



Pool and Spa Water Treatment Applications

Using OxyChem's Solid Calcium Chloride Products

Introduction

Solid calcium chloride currently manufactured by Occidental Chemical Corporation ("OxyChem") contains approximately 6000-8500 ppm bromide. The purpose of this communication is to inform customers of potential impacts on pool and spa treatments when using OxyChem calcium chloride containing this level of bromide.

The presence of bromide in pool and spa water is not uncommon. Bromide is present when bromine-based disinfection systems are used (BCDMH, bromine/hypochlorite). Sodium bromide is sometimes used as an algacide treatment for pools. Also, bromide is a natural component of seawater and other "natural" water sources that may be used as source water in pools and spas. However, pool and spa customers unfamiliar with the role of bromide in pool water chemistry and/or accustomed to using a calcium chloride product with low bromide content for water hardness adjustment should be aware of the following information.

Health-related Information

The disinfectants (chlorine-based, bromine-based and ozone) used to eliminate microbial hazards may also react with other chemicals in the water to form unwanted by-products, known as disinfection by-products (DBPs). One such DBP is bromate which may form when bromide is present in water that is disinfected with ozone. The United States Environmental Protection Agency (2001b) has classified bromate (and its water soluble salts) as a probable human carcinogen by the oral route of exposure under the 1986 EPA Guidelines for Carcinogen Risk Assessment. In the publication titled, *Guidelines for safe recreational water environments, Vol. 2, Swimming Pools and Similar Environments*, the World Health Organization states, "Ozone can react with residual bromide to produce bromate, which is quite stable and can build up over time (Grguric et al., 1994). This is of concern in drinking water systems but will be of lower concern in swimming pools."¹

Pool Maintenance-related Information

When calcium chloride containing bromide impurity is added to a pool or spa using a chlorine-based disinfecting system, a drop in free chlorine may be observed. For pools that receive significant exposure to sunlight, an increase in chlorine consumption may also be observed. The magnitude of these effects will depend on specifics of each situation.

Summary

This information is provided in good faith, representing the current knowledge and understanding of OxyChem on the potential impacts of the expected bromide impurity change on pool and spa treatment applications. Due to the complexity of pool water chemistry and the wide variety of possible application scenarios, OxyChem does not purport that the information above covers every possible issue or impact. For more detailed information on this subject, refer to the World Health Organization publication cited above. It is ultimately the customer's responsibility to determine if calcium chloride with elevated levels of bromide is appropriate for water treatment applications in pools and spas.

¹ *Guidelines for safe recreational water environments, Vol. 2, Swimming Pools and Similar Environments*, World Health Organization, ISBN 92 4 154680 8, 2006, p. 68.

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Occidental Chemical Corporation

A subsidiary of Occidental Petroleum Corporation

Occidental Tower
5005 LBJ Freeway, Suite 2200
Dallas, Texas 75244-6119
888-293-2336

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