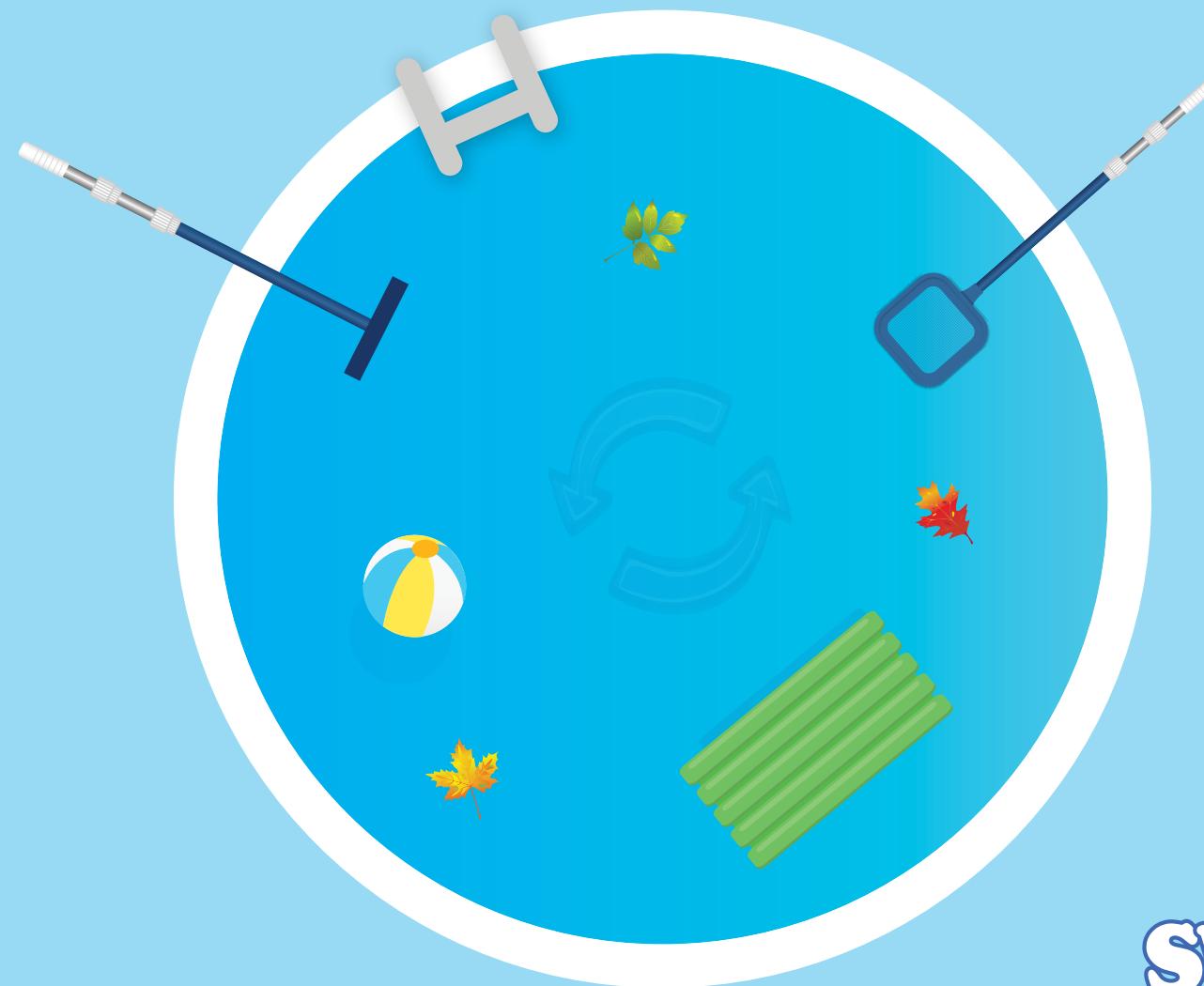


# THE POOL CARE HANDBOOK

Easy-To-Use Illustrated Guide to Complete DIY Swimming Pool Care:  
Opening/Closing, Chemistry, Maintenance, Troubleshooting, and More!



**swim**  
**UNIVERSITY**<sup>®</sup>

# Zen Pool Care

*This book is designed to help you take care of your swimming pool and to appreciate it. Owning a swimming pool, and taking care of it, will make you a calmer, happier person. It will bring more joy and appreciation for the smaller things in life, all while saving you money. That is the goal of this book.*

*Also, throughout the book you will see quotes and artwork from artists around the world who love their pools and decided to express themselves with it.*

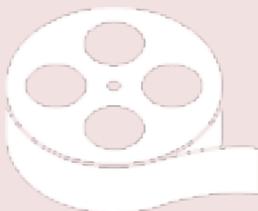
# How to Use This Book

There are a few breakout boxes that will provide additional information.



## ENLIGHTENMENT

These are boxes of extra content that will help you to understand further what I'm explaining.



## VISUALS

These are boxes that contain links to informative online videos that I've made.



## TOOLS

These are boxes that contain links to products (via Amazon) that I recommend



## MINDFULNESS

These are boxes that contain notes you should pay attention to before performing the given task.

## Links

All the links in this book, indicated by blue underlined text, are clickable and will take you to a webpage on your default web browser.

Links will be to articles on [SwimUniversity.com](#), videos on [YouTube](#), and products on [Amazon.com](#).

## What To Expect

The chapters of this book are in chronological order based on what you should know before moving further along.

Because of the Zen and Lean theme (which I'll mention in the introduction), all the fluff has been taken out.

In other words, this book gets right to the point so you don't have to wade through any unnecessary information.

# Table of Contents

Here is how the book is organized:

## 1. INTRODUCTION

I explain why you should learn to appreciate your pool, introduce you to the idea of lean pool care, and help you see your pool as a great source of happiness in your life. It's an introduction unlike any how-to book you'll ever read.



## 2. ANATOMY

I'll go into detail explaining the inner workings of both above-ground and in-ground swimming pools. In this section, the goal is to understand how your pool is built and how water flows in and out of the filter system.



## 3. CIRCULATION

This section is the beginning of proper pool care, and it's the most important and commonly overlooked area. I want you to understand the ebb and flow of your filter system and how to keep your water clean just by keeping the water moving.



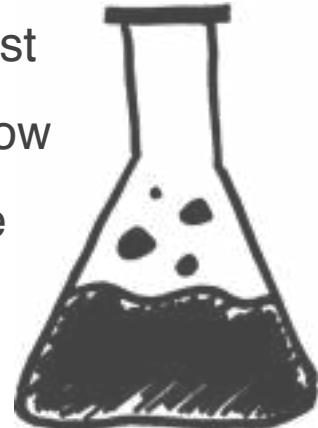
## 4. CLEANING

Every pool gets dirty once in a while, but this section is geared toward keeping your pool clean so you don't have any major issues that could spoil a good pool season. It includes: skimming, vacuuming, brushing, and backwashing your filter.



## 5. CHEMISTRY

My goal with this section is to explain pool chemistry in its simplest form. I will only provide you with the most important chemical information you need all year and how to keep a very rigid schedule so your pool will always be clean and clear. It includes: balancing, sanitizers, shocking, algaecides, clarifiers, and more.



