What causes a Chlorine Demand/Lock?

It appears that the chlorine demand situation has become more widespread each year. Although a singular cause for Chlorine Demand has not been determined (there are many), we have found a common thread in many of these cases. One common thread is if a pool is kept closed longer in the spring (covered without a sanitizer). Heavy rainfall or snow that has ammonia present will cause a Chlorine Demand. Accidental addition of household fertilizers or any compound that can be oxidized by chlorine will result in a Chlorine Demand.

So what exactly is a Chorine Demand/Lock?

A chlorine demand problem occurs when the Free Chlorine ---the chlorine available as a sanitizer---in a swimming pool can't be sustained at the required level despite regular maintenance and shocking. The problem occurs when most of the chlorine added to the water reacts with organic matter or other chemicals to form compounds called chloramines. Even though the total chlorine content in the pool is high, the Free Chlorine is consistently too low because the chlorine is bound to bacteria which creates chloramines. The cure usually involves adding very large amounts of shock chemicals to the water to remove the chloramines, and then following up with routine shocking.

What exactly are Chloramines?

Chloramines are often referred to as “combined-chlorines” because they are molecules formed by the combination of chlorine in the form of Hypochlorous Acid (HOCl) and organic wastes (saliva, perspiration, body soil) in the form nitrogen or ammonia. Chloramines produce the “chlorine odor”. When people complain of “too much” chlorine, it is always the case of combined chlorine or chloramines causing the foul odor.

What do I do if I have a Chlorine Demand/Lock?

Bring us a water sample, we will first check to see if you have phosphates or nitrates in the water. If phosphates are present, PhosFree will be recommended to decrease the amount of Phosphates in your pool. If nitrates are present you must partially drain and refill to dilute the nitrates (make sure we first test your source water to ensure nitrates are not present in your source water), there is no chemical or shock treatment that will remove nitrates from your pool water.

If there are no phosphates or nitrates present in your water we will do a 24 hour Chlorine Demand Test that will tell us exactly how much chlorine shock is needed to get rid of the Chloramines and break the Chlorine Lock. The recommended amount of chlorine to be added to successfully treat the chlorine demand must be added ALL AT ONCE. Whether it's 5 gallons or 20 gallons, the entire amount MUST be added at one time.

This is the reason why:

If there are ANY significant chloramines present (over 1.0 ppm), any chlorine shock added to break the chlorine demand will continually reform & recombine to form more & more chloramines! In short, the chloramines must be completely overwhelmed in order to successfully break them & the chlorine demand. All of this occurs through the oxidation process of shocking. If the Chlorine Demand is not treated completely, at one time, the situation will actually worsen. At times, we may suggest using a non-chlorine shock first in order to lower the amount of chlorine shock needed to break the chlorine lock or demand.