INTRODUCTION

Welcome to the exciting world of pool ownership. Please take your time in reviewing the information in this manual and read all of the manufacturers' instructions that came with your pool. To operate your pool safely and trouble-free you need to understand the basics of pool care. If you follow the proper routine maintenance steps within this guide: circulation and filtration, balanced pool water and a consistent chemical program, your pool water will be sparkling clean and easy to maintain.

You have heard the saying "an ounce of prevention is worth a pound of cure", this certainly applies to pool care. Preventative maintenance will save you time and money in correcting water problems that could have been avoided while protecting your pool and equipment from damage caused by imbalanced pool water. The amount of water in your pool is a figure you will reference often for chemical adjustments. If you do not know the water capacity of your pool click you can use this program to calculate by clicking on Test Water at the main menu and entering the dimensions of your pool. We recommend you print and complete the Owner's record on the following page, recording your pool's water capacity, equipment models, serial numbers, etc. This information along with any warranty papers and owner's manuals that came with your pool should be kept on file for future use.

As a pool owner it is your responsibility to make your pool environment as safe as possible. Please read all of the safety information provided with your pool and follow the *swimming pool safety* information contained within this manual. Remember, warning signs or notices supplied by manufacturers MUST be posted or applied where they are visible to pool users. Remember, our staff is always available to help you with any questions or pool problems that may arise.

Throughout this pool manual you will find links in *blue text*. When you click on these links you will open additional documents to view more information on that subject (all contained within this program). Click on the lower X in the right corner of the toolbar or the green back arrow at the bottom of the page to return to the previous page. Click here for *detailed instructions on navigating the manual* in Adobe Reader. When you installed the program you were asked to select specific equipment for your pool. If you need to make a change to the sanitizer or equipment selections after installation of the software, go to the Main Menu/Test Water. If you have already entered the capacity of your pool, use the previous button at the bottom of the window. There you will see the Change Settings option. To change settings you will need an active internet connection. Questions or technical concerns related to operating this computer program should be directed to Pool Software customer support: at help@poolsoftware.com or by calling 800-899-7479.

Thank you for choosing Niagara Pools & Spas. We hope you enjoy your new pool!

Voorhees Store	**Turnersville Store**	**Bristol Store**	**Service Department**
92 Route 73	4170 Route 42	200 Route 13	318 S Blackhorse Pike
Voorhees, NJ 08043	Turnersville, NJ 08012	Bristol, PA 19007	Blackwood, NJ 08012
(856) 768-7600	**(856) 875-6600**	**(215) 781-1300**	**(856) 232-4900**

www.niagarapool.com

BASIC POOL WATER CHEMISTRY

Understanding the basics of pool water chemistry will help you to properly maintain your pool. Clean and healthy pool water is achieved through chemical treatment, water balance, good maintenance (cleaning/vacuuming) and proper circulation/filtration. All of these elements work together to provide sparkling clear water and a comfortable pool.

Chemicals used in swimming pools include: Disinfectants to destroy harmful or otherwise objectionable organisms; Alkalinity and pH Adjusters to maintain a consistent acid-base relationship and acid buffering capacity; Chlorine Stabilizer to prevent unnecessary loss of chlorine; Algaecide to kill and prevent algae, and Filter Aids to help remove foreign material. Be sure to read and follow all manufacturers' instructions for the chemical treatment program recommended by your pool professional.

The following is a listing of proper chemical parameters. Please consult your pool professional to be certain that these are the ranges they would recommend for your pool type and region of the country as you may find they differ slightly. You may also refer to *Pool Finish* section for more detailed instructions for your specific pool type. Sanitizer levels and sometimes water balance parameters can vary according to the treatment program you are using. Please refer to your treatment program below for more detailed instruction.

CLICK HERE FOR MORE INFORMATION
USING YOUR CHEMICAL TREATMENT PROGRAM

TEST	ACCEPTABLE	IDEAL
pH	7.2-7.8	7.4-7.6
Total Alkalinity	80-150 ppm	100-125 ppm

The following tests should be performed by your pool professional

TEST	IDEAL
TDS *(total dissolved solids)*	1000-2000/*salt generator pools may be higher 3,000-4,500*
Calcium Hardness	175-400 ppm
Cyanuric Acid *(conditioner/stabilizer)*	30-50 ppm/*salt generator pools 50-80 ppm*
Metals- *NO metals should be present**	0 *Simple Salt Users- coper level: 0.3 ppm-0.5ppm

pH is the single most important element in swimming pool water chemistry. It affects every other chemical balance in pool water. pH is the measure of acid vs. base of a solution. The pH scale runs from 0 to 14 with 7.0 being the neutral point. It is important to maintain a ph reading between 7.2 to 7.8, **ideally 7.4-7.6**, to ensure swimmer comfort, water balance and to maximize the effectiveness of your sanitizer. The type of sanitizer you use can affect your pH as does rain water and many other things, requiring you to test and adjust your pH on a regular basis.

Low pH

When the pH reading is low (below 7.2) your pool water is acid ic. Acidic pool water can cause damage to vinyl and plaster pool walls while co rroding metal plumbing and metal components in heaters, pumps and filt ers. Low pH water also causes skin and eye irritation, making the eyes look red (a condition often mistaken for t oo much chlorine). You will also find the a rapid loss of your chlorine residual and alkalinity when the pH is too low.

High pH

When your pH reading is too high (over 7.8) your pool water is too alkaline. This condition will often make your water hazy or dull and can c ause scaling of your pool walls, plumbing and equipment. Your sanitizer becomes less effectiv e-requiring you to use more while a High pH can also cause skin and eye irritation.

Adjusting pH

To avoid the problems listed above, pH must be maintained between 7.2 and 7.8. The most desirable level for pH is between 7.4 and 7.6. If you enter your pH test results into TestMate 4 Pools you will receive proper chemical recommendations with the dosages required to balance your pool. Be sure to follow the manufacturer's label recommendations for applying these chemicals and do not add any more than the recommended dosage per application. Be sure the pump is running when chemicals are added. Allow to re-circulate then retest to determine if further treatment is necessary. If problems with low pH persist, it may be necessary to raise total alkalinity to stabilize the pH.

Raising pH with pH Increaser

If pH is too low - raise pH by adding pH Increaser. Never add more than 2 lbs per 10,000 gallons in a single treatment. If pH is under 7.2, add this amount of pH Increaser, then retest.

	GALLONS IN POOL						
pH	**1,000**	**5,000**	**10,000**	**15,000**	**20,000**	**25,000**	**50,000**
7.2-7.4	2/3 oz.	3 oz.	6 oz.	9 oz.	12 oz.	1 lb.	2 lbs.
7.0-7.2	3/4 oz.	4 oz.	8 oz.	12 oz.	1 lb.	1 1/4 lbs.	2 1/2 lbs.
6.6-7.0	1 1/4 oz.	6 oz.	12 oz.	1 lb.	1 1/2 lbs.	2 lbs.	4 lbs.
Under 6.7	1 1/2 oz.	8 oz.	1 lb.	1 1/2 lbs.	2 lbs.	2 1/2 lbs	5 lbs

If pH is too high - lower by adding pH Decreaser. **Carefully** add the pH decreaser to the pool following all label recommendations and safety precautions. You should gradually adjust the readings adding no more than 1 lb. of pH Decreaser per 10,000 gallons of water per application. Make adjustments in doses, retesting the water after 2 hours before repeating and do not add more than 2 1⁄2 lb. per day.

Total Alkalinity 80-150 ppm

Total Alkalinity (T.A.) is a measurement of the concentration of alkaline minerals in your pool water that provide a pH buffering capacity (the water's ability to resist sudden changes in the pH). Although Total Alkalinity is not the same as pH it is instrumental in stabilizing the pH to prevent fluctuation. The ideal range to maintain your Total Alkalinity is 80-150 ppm.

When T.A. values fall below the recommended range, the pH is easily affected. Even a small amount of high or low pH material introduced into the water can result in large swings in pH values. Generally when T.A. is low, the pH remains low as well, causing your pool water to be corrosive and irritating to swimmers. At high T.A. levels, small additions of calcium can produce scale. The pH tends to remain high and attempts to lower pH are short lived.

Adjusting Total Alkalinity When the Total Alkalinity of your pool is low (below 80 ppm) you will need to raise it by adding an Alkalinity Increaser. This chemical will raise the T.A. level while having a moderate effect on the pH level. Follow the manufacturer's recommendations for application by either broadcasting the chemical or pre-dissolving.

Raising Alkalinity Using Alkalinity Increaser

Increase	GALLONS IN POOL						
(ppm)	1,000	5,000	10,000	15,000	20,000	25,000	50,000
10	0.14 lbs	0.7 lbs.	1.4 lbs.	2.1 lbs.	2.8 lbs.	3.5 lbs.	7 lbs.
20	0.28 lbs.	1.4 lbs.	2.8 lbs.	4.2 lbs.	5.6 lbs.	7.0 lbs.	14 lbs.
30	0.42 lbs.	2.1 lbs.	4.2 lbs.	6.3 lbs.	8.4 lbs.	10.5 lbs.	21 lbs.
40	0.56 lbs.	2.8 lbs.	5.6 lbs.	8.4 lbs.	11.2 lbs.	14.0 lbs.	28 lbs.
50	0.70 lbs.	3.5 lbs.	7 lbs.	10.5 lbs	14.0 lbs.	17.5 lbs.	35 lbs.

High Total Alkalinity levels (above 150 ppm) should be lowered by using pH Decreaser or Muriatic Acid. Follow the manufacturer's recommendations for adjusting Total Alkalinity. When lowering Total Alkalinity using pH Decreaser you may be required to add the chemical in a "column method". Pouring the chemical in one section or "column into the water" can have a greater affect on the T.A. while having a lesser affect on the pH. It is usually recommended that you do not add more than 1 lb. of acid (dry or liquid) per application. Follow all safety precautions when using acids- see *Chemical Safety* for precautions along with label directions.

Lowering Alkalinity Using pH Decreaser

Decrease	GALLONS IN POOL						
(ppm)	1,000	5,000	10,000	15,000	20,000	25,000	50,000
10	0.21 lbs.	1.06 lbs.	2.13 lbs.	3.19 lbs.	4.25 lbs.	5.31 lbs.	10.63 lbs.
20	0.43 lbs.	2.13 lbs.	4.25 lbs.	6.38 lbs.	8.50 lbs.	10.63 lbs.	21.25 lbs.
30	0.64 lbs.	3.19 lbs.	6.38 lbs.	9.56 lbs.	12.75 lbs.	15.94 lbs.	31.88 lbs.
40	0.85 lbs.	4.25 lbs.	8.50 lbs.	12.75 lbs.	17.00 lbs.	21.25 lbs.	42.50 lbs.
50	1.06 lbs.	5.31 lbs.	10.63 lbs.	15.94 lbs.	21.25 lbs.	26.56 lbs.	53.13 lbs.

TOTAL DISSOLVED SOLIDS 1,000- 2,000/*Salt generator pools may be higher 3,000-4,500*

The ideal range for Total Dissolved Solids (TDS) is 1,000-2,000 with a minimum acceptable reading of 300 and a maximum of 3,000. A proper level of TDS in the water will help maintain balance. This level can be changed by draining and refilling the pool with fresh water.

CALCIUM HARDNESS 200-400ppm

Calcium Hardness is a measurement of calcium and magnesium in your water. Water hardness levels can vary quite a bit depending on what part of the country you live in. Having the proper level of calcium hardness is important to maintain water balance. It the level is too low the water can be corrosive and plaster surfaces can begin to etch and if too high staining, scaling and cloudy water can appear. When Calcium Hardness levels are too low (below 200 ppm) they can be raised by adding a Calcium Hardness increaser (calcium chloride). Levels that are too high (above 400 ppm) can be lowered by partially draining and re-filling with fresh water.* Be sure to test the make-up water going into the pool for the hardness levels- if too high a water softener should be used. Always consult with your pool professional prior to draining water from any pool and *NEVER drain a one-piece fiberglass pool.

STABILIZER/CONDITIONER (CYANURIC ACID) 30-50ppm/ *salt generator pools 50-80 ppm*

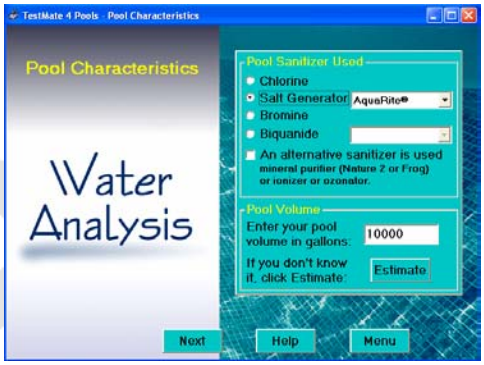
Conditioner or Stabilizer (cyanuric acid), shields chlorine from the sun, reducing chlorine consumption by up to 50%. Some chlorine products are stabilized, such as dichlor and trichlor chlorine products (contain cyanuric acid) while granular chlorine, calcium hypochlorite, and liquid chlorine, sodium hypochlorite, are not stabilized. Once added to the water cyanuric acid remains but the levels can be lowered from rain and make-up water and raised from the use of stabilized chlorines. You should have your water tested for conditioner levels by your pool professional on a regular basis to maintain a 30-50 ppm reading. As mentioned above, a cyanuric acid level that is too low (under 20 ppm) can cause rapid chlorine loss from the sun's UV rays. Levels that are too high (over 100 ppm) can cause a condition called "chlorine lock" where the chlorine is unable to do its job. In order to lower the cyanuric acid water must be drained and new make-up water added to re-fill the pool. Always consult your pool professional before draining any pool and never drain a one-piece fiberglass pool. Pools treated with bromine and biguanide do not need to maintain a conditioner/stabilizer level in the water.

METALS

There are various metallic substances that can be found in pool water (copper, iron, manganese, etc.) which can cause staining and discoloration in your pool when levels are too high. Simple Salt Users should maintain a Copper Reading of 0.3-0.5 ppm in their pool.

WATER TESTING

Pool water testing can be performed with liquid test kits or test strips. Your SPARCO professional will recommend the testing method that is best for you. Whether you are using a liquid test kit or test strips be sure to read the directions provided. You should also have your water professionally tested at least one to two times every season-ask you dealer how often you should bring in a water sample. A professional water analysis will provide a wider range of tests and a detailed analysis of your pool water.



You should test your pool water a minimum of two to three times a week using your test kit or test strips. When testing your pool water take a sample from approximately 12" below the water surface and away from the return inlet. You can enter your test results into TestMate 4 Pools™ water analysis and receive accurate chemical recommendations and dosages to maintain balanced pool water.

Test Strips –provide quick and accurate results for a variety of water tests. A typical 3-way test strip will provide chlorine (Free chlorine), pH and Total Alkalinity readings. As with any test kit, there are several factors that can be controlled to ensure the validity of the test results. Following are some guidelines for using test strips to obtain accurate water analysis results.

- **Follow the directions that came with the kit.** Sounds simple, doesn't it? However, there have been many cases where a user inadvertently used the directions that came with another manufacturer's strips or used directions from an older kit. Most inaccurate test results occur when individuals do not follow directions or follow the wrong directions! Test strips are continually improving and becoming more accurate, and you should never assume that the directions on one container are going to apply to another container's strips. In addition, not all manufacturers' test strips are the same, so it is essential to read and follow the directions on each container.