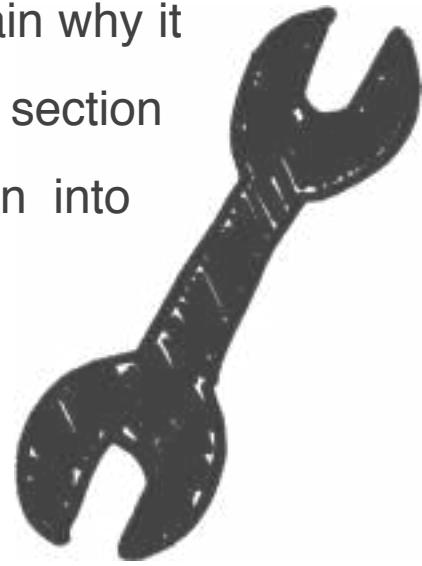
## 6. OPENING & CLOSING

In some parts of the world, you can't keep a pool open all year round. So in this section, I'll break down how to open and close both above-ground and in-ground pools. It includes: how to open an in-ground pool and above ground pool, how to close an in-ground and above ground pool, how to remove and store a safety cover, and some off-season pool care tips.



## 7. TROUBLESHOOTING

Sometimes green or cloudy water happens. I'll explain why it happened and how to deal with it when it does. This section aims to cover every possible issue you might run into when taking care of your pool.



## 8. EXTRAS

In this section you'll find some additional information including how to take care of your pool after a storm, how to cool down and heat up your swimming pool, and how to swim with man's best friend.



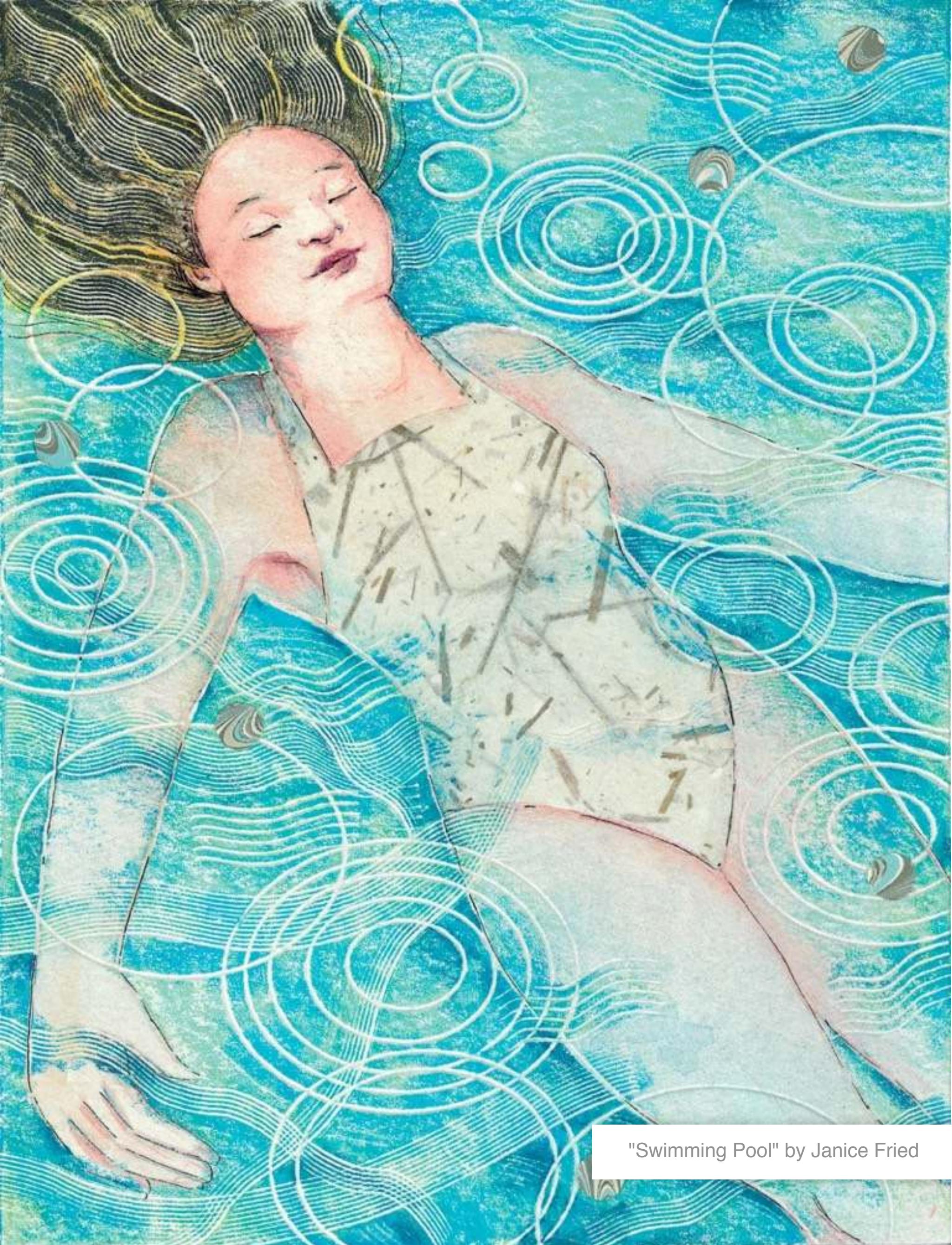
## 9. RESOURCES

In this last section, I'll provide some downloadable and printable resources you can use to keep track of your pool care, as well as the terms you can throw around when educating others on what you learned in this book.



# Thanks to Our Sponsors for Making This Book Possible





"Swimming Pool" by Janice Fried

For Alice,  
who taught me everything I know about pool care and how to teach it.

# INTRODUCTION

*To have faith is to trust yourself to the water. When you swim you don't grab hold of the water, because if you do you will sink and drown. Instead you relax, and float.*

*- Alan Watts*

## You are lucky to have a swimming pool!

That's what I want to remind you throughout this book, and specifically in this section. I've spent over 18 years teaching people how to properly take care of their pool, but what I haven't done is teach them how to appreciate it.

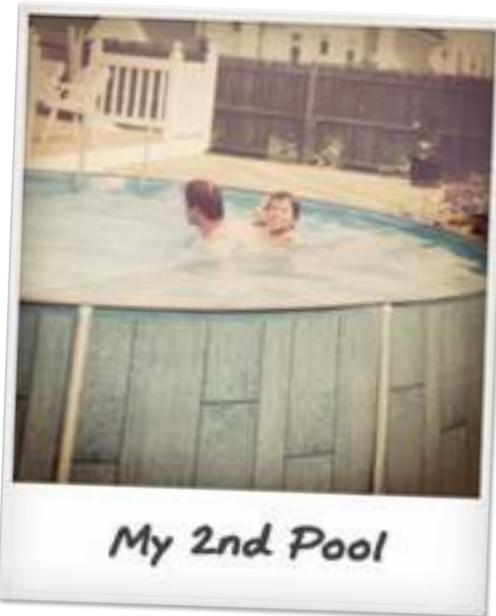
Whether you purchased the pool or moved into a home with one already built, you are a lucky individual.

In fact, you're in a small group of only 10 million people, in the United States alone, who owns a swimming pool.

