the lakes. Although the earthy-musty taste and odor caused by Geosmin and MIB is unpleasant, it is simply an aesthetic problem and not a health hazard.

FISCAL IMPACTS:

None.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on September 4, 2002 and agendized to the September 23, 2002 Board meeting as information.

RECOMMENDED MOTION:

This item is for information only.