- **Store test strips in a low humidity environment at room temperature.** Test strips will be most effective over a long period of time if they are stored properly. Suitable storage will give you confidence in your results until the product has reached the date of expiration.

- **Keep the cap on tight between uses.** Doing this will prevent moisture from entering the bottle of unused strips. It is important that moisture not be introduced to the test strips until you use them in your pool or spa.

- **Keep wet fingers out of the bottle.** The test strips won't know the difference between the water on your fingers and the pool or spa water! So, make sure that the only water your test strips are reacting with is the pool or spa water you intend to measure.

- **Do not use expired test strips.** Most containers of test strips will display an expiration date somewhere on the container. Always be aware of this date when using or purchasing test strips. Regardless of how the container has been stored or handled, test strips have a definite shelf life and should not be used after the product has expired. Using test strips after this date will likely lead to inaccurate results. Therefore, replace any bottles that have expired.

SANITIZING YOUR POOL

Clean, clear, healthy pool water is the result of proper sanitation, filtration and circulation. The term sanitize means to *kill all disease-causing organisms*. The sanitizer is the key component of your chemical program. In order to be effective, a chemical program used to treat pool water must not only sanitize but also disinfect – *kill all living organisms* and oxidize- *destroy organic waste*.

There are many sanitizer options available today. A member of our staff will be happy to assist you in selecting the program that best suits your pool type, geographic region and lifestyle. Once you find a sanitizer program that works for you stick with it! Maintaining a consistent level of sanitizer in your water will prevent bacteria and algae growth and provide sparkling clear water.

Many swimming pool products are incompatible and should not be used with certain sanitizers, alternative sanitizers or pool types. Again, it is best to stick with the products offered in your brand specific chemical program.

CLICK HERE FOR COMPLETE INSTRUCTIONS FOR YOUR SANITIZER

The basics of water chemistry, found within this manual, explains the importance of water chemistry and the role that water balance plays in the effectiveness of your sanitizer. Be sure to review this section, *see Basics of Water Chemistry*.

Each chemical program requires specific handling and storage precautions. Please read and follow all label directions as well as the safety recommendations listed in *Chemical Safety*. In all cases chemicals should be kept in a dry location out of the reach of children.

ALTERNATIVE SANITIZERS

Alternative sanitizers include water treatments, other than chemical sanitizers, that are used to treat the water. There are many alternative sanitizer options available today. Ask one of our professionals to explain the pros and cons of each and help you in choosing a sanitizer or alternative sanitizer program that will best suit your needs. Alternative methods of sanitation greatly reduce the chemicals required to maintain your pool while offering other benefits as well. These benefits vary according to the treatment type but often include increased bather comfort due to less chemical use. Most alternative sanitizers still require a supplemental halogen sanitizer (chlorine or bromine), but at much lower residual levels. Some types of alternative sanitizers can be combined in parallel to increase the overall benefits and or replace the need for a supplemental chemical sanitizer. Mineral Sanitizers include catalytic sanitizers such as Nature² and FROG products. Other Alternative Sanitizers would include ozonators and UV.

CLICK HERE FOR YOUR MINERAL SANITIZER OWNER'S MANUAL

CLICK HERE FOR YOUR OTHER ALTERNATIVE SANITIZER OWNER'S MANUAL

SHOCKING or SUPERCHLORINATION

When you shock your pool you use the process of oxidation to chemically remove (burn up) organic debris, such as body waste, particulate matter and perspiration, from the water. All pools require a shock treatment on a regular basis to maintain optimum water quality. Routinely shocking the water following your chemical program's recommendations will greatly increase the water quality of your pool. In addition to oxidizing undesired wastes – shocking will help rid the pool of algae and bacteria that might be hiding in filters and hard-to-sanitize areas.

Contrary to what most people think, a strong chlorine smell is not an indication of too much chlorine in the pool but actually a red flag that a super dose may be required to correct the problem. A properly balanced and chlorinated pool will have no discernible odor. In chlorine treated pools shocking can be achieved by superchlorination (adding a much higher chlorine amount than normal). Hypochlorous acid is the form of chlorine that provides sanitization. Hypochlorous acid is very active and will react with ammonia and other nitrogen-containing organic compounds (i.e., perspiration, urine, etc.) and form chloramines. This "combined chlorine" is 40 to 60 times less effective than free available chlorine. Combined chlorine, in addition to reduced effectiveness against bacteria can cause eye irritation and so called "chlorine odor."

The following are GENERAL recommendations for shocking your pool water. For more complete instructions follow your specific chemical program instructions, shown below.

WHEN TO SHOCK

Every 2 Weeks*:	When the temperatures are 80° F or below
Weekly:	When the temperatures are above 80° F Heavy bather load (after the pool party!)
As Needed:	At the first signs of visible algae (slippery walls or floor) Cloudy water (check water balance as well) Heavy rains or storms (increase organic debris in water)

Most biguanide programs require a monthly shock treatment using the specific shock in your program.

WHAT TO USE

As mentioned above, the sanitizer program you use to treat your pool will determine the type of shock you can use. Not all shocks are compatible with all sanitizers, so be sure to follow the recommended shock treatment for your treatment program, shown in the link at the bottom of this page. The chemicals used for shock treatments are powerful oxidizers. CAREFULLY read and follow the recommendations in the *Chemical Safety-oxidizers* section.

- ✓ It is most effective to shock in the evening as chlorine shock dissipates very rapidly in sunlight.
- ✓ If you are using a chlorine shock treatment you will have a very high chlorine reading (10 ppm or higher). You must allow the Free Chlorine level to drop back down to the safe range of 3 ppm or lower before re-entering the pool. This can take up to 24 hours, so plan according when superchlorinating or use a non-chlorine shock (mono-persulfate) if the pool will be in use sooner. Non-chlorine shocks and biguanide shock treatments allow you to re-enter the pool within 15 to 30 minutes after treatment.

SPECIALTY CHEMICALS

There are a variety of specialty chemical products available today to treat a wide range of water problems. The following provides a general description of some of these specialty products. Ask one of our pool professionals to recommend a brand specific specialty chemical treatment product best suited for your water problem, chemical treatment program and pool finish. Please remember some products may NOT be compatible with the sanitizer program you are using. PLEASE refer to your treatment program below for a list of specialty or troubleshooting products you can use.

Specialty Chemicals in your treatment program

Chelating or sequestering agents
These chemicals are used to prevent staining or scaling by binding metals or minerals in pool water together so they will not precipitate (fall out of solution). Often called stain or scale remover or inhibitor these products work best to prevent discoloration PRIOR to the use of any chemicals. Use the brand specific chemical recommended in your chemical treatment program. *See Staining and Scaling for more information.*

Clarifiers
Clarifiers help filter out suspended particles that cannot be oxidized. Clarifiers attract and coagulate or bind small particles together making them large enough to be trapped by the filter. Clarifiers come in a variety of concentrations. Be sure to read and follow label instructions on the clarifier recommended by your pool professional. *See Cloudy Water for more information.*

Enzyme Products
Provide a natural method for combating organic matter in your pool water. Pools with heavy use or large amounts of organic material (sun-tan oils, cosmetics, body oils & wastes, leaves, worms) will benefit greatly from a weekly addition of an enzyme product. These products can reduce foaming and scum-lines, increase water clarity and decrease backwashing frequency.

Flocculants or Filter aids
Floc is used to treat extremely cloudy water by binding suspended particles and settling to the pool floor. This treatment involves loss of water as the settled material should be vacuumed to waste (by-passing the filter system). In lesser amounts a flocculant can sometimes be used as a filter aid to trap finer particles- see label directions for application instructions.

Filter Cleaners
There are many filter cleaners available for specific filter types (sand, D.E., cartridge). Our staff will recommend the correct filter cleaner for your chemical program, filter and usage. Generally, your filter should be chemically cleaned 1 to 3 times per season. Pools sanitizing with a biguanide program may require more frequent chemical cleanings.

Phosphate Treatment
Phosphates are a primary nutrient for algae- by removing the food source pool water becomes much less inviting for algae growth. A well maintained pool with proper sanitizer levels should not experience algae problems, but the higher the phosphate level goes, the more algae flourishes and the more resistant it becomes. In most cases phosphates enter the pool in the fill water, which runs from 100 parts per billion (ppb) to more than 1,000 ppb (many water districts add phosphates to their water to inhibit corrosion). Other sources include rain water, fertilizers, some pool chemicals, organic debris (like bark or leaves) and people. In other words, phosphates are always entering a pool. Your SPARCO professional may wish to test your water for phosphate levels and determine if the regular addition of a phosphate remover is recommended for your pool.

Tetraborate
Potassium tetraborate prevents algae from processing carbon dioxide- which is necessary for its growth. Used as an algaestat (algae preventative) it has the additional benefits of providing softer water, with reduced eye and skin irritation. Follow label directions for dosage and application instructions. Periodic additions of this product will be needed to make-up for water lost to backwash and splash out water.

Tile & Vinyl Cleaner
Our pool professionals will recommend a cleaner best suited for your pool type.
You should clean the waterline of the pool often to prevent a scum-line from forming.

CAUTION: When using any chemical you should always read the label directions for usage and handling instructions. Follow all safety guidelines on the bottle as well as the *Chemical Safety* recommendations found within this manual.

CHEMICAL SAFETY

To handle swimming pool chemicals safely they must be used and stored properly. Problems occur when careless mistakes are made. By reading and following the label instructions along with some easy safety rules below, accidents can be prevented. In addition to these safety recommendations be certain to always read and follow the directions on the bottle label.

MSDS should be available on the chemical company's website or telephone hotline for specific safety and handling instructions. In the event of an emergency that requires medical treatment have the product container on hand and immediately call 911 or U.S. Poison Control at 1-800-222-1222

1. FOLLOW INSTRUCTIONS CLOSELY: MIX CHEMICALS ONLY AS INSTRUCTED.
2. NEVER add water to chemicals—add chemicals to water slowly.
3. ALWAYS use the exact dosage specified on the label by the manufacturer.
4. PROTECT eyes with glasses or a mask when handling chemicals.
5. ALWAYS open product containers in a well-ventilated area.
6. NEVER mix different chemicals together. This can produce a chemical reaction that can lead to a fire, toxic fumes or explosion.
7. ALWAYS use a clean dipper or scoop; free of oil, grease, or insecticides. Even a small amount of residue can combine with the chemicals and produce a danger.
8. ALWAYS keep chemicals in their original containers, tightly sealed.
9. STORE your chemicals in a clean, dry, well-ventilated area away from household items such as fertilizer, gasoline, oil, or other cleaning solutions.
10. NEVER store any liquid products directly over or directly next to dry pool products (trichlor, granular chlorinators, shock products).
11. KEEP liquid acid (muriatic) and liquid chlorine products away from each other and away from all shock products and chlorine-based products.
12. SEPARATE your pool care products with an empty space (at least 3 feet) as a buffer zone between products.
13. CAREFULLY read the active ingredient section on the front of the product label to determine what acids, balance chemicals, or oxidizers it contains.
14. ALWAYS clean up spills immediately with a clean broom or dust pan. Dispose of spilled materials in clean container. DO NOT PUT SPILLED CHEMICALS BACK IN THEIR ORIGINAL CONTAINER. The chemical may have been contaminated.
15. REMEMBER to rinse plastic dispensing containers with water after use.
16. KEEP chemicals away from electrical equipment and open flames.
17. NEVER FLUSH excessive amounts of chemicals down storm sewers. In case of large spills, contact your local fire department for assistance.
18. ALWAYS wash hands thoroughly after handling chemicals.

ACIDS AND OXIDIZERS SAFETY

Balance Chemicals such as pH increaser, pH decreaser, Alkalinity increaser, Muriatic Acid

Protective Equipment
- Eyes-goggles
- Hands-gloves (rubber, neoprene, or PVC)

Handling Precautions
- DO NOT take internally
- Avoid contact with eyes, skin or clothing
- Avoid breathing dust, spray or mist
- Store containers in a cool, dry place
- Always keep containers tightly sealed
- *Caution: DO NOT MIX balancing chemicals with anything other than water*
- Conditions and Materials to Avoid
- Avoid contact with acids
- Avoid contact with organics and oxidizers
- Do not store near acids

Oxidizers- any form of chlorine, bromine, or shock treatment.

Protective Equipment
- Eyes-wear glasses or goggles
- Hands-wear gloves (rubber, neoprene, or PVC)

Handling Precautions
- DO NOT take internally
- Avoid contact with eyes, skin or clothing
- Upon contact with skin or eyes, rinse with water
- Avoid breathing dust
- Store all containers in a cool, dry place
- Do not store containers in direct sun light
- Do not store near combustible materials
- Do not mix oxidizers
- Use clean, dry utensils when handling oxidizers
- Keep all oxidizer containers off wet floors

Conditions and Material to Avoid
- Excessive heat—oxidizers will decompose, releasing toxic gasses and heat
- Solvents
- Acids
- Other pool chemicals such as acids, algaecides, clarifiers, sequestering agents, surface cleaners, etc.
- Organic materials
- *Do not mix chemicals with anything other than pool water. Always add chemicals to plenty of water. Never add water to chemicals.*

ALGAE

Algae are microscopic plant life. There are many types of algae, yellow, green, brown, or black; thousands of species of algae exist. Green algae are the most common type and the easiest to get rid of. Green algae can appear in patches or create an all-over cloudy green shade of water. Pink slimy algae are actually not algae but fungus bacteria, often appearing as streaks or spots in corners and crevices. Sometimes it appears as a pink or orange colored ring around the skimmer or waterline. *See Pink Slime or Water Mold for details and treatment.* Mustard algae prefer shady areas like pool step corners, along the walls and under the pool lights, ladders or other fixtures. Black algae often appear as dark colored spots on the walls or floor. Temperature, sunlight, pH, sanitizer level and the presence of carbon dioxide, phosphates and nitrates all affect the presence and growth rate of algae. Algae can be introduced into the pool by rain or wind, leaves and organic material, even fill water. In early stages of algae infestation you may notice the water circulation slowing as the filter is removing algae spores, the filter pressure builds and the return flow decreases.

In all cases it is much easier and better to prevent the growth of algae than to cure it.

Prevention

To prevent algae from growing in the first place requires regular pool maintenance, proper circulation and filtration; keeping the pH and free chlorine residual or other sanitizer at the proper level, keeping the pool clean and vacuumed, weekly shocking and adding a maintenance algaecide, algistat or specialty chemical to help prevent algae growth. While **proper sanitizer levels will prevent most algae growth** there are some strains that are resistant to chlorine and other sanitizers. That is why it is a good idea to regularly add a dosage of a maintenance algaecide or a specialty chemical. Although you are not able to test for algaecide levels in the water, regular use will be an effective deterrent to algae growth. Maintenance algaecides may cause foam on the surface of the water due to their ability to decrease surface tension. The foam is normal and short lived and will gradually disappear with filtration. Maintenance algaecides often have a lower percentage of active ingredient and work best in preventing algae, as an algistat rather than as a treatment for active algae infestation. There are a variety of specialty chemicals available today, such as phosphate removers, that can also be used to prevent algae growth. For more information go to *Specialty Chemicals*.