## Keep that in mind!

# My Pool

Early on, we had a starter pool (what I like to call quick-set pools). It was a small pool, maybe 3 feet deep at 8 feet around, that my dad set up for us in the backyard. I'm pretty sure that lasted for about a year until it collapsed. We had to wait another six or seven years before we saw another pool in our yard.



During that time, I was forced to use the neighbor's pool, or the pool at my friend's down the street. That meant leaving my house and swimming with another family. There was nothing wrong with that, but I remember dreaming about how awesome it would be to have a pool in my backyard again.



Then, one day, my dad decided to have an above ground pool built in our yard.

It was a 28-foot round pool, which at that time was massive, and it held about 18,000 gallons of water.

In the summers, my family and I would swim in the pool almost every day. We invited our friends over to swim. Our entire extended family persuaded us to

have holiday parties just so they could take advantage of our pool. Life was good.

But those were the early years.

After a while, we started having common issues with the pool that almost everyone will deal with at some time. The pool was located under some trees, was constantly dirty, and would turn green every few weeks.

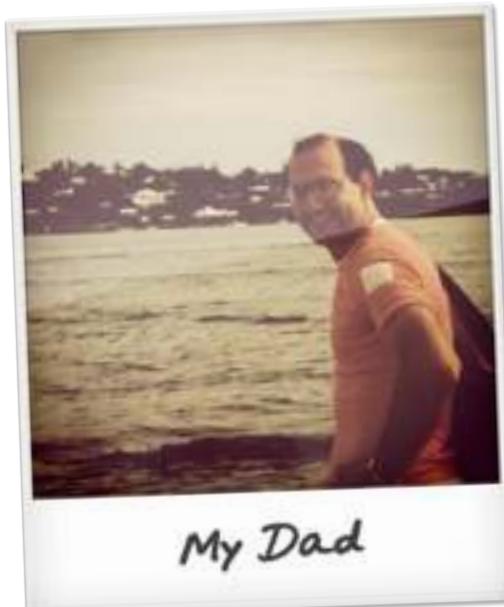
The only two people in charge of taking care of it was my dad and me.

My dad was not a patient man, and would easily lose his cool when something went wrong. I'm the same way.

Since we didn't have an automatic pool cleaner, we were forced to vacuum and skim it ourselves every single day before we could use it. As a kid, that kept me from swimming in it, and it was a total bummer!

A few years later, in one of the coldest winters in New Jersey, my younger brothers thought it would be fun to slide themselves across the covered, frozen pool.

They ended up breaking a panel in the wall, and my dad proclaimed it was the final straw. That spring, our pool came down for good.



I know that's a sad ending to the story of my swimming pool, but I wanted to tell it because I don't want this to happen to you.



*My First Pool*



*Grandmom!*



*Matt & The Pool*



*Matt in the Hot Tub*

# Appreciation

As a result of giving up on caring for it, and not appreciating its value, we ended up destroying something that could have brought happiness to our lives.



Before writing this book, I sat down to think of all the good times and all the bad times I had with my swimming pool. I tried to recount all my interactions with pool owners over the years. I remember asking them why they bought a pool and if they were happy with it.

I found that a majority of these people saw their pool as just another chore for them, or “something the kids can use.” **Only a few people really understood what they had in their backyard.**

When I worked in stores helping people with pool cleaning and water chemistry, not once did I teach them about the value of a swimming pool. How owning a swimming pool can actually make you a happier person, and bring joy to your family and even your relationship with a significant other.

My claim here is that your **swimming pool can be a great source of happiness and well-being in your life if you let it.**

I want to explore some of the ways I think that big body of water in your backyard will actually make you calmer and happier and improve your life overall.

# Water

There is a book called [Blue Mind](#) by Wallace J. Nichols which explores the science that shows how being near, in, on, or under water can make you a happier, healthier, more connected, and better at what you do (that's literally the tagline of the book). Nichols says:

*“We have a ‘blue mind’ —and it’s perfectly tailored to make us happy in all sorts of ways that go way beyond relaxing in the surf, listening to the murmur of a stream, or floating quietly in a pool.”*

Being around water gives our brains and our senses a rest from overstimulation.

*“The sound around us, from an auditory perspective, is simplified. It’s not quiet, but the sound of water is far more simple than the sound of voices or the sound of music or the sound of a city. And the visual input is simplified. When you stand at the edge of water and look out on the horizon, it’s visually simplified relative to the room you’re sitting in right now, or a city you’re walking through, where you’re taking in millions of pieces of information every second.”*

When we're near, on, in or under water, we get a cognitive break because there's simply less information coming in. Our brains don't shut down —they keep working, but in a different way, according to Nichols.

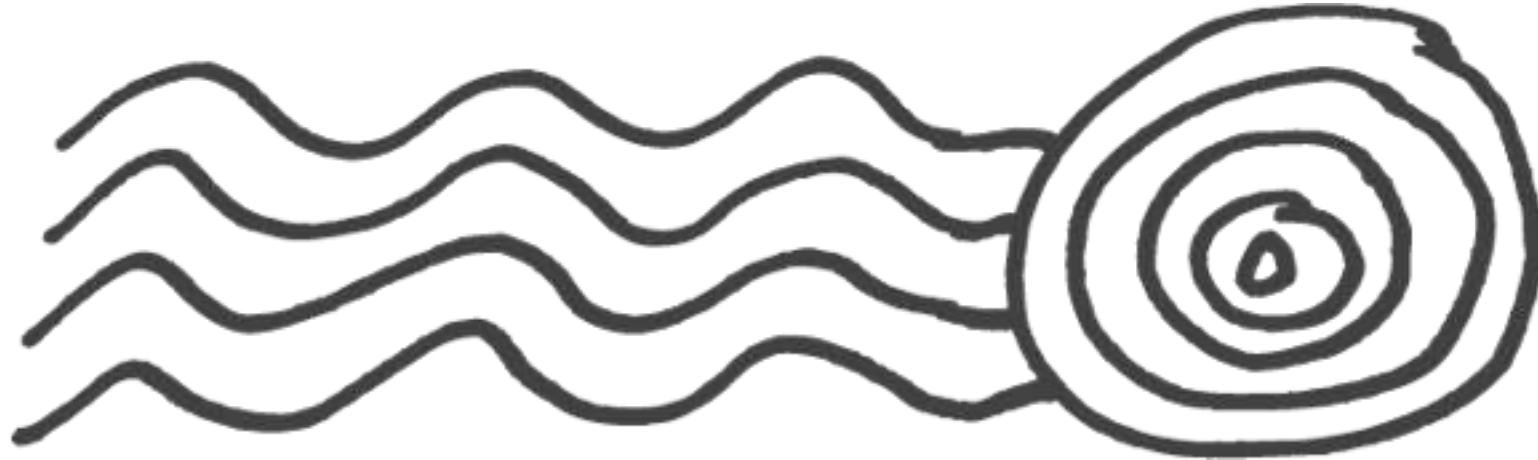
*"When you have that simplified, quieter 'blue' space, your brain is better at a different set of processes."*



# Meditation

Have you ever heard of a Japananse rock garden? You might have seen a smaller version of one on your tree-hugging hippie friend's coffee table.

The Japanese rock garden (枯山水 karesansui?) or “dry landscape” garden, often called a zen garden, creates a miniature stylized landscape through carefully composed arrangements of rocks, water features, moss, and pruned trees and bushes. It uses gravel or sand



that is raked to represent ripples in water.

A zen garden is usually relatively small, surrounded by a wall, and is usually meant to be seen while seated from a single viewpoint outside the garden, such as the porch of the hojo, which is the residence of the chief monk of a temple or monastery.

Classical zen gardens were created at temples of Zen Buddhism in Kyoto, Japan during the Muromachi Period. They were intended to

imitate the intimate essence of nature, not its actual appearance, and to serve an aid to meditation about the true meaning of life.

So why am I telling you about this?

I want you to think of your swimming pool in the exact same way. When you look out on your backyard, take a deep breath and stare at the calming blue water as it ripples in the wind.

Next, go outside and stand near your pool. Observe. Use all your senses. Smell the clean aroma of the chlorine. Gaze at the clear, blue water – imagine it's the only water source around for hundreds of miles, and it's all yours.

Go ahead, taste the water (it won't hurt you). Listen to the wind, the birds, the soft humming of the pump as it keeps the water circulating and clean.

Close your eyes and appreciate the feeling you have. You have a swimming pool, and if you wanted to, you could strip down to the bare essentials and dive right in. There are very few people who can do this in this exact moment.

I want you to practice this every day. It's best to do it first thing in the morning, before anyone else in your house is awake, or before any thoughts about the day enter your head.

When you go to work, put a picture of your pool on your desk, and remind yourself that it will be there when you get home.

If it's the weekend, and the weather is nice, swim in it alone. And slowly. Feel the cool water all over your body. Just move through the water, feeling its slight resistance. Close your eyes, you're safe. Keep moving and notice how it feels on every part of your body.

Now, if you can, gently allow yourself to float on top of the water, being as still as possible. Stay there for a few minutes and feel the sun and the wind warming and cooling the front of your body.

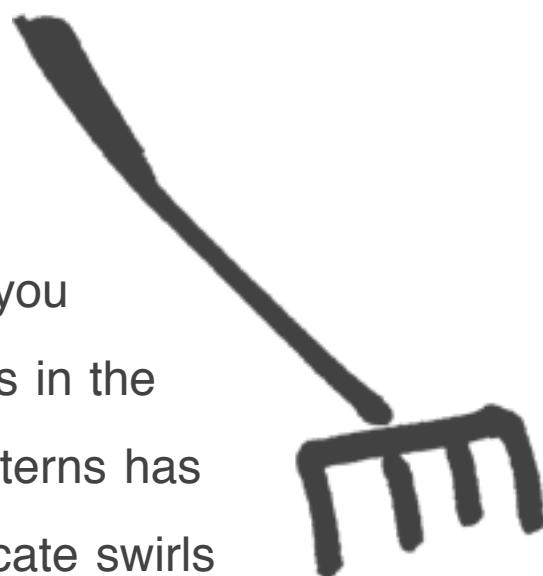
There is an entire small industry dedicated to this. You can buy a small container filled with water and salt to float in complete silence. It's meant to help reduce stress, relieve pain, and strengthen your immune system.

The good news is, you don't have to invest in one of these containers, because you're floating in one that fits right in your backyard.

## Vacuuming

In order to tend a Japanese rock garden, you use a wooden rake to create swirling patterns in the sand or gravel. The act of creating these patterns has meditative benefits. It's calming to make delicate swirls in the sand and take in what you've created when it's all done.

I want you to think about manually vacuuming your swimming pool this way.



While I'll frequently recommend investing in an automatic pool cleaner in this book, vacuuming your pool by hand might be something to consider from time to time.

When I was younger, vacuuming the pool was a chore I loathed to start. Now I can say that I would invite this chore and even look forward to it, knowing I could use that time to meditate and reflect (literally and figuratively).

The next time you hook up your vacuum, I want you to appreciate the day—the warmth, the water, the wind, the smells. Slowly push your vacuum across the bottom of your pool, picking up every speck of dirt until your pool is completely clean.

After you're done vacuuming, get out your skimmer net and clean the surface of your pool.

Slowly move the net across the top of the water. Notice the resistance. Notice the clean water as you pass by and collect the leaves and debris.

When you're finished, take a deep breath, and with a soft focus, gaze at your clean, blue, clear swimming pool. It's an amazing feeling. Remember that feeling and let it carry you for the rest of the day.

## Rebirth

Play a new game with your kids. Change the landscaping around your pool.



Exercise instead of just relaxing, and vice-versa.

Don't rely on toys or floats to make your pool more interesting and fun.

Invite over new friends. Invent your own game!

## Nostalgia

Try to remember your childhood. Did you have a pool growing up? Did you swim? Anywhere?

Remind yourself how good you felt when you would jump into a crystal clear pool on a hot summer day.

As a child, you didn't have to take care of the pool (unless you were like me). You just got to enjoy it. Now that you're in charge, it's all the more special.

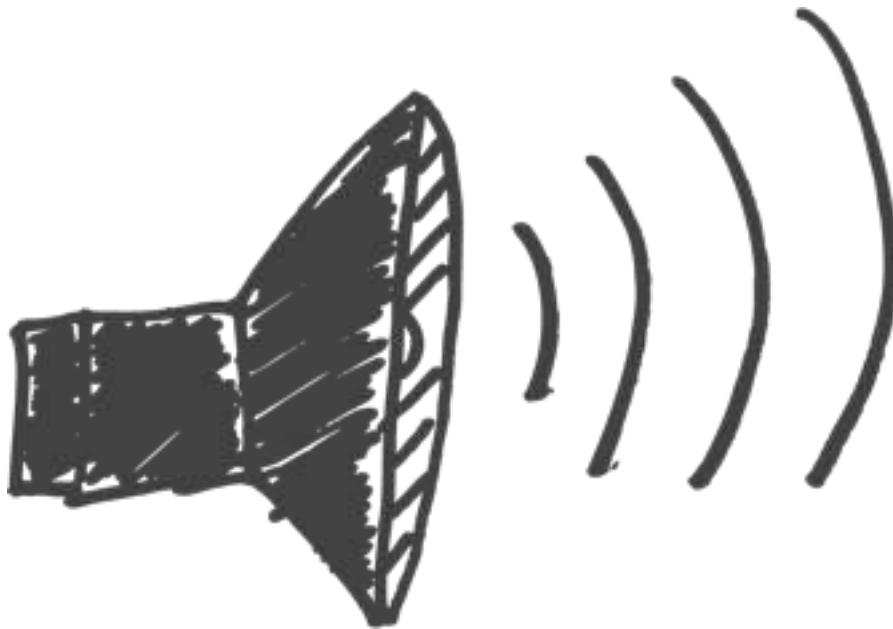


Be sure to keep these thoughts in mind while you own a swimming pool.

# Filter The Noise

Since we're on the subject of simple, the same goes for information. I always say that taking care of a pool isn't rocket science. In fact, it's pretty damn easy. However, there are people out there, as with anything, looking to make it complicated.

I won't go into why they strive to make things so difficult, but keep in mind that there's profit involved with some of them.



A little knowledge is a dangerous thing, but a lot can kill you. Not literally of course, but it can be damaging to your pool.

That's why I always tell people to find a trusted source of swimming pool information and stick to it. Everyone has a different approach to pool care, and one is not better or worse than the other – it's just different and could be even conflicting at times.

I worked at a pool supply store located directly across the street from a competitor.

Of course, people would go back and forth between our stores and get upset when they got conflicting information. The truth is, it was true.

While one store would promote algaecide as a chemical to kill algae, our store would say chlorine is used to kill algae. This resulted in some people putting way too many chemicals in their pool and having strange chemical reactions occur in their water.

This happened a lot, and my advice was always the same, “just stick to one source of advice and filter out all the other noise.” If you trust someone with good pool care information (like me), then you won’t be confused.

# Zen Pool Care

I used to be a very materialistic person. Everything I saw and wanted, I bought. I relied on material things to make me happy, and all it did was make it harder to move and take up all my closet space.



Now I would consider myself a minimalist, and I take that same mindset to pool care when I teach it.

You can go to the pool store and buy a trunk's worth of supplies and gear, but if you're not consistent on taking care of your pool, no chemical or device will solve your pool's problems.

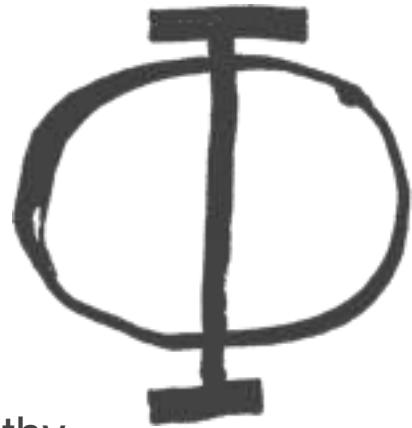
That's why this book will ONLY give you the chemicals and tools you absolutely need to take care of a pool. If it's not mentioned in this book, you don't need it.

Water is a simple element on this earth, and there's a lesson here we can learn when we take care of it—keep it simple.

# Philosophies

Over the last 18 years, I've developed a core set of pool care philosophies:

1. **Stick to one source of information you trust.**
2. **Proper circulation** is the key to a clean and healthy pool.
3. **Consistent cleaning** will reduce the need for extra chemicals and equipment when problems arise.
4. **Simple is always better**—less chemicals, more cleaning, better circulation.
5. **Swimming** can help prevent water problems such as algae and cloudy water.
6. **Cleanliness is next to godliness.** Always keep your equipment and tools clean as well as the water.
7. **Balance** is the key to making your sanitizers more effective.
8. **Automate** as many processes as you can, including adding chemicals, vacuuming your pool, and operating your filter equipment.
9. **Be mindful of the environment.** Conserve water, reduce energy consumption, and be aware that everything in nature can and will affect your pool.
10. **Keep Calm and Appreciate Your Pool.**



# Helping Hand

If you have a friend, family member or neighbor that owns a swimming pool, I want you to share this book with them. Yes, I'm telling you to literally give them this book for free. You have my permission.

If you want to help make my site and books even better, you can send them a link to buy it. That would be much appreciated!

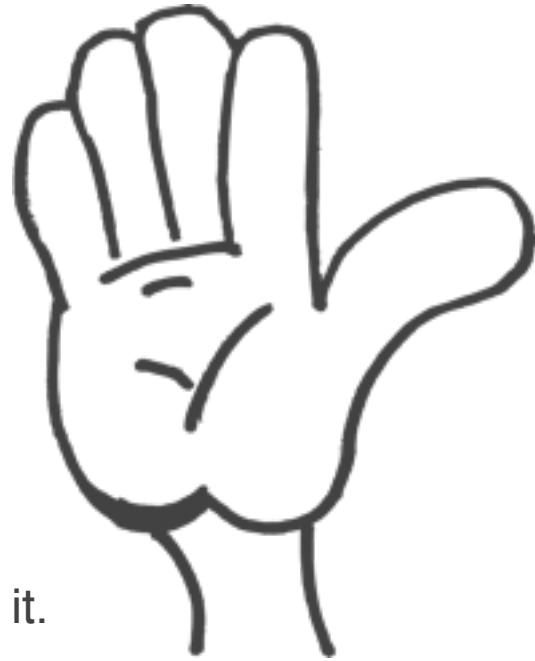
Not only that, but share your pool with family and friends. Throw a pool party, a holiday part, a "just because" party.

Always offer to help others with their swimming pools.

When we do things for others, it makes us feel better and happier – that's just science. Try it if you don't believe me. Have a party, swim with friends, or pass this book along to someone who will appreciate it.

If you want them to purchase the book on their own, send them to:

<http://www.SwimUniversity.com/give>



# About The Author

I am the writer, designer, developer, videographer, and photographer who built SwimUniversity.com. I created it in 2007 because I wanted to bring my unique style of teaching pool care to the web.

I started working in the pool and spa industry when I was just 13 years old at a local pool supply store. I tested water, helped customers, and quickly became a manager at age 16.

Since then, I've worked at a few different pool and spa companies before focusing my full attention on Swim University.

I've been a "pool nerd" for the last 19 years and counting, and I've worked in many aspects of the industry, including helping customers in several pool and spa retail stores, conducting on-site pool and hot tub services, and providing offline and internet marketing for major pool and spa companies.

My goal with Swim University has been the same since I created it: to make swimming pool and spa care EASY. I wanted to bring the experience I've had with in-store and off-site customers to pool and spa owners around the world.





Pool & Spa News made me a centerfold! This is me at the 2013 Pool, Spa and Patio Expo in Las Vegas.

Let's dive in!

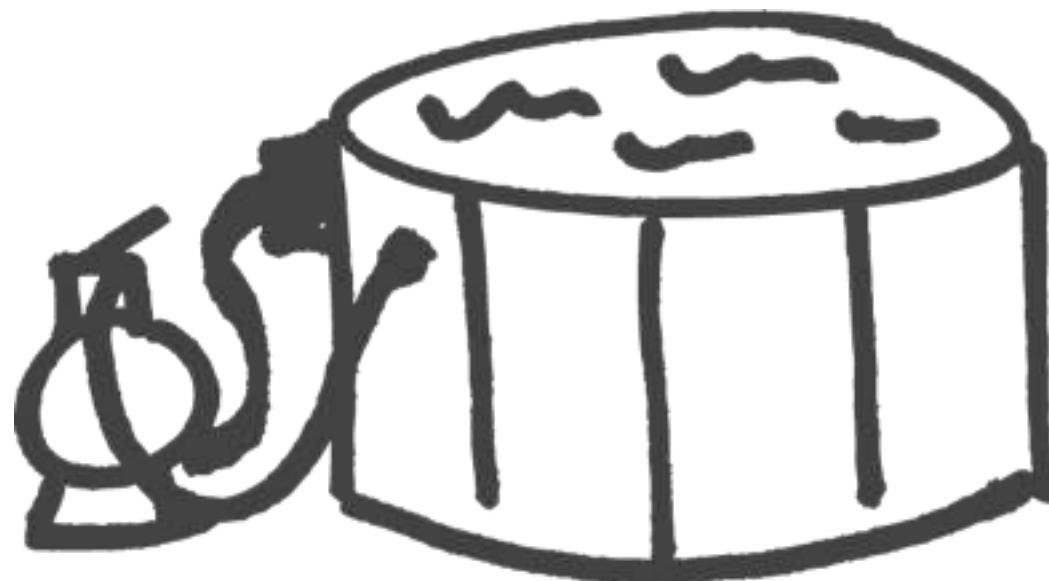


The Swimming Pool (21st Century Museum of Contemporary Art, Kanazawa)

# ANATOMY

*For many of us, clean water is so plentiful and readily available that we rarely, if ever, pause to consider what life would be like without it.*

*- Marcus Samuelsson*



What is a swimming pool? When you boil it all down, a swimming pool is just a giant structure that holds a large amount of water. However, each swimming pool is different in its own special way.

In this chapter, we'll explore all the different types of above ground and inground swimming pools that can be installed in your backyard. We'll also explore the filter system and how it all works to keep your water clean and clear.

# Types of Swimming Pools

There are two main types of swimming pools: inground and above ground.

Inground pools are more complicated than above ground, but all the principles and techniques apply to both.

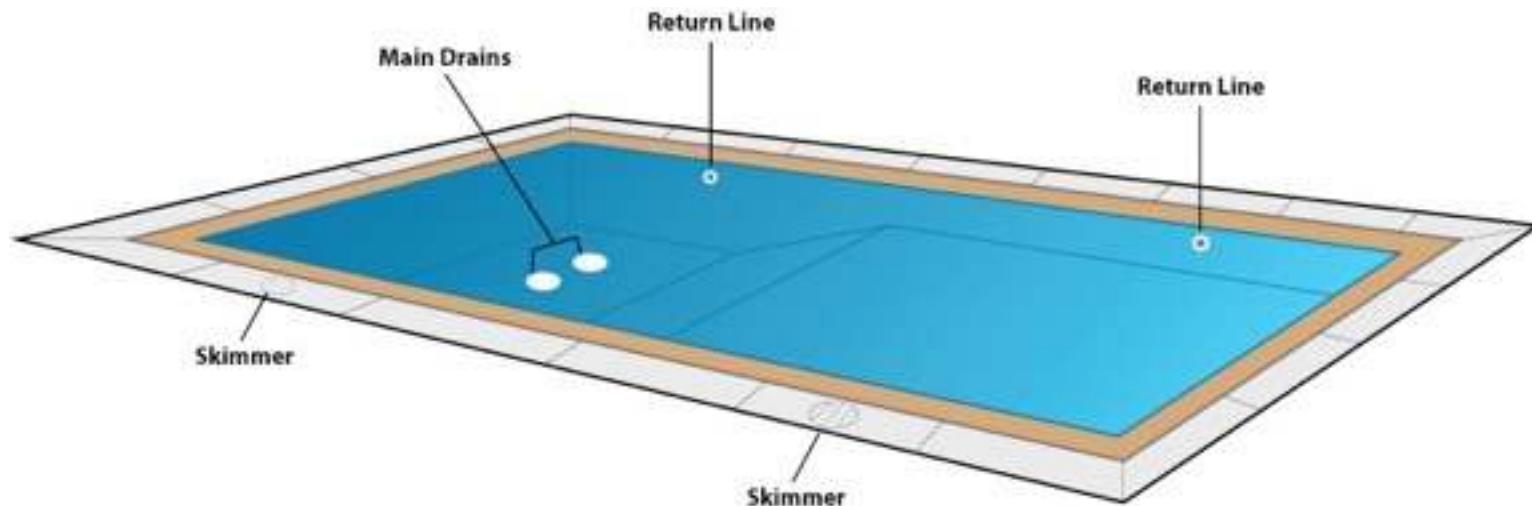
## Inground Pool

There are three main types of inground pools. These names apply to the surface of the pool. It's pretty easy to tell by just looking at it.

1. **Vinyl pools** are lined with a rubber-like material that comes in a variety of colors and patterns.
2. **Gunite or concrete pools** are finished with concrete like you'd find on a sidewalk and will sometimes have a tile border. If you rub your hand on the walls of the pool and it feels rough to the touch, you have a concrete pool.
3. **Fiberglass pools** are one giant plastic-like tub that goes in the ground. If you don't see any liner seams, and it's not rough like concrete, chances are you have a fiberglass pool.

Inground pools come in all shapes and sizes, and later in the book we'll help you to determine how large your pool is and how many gallons it holds.

# Plumbing



Water is pulled in through the skimmer(s) located along the top of your pool, and the main drain(s) located at the bottom of the deep end. It's then pumped through your filter and back into your pool through the return jets.

Some pools will have just one skimmer and return, while other pools will have multiple, sometimes including jets in the steps or attached hot tubs.

Take a quick inventory of your pool and count all the skimmers and returns. Add this to the pool profile sheet located at the end of this book.

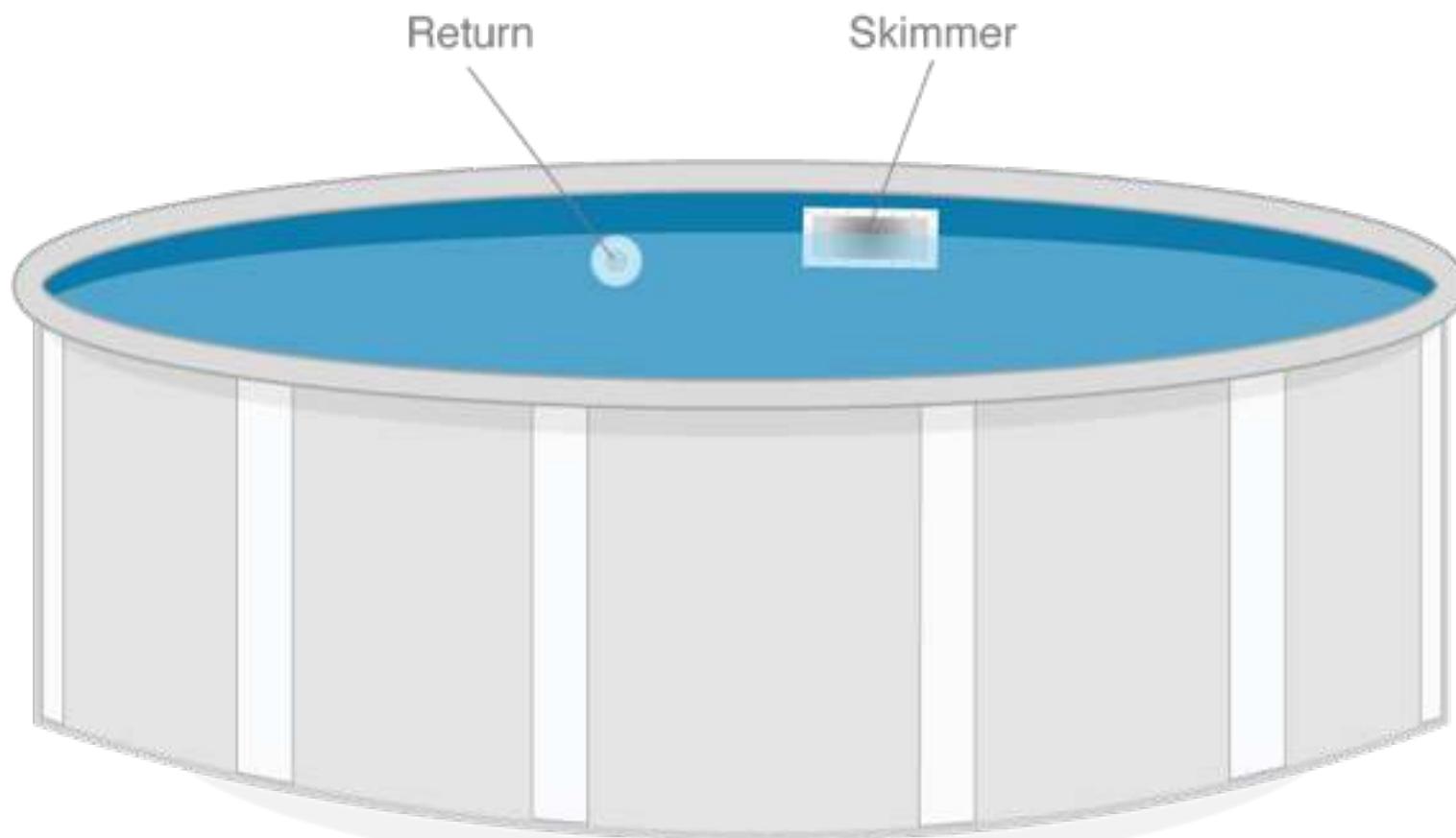
## Above Ground Pool

These pools only come in one style—vinyl liner. However, there are two types of liners you may have, and they include overlap or beaded. You won't need to know this until the time comes to replace your liner, but it's a good idea to find out what type you have and add it to your pool profile sheet.

The best way to tell is to look at the outside of your pool walls. If you *can* see the liner from the outside of the pool underneath the top rail, then you have an overlap liner, which means its overlaps the wall of the pool.

Beaded liners come in a very specific height and snap into the top of the wall like a Zip-Loc bag. If you *can't* see your liner from the outside of the pool, and looking from the inside, the liner is perfectly in place, then chances are you have a beaded liner.

## Plumbing



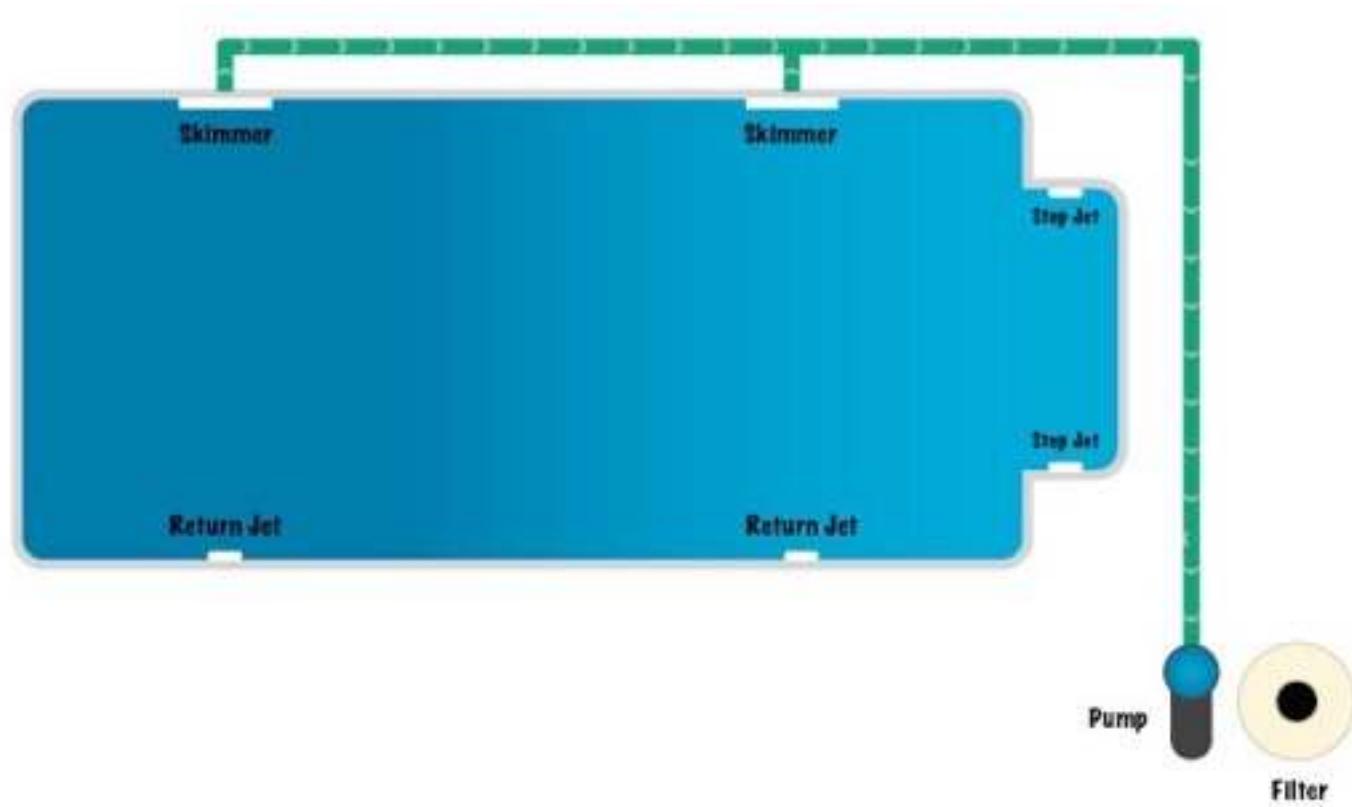
Above ground pools have a pretty easy and exposed plumbing system. You should have only one skimmer and one return jet.

Water is pulled in through the skimmer located along the top of your pool, pumped through your filter, and returned to your pool through the return jet.

Next, I'll provide a clear understanding of the suction side (the skimmers and pump) and the pressure side (the filter and returns) of your pool.

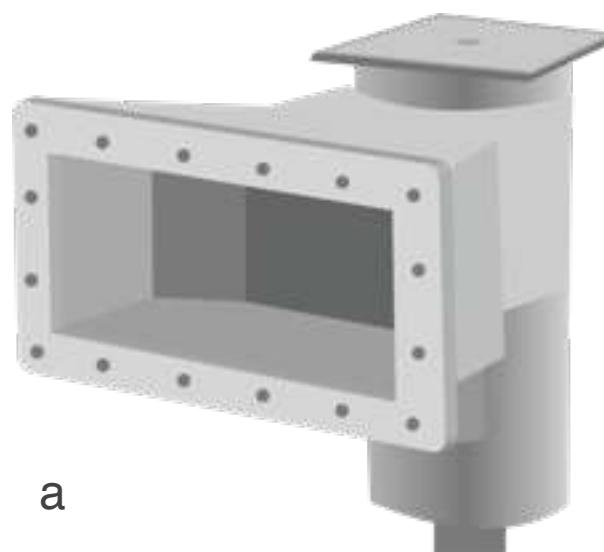
# The Suction Side

This is the area of your pool that allows water to come **IN** from the pool to the pump and filter.



## Skimmers

These are buckets built into the concrete or attached to the side of an above ground pool. They house a skimmer basket and are sometimes equipped with a flapping door called a skimmer weir.



Skimmers help pull the water out of the pool and through your filter system. The basket inside catches large debris including leaves, sticks, and bugs before it enters your pump.

## MINDFULNESS



If you don't have a skimmer weir, it's not the end of the world, but they're nice for regulating water flow and keeping out large items, like toys.

## Main Drain

In-ground pools also have a main drain, which also pulls water out to the filter. Main drains are located at the bottom of the deep end of the pool.



While the skimmers take care of pulling water off the top of the pool, main drains pull water off the bottom. Between skimmers and the main drain, water is pulled from all areas of the swimming pool.

## MINDFULNESS



If you see two main drains at the bottom of your pool it means the suction power is distributed through two drains. You may have heard horror stories of people getting trapped by these powerful drains. A dual system helps prevent that issue, however always use caution and watch children around main drains.

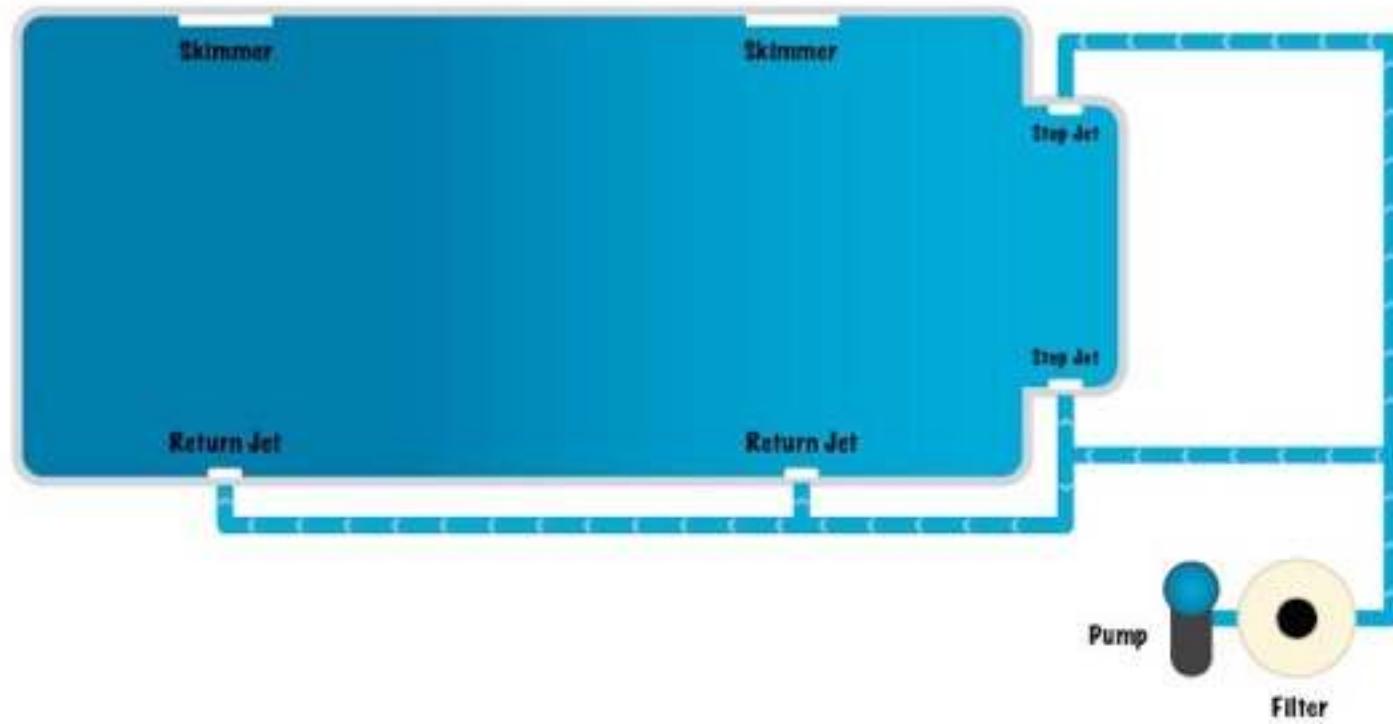
## The Pump

To be technical, the suction side of your pool system refers to everything that happens from the pool to the pump. Once the water leaves your pump to enter the filter, it's called the pressure side because the pump is now pushing the water through the rest of the system and back into your pool.



# The Pressure Side

This is the area of your pool that allows water to flow **IN** from the pump and filter back into your pool.



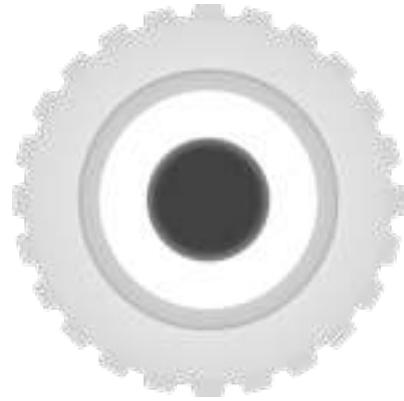
## The Filter

Remember, once the water leaves the pump, the rest of the system is referred to as the pressure side. So that means the filter, heater, and any other equipment the water runs through before heading back into your pool is part of the pressure side.



## Return Jets

This is the jet that pushes the water back into your swimming pool after it's been filtered. The jets also help to circulate the water, allowing the skimmers a better chance to pick up more debris.



## Step Jets

Another area where you might find these jets are on the steps leading into your pool. These are there for two reasons:

1. They help keep the steps clean, as the steps tend to gather a lot of debris.
2. They're nice for sitting and relaxing, like a hot tub jet.

## Pool Cleaner Jet

You may also have an additional jet dedicated to an automatic pool cleaner. We'll talk about this later, but if you have an additional pump attached to your filter system that's used to run an automatic pool cleaner (like a Polaris), then there might be a jet just for that.

## Waterfalls, Fountains & Slides

Lastly, if you have any of these items on your pool, they also introduce clean water to the pool. Another benefit, besides looking great, is the fact that they aerate the water and keep your pool cooled down.

Now let's examine your filter setup that runs all this.

# The Filtration System

Your filter system is made up of two parts—the pump and the filter.

Often, owners will refer to these as one unit, but they are completely separate. The pump moves the water, and the filter cleans the water.

## The Pump

This unit pulls water out of the pool, then pushes it through the filter and back into your pool.

It consists of two parts:

1. **The pump:** the bucket with a lid and a basket inside. There is also an impeller that spins super fast – that's what moves the water in and out.
2. **The motor:** the heavy cylinder behind the bucket with the lid. Its job is to spin the impeller.



Pumps come in all shapes, sizes, and speeds. The speed is what's really important. It's measured in horsepower and ranges from  $\frac{3}{4}$  horsepower to 4 horsepower.

Smaller pools don't require as much horsepower as a larger pool. So, the bigger the pool, the bigger the pump and motor.

## Booster Pump

You might have more than one pump if you do, chances are you have an pump dedicated to providing more pressure to an automatic pool cleaner, