

## USING SPECIALTY CHEMICALS

Almost all the problems of public pool water chemistry are preventable or solveable by using the common pool chemicals. By common we mean chlorine or bromine in some form or other, a base such as soda ash, and an acid. Although needed less frequently, bicarbonate of soda (baking soda) and calcium chloride may also be considered as common rather than specialty chemicals.

Simply stated, all other chemicals are "special" and may be needed in special circumstances. For example, the pools in northeastern Minnesota have an unusually high iron content compared to pools in most other regions. Pool managers there use a specialty chemical to help control the effects of high iron.

More than a few pool managers have needed a specialty chemical after vandals threw a box of detergent in their water or after a drowning.

The biggest danger in specialty chemicals is using one not designed to do what you want it to do. To stay on the safe side, follow both of these rules:

1. Never use a product in pool water or on a pool deck that is not specifically labeled for pool use or sold by reputable public pool supply outlets. Beware of locker room cleaners or coatings not meant to be used around chlorinated water. If in doubt, ask your local public health official or send the label of the product in question to us here at AQUA TIPS.
2. Never use a chemical the ingredients of which are ammonia, ketone or ester. If any of these words appear, it's not a public pool product regardless of the label or instructions. (Some swimming pool algaecides contain ammonia but these algaecides are not recommended for public pool use.)

Here are a few common problems which are frequently solved by specialty chemicals:

**ALGAE** - The first line of defense against algae is proper routine chlorination and periodic super-chlorination. Regular super-chlorination to control chloramines is usually sufficient but if additional super-chlorination for algae control is needed, use about a 3 ppm dosage for green algae and about a 10 ppm for black algae.

However, if algae persists after super-chlorination, then it would be appropriate to use **ALGAECIDE**. Avoid the so-called "quats" which are inexpensive but contain ammonia. You get enough free ammonia in your pool water from swimmers. You don't need to buy it. Avoid copper or silver or other metal based algaecides, too, as they can cause staining.

Many managers of seasonal public pools use algaecides at seasonal openings and closings.

**STAINS** - Black, green or brown stains around main drains, gutters or ladders or in pool corners have to be cleaned out by hand, but use of **SEQUESTERING AGENT** can stop them from coming back. Sequestering agents increase the ability of water to hold minerals in solution instead of precipitating to form stains. Use a powdered kind — it's more economical than the liquid — and follow instructions which usually call for weekly addition of a pound or two depending on pool size. There are many kinds of sequestering agents available and most are used on heating and cooling water. Be sure to use a sequestering agent specifically meant for pool applications.

**DIRTY D.E. FILTER BAGS** - If one had to pick a single chemical that would do a better job than any other single chemical in cleaning D.E. filter bags it would be **OXALIC ACID**. However, there are commercially available filter bag cleaners which are a combination of **ACIDS AND BIODEGRADABLE**

**DETERGENTS** which are better than oxalic acid by itself.

If you have a fairly small filter tank and can afford to be shut down for a few hours, you can let the bags soak in the filter tank itself. Most operators, however, would remove the filter bags to a plastic container for soaking.

**FOAM OR SUDS** - This problem is a chronic one at most spas. The box of detergent thrown over the fence into the pool at night by vandals is not an unusual experience. The solution is a particular type of **SERFACTANT**, or wetting agent specifically meant for pools and is usually called a **DEFOAMER**. This chemical works by reducing the ability of water to form bubbles. Even if your pool does not now and has never had a foaming or a sudsing problem, a bottle of defoamer on the shelf will come in very handy when the vandal with a box of bubble bath breaks in some night.

**TOO MUCH CHLORINE** - When chlorine residual is too high, the best dechlorinating agent you can use is **SODIUM THIOSULFATE**. This chemical comes in a powdered form and a little of it should be kept on hand at all pools for emergencies. The product does not deteriorate with age so has no shelf life to be concerned about. Use this formula:

*0.7 x the weight of 1 part-per-million in your pool x the number of parts-per-million of chlorine to be neutralized*

The answer is the number of pounds of sodium thiosulfate needed.

Add half of your calculated dosage, wait an hour or so and retest before adding the second half. If you have made an error in any of your calculations or in your tests, and if you overshoot with this chemical, it may take substantial chlorine dosage to establish a residual again.

**STUBBORN CLOUDINESS** - The primary cause of cloudiness in pools is a buildup of chloramines which is solved by super-chlorination. The second greatest cause of cloudiness in pools is an improper balance of pH, total alkalinity and calcium hardness which can be solved by balancing the pool properly to the Saturation Index. If cloudiness remains after a proper super-chlorination and after the pool is balanced to the Saturation Index, and if the filters have been checked and are working properly, it may be time to use a **POLYMER FLOC**.

Instructions for use typically indicate weekly dosages, but well maintained, properly functioning pools have no need for regular use of polymer floc. However, when pH has inadvertently been allowed to bounce very high or very low or if, by accident, the pool has been loaded with dirt or DE, a polymer floc can be very helpful.

Mix double the initial recommended dosage in a bucket of water and then broadcast over the surface of the pool. Wait an hour. Then shut down the main recirculation system. The water will begin to clear from the surface, and the border between clear and cloudy water will move gradually down to the floor of the pool, at which time you very slowly and carefully vacuum to waste. If cloudiness continues, repeat the procedure once.

The polymer floc is an extremely large molecule which collects small contaminants into big chunks which sink to the bottom of the pool or are picked up on the filter.

By the way, use of a polymer floc is recommended after a drowning has taken place in a pool. Every two or three years

we hear of a drowning victim being discovered in a pool several hours after the drowning took place. In such cases, the water would be very cloudy. Some of this cloudiness comes from organic matter and therefore the pool should be superchlorinated at once. However, some of the cloudiness is coming from inorganic material which will take most filter systems two to three days to clear up. The use of a polymer floc can shorten that cycle.

There are thousands of different kinds of polymers in use in industrial applications particularly in waste treatment. AQUA TIPS recommends "Crystal Clear" by Robarb of Atlanta, Georgia or "Clarifier" by Great Lakes Biochemical of Milwaukee, Wisconsin.

**DECKS & SHOWERS** - Many pool managers avoid problems and economize operation by using only **CALCIUM HYPOCHLORITE (HTH)** and **TRISODIUM-PHOSPHATE (TSP)**. Use the TSP for a degreasing agent where needed. Pour a little calcium hypo into your full mop bucket and brush it across the decks and the floor of the shower room with a stiff bristle brush. It disinfects, has a good cleanser action and most importantly doesn't cause any problems when mixed with chlorinated pool water.

There are commercially available deck and shower room cleaners specifically designed for use around pools and the best ones are combinations of acids and biodegradable detergents sold specifically as pool and tile cleaners.

### Glossary

**Chloramine** - any of several compounds of chlorine and another nitrogenous substance, usually ammonia; a weak oxidant which in pool water can cause

eyeburn, cloudiness, severe chlorine odor, and the need for frequent filter backwashing; also called "combined chlorine" and "N-chloro compound."

**Free available chlorine (FAC)** - the combination of hypochlorous acid (HOCl) and hypochlorite ion (OCl<sup>-</sup>) in water, specifically excludes the chloramine or combined chlorine forms, measurable by reagent type test kit using DPD or BW method only or by electronic analysis.

**Hypochlorous acid (HOCl)** - that portion of free available chlorine which serves as the principal oxidant in pool water; excellent disinfectant, sanitizer, bactericide, and algicide; not specifically measurable by any reagent type test kit now available.

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