Treatment

If you develop an algae problem a professional water analysis is recommended to help determine the course of treatment AND the cause of the algae. Your pool professional will help you determine the type of algaecide needed based on the algae present and your pool type. As mentioned above, you can treat an existing algae problem with algaecides or specialty chemicals. General instructions for treatment using algaecide are listed on the following pages. BIGUANIDE users CANNOT use certain types of algaecide (copper or silver based) and should only use the algaecide recommended with their brand specific program. Algaecides kill algae working hand in hand with your sanitizer to help control and prevent algae growth. There are many different types of algaecides available; some are made to specifically fight certain types of algae. The key to choosing the right algaecide is to follow the manufacturer's directions and to maintain a regular amount of algaecide in the water during treatment. Polymer based algaecides from 30-60% are non-foaming and effective in both prevention and killing of many types of algae. Copper, silver and magnesium based algaecides are often recommended for killing stubborn algae such as black or mustard. Caution should be taken when using mineral based algaecides such as copper or silver in

plaster pools. It is recommended that a sequestering agent be used to keep the metals/minerals in suspension to prevent staining on white plaster walls.

Click here for Algae Treatment products in your chemical treatment program.

Green Algae

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Check pH and adjust if necessary.
3. Shock pool - see Water Analysis for dosages. Chlorine shock (calcium hypo or sodium dichloro) is recommended over non-chlorine shock (mono persulfate) for algae treatment. ****BIGUANIDE USERS**** remember you CANNOT use chlorine or non-chlorine (mono persulfate) shock and must always use the hydrogen peroxide based shock treatment in your biguanide program along with the appropriate algaecide. See Biguanide treatment section for additional recommendations.

4. See our pool professionals for the appropriate algaecide and follow treatment recommendations for your algae type and pool type. Pour algaecide directly into the water near or over the visible algae growth.
5. Increase filter run time to 24 hours if possible to increase circulation.
6. The following day, brush and vacuum affected areas (steel bristled brushes are recommended for plaster pools and nylon brushes for vinyl)
7. Check the gauge to determine the filter pressure and backwash if necessary.
8. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
9. Continue to brush walls and vacuum, clean filter as necessary and add maintenance algaecide until pool is clear of all signs of visible algae.

Black Algae

Some types of algae, especially black algae, are very stubborn and require special treatment. Black algae form a protective coating which makes it highly impervious to shock treatments and algaecide. The best treatment for black algae is to scrub the affected areas or spots prior to chemical treatment so the shock and algaecide will have an opportunity to penetrate the algae spores.

1. Remove solar cover and discontinue use during treatment of active algae growth
2. Vigorously scrub algae spots with a maintenance or algae brush (steel bristled brushes are recommended for plaster pools and nylon brushes for vinyl).
3. Check pH and adjust if necessary.
4. Shock pool - see Water Analysis for dosages. Chlorine shock is recommended over mono persulfate shocks for algae treatment. ****BIGUANIDE USERS**** remember you CANNOT use chlorine or non-chlorine (mono persulfate) shock and must always use the hydrogen peroxide based shock treatment in your biguanide program along with the appropriate algaecide
5. See our pool professionals for the appropriate algaecide for black algae (generally copper or high% polymer) and follow treatment recommendations for your pool type. Pour algaecide directly into the water near or over the visible algae growth.
6. Increase filter run time to 24 hours if possible to increase circulation.
7. The following day, brush and vacuum affected areas again.

8. Check gauge to determine the filter pressure and backwash if necessary.
9. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
10. Continue to brush walls and vacuum, clean filter as necessary and add maintenance algaecide until pool is clear of all signs of visible algae.
11. After fighting a stubborn algae problem such as black or mustard algae it is recommended that you thoroughly clean your filter media, brushes, vacuum head and hoses. If algae spores remain in any of these areas they can re-infest the pool.

Mustard Algae

This type of algae brushes off very easily, in fact too easily. It is NOT, however, an easy form of algae to get rid of. When brushing the mustard algae tend to just spread throughout the pool. Your pool professional may recommend an algae treatment formulated specifically to combat mustard algae. If so, use the recommended product along with aggressively shocking your pool, as mustard algae is resistant to normal chlorine levels.

1. Remove solar cover and discontinue use during treatment of active algae growth.
2. Check pH and adjust if necessary.
3. Brush walls and floor areas affected by yellow algae accumulations.
4. See our pool professionals for the appropriate algaecide for mustard algae (often copper based), follow treatment recommendations for your pool type. Pour algaecide directly into the waternear or over the visible algae growth..
5. Superchlorinate or shock pool - see Water Analysis for dosages. Chlorine shock is recommended over mono persulfate shocks for algae treatment. *BIGUANIDE USERS* remember you CANNOT use chlorine or non-chlorine (mono persulfate) shock and must always use the hydrogen peroxide based shock treatment in your biguanide program along with the appropriate algaecide.
6. Once a free chlorine test yields 3.0 or lower you can resume swimming.
7. Increase filter run time to 24 hours if possible to increase circulation.
8. Check filter pressure and backwash if necessary.
9. Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
10. Clean filter as necessary and continue to add a maintenance algaecide until pool is clear of all signs of visible algae.

After fighting a stubborn algae problem such as black or mustard algae it is recommended that you thoroughly clean your filter media, brushes, vacuum head and hoses. If algae spores remain in any of these areas they can re-infest the pool.

STAINING AND SCALING

All water contains some levels of minerals and metals. When the minerals or metals are dissolved and in suspension they are not visible. If they precipitate, or fall out of suspension, staining or scaling can result. Metals such as copper, iron or manganese in sufficient quantities can all cause staining. Prior to treatment you must first determine the cause. Algaes or bacteria can cause green, black, yellow, brown or pink discoloration. These organic deposits can generally be distinguished from mineral or metal staining by their response to chemical treatments (sanitizer and algaecide) and in most cases can be removed with a vigorous brushing (although they may grow back). *See Algae for more information*. Leaves, worms and other organic material left in the pool can also cause staining. This type of staining will usually respond to a sanitizer and a follow up stain remover.

Ruling out the above, one can assume that the discoloration, throughout the water or in deposits, is caused by metals or minerals that have oxidized or dissolved and have precipitated (come out of solution). Unbalanced pH, Alkalinity and the addition of sanitizers are all possible causes for such precipitation. High levels of metallic salts such as calcium or magnesium in suspension may cause cloudy water, when they form hard white deposits or crystals on the pool surface it is referred to as scaling. Heavy metals like copper and iron will cause discoloration or when deposited, staining. Green usually indicates copper or iron, red and brown –iron, black or brown -manganese.

As with all water problems, prevention is preferred to treatment. The best way to prevent staining is to have your pool water tested at our store PRIOR to the addition of ANY pool chemicals. Often the original source water that you use to fill your pool may contain iron or other metals or minerals that are not visible to the naked eye. If a test reveals the presence of metals or minerals in your water our pool professionals can recommend a treatment method, often consisting of the addition of a sequestering or chelating agent. These chemicals are used to help bind the metals together so they will not precipitate. Some pool water will require regular additions of these chemicals, especially after the addition of make-up water. Have your water professionally tested for metal content at the beginning of every season. Another key in preventing precipitation is to follow the chemical guidelines for adjusting pH and alkalinity, high, rapid fluctuations can cause precipitation. Corrosion of metal equipment components due to unbalanced pH and Alkalinity can also cause dissolved metals to precipitate in the water. If staining or scaling does occur our pool professionals will recommend a stain and scale remover for treatment. Follow the steps below to help prevent staining and scaling:

- Have your water professionally tested for metals.
  __DO NOT__ ADD ANY CHEMICALS UNTIL THIS TEST IS PERFORMED
- Follow water balance guidelines for pH, Total Alkalinity, TDS and Calcium Hardness. Add pH and Total Alkalinity adjusters following the application directions closely. **DO NOT** add too much chemical or make too rapid of an adjustment in a short period of time or precipitation can result.
- Routine maintenance doses of a sequestering or chelating agent will help prevent staining and scaling- Strongly recommended in plaster and fiberglass pool finishes..
- Poor filtration or circulation will accelerate metal precipitation.
- Pool owners with plaster and fiberglass pool surfaces need to be especially diligent in stain and scale prevention, although all pool types are susceptible- the penetrable surface of plaster pools make them more vulnerable to staining and scaling.

Click here to learn about treatments available in your chemical program

CLOUDY WATER

Cloudy water can be caused by a number of conditions, check in the following order:

- Insufficient filtration- Make sure your filter is clean and functioning properly. Perhaps your filter is due for a more thorough cleaning than backwashing alone will provide. Use a filter cleaner recommended by a member of our staff one to three times per season per label directions. Has your pool been circulating a minimum of 8- 12 hours a day, up to 24 hours a day? Be sure to allow your filter to run continuously, 24 hours a day, until your water clears.
- Unbalanced Water- High ph (above 7.8), high Total Alkalinity (above 150), high Calcium Hardness (above 400) are all capable of causing cloudy water. A professional water analysis should be performed to determine if your water is balanced, and if adjustments are necessary.
- Low Sanitizer level- Sanitizers can be consumed rapidly, especially in high heat and heavy bather loads. A low sanitizer residual can also allow for algae growth, which in the early stages can appear as cloudy water. Adding a dose of your maintenance sanitizer and shocking your pool will often greatly improve the water clarity Shocking with a non-chlorine mono-persulfate shock will oxidize any contaminants without adding calcium, found in granular chlorine (calcium hypochlorite), which can add to the cloudiness, *see shock for more details*.

TREATMENT

After running your clean filter, balancing and shocking your pool water you may still find the need to add a clarifier. Clarifiers help filter out suspended particles that cannot be oxidized. Most clarifiers are concentrated liquids that bind small particles together making them large enough to be trapped by the filter. Use the clarifier recommended by our pool professionals, following label directions for treatment of cloudy water. Maintenance doses of clarifier may be used, again see bottle label for dosage and application instructions..

In more severe cases of cloudy water our pool professionals may suggest a floc treatment. Powdered Alum or liquid Flocs restore water clarity and sparkle by flocking (dropping) suspended particles (debris) to the bottom of the pool to be vacuumed to waste. These products act as coagulants attaching to free floating matter in the water to form larger, heavier-than-water particles that settle to the bottom of the pool. Flocs often require a higher than normal pH, above 8.2, to be effective. If the label directs, you will need to add pH increaser to raise the pH prior to treatment. Read the label directions carefully and allow the pool to stand undisturbed overnight, up to 24 hours, again, as label directions recommend. After the debris has settled to the bottom, vacuum the pool on the waste or drain cycle (see filtration) to rid the pool of the unwanted matter. Do not Floc the pool when it is raining, the rain will disturb the water and prevent the settling. Floc involves water loss, so carefully consider this option prior to treatment.

Click here to learn about treatment options in your chemical program

WATER MOLD OR PINK SLIME

Pink slime or pink algae are actually not algae but a bacteria or fungus, often appearing as streaks or spots in corners and crevices. Sometimes it appears as a pink or orange colored ring around the skimmer or waterline. Water mold may have different appearances. It may appear as raised white spots or as sheet-like growth on the pool's surface. It will have a slippery feel and may appear as different colors. Water mold is caused by the build-up of a slime coating produced by microorganisms on exposed surfaces. These microorganisms are constantly introduced into the environment and will begin to grow when conditions become favorable (that is, low sanitizer, poor house keeping, etc.). The film that is generated as these organisms grow makes them particularly difficult to treat as the slime that results affords the organisms(s) protection from the sanitizer. Water mold is nonpathogenic (does not cause disease) and, like algae, your pool can be sanitized and safe to swim in with water mold present. Also like algae, water mold originates from the environment around your pool. One common way of introducing water mold into a pool is by placing a pool cover on the ground where it comes in contact with soil that contains the mold. When the cover is placed on the pool, the mold is introduced into the pool. It is always best to fold a cover and drape it over a chair or railing. Cold may slow its growth but will not kill water mold.

Regular housekeeping usually keeps water mold and pink slime from growing in your pool. But there are places in a pool where proper attention is not always given such as behind lights, under ladder treads, nooks and crannies, a dirty filter, etc. Poor circulation is probably the biggest culprit. Water mold likes to grow in "dead spots." These are places that water does not readily circulate to and therefore the water becomes stagnant.

TREATMENT

The best overall treatment for pink slime or water mold is to vigorously brush the affected areas, shock the pool and add a recommended bacteriostat algaecide such as a silver based algaecide (regular maintenance algaecides may not be effective on pink slime or water mold). ***BIGUANIDE USERS*** should not use silver or copper based algaecides- use only the algaecide recommended in your program. The following tips will be helpful while following the chemical treatment recommendation provided by our pool professionals.

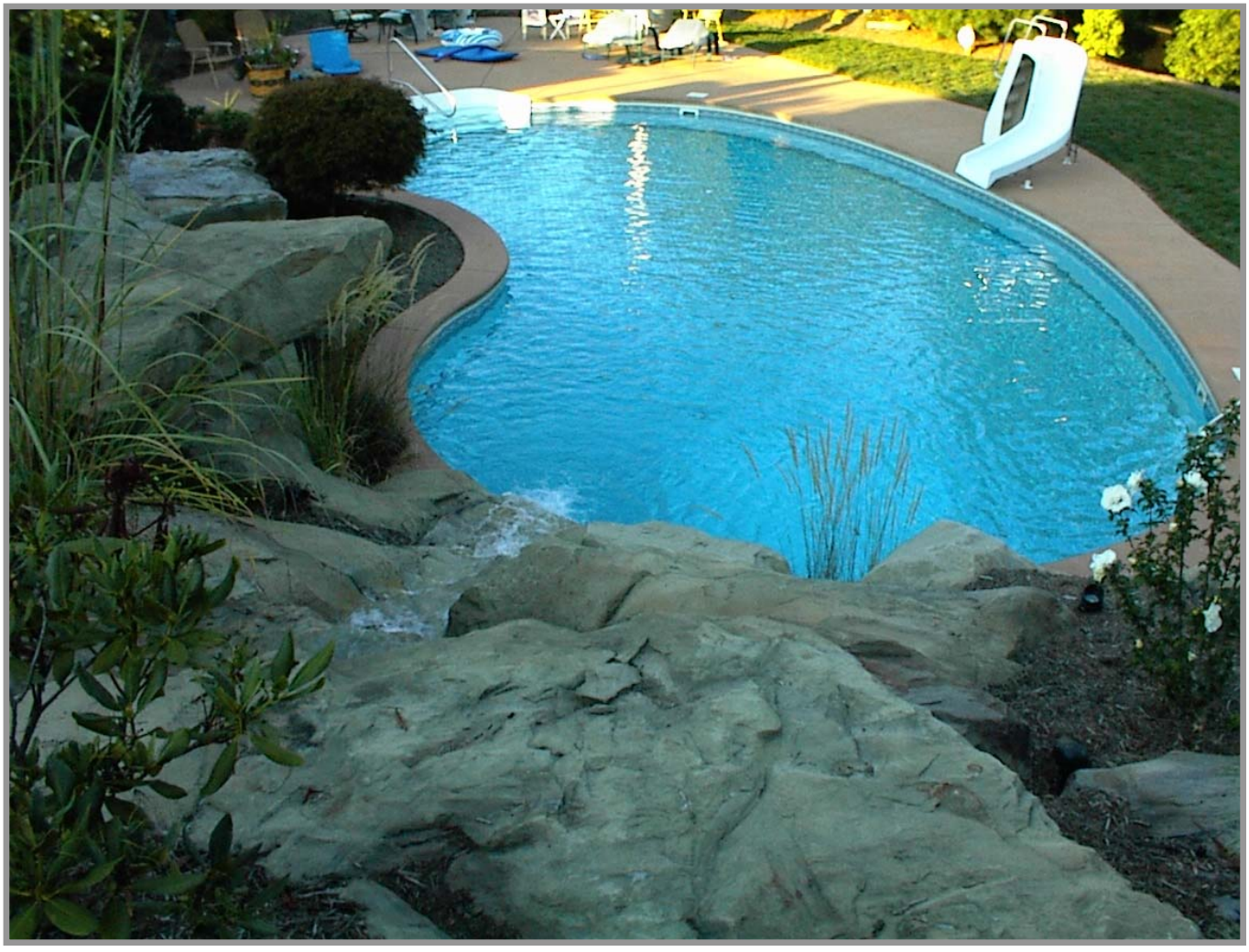
- ✓ Remove solar cover and discontinue use during treatment.
- ✓ Vigorously scrub affected areas with a maintenance or algae brush. Brush all surfaces very carefully, including the underside of ladder treads and skimmer faces behind pool lights, etc. Pink slime, in particular, has a gel-like protective coating that resists casual brushing.
- ✓ Increase filter run time to 24 hours if possible to increase circulation.
- ✓ Continue to maintain your sanitizer level at the high side of normal (free chlorine of 3.0) during treatment for algae infestation.
- ✓ Continue to brush walls and vacuum, clean filter as necessary and add maintenance algaecide until pool is clear of all signs of infestation.
- ✓ After fighting a stubborn problem such as water mold or pink slime it is recommended that you thoroughly clean your filter media and disinfect brushes, vacuum head and hoses to prevent re-infestation.

AUTOMATIC CONTROLS

Today controlling your pool and spa has never been easier with an automated control system. Heating, filtration, and cleaning cycles can be automatically programmed. From inside or outside your home there are a variety of control panels and remote control options that allow you to operate pumps, valves, heaters, salt water sanitization, solar heating systems, pool and landscape lighting, water features and more. These systems are not only convenient- they are cost effective as well, programming your equipment to run at peak efficiency.

To learn more about the operation of your control system, please refer to the link below:

CLICK HERE TO ACCESS THE OPERATING MANUALS FOR YOUR AUTOMATIC CONTROL SYSTEM



CIRCULATION

Your pool's circulation system is unique. How many skimmers (and what type), bottom drains and return inlets, the size of pluming and type of pump and motor will vary from pool to pool. All of these factors can influence the length of time you should run your pump and motor to circulate and filter your pool water. Generally, this should be a minimum of 8 to12 hours every day, up to 24 hours a day. Moving water allows your sanitizer to work more effectively, helps prevent dirt build-up and algae and allows your filter to effectively remove dirt and debris.

Circulation occurs as water travels into the Skimmer(s) and Drains (optional) passes through the Plumbing to the pump. It then is filtered and returned via the Return Inlet(s) of the pool. Check the skimmer and pump baskets frequently to be sure that they are clean and free of debris. When adding chemical treatments to your pool it is usually best to be circulating the water (unless otherwise directed).

Skimmer

Typically an above ground pool has 1 skimmer installed, while an inground pool may have multiple skimmers. The skimmer opening into the pool is half submerged under the water surface. You should monitor the water level in your pool to maintain a level that is ½ to 2/3 up on the skimmer opening. If the water level drops below these levels the pump may begin to suck air and cavitate, possibly causing damage to the pump and motor by allowing it to run dry. All vinyl pool skimmers and some concrete pool skimmers have a weir door. This door flaps in and out of the skimmer opening -drawing floating debris into the skimmer. The door simply snaps into place in the skimmer mouth and should at all times move freely to allow unrestricted water flow into the skimmer. The skimmer body contains a basket for catching leaves and debris before they enter the pump and possibly clog the impeller area. You should check the basket regularly (every few days) and empty as needed. If your basket becomes cracked it should replaced. There are many styles and sizes of skimmers available, be sure to save yourself an extra trip by bringing your old skimmer basket with you. Manual vacuuming is performed through the skimmer. Go to *Vacuuming* section of the manual for detailed instructions.

Bottom or Main Drains

Bottom or main drains provide an additional source of circulation by moving water from the drain to the suction side of the pump through underground plumbing. Drains are not commonly found in above ground pools and are optional in most inground pool installations. Originally designed as the main source of draining commercial concrete pools- they are generally located at the deepest (bottom) end of the pool, hence the name bottom main drain. Today main drains are used primarily to enhance circulation (pulling water from the bottom and surface) as most pools do not require draining. In fact, vinyl pools and fiberglass pools should **NEVER** be drained unless done so by a pool professional. Please read and follow all safety precautions regarding the potential hazards related to suction inlets and drains on the following page.

WARNING caution should be taken in and around any pool suction fittings due to the high vacuum that is created. If there is a dedicated suction line to the main drain (plumbing goes directly from the drain to pump and is not connected with the skimmer OR has a valve in which the skimmer can be closed off) and the drain would become blocked with hair or body one could become trapped and held against the suction fitting. This entrapment can result in disembowelment or drowning. Please review the following suggestions to prevent entrapment.

There are a number of products available today to reduce the risk of suction entrapment. One such device is known as an SVRS- a Safety Vacuum Release System. An SVRS is a device capable of providing vacuum release at a suction outlet caused by a high vacuum occurrence due to a suction outlet flow blockage. SVRS devices must allow for vacuum release with or without suction outlet cover(s) in place, and shall operate in such a way as to not defeat or disengage other layers of protection installed to protect against suction entrapment. SVRS devices can be installed independently or may be an option on your pool pump. Once installed, it takes little or no maintenance.

- ✓ Drain grates or covers should be inspected regularly. If a grate is worn, broken or missing or the hardware securing the grate is missing or not secure the pool should be closed immediately until repairs have been made. **No** work should be performed on or around the bottom main drain unless the pump and motor are turned off at the main breaker.
- ✓ Do not allow children to play in or around any suction fittings including bottom main drains, skimmer inlets and equalizer line openings. Entrapment can occur with the following:
  - Hair: hair can get caught in a faulty or broken drain cover
  - Limbs: arms, legs and fingers can become lodged in a suction opening
  - Body: any body part that can cover a drain can be held down by suction
  - Evisceration: sitting on a broken or uncovered drain can cause injuries or disembowelment
  - Mechanical: jewelry or bathing suits can become entangled in a drain cover

If you have any questions or concerns regarding the safety of your pool or are uncertain of the plumbing configuration you should have the pool and drain inspected by a pool professional. SVRS or anti-entrapment safety devices can be installed on existing pools to sense a potentially dangerous increase in suction and turn off pool's pump.

Click here to learn more about *Entrapment Prevention and the Virginia Graeme Baker Act.*

PUMP & MOTOR

Your pool water circulates as a result of your pump and motor. Which, generally recommended, should operate a minimum of 8 to 12 hours every day, up to 24 hours a day. If you begin to experience a water problem, cloudy water or algae present, run the filter longer, 24 hours if necessary. Optional automatic timers are a convenient way to control run-times.

Your pump has a suction side and a discharge side. The pump housing holds an impeller that pushes water to the discharge side of the pump, where it then flows through the filter for cleaning and then it goes back to the pool through the return fitting.

Most pumps have a lint strainer where the water enters the pump. The pump strainer basket is usually positioned under a clear lid, so you can literally see if it contains any debris. You will have to check the pump basket regularly and clean it out with a hose. The lid on the lint strainer holds an o-ring that must be lubricated with an o-ring lubricant from time to time to ensure a good water tight seal. (do not use Vaseline® on o-rings as the petroleum can break down the rubber) When worn, cracked or stretched the strainer lid o-ring will not seal properly which can allow air into the lines causing pump to not hold prime and air bubbles in return inlet. Inspect the o-ring for wear and replace as needed.

Your pump will have (1) or (2) ¼" drain plug(s) threaded into the lint pot and or pump housing; the drain plug is used to drain water out of the pump for winterizing. If your plugs come with o-rings you should keep them lubricated to keep air from entering the pump and loosing prime.

Priming

Priming your pump (removing air and filling with water) may need to be done manually. Most above ground pumps are not self priming and occasionally inground self priming pumps may still need to be primed. At times the pump will lose its prime if the pump is higher than the water level in the pool, if it has been winterized or after cleaning your pump basket. If you need to prime your pump use the following steps:

- ✓ Check water level in the pool is at the half-way point on the skimmer.
- ✓ Check the skimmer basket –empty if needed.
- ✓ Make sure the drain plugs are installed in the pump.
- ✓ Check that any valves leading to pump are in the open position
- ✓ Remove the lid from the lint strainer at front of pump.
- ✓ Take a garden hose and put it into the pump housing. Fill the pump housing, which should automatically fill the suction line.
- ✓ When water flows out of the pump housing remove the hose.
- ✓ Put the lid back on the pump over the basket area. Check the lid O-ring is in place so that no air gets into the pump housing.
- ✓ Quickly turn "on" the power to the pump.

Watch the lid on the pump and see if the water has started to come in, this should take a minute or less, if after a minute you don't see water and the clear lid is starting to fog up, then turn "off" your pump and repeat the above steps. The motor is what powers the pump to circulate water. The motor is the electrical side of the pump; it is located opposite of the pump housing. Most above ground pump & motors have 110v electrical plugs. They should always be plugged into a GFCI receptacle. You should NOT run the motor off of extension cords as this is an electrical hazard and is also detrimental to the motor itself. Inground Pumps can be 110v or 220v and are generally hard wired. Motors are designed and built for maintenance free operation. In order to keep your motor operating smoothly and extend motor life you should follow these general maintenance guidelines:

- ✓ Keep the area in and around the motor clean. Excessive dirt in the area can be pulled into the motor, resulting in shortened motor life.
- ✓ If the motor is being stored when not in use, be sure that all surfaces are dry to prevent rust. If left outside, the motor should be covered to guard against blowing leaves, dirt, and snow. DO NOT SEAL THE MOTOR IN AIR TIGHT MATERIALS. Condensation may form, causing bearing and insulation damage.
- ✓ Keeping the motor cool is most important. Ambient temperatures should not exceed nameplate markings. Provide shade from direct sunlight. The area around the motor should be large enough to provide ample cross ventilation.

Your pool may be equipped with one or more pump. If your pool uses one pump you will find detailed operating instructions in the owner's manual by clicking on Pump 1. If your pool is equipped with more than one pump model the manual for each model can be accessed below.

Click on the pump listing below to view the complete operating manual

Pool Pump

Pump 1 Pump 2

Spa Pump

FILTRATION

Adequate filtration is the one of the most important elements of good pool maintenance. Chemicals alone do not keep the pool water clean. It is the combination of chemicals, circulation and filtration that keeps your pool water clean, clear and healthy. The importance of proper filtration cannot be overemphasized in the overall program of sound pool maintenance and sanitary water. Proper circulation and filtration of the water is one of the best defenses against algae formation and cloudiness. The filter system comprises the complete filter and pump and motor. The filter is passive and requires the pump and motor to pass water through it for cleaning.

Circulation begins as water flows through the in-wall skimmer and drain (optional) into the pump & motor. It then is pushed into the filter tank where dirt and debris are trapped in the filter medium. Clean water then exits the tank through a return hose or pluming to the pool through the return inlet(s). Regardless of the type of filter system you have you should operate your system a minimum of 8 to 12 hours per day, up to 24 hours. Refer to the operating instructions for your specific filter system type from the link at the bottom of this page. Be certain to read and follow all manufacturers' instructions on operation prior to start-up.

The links below will display more specific instructions for your filter, including the complete owner's manual & operating instructions. Please note: your pool may or may not have multiple filters and may or may not include a spa or water feature. You will only find owner's manuals will display in the categories you selected on the installation of your pool manual software. If you have questions or require assistance please contact our store or service department for assistance.

USE: POOL FILTER

1 Complete Owner's Manual

USE: SPA FILTER

1 Complete Owner's Manual

VACUUMING

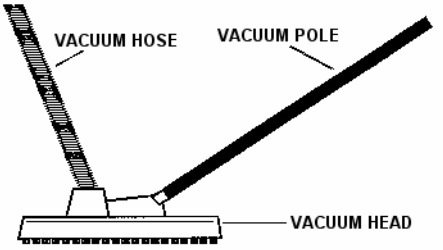
To keep your pool clean it will be necessary to vacuum the pool floor to remove dirt and debris. When vacuuming you are using your pool pump with vacuum attached to skimmer to pull dirt and debris from the pool floor to be trapped inside of your filter-returning the water back to the pool. You should vacuum your pool on a regular basis, generally once a week- or as needed. If your looking for a little less maintenance there are a variety of automatic cleaners available today for all pool types and budgets. I

Your manual vacuum consists of a vacuum head, vacuum hose, telescopic pole and skim-vac plate. The Vacuum head attaches to the telescopic pole, the hose slips onto the vacuum head on one end (if you have a swivel end on your hose attach the swivel cuff end to the vacuum head) the other hose end will slip onto the skim-vac in the skimmer. Follow the steps below, before attaching the vacuum hose to the skim-vac.

Click here to see how to manually vacuum your pool

Before vacuuming you should:

- ✓ Check the water level- should be at the 3/4 point of skimmer opening. A lower water level could cause the pump to loose prime while vacuuming.
- ✓ Check the skimmer basket- empty if needed. The skimmer basket will remain in place when using a skim-vac. The skim-vac will sit over the skimmer basket with a fitting in which to attach your vacuum hose.
- ✓ Check the pump strainer basket-clean if necessary.
- ✓ Check the filter pressure. If the pressure has increased and the suction has decreased, it may be necessary to backwash, where applicable, your filter.



You are now ready to prime the vacuum hose:

- ✓ Submerge the vacuum head (already attached to pole and hose
- ✓ With the filter running hold the free end of hose in front of the return wall fitting to purge the hose of any air and fill with water. When you no longer see any air bubbles coming from the vacuum head the hose is primed.
- ✓ Hold the hose underwater to maintain the prime while connecting to the skimmer. The hose can usually fit through the front of the skimmer opening (weir door may need to be removed) where you can slip onto skim-vac plate.

You are ready to vacuum:

Move the vacuum head slowly and gently to thoroughly clean your pool and not “stir” up debris. It is normal for the pressure reading on your filter’s gauge to drop while vacuuming- as the water flow is being restricted through the vacuum head and hose. You should not, however, notice a decrease in the return flow. If while vacuuming the suction decreases check the strainer baskets (in skimmer and pump) and empty if necessary. If the baskets are clean and suction is still diminished the filter may need cleaned or backwashed- you will notice a decrease in the return flow at this time. When vacuuming large amounts of dirt or debris it may be necessary to clean or backwash during the vacuuming process.

During spring clean up, after an algae problem or heavy dirt/debris you may want to consider vacuuming to waste. If your filter type allows for this option the water being vacuumed from the pool would be discharged through a waste or backwash line out of the pool vs. circulating through the filter. You will lose a considerable amount of water doing this and should first consult our service department.

If you are experiencing air bubbles coming from the return inlet or low suction (and filter does not require backwashing) you may have an air leak on the suction side.

- ✓ Check the vacuum hose itself for pinholes or cracks that could be sucking air, check the connection at the skim-vac or skimmer- is the hose still submerged
- ✓ Check the pump housing is it filled with water? The strainer lid on the pump housing holds an o-ring that should be checked as well. Lubricate with an o-ring lube, available at our store. If o-ring is worn, cracked or stretched replace it. A filter system that is running fine can sometimes show air leaks when the suction is increased during vacuuming.

Automatic Pool Cleaners keep your pool looking great, nearly effortlessly. There are several cleaners available to suit every pool style and budget, ask your Niagara Pools & Spas professional for a recommendation.

AUTOMATIC POOL CLEANERS

There are a variety of automatic pool cleaners available today that will keep your pool looking great, while saving you time. Your Niagara Pools & Spas professional can recommend the type of cleaner and brand best suited to your pool type and budget. Automatic cleaners not only remove dirt and debris but also improve your pool's circulation. There are four types of automatic cleaners: *Battery Powered/Hand Held* cleaners use rechargeable batteries*; Suction Type* use the suction from your pool pump and motor*; Pressure Type are* powered by the return flow from your filter system; *Robotic Type* are self-contained, electric powered cleaners.

DO NOT coil the vacuum hose from any automatic cleaner into a circle - store straight. A coiled hose will create a memory that can impede the performance of your automatic cleaner.

You can view complete operating manuals by clicking on the links below. If your make and model is not listed you will need to reference the printed material that came with your cleaner or contact your pool professional.

Battery Powered (Self-contained) These battery-powered, hand held cleaners snap onto any telescopic pole and require no installation or assembly. By using a rechargeable battery and a reusable, easy-to-clean filter bag, they collect leaves, hair, dirt; and even sand, silt and algae, which means dirt and debris stay out of your filter.

iVac AquaBroom iVac C2 iVac M3

SUCTION TYPE Suction type cleaners attach to your skimmer using the filtration system of your pool, working from the suction side in the same way you attach your manual vacuum. The dirt and debris collected by a suction cleaner is drawn into the pool filter. Operating from your existing equipment, these automatic cleaners move effortlessly with no additional costs. They aid in your pool's circulation by dispersing chemicals and water temperatures from bottom to top more efficiently.

Dirt Demon AG Zap Vac

PRESSURE TYPE (*with and without booster pumps)*

Pressure cleaners are powered by the force of the clean water coming back into your pool through the return inlets. There are two types of pressure style cleaners; those that rely on your filter's return water pressure only, and those that use an independent pump and motor specifically to boost the return water pressure to operate the cleaner. Both styles will have a bag or storage compartment to collect the dirt and debris it collects. These filter bags need to be emptied and cleaned, but will in turn eliminate the debris from entering your filter system. As they clean your pool they enhance circulation by dispersing the chemicals and filtered water throughout the pool. These cleaners sometimes have long tentacles or whips that sweep interior surfaces of your pool, pushing leaves and debris into the filter bag.

KreepyKrauly Legend II KreepyKrauly Platinum Polaris 65 ,165 Polaris 360 Polaris 380

ROBOTIC CLEANERS This category of cleaners operates completely independent of your pool's pump / filtration system and without the cost of installation or booster pumps because

robotic cleaners have their own pump motor and reusable filter system built-in. The robot's internal filtration enables reduction of debris entering the main pool filtration system, thus decreasing the amount of debris to the main filter by as much as 80%, saving 1,000's of gallons of water annually. Additionally, robots can scrub your pool clean as it vacuums and filters (so you wont have to) all while saving you money and time. Their powerful circulation capabilities even mix warm, chemically depleted water above, with cooler chemically rich water below to provide more uniform and healthier swimming water for friends and family. The increase in water circulation will also save you money by reducing heater usage and saving energy. To operate, simply plug the compact power supply into a grounded outlet, and the thin, floating power cord into that, and these low voltage (usually just 24v) robots will automatically clean, saving time and money at the touch of a button.

Cyclone

Z Junior Industrial

Z1 Industrial

Z2 Industrial Turbo

Industrial 4WD

Smart Pool Nitro Cleaner

ROUTINE MAINTENANCE

Keeping your pool physically clean is as important as the regular addition of chemicals. Debris in the pool is unsightly, increases sanitizer demand and may cause staining of pool surface. During the swimming season, thoroughly clean your pool at least once a week. To ensure proper circulation and filtration you should run your system a minimum of 8 -12 hours, up to 24 hours per day, following your pool professional's recommendation. The general maintenance tips below will help keep your pool looking great and operating smoothly

1. Maintain proper water level, approximately 2/3 high on skimmer opening.
   You can lose up to 3" of water per week through evaporation and splash out.
2. Skim pool surface with leaf skimmer daily or as needed.
3. Brush walls and floor with proper brush weekly, this will reduce your vacuuming time.
4. Remove dirt ring from waterline using a tile and vinyl cleaner.
5. Clean out skimmer basket.
6. Clean out hair and lint basket at your pump.
7. Check filter pressure; when pressure gauge raises 10 psi above the normal starting pressure you should backwash or clean your filter. *Click here for your filter manual*
8. Keep deck area clean near pool.
9. Check hoses and equipment and replace when needed.
10. Vacuum pool weekly or as needed. *See Vacuuming for complete instructions.*
11. Test your pool water using your test strips or kit 2-3 times per week and follow a regular chemical treatment program.

Above Ground Owners- *click here to read your Manufacturer's Maintenance Information*

HEATING YOUR POOL

Your pool won't contribute to your health or pleasure unless it's warm enough to swim in comfortably when you want to swim. Heating your pool will enable you to get the maximum value out of your investment by allowing you to enjoy the most comfortable water temperatures possible, allowing you to use your pool more often.

How warm you keep your pool is, of course, entirely up to you. Competitive swimmers prefer a temperature of 78º F while recreational swimmers are generally more comfortable near 80ºF, the young and elderly closer to 82ºF. The sun alone usually can't keep your pool water at that comfort minimum of 78ºF. By having a heater to warm your water you can add substantially to the daily use of your pool and extend your swimming season.

There are several methods available to heat your pool, from the sun itself to: gas, oil and electric fired heaters, electric heat pumps and solar heating systems. Our pool professionals will help you select the heating system that best suits your budget, geographic region and lifestyle. To learn more about the heating system used on your pool, click on the link below for the complete owner's manual. Remember, operating costs can be kept to a minimum by installing an efficient, properly sized heater or heat pump; using a good quality pool cover; and, of course, keeping your filter clean and your heating and filtering system well maintained.

The following tips will help you conserve energy and heat your pool more economically.

1. Keep a thermometer in your pool. It will pinpoint accurately the temperature most comfortable for you.
2. Keep your thermostat at the lowest comfortable setting. Each degree more heat than needed could add more to your monthly fuel cost and use up more energy than necessary.
3. Mark the "comfort setting" on the thermostat dial. This will prevent accidental or careless over-heating and waste of energy.
4. Lower thermostat to 70°F when pool is not going to be used for three or four days. For longer periods, shut the heater off. You will save money on fuel consumption and help conserve energy.
5. Protect your pool from wind. Wind above 3 to 5 miles per hour can lower the pool temperature substantially. A hedge, cabana or decorative fence can be an effective windbreak.
6. Use a pool cover when pool is not in use. This can reduce heat loss by as much as 50%. If you are vacationing for a couple of weeks or shutting down for winter, turn the heater off completely.
7. Drain heater or heat pump completely prior to freezing weather. Freezing water inside the heat exchanger can result in costly repairs. *Read owner's manual thoroughly*.
8. Get a maintenance checkup annually. It's your best ounce of prevention. Call our service department for more details. The cost is minimal and the service will keep your heater or heat pump working efficiently for many years.

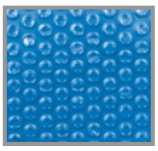
Click on the link below for the complete owner's manual for your heater or heat pump

Pool Heater or Heat Pump

Spa Heater or Heat Pump

SOLAR COVERS AND REEL SYSTEMS

For a variety of reasons, the single biggest energy conservation move that you can make is to put a cover on your pool. First, the cover reduces the heating bills by preventing heat loss. The cover can also reduce the amount of dirt and grime that enters the pool, reducing the amount of time it takes to remove them from the water through filtration or vacuuming.

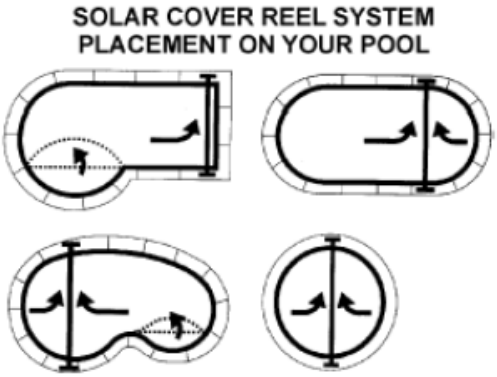


A solar cover goes one step further, collecting heat from the sun. Covers can also reduce evaporation, which can waste both water and heat and increase the Total Dissolved Solids levels in the water. Some estimates say that as much as 50 gallons a day can be lost in an uncovered pool, due to evaporation. That's more than 18,000 gallons of water wasted each year. There are also several liquid solar products available that can be used in place of a solar cover to increase heat by reducing evaporation.

When using a solar cover on your pool remember these important tips:

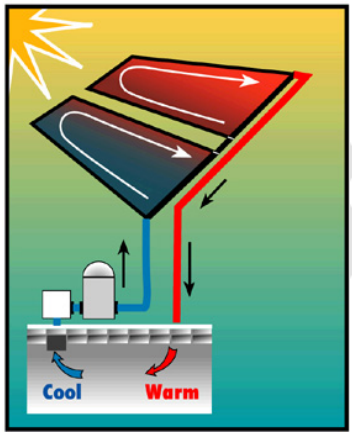
- ✓ **CAUTION:** Solar covers pose a drowning hazard to children or pets who may try to walk across the cover. ALWAYS keep an eye on children around the pool and warn them that the cover will NOT support them and that they should not try to play on or around the pool. **DO NOT** swim with the cover on.
- ✓ Covers should float on the surface of the water- *bubble side down*.
- ✓ DO NOT remove your cover and lay it on t he lawn. The intense UV rays of the sun will burn-out the grass very quickly.
- ✓ Leave your solar cover off immediately after shocking your pool and during treatment for visible algae or cloudy water. This will help promote the circulation and water quality of the pool as well as extend the life of your solar cover.
- ✓ When solar cover has been removed and is reel ed onto a solar reel- it should be covered with the protective white plas tic supplied with cover, to pr otect the coiled cover from gathering heat in the sun and possibly sticking together.
- ✓ DO NOT leave your pool covered for 3 to 4 days or more without removing the cover from time to time to promote circulation and reduc e algae growth. This includes vacation time- leave your cover OFF while away.

Solar reel systems are available for all pool styles and shapes. Reels allow one person to easily remove and reinstall a cover in addition to providing a convenient location to store the cover when not in use.



SOLAR HEATING SYSTEMS

Solar pool heating is the most economical, reliable, and environmentally friendly way to heat your swimming pool. Unlike other pool heating systems such as gas or electric heat pumps, solar pool heating systems have little ongoing operational cost. After the initial system purchase price, solar heat delivers FREE energy from the sun to heat your pool day after day, month after month, and year after year. With proper placement, solar heating systems are capable of providing desired temperatures well above the norm during the swimming season



In solar heating systems, pool water circulates through a large heat exchange surface, located on the roof or ground, and absorbs the sun's energy. The concept is similar to the way a car radiator works; only these solar heat exchangers collect heat instead of radiating it. Most solar "collectors" are flat black panels manufactured from high technology plastics, which have been designed to resist weather and ultraviolet radiation.

The major advantage of these systems is that because sunshine is free, they have no operating cost. Used in conjunction with a pool cover, solar heating systems can more than double your comfortable swim season, from four months to nine or ten months every year. Another plus for environmentally concerned pool owners is that solar energy is renewable and non-polluting. The major disadvantage is that solar does not provide heat on demand. In other words, the solar system can only put into the pool the heat that is available from the sun on any given day. You cannot make more solar energy the way you might burn more gas or use more electricity to maintain your heat.

Some simple requirements needed for solar heating to operate under the best conditions include:

- System should be situated in a place where it receives unobstructed sunlight from 8am-4pm.
- Ideally the sun collector should face due south, east or west of south can be acceptable.
- A Solar cover should be used in conjunction with a Solar Heating System to maximize the temperature increase and retention. *See Solar Covers & Reels*.

Any of our pool professionals can help you determine what type of solar heating system would be best for your pool.

ENERGY CONSERVATION

Not only can maintaining your pool involve a great deal of work, but also much energy is required to keep it up and running. Fortunately there are alternatives to reduce the amount of energy used that results in savings for the environment and money in your pocket long term.

For a variety of reasons, the single biggest energy conservation move that you can make is to put a cover on the pool.

First, the pool cover reduces the heating bills by preventing heat loss. The cover can also reduce the amount of dirt and grime that enters the pool, reducing the amount of time it takes to remove them from the water through filtration or vacuuming. In addition, the cover will save on the amount of chemicals and water that need to be added. *See Solar Covers & Reels for additional information*

Covers can also reduce evaporation, which can waste both water and heat and increase the Total Dissolved Solids levels in the water. Some estimates say that as much as 50 gallons a day can be lost in an uncovered pool from evaporation. That's more than 18,000 gallons of water wasted each year!

Solar heating systems are considered to be one of the best options in conserving energy. Take advantage of the power of the sun. The system absorbs the sun's rays maintaining a comfortable pool water temperature and lengthening your swim season.

General pool energy management is essential in saving you and the environment time, energy, and money. Here are a few guidelines to be noted:

- ✓ Keep in mind that each degree the pool temperature is increased, consumption is elevated by 10%.
- ✓ It is important to keep intake grates and skimmer baskets clean.
- ✓ Reduce filtration time, if possible.
- ✓ Only backwash filter when absolutely necessary.
- ✓ Pool heater maintenance should be kept up-to-date.

As big energy consumers, pools must be properly managed. The following page contains water conservation tips courtesy of NESPA, Northeastern Spa and Pool Association. These water saving ideas are especially helpful in drought prone areas or if a water restriction is in effect due to drought-like weather.

WATER CONSERVATION TIPS

- ✓ **Repair any leaks**.
  Even a small leak in either the equipment or the structural shell can cause substantial water loss. Just 1-1/2 inches a day in a 15 by 30 foot pool wastes approximately 102,000 gallons per year!
- ✓ **Buy and use a cover**. *See Solar Covers & Reels for additional information*
  Covers reduce water loss due to normal evaporation.
- ✓ **Manually clean your filter.** *See Filters for detailed instructions*.
  If possible, manually clean your filter. You'll do a more thorough job and use much less water. The average backwash uses between 250 and 1,000 gallons of water - without completely cleaning your filter.
- ✓ **Prohibit diving, splashing, and water fights.** Boisterous play causes large amounts of water loss from "splash-out".
- ✓ **Control filter cycle and chemical use**.
  Use the least possible filtration time and test/treat chemically frequently. Regular care will keep the pool/spa cleaner and will avoid the need to drain and refill to correct conditions caused by neglect.
- ✓ **Reduce heater temperature**.
  If you have a heater, reduce the pool/spa heater temperature because warmer water evaporates more quickly. *See Heating Your Pool- Conservation Tips*.
- ✓ **Plug the overflow line when swimming**.
  If your pool is equipped with an overflow line, this prevents water loss through the line when the pool is in use.
- ✓ **Gain advantage of roof runoff**.
  Redirect downspout water directly to pool via vacuum or backwash hose.
- ✓ **Turn off tile-spray on automatic pool cleaner**.
  This device's splashing causes water loss by evaporation. Over spraying can send water right out of the pool.
- ✓ **Plant drought-resistant native trees and plants in the yard**.
- ✓ **Sweep instead of hosing off**.
  Sweep decks, patios, driveways and sidewalks instead of hosing.
- ✓ **How to maintain your pool with a low water level**.
  If swimming pool water level falls below the skimmer, consult your swimming pool service company for operating guidelines. You may be able to still operate your equipment through a suction hose in your skimmer.

Courtesy of:

Northeast Spa & Pool Association
Water & Energy Conservation Checklist to Save Water Around Your Pool & Yard

POOL OPENING

If you live in a colder climate where your pool is “winterized” and covered you will want to follow these steps #1-9. If you live in a milder climate where you have simply reduced your chemical routine you can begin with the instructions for chemical start-up.

1. Remove standing water and debris from winter cover. For water removal use a cover pump or siphon. *(Note: if you notice your water level is dropping there may be pinholes in your cover at which time you would be draining water from your pool from atop your cover) Try to avoid the water and debris on top of the cover from entering the pool water while removing. Once removed clean the winter cover with a cover cleaner- allow to dry (to prevent mildew and deterioration)- and fold for storage until fall. *(Do not lay cover out in yard to dry- it will burn and kill the grass in a very short time)
2. Remove any winter plugs, closing plates or freeze protectors from skimmer or return inlets. Install skimmer basket and directional “eyeballs” in inlets.
3. Check water level and if necessary add fill water to bring pool water to proper level- ½ to 2/3 up on the skimmer opening.
4. Using a leaf net or leaf bagger remove leaves and debris from water, floor.
5. Connect all hoses, pump and motor and filter system. See your Filter owner’s manual that came with your pool for complete instructions on hooking up your filter system- clean or replace filter media if necessary. Make sure all drain plugs have been reinstalled in pump and motor, filter, chlorinator, etc. Lubricate all o-rings (pump strainer lid, filter, valves, unions, chlorinator lid, etc) with an o-ring lubricant and replace any that are worn, cracked or stretched. Be sure all equipment is in good working order.
6. Prime pump if necessary (if non-priming or above water level) and start circulation/filtration.
7. Vacuum the pool. A thorough manual vacuuming is usually recommended-*Vacuuming*

   *If there is a lot of fine debris or sediment covering the floor you may want to vacuum to waste if this is an option on your filter system *See your filter manual.
8. Prior to adding any chemicals you should have your water tested-especially if you suspect metals or minerals may be present in your pool. It is better to treat metals in the water prior to adding any chlorine. Our staff can provide you with a complete, professional water analysis and treatment recommendations.
9. Re-install all equipment and accessories. Check the diving board, slide, stairs and ladders for any signs of looseness or corrosion. Tighten all hardware replace any necessary fittings.

   Once your water has been tested and is in balance you can begin treatment with Sanitizer program of your choice. *See* *Sanitizing your Pool* in this manual for detailed instructions.

POOL CLOSING - WINTERIZING ABOVE GROUND POOLS

OVERVIEW

When you are ready to close your pool for the season you will want to first be sure that the water is CLEAN AND BALANCED.

1. Brush and Vacuum the pool and remove any fallen leaves or debris.
2. Test the water and make any necessary adjustments so the pH reads between 7.2 –7.8 and the Total Alkalinity between 80-120 ppm.
3. If you have or suspect you have excess minerals or metals in your water have your water professionaly tested at our store and add the recommended sequestering agent or metal remover per label directions.
4. For best results allow water to circulate a minimum of 2-4 hours so that any chemicals added will be evenly distributed.
5. Purchase any necessary winterizing products that you may need to close your pool; such as a freeze protector for your skimmer, air freeze pillows, plugs, winterizing chemicals, etc.
6. Check winter cover and be sure it is in good condition along with cable and winch or water tubes. Replace any worn or lost items.

Please call our service department for pool closing and opening services. If you choose to close your own pool be sure to read all of the manufacturer's winterizing recommendations that came with your pool & equipment. ***Freeze damage caused by improper winterization is NOT covered under warranty.*** ***CLICK HERE FOR IMPORTANT MANUFACTURER'S WINTERIZING INSTRUCTIONS FOR YOUR ABOVE GROUND POOL***

The recommendations below will provide general guidelines for closing your pool.

1. Follow recommendations above and be sure water is clean and balanced
2. Add closing chemicals recommended by our pool professionals. Often, a winterizing kit is available with all of the chemicals you need to close.
3. **IMPORTANT** FOLLOW the directions on the kit, or bottle labels regarding circulation time, often a circulation time of 4 to 8 hours is required to ensure the chemicals have circulated thoroughly.
4. Backwash and clean filter following owner's manual for cleaning and winterizing. Most manufacturers recommend that you chemically clean your cartridge or D.E. elements at the end of each season. Every 2 to 3 seasons sand filters can be emptied and new sand added in the spring.
5. Shut off pump and motor.
6. Water level should be lowered according to your SPARCO professional's recommendations. With a *Skimmer Plug™* you can close your pool with very little water loss by creating a water tight seal at the skimmer opening. Generally you will want to drain the water to the bottom of the skimmer opening. If using a thread-in freeze protector in the skimmer, you should drain the water level 3-4 inches below the skimmer.
7. PROTECT YOUR SKIMMER using a freeze protection device from your pool professional. As mentioned above, if using a press in *Skimmer Plug™* you will be covering the skimmer to prevent water from entering and freezing. When using one of these products be sure to leave the bottom of the skimmer open so outside water will not accumulate inside the housing.

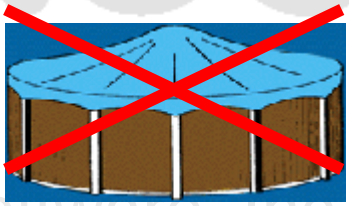
8. Remove any directional part of the return protruding into the pool, such as the eyeball fitting or return nozzle and install appropriate plug.

9. Remove ladder or steps from pool.
10. Disconnect hoses.
11. DRAIN ALL EQUIPMENT: pump, filter and heater, automatic chemical feeder (store drain plugs in pump basket). Be sure all water is drained from equipment and fittings, freeze damage is not covered under warranty. Store indoors during winter months or cover with a tarp to protect from the elements. Refer to the equipment operating instructions for your filter, pump, heater, etc. found within this manual for more detailed winterizing instructions.
12. Inflate air freeze pillow approximately 2/3 full with air and secure in center of pool. NOTE: DO NOT over inflate or fully inflate air freeze pillow. You may also want to place a piece of duct tape over the air cap to help keep securely closed throughout the winter.
13. Secure cover with cable and locking winch and or attach cover clips.
14. Cover should rest on the surface of the water:

RIGHT

The cover should lie on the surface of the pool water. Leave slack, do not pull tight. Any excessive accumulation of water or snow should be removed immediately.

WRONG



Do not install the cover this tight. The weight of snow or rain will force the cover at the seams and along the pool edges.

15. When securing cover with cable, cord or other mounting device, make sure the cable, cord, etc. is positioned over the top of the Thru-the-Wall skimmer and **NOT UNDER THE SKIMMER**.
16. Keep an accumulation of 1 to 2 inches of water around perimeter of cover to prevent cover from flapping or dislodging during high winds. If ice forms on cover, do not tamper with ice or attempt to remove. Leave ice until it melts. Before removing cover in the spring be sure to siphon off all excess water resting on pool cover.

IMPORTANT: During the winter months, inspect your pool and surrounding area. Remove any accumulation of water, ice and snow from the top of the pool and from the skimmer to prevent formation of an ice, water or snow load which can cause severe damage to pool and pool cover. We offer cover pumps at our store to aid in removing excess water. It is essential that you monitor the amount of water, snow and ice on the top of your pool during the winter months. If you feel that the cable that attaches the cover to the pool is too tight and is pulling up on the pool ledges, or is creating excessive weight on the pool, release the cable at once to prevent damage to the pool.

POOL OWNERS WITH BEADED LINERS: If you allow your water level to go below the recommended levels as described in step #6, your liner may disengage from the bead receiver. It is very IMPORTANT that you maintain a water level as close to the operational level as possible.

POOL CLOSING - WINTERIZING INGROUND POOLS

OVERVIEW

When you are ready to close your pool for the season you will want to first be sure that the water is CLEAN AND BALANCED.

1. Brush and Vacuum the pool and remove any fallen leaves or debris.
2. Test the water and make any necessary adjustments so the pH reads between 7.2 –7.8 and the Total Alkalinity between 80-120 ppm.
3. If you have or suspect you have excess minerals or metals in your water have your water and add the recommended sequestering agent or metal remover per label directions.
4. For best results allow water to circulate a minimum of 2-4 hours so that any chemicals added will be evenly distributed.
5. Purchase any necessary winterizing products that you may need to close your pool; such as a freeze protector for your skimmer, air freeze pillows, plugs, winterizing chemicals, etc.
6. Check winter cover and be sure it is in good condition along with water tubes. Replace any worn or lost item

Due to underground plumbing and various circulation systems that require specific winterizing procedures we suggest you contact our service department to schedule a professional pool closing. If you choose to close your own pool please carefully read and follow all the manufacturer's winterizing instructions that came with your pool and equipment.

Freeze damage caused by improper winterization is NOT covered under warranty.

The recommendations below will provide general guidelines for closing your inground pool.

1. Add closing chemicals recommended by our pool professionals. Often, a winterizing kit is available with all of the chemicals you need to close.
2. **IMPORTANT:** FOLLOW the directions on the kit, or bottle labels regarding circulation time, often a circulation time of 4 to 8 hours is required to ensure the chemicals have circulated thoroughly.
3. Backwash and clean filter following owner's manual for cleaning and winterizing. Most manufacturers recommend that you chemically clean your cartridge or D.E. elements at the end of each season. Every 2 to 3 seasons sand filters can be emptied and new sand added in the spring.
4. Shut off pump and motor.
5. Water level should be lowered according to our staff's recommendations. Generally, if using a *Skimmer Plug*™, drop the water 1"-2" below the skimmer opening. If not using a snap on lid you need to lower the water 4"-6" below the skimmer opening. You can lower the water by using your pool pump and motor- with the return hose redirected, or by starting a manual siphon with your vacuum hose or garden hose or by using a cover pump.
6. PROTECT UNDERGROUND PLUMBING-before sealing off skimmer and plugging return inlet(s) you need to protect your underground plumbing. Blowout the lines using a canister type wet-dry vacuum in the skimmer opening, plug return inlets with threaded plugs w/ o-rings and add swimming pool antifreeze to the lines at a rate of 1 gallon per 25 feet of plumbing.

7. Remove all parts from skimmer (basket, weir, lid) store indoors. Wipe the inside of the skimmer clean and use a freeze protection method recommended by our pool professionals. A press-in place *Skimmer Plug™* will protect the skimmer by creating a water-tight seal, blocking pool water from entering the skimmer. Thread in freeze protectors will expand or contract to prevent damage to skimmer.

8. Remove ladder, handrails, boards, and accessories.
9. Read manufacturer's instructions for winterizing your pool light and if necessary lower into deep end of pool or lift onto pool deck.
10. DRAIN ALL EQUIPMENT: pump, filter, heater, chlorinator, fittings and valves, etc. (store drain plugs in pump basket) Refer to you equipment owner's manuals for more detailed winterizing instructions.

    All water must be ***completely drained from any equipment to avoid freeze damage.***

11. Secure winter pool cover. Tarp-style covers should lie on the surface of the water and be anchored securely at perimeter using water tubes/bags. Allow some room in the water tubes for expansion when the water freezes. Do not allow excessive water more than 1"-2" to accumulate on the winter cover.

    Safety Covers are available to cover and protect your pool, see *Winter Cover* section for more information as well as use and care instructions.

12. **IMPORTANT:** During the winter months, inspect your pool cover and remove any excess accumulation of water from the top of the pool cover. The weight of too much water, ice and snow load on the cover will cause stress and possibly damage to the pool cover. We recommend using a cover pump, available at our store, to aid in removing excess water.

WINTER & SAFETY COVERS

WINTER COVERS

A winter cover is a must to keep your pool water clean and free from dirt, leaves and debris, eliminating costly maintenance and spring clean up.

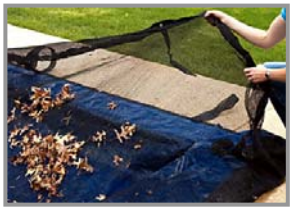
Above ground covers are secured with a wire rope and tightening winch that runs through grommets in the cover. When securing cover with cable, cord or other mounting device, make sure the cable, cord, etc. is positioned over the top of the thru-the-wall skimmer and **NOT UNDER THE SKIMMER**. If you feel that the cable that attaches the cover to the pool is too tight and is pulling up on the pool ledge s, or is creating excessive stress on the pool, release the cable at once to prevent damage to the pool.

Inground covers should be secured using water tubes. Just fill with water, allowing room in the water tubes for expansion when the water freezes, and place around the perimeter of the pool.

Keep an accumulation of 1” to 2” of water on the cover to prevent cover from flapping or dislodging during high winds. If ice forms on cover, do not tamper with ice or attempt to remove, leave ice until it melts. Before removing cover in the spring be sure to siphon off all excess water resting on pool cover.

.**IMPORTANT**: It is essential that you monitor the amount of water, snow and ice on the top of your pool during the winter months. Inspect your pool cover and remove any excess accumulation of water from the top of the pool cover. The weight of too much water, ice and snow load on the cover will cause stress and possibly damage to the pool cover. Do not allow excessive water more than 1”- 2” to accumulate on the winter cover.

LEAF NETS



Leaf Nets are a great addition to your winter cover. The Leaf Net cover keeps leaves and debris out of your pool. The fine mesh allows water to pass through while trapping leaves, twigs, and other debris. Leaf nets easily attach to the winter cover with grommets and prolong the life of the cover. Spring clean up of your pool cover is much easier, as all debris comes off of your pool cover in one simple motion.

SAFETY COVERS

A pool or spa safety cover is a manual or motorized barrier that can be placed over the water’s surface, and is easily opened or closed. Pool and spa safety covers are a great way to pool safely, because visually they say, “not open” for use to curious children. Safety covers for pools can be manual or motorized, while covers for spas are generally manual. When a safety cover is properly in place over the pool or spa, it provides a high level of safety for children less than 5 years of age by inhibiting their access to the water. To maintain that high level of security, it’s important to remove ladders and slides when using covers on pools

Manual spring anchored safety covers that anchor to the pool deck will stretch taunt over the pool area, attached to the pool deck by a series of brass anchors and stainless steel springs. Safety covers made of mesh, solid or light blocking materials all offer specific advantages. Mesh safety covers provide a shield over the pool area while allowing rain and melting snow to drain through, so the top of the cover never becomes a dangerous, slippery hazard (there have been cases of children and pets that have drowned in the collected rainwater).

Solid Safety Covers eliminate fine debris and UV rays that can penetrate mesh covers and offer a drain panel to reduce standing water while filtering debris. Two very important things to remember with any solid safety cover or automatic or manual solid cover are the water level in the pool and standing water on the cover.

✓ **Pool Water Level** Be sure to maintain the water level at the middle elevation of the skimmer opening. If the water drops below this level, the cover may operate under stress. Never cover the pool without the proper water level under the cover. The water supports all weight on the surface of the cover. If the water level is low and water builds up on the cover, severe damage may be done to the coping and/or cover system.

✓ **Using the Pool Cover Pump** Water will accumulate on the top of the cover can come from rain, snow, over-spraying sprinklers, or leaks that may develop in the cover. Even what appears to be small amounts of water spread over the whole surface of the cover can migrate and accumulate in depressions. This is dangerous. Any accumulation of water on the surface of the cover must be removed immediately using the cover pump.

A solid cover is not a safety cover unless the pump is in place!

The following general use & care instructions below apply to anchored safety covers.

Water Level: The water level in the pool should be kept within 20” of top of pool wall.

Spring Tension: Initially, adjust the straps so that they are set to at least half compression. This will keep the cover tight and aid in draining. The springs should be checked periodically and the straps adjusted to maintain tension.

Water Treatment: Be sure your pool has the proper level of sanitizer and algaecide before closing in the winter. This will insure that the water is clear upon opening in the spring. If the cover is left on when the temperature has gone beyond 60ºF it may be necessary to add algaecide to maintain clarity.

Snow & Water: Large accumulations of snow should be carefully removed, taking precautions not to damage the cover. Likewise, if a large puddle of water accumulates. , it should be removed immediately by directing it to the drain panel or by using a weighted cover pump. The straps should be readjusted to prevent a reoccurrence. Failure to perform this maintenance could result in stretching or damage to other cover components. Drainage can be facilitated by slightly loosening the strap that runs through the drain areas while tightening the straps away from the drain. A small amount of puddling is normal and will evaporate in dry weather. If you have questions about these or any other procedures, please contact your cover installer.

Debris & Standing Water: Standing water resulting from melting snow and rain must be removed immediately. Covered pools located in heavily wooded areas are susceptible to accumulation of leaves, needles and other debris that will inhibit water flow to and through the drain panel. **It is very important to keep the drain clear of debris at all times.** Water can be removed by placing a weighted pool cover pump in a suitable location on the cover. Cover pumps are available at Discounter’s Pool and Spa Warehouse..

Abrasive Coping: For covers not ordered with protective padding at the coping, it is recommended and often required that padding be placed as a barrier between rough or sharp coping and the cover itself. Failures to do so may void your safety cover warranty. Periodic examination of the cover is necessary for detection of early signs of wear.

Removal: The cover may be hosed off and should be allowed to dry before fan folding for storage in its mesh bag. Cover cleaner and treatments, available from your pool supply store are also recommended.

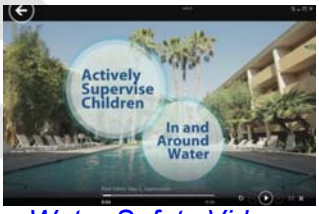
Anchors: After removing or prior to installing the cover, clean out all the anchor sockets with a stream of compressed air or water. This biannual cleaning will assure proper anchor function. Applying spray silicone to these components will also be beneficial to their proper operation. When the cover is not in use, screw anchors down completely to keep out debris and prevent tripping and foot injuries.

SWIMMING POOL SAFETY

Safety is the most important factor to consider when using or caring for your pool. Please read all of the pages contained within this section, and make a habit of practicing basic safety in the use and care of your pool and equipment. Also, read your equipment owner's manuals carefully. When you see blue underlined text you can click to open up more information on that particular topic. In this section, we will discuss four main subgroups of safety:

Chemical Safety ***Water Safety*** ***Electrial Safety*** ***Equipment Safety***

The following ***GENERAL SAFETY RECOMMENDATIONS*** are supplied by the CPSC and the APSP and provide an overview of the various safety aspects mentioned above. Remember you do not know which pool safety step can save a life!



Water Safety Video

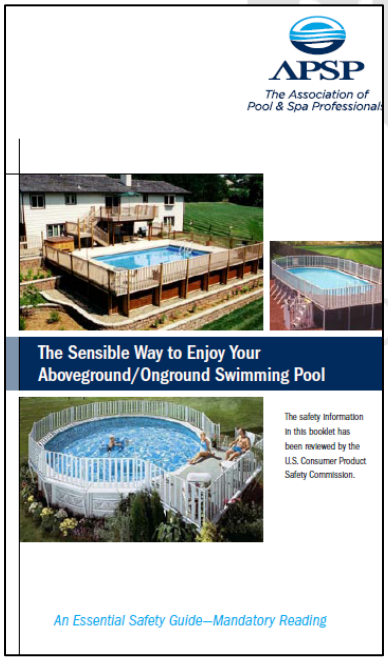
Watch Video

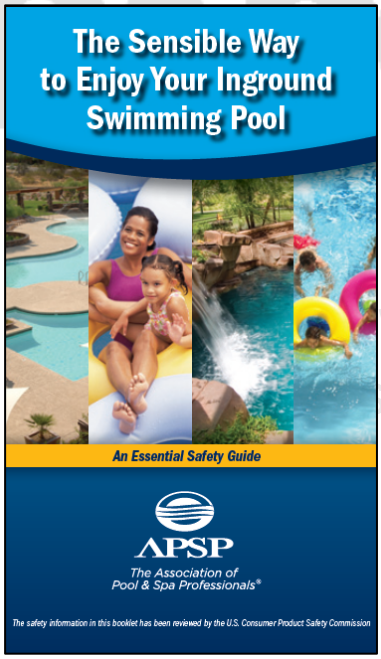
- Set pool rules and stick by them.
- Never dive in an above ground pool or shallow water.
- Nine out of ten diving injuries occur in six feet of water or less.
- Post depth markers to accurately identify the pool depth.
- Keep these basic safety items by the pool at all times:
    1. Shepherd's crook or long-handled hook
    2. Life ring preserver-coast guard approved
    3. First aid kit including written instructions on how to administer CPR
- Never leave children unattended or even out of eye contact in your swimming pool.
- Make sure pool is inaccessible to children when unsupervised or you are away from home.
- Don't leave toys around the pool or in the water. They could encourage an unsupervised child to enter the pool area.
- Follow instructions for assembly and use of a ladder.
    - Locate the ladder on a solid base
    - Face the ladder when climbing
    - Use the hand grips
    - One person on the ladder at a time
    - No running or pushing on the ladder
    - Swing-up ladders should be raised when leaving the pool unattended—even for a moment.
- Make sure you are aware of local requirements concerning fencing around pools.
- It is a good idea for all family members to become familiar with CPR (Cardio-Pulmonary Resuscitation). Training is normally available from a number of different groups, i.e., American Red Cross & YMCA.
- In case of emergency, call 911 immediately. It is a good idea to have a cordless phone available in the pool vicinity. Keep the following emergency phone numbers posted near the pool:
    - Police/Fire/Rescue
    - Poison control
    - Physician
    - Ambulance/Hospital

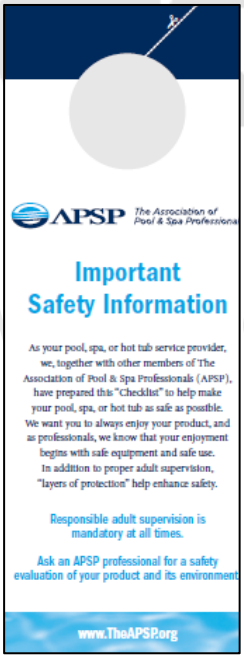
- Be aware and prepared for unsafe weather conditions. All swimmers should leave the water immediately as soon as you see or hear a storm to prevent possible electrical shock.
- Keep all chemicals sealed and out of children's reach. Always follow all directions on label.
- Never mix chemicals together.
- Always add chemicals to water, never the reverse.

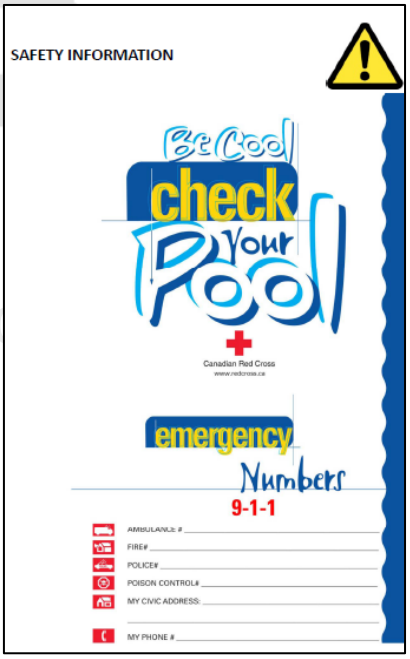
- Chemicals should be stored in a cool, dry place.
- After handling chemicals, clean hands thoroughly.
- Never put a quick dissolving chlorine tablet or granular chlorine into an automatic chlorinator or floating dispenser.
- Pool alarms are recommended for families with small children or pets.
- Many serious pool accidents involve alcohol. Remember alcohol and pools don't mix!
- Glass and Sharp objects should not be used on or around the deck of the pool.
- All electrical equipment (including power supply cords) used with or around the swimming pool should be protected by a ground-fault circuit interrupter (GFI) at the power source. Your licensed electrical contractor always supplies this circuit. Serious injury and even death can result from improper electrical hook-up.

CLICK ON AN IMAGE BELOW TO OPEN THE COMPLETE DOCUMENT









Chemical Safety

When opening your pool or doing routine maintenance, remember to follow common-sense rules for safety. Using pool care products can be dangerous if you forget the right handling and storage procedures. Click here for more information on *Chemical Safety-Storage and Handling.* All chemicals used for any purpose in or around the pool should be handled very carefully, stored in a safe place, and precautions noted. Chlorine and other pool sanitizers are classified as oxidizers. These chemicals require specific precautions, see *oxidizers*. Some pool chemicals, specifically balancing chemicals, are classified as acids and also require specific handling and usage instructions, see *acids*.

Water Safety

Pools are a great asset to any home or community, however, rules must be set and enforced, manuals must be read and re-read, and knowledge of proper water safety is key to avoiding preventable accidents. Every parent should teach his or her child(ren) to swim at an early age. You can contact one of the following organizations on-line to locate a certified water safety instructor in your area: www.ymca.net or www.swimamerica.org With a few precautions, the likelihood of a drowning incident may be significantly diminished. Please click below to view the following safety pamphlets related to drowning prevention: *Children aren't waterproof*

Layers Of Protection

Your pool provides your family the opportunity to enjoy healthy recreational activity together, as well as the means to teach your children a lifelong respect for water. As a responsible adult,

you are aware of the risk of a child drowning when around any body of water, including pools. While it is a fact that adult supervision is the primary solution to childhood drowning, it is also a fact that most of these accidents occur when there has been a lapse in that supervision. Studies have shown in the majority of cases it is during these short lapses in supervision that children have gained access to the pool are through:

- ✓ **Open or unlocked house doors or windows,**
- ✓ **Open, unlocked or broken fence gates.**

Several suggested alternatives or options have come forward to provide a layering effect between the house and the pool. These options are to be used only in conjunction with proper supervision. **In no instance**, are they to be used in place of supervision. In discussing pool safety alternatives, Association of Pool & Spa Professionals (APSP),believes that certain requirements should be met at an absolute minimum. These are as follows:

- All pools should be enclosed by a barrier.
- When the house is used as one side of the barrier, all windows should have a latching device and all doors should be self-closing and self-latching with the latch located at least 56" from the floor.
- All fence gates should be self-closing and self-latching and capable of being locked when the pool is not supervised.

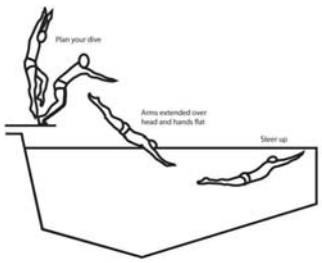
The suggested recommendations are in logical progression from the house to the pool. The APSP recommends that you not rely on any one system, rather several together providing layers of protection. Please pay particular attention to any sliding glass doors which provide access to the pool. These doors may often be left open, requiring layers of safety.

Diving

Under NO CIRCUMSTANCES should diving or jumping occur in an above ground pool!

In an inground pool the pool area must be examined (depth & obstacles) and a diving technique should be discussed to ensure a safe and fun dive. To learn more please visit the www.divingboardsafety.net website or click below to watch the safe diving video and to review the APSP safe diving instructions.

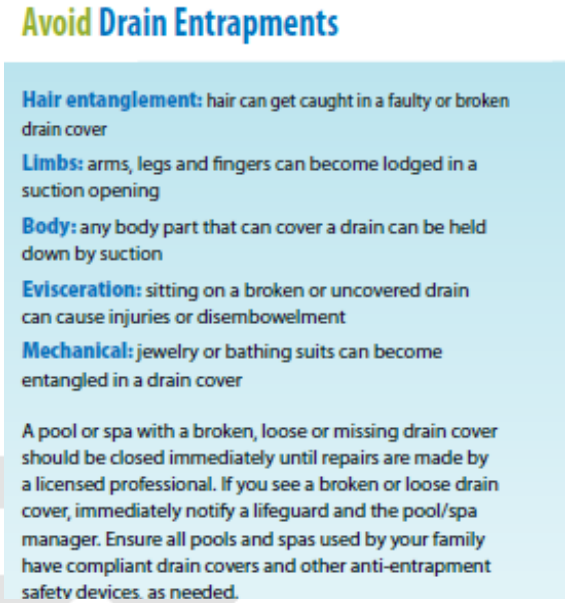
Click here for Safe Diving Tips



Click to watch Safe Diving Video

Entrapment

Entrapment occurs when a swimmers' hair or body parts are sucked into or held down by a strong vacuum through a suction fitting or main drain. Be certain that all swimmers know to **STAY AWAY** FROM the main drain and suction fittings, especially in spas and shallow pools. Regularly inspect the skimmer lids, and main drain covers to be sure they are securely screwed in place without sign of cracking or deterioration. If a broken or missing grate or drain cover is detected, the pool should not be used until the hazard is fixed. It is a good idea to have an emergency shut-off switch for the pool pump in an easily accessible area near the pool. Anyone using the pool should know where it is and how to use it in the event of an emergency. *Click here to learn more*



Electrical Safety

GFCI - All electrical equipment (including power supply cords) used with or around the swimming pool should be protected by a ground-fault circuit interrupter (GFI) to protect from possible shock. Your licensed electrical contractor always supplies this circuit. Serious injury and even death can result from improper electrical hook-up. The GFI is located in either the junction box that connects the pool light to the electrical system or in the main load center for the pool (breaker box). The GFI consists of a reset button and a small square button marked "test". To test the effectiveness of the GFI first press the "test" button, it should trip. Next, depress the "reset" button. You should hear a clicking sound. This tells you that the shock protection is intact. Perform this test once a month to be sure your GFI is in working order.

Codes- All electrical equipment and wiring must meet the requirements of the local and national codes which apply.

Grounding and Bonding- All electrical equipment must be grounded. All metal objects (ladders, diving platforms, etc.) must be electrically bonded together.

Extension cords- Never use extension cords around a pool or spa. If they get wet, it's an invitation to a shock - possibly a fatal one.

For additional information read the document *Don't Swim With Shocks-click here*

Equipment Safety

Always read the complete owner's manual for all equipment and be certain you have a good understanding of its operation prior to start-up. Compressed air can become trapped within your pump and filter system creating a dangerous amount of pressure- enough to actually blow the lids off of filters or strainers. The manufacturer's owner's manual for your filter system and pump will explain how to safely bleed the air out of your system. **NEVER** start your system without opening the air bleeder valves first. Below is a safety checklist you should routinely perform to be sure your pool and equipment are operating safely and efficiently.

- Main Drain cover is installed correctly, screwed down, unbroken, and certified for that application.
- All skimmer covers are in place, screw-fastened and unbroken.
- Filter pressure gauge is in good working condition and that the filter pressure is within the operating range specified in your filter owner's manual.
- Filter o-rings are sealing properly and in good condition.
- Filter Tank Clamps and Bolts in place, in good physical condition, and correctly tightened. (Don't try to adjust clamps while the filter is under pressure.)
- ALWAYS Bleed off accumulated air from the system.

- Skimmer baskets and the pump strainer basket empty and free of debris.
- Remove any debris or obstructions from the main drain cover.
- Remove obstructions and combustibles from around the pump motor air vents.
- All chemicals are properly stored (*see chemical safety storage and handling*).
- Pool heater is functioning properly, with no smell of gas around the heater.
- Make sure that all grounding and bonding wires are connected and in good condition.
- Make sure that all wiring connections are tight and clean and that all wiring and electrical equipment are in good condition.
- If equipment is indoors the area should be clear of leaves, debris, and combustibles.

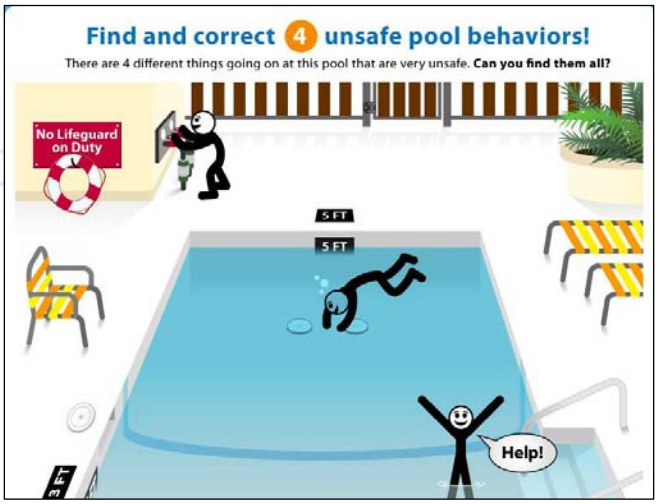
The topic of safety cannot be stressed enough. Adult supervision (knowledgeable swimmer and CPR certified) around the pool is highly recommended. It is also wise to use multiple safeguards or Layers of Protection, mentioned below. As a pool owner it is your responsibility to make your pool environment as safe as possible.

Warning signs or notices supplied by your pool dealer must be applied or posted where they are visible to pool users. Please visit www.poolsafely.gov to learn more about water safety.

Please ask the adults and children that will be using your pool to take a brief water safety quiz- it only take a few minutes- click below.

ADULTS water safety quiz

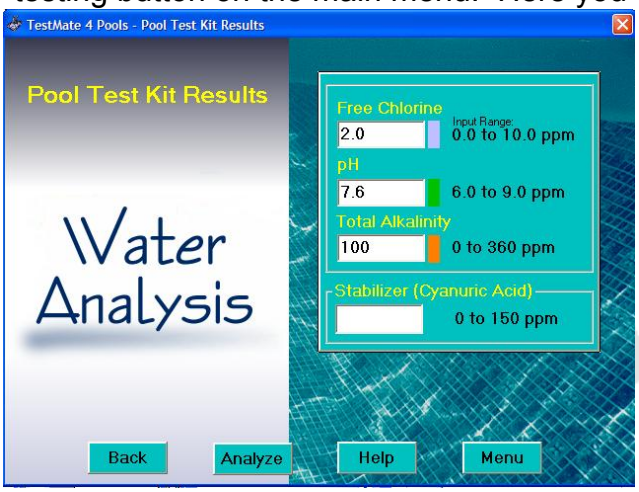
KIDS water safety quiz



Kids can learn more about water safety by clicking on the picture of the pool above and playing an interactive water safety game on-line at www.poolsafely.gov or by playing an online video game by clicking on the Adventures of Splish and Splash image below

WATER TESTING SOFTWARE

Your interactive pool manual includes a water analysis testing program, TestMate 4 Pools™. We suggest that you test your pool water at least two to three times a week. If the sanitizer, pH or alkalinity tests are not in the acceptable ranges you will want to go to the water testing button on the main menu. Here you will enter your test results and receive chemical recommendations with dosages to balance your pool water. Maintaining a consistent chemical routine is extremely important in keeping your pool clean, clear and healthy. Once you have started on a chemical program stick with it. Chemical brands can vary quite a bit and mixing different chemicals can be dangerous. If you follow our recommended chemical routine along with good pool maintenance (vacuuming and filtration) your pool will look great and be easy to maintain. TestMate will help you save time and money using only the chemicals you need, when you need them.



Do not forget to have your pool water professionally tested every season. When performing in-store water analysis a wide range of tests are performed to be sure your water is balanced. Your TestMate water-testing program will help you to maintain that balance throughout the season. Of course if you are experiencing a water problem beyond your basic: sanitizer, pH or alkalinity tests you should have your water professionally tested by our pool professionals.

ALWAYS READ ALL CHEMICAL INSTRUCTIONS AND FOLLOW ALL MANUFACTURER RECOMMENDATIONS FOR SAFETY WHEN HANDLING AND STORING ANY CHEMICALS.

If you are experiencing any difficulty with the operation of this software please contact pool software at help@poolsoftware.com or by calling 800-899-7479. If you are having difficulty maintaining your pool or water chemistry you should contact your pool professional.

GLOSSARY

Acid- Chemical which lowers pH.

Acidic- Having a pH below 7.0. Opposite of basic.

Acid Wash- A procedure using an acid solution to clean an interior surface of a pool with subsequent neutralization of the acid.

Acrylic- A thermoplastic material that can be extruded, injection-molded or vacuum-formed into usable shapes and surfaces.

Activated Carbon- A charcoal-like material used to remove colors, odors, and/or excess oxidizer from water.

Aggressive Water- Water that is corrosive because it is low in pH and/or calcium hardness and/or total alkalinity.

Algae- Microscopic plants that enter your pool via rain, wind, dust, etc. and can cause discoloration of the water or pool surface.

Algaecide- Chemical that kills or prevents algae.

Alkaline- Having a pH above 7.0.

Alkalinity- All pool chemicals work most effectively when alkalinity remains in balance. Alkalinity prevents pH bounce. Low alkalinity is very corrosive to the filter and other pool equipment. High alkalinity promotes scale formation, cloudy water and reduces chlorine efficiency.

Alum (aluminum sulfates)- A compound used to cause suspended solids in water to form filterable masses (flocculant).

Ammonia- A chemical compound of hydrogen and nitrogen that combines with free chlorine in pools to form chloramines, or combined chlorine. Also combines with free bromine to form bromamines.

Antivortex Drain Cover- A plate or cover that is affixed to the main outlet of a swimming pool to prevent a vortex from forming as water passes through to the main outlet.

Backwash- The process of cleansing the filter medium and/or elements by the reverse flow of water through the filter.

Bacteria- Microscopic organisms that enter your pool from swimmers and dust, among other things, can cause irritation and infection.

Balanced water- Total water chemistry that is right where it should be to prevent both corrosion and scaling. The factors to check for in balancing your water are pH, total alkalinity and water hardness.

Ball Valve- A device that can partially or totally obstruct the flow of water, using a ball-shaped diverter.

Base- A chemical used to raise the pH and/or total alkalinity of pool water.

Basic- Having a pH above 7.0. Opposite of acidic.

Breakpoint Chlorination- The practice of adding a sufficient amount of chlorine to water to destroy the combined inorganic chlorine present. Normally, the amount added is 10 times the combined chlorine concentration.

Broadcasting- Tossing granules out over the deep end of your pool.

Buffer- Any chemical that, when dissolved in water, will resist pH change. Also any chemical solution used to calibrate pH instruments.

Calcification- Formation of calcium carbonate on walls of pools or pipes, or in a filter or heater, due to precipitation of calcium carbonate.

Cavitation- The formation of partial vacuums when pump capacity exceeds the water replacement supply.

Channelization- The undesirable process whereby filter sand is permeated by tubes or channels of calcified or oily material, allowing water to pass freely, without filtration.

Chelating Agent- and sequestering agents are used to prevent mineral/metal precipitation (fall-out) by bonding minerals or metals in solution in the water to prevent staining, scaling or water discoloration.

Chloramine- A compound formed when chlorine combines with nitrogen or ammonia. It causes eye and skin irritation and has a strong, unpleasant chlorine odor.

Chlorinator- A device used to add or deliver a chlorine disinfectant at a controllable rate. Chlorinators are designed specific chlorine compounds and should only be used with the compounds for which they are designed.

Chlorine- A chemical element that exists as a gas in its elemental form, or as a part of a chemical compound. Used as an oxidant to sanitize and disinfect pool water.

Chlorine Demand- The amount of free available chlorine combines with nitrogen or other organic compounds.

Circulation System- A system of mechanical equipment and/or components designed to ensure even distribution of heat, chemicals, and filtration of water throughout a pool. Includes filters, heaters, pumps, piping, inlets, drains, skimmers, and other devices.

Clarifier- A chemical that coagulates suspended particles in water. See coagulant or flocculant.

Coagulant- A chemical, usually alum, used in pools to gather and precipitate suspended matter.

Coping- The cap on the wall that provides a finishing edge around a pool. Can be formed, cast in place, precast or prefabricated from metal or plastic materials, brick or stone. May be used as part of the system that secures a vinyl liner to the top of the pool wall.

Corrosion- Eating away of metal surfaces in your system caused by water that's out of balance.

Cove- The radius that joins the floor and wall of a pool.

Cyanuric acid (Stabilizer)- Maintaining an appropriate cyanuric acid level protects free chlorine from the sun's UV (Ultra Violet) rays by slowing the breakdown of chlorine by the sun. The ideal range is 30-50 ppm. If the test value is beyond 90 ppm, you may have to drain a portion of the pool's water and replace it with fresh water to reduce the cyanuric acid level. This test should be performed at the beginning of each pool season and twice during the season at our store. Stabilized chlorines (di-chlor and tri-chlor) are chlorines that contain isocyanurates (stabilizer). These will increase the cyanuric level over time.

Etching- Corrosion on the surface; the pitting or eating away of a material such as the surface of plaster (marcite).

Filter Agitation- Mechanical or manual movement to dislodge the filter aid and dirt from the filter element.

Filter Aid- A powder-like substance such as diatomaceous earth or volcanic ash used to coat the filter media and trap a finer particle.

Filter Cycle- The operating time between cleaning or backwash cycles.

Filter Medium- A finely graded material (such as sand, diatomaceous earth, polyester fabric, anthracite, etc.) that removes solid particles from water.

Filter Sand- A hard, silica-like substance free of carbonates or other foreign material used as the medium in sand filters.

Filtration- The process of capturing suspended particles and clarifying water.

Flocculant (floc)- A chemical substance (Alum) or compound that promotes the combination, agglomeration or coagulation of suspended particles in water.

Free Chlorine- A measurement of the available disinfectant (hypochlorous acid) remaining in the water to kill bacteria, algae and other contaminants found in the water.

Hardness/Calcium Hardness/Water Hardness- A measure of the amount of calcium and magnesium in your water.

Hydrogen Peroxide- A compound of hydrogen and oxygen used as an oxidizer to shock pools treated with a biguanide program.

Hypochlorous Acid (HOCl)- The active form that kills algae and bacteria in your pool. The most powerful disinfecting form of chlorine in water.

Mineralizer (or Mineral Purifier)- Used to treat the water with minerals such as silver, copper and zinc. Available in a variety of cartridge forms, it significantly reduces the need for sanitizer by trapping and assisting in killing bacteria.

Organic Matter- In a pool, material introduced to the water by users and the environment such as perspiration, urine, saliva, suntan oil, cosmetics, lotions, dead skin, and similar debris.

Organism- Plant or animal life. Usually refers to algae or bacteria-like growth in pool water.

OTO (Orthotolidine)- A colorless reagent used in liquid test kits. OTO reacts with chlorine or bromine to produce a series of yellow to orange colors, indicating the amount of chlorine or bromine in water. Effectively measures Total Chlorine NOT Free Chlorine

Oxidizer- A disinfectant that works to eliminate irritating organic compounds from pool water.

Ozone- A gaseous molecule composed of three oxygen atoms, generated on site and used for the oxidation of water contaminants.

Ozonator- A device that generates Ozone (a special form of oxygen) that kills bacteria an algae spores. The resulting material and microscopic debris is then "burned up" (oxidized) for removal by the pool filter.

pH- A measure of acidity and alkalinity of pool water. If the pH level is high (alkaline), it will cause eye and skin irritation, cloudy water and scale formation. Chlorine and filter efficiency will decrease. If pH is too low (acidic), it will cause eye and skin irritation, a breakdown of total alkalinity, and corrosion of metal. Acceptable levels are 7.2-7.8, with an ideal reading of 7.6.

PPB- Part per billion, the measure of a chemical's concentration in your water (this measure is usually used when testing for phosphates.

PPM- Part per million, the measure of a chemical's concentration in your water.

Precipitate- A solid material that is forced out of a solution by some chemical reaction and settles out or remains as a haze in suspension (turbidity).

Priming- Refers to evacuating the air; in a pump strainer housing you can manually prime the pump by filling with water and quickly replacing the lid.

Pressure Gauge- A gauge that measures the amount of pressure built up within a closed container, such as a filter.

Salinity- The sodium chloride or salt content of water.

Saturation Index- A rating that indicates whether water will have a tendency to deposit calcium carbonate from a solution, or whether it will be potentially corrosive. Four factors are used in the computation: pH, total alkalinity, calcium hardness, and temperature. When correctly balanced, water will be neither scale-forming nor corrosive.

Scale- White, gray or brownish spots on surface or equipment caused by water that's out of balance.

Sequestering Agent- and sequestering agents are used to prevent mineral/metal precipitation (fall-out) by bonding minerals or metals in solution in the water to prevent staining, scaling or water discoloration.

Shock Treatment- The practice of adding significant amounts of an oxidizing chemical to water to destroy ammonia and nitrogenous and organic contaminants.

Stabilized Chlorinating Products- A chlorinating compound that contains cyanuric acid protecting the chlorine residual against the negative effects of the sun. Lasts up to 5 times longer than unstabilized chlorinating compounds.

Superchlorination or Shock- The practice of periodically adding an oxidizer to destroy chloramines and other undesirable compounds that builds in your pool water. Free Chlorine levels need to reach 10 ppm or higher for a minimum of 4 hours for a shock treatment to be effective. You should routinely shock your pool every 1-2 weeks with an increase in frequency during heavy bather loads, high heat or heavy rain. If water problems such as cloudy water or algae appear you will want to shock the water.

Total Alkalinity- The ability or capacity of water to resist change in pH, also know as the buffering capacity. Measured with a test kit and expressed as ppm.

Total Chlorine- The measurement of your water is a combination of chlorine in the form of chloramines (already used chlorine) and free available chlorine (unused chlorine).

Total Dissolved Solids (TDS)- A measure of the total amount of dissolved matter in water, e.g., calcium, magnesium, carbonates, bicarbonates, metallic compounds, etc.

Turbidity- A cloudy condition of water due to the presence of extremely fine particles in suspension that interfere with the passage of light.

Winterizing- The process of preparing a pool for freezing weather. Includes chemical treatment of the standing water, plus physical and chemical protection against freezing of the pool and its equipment.

Start Swimming and Enjoy Your Pool !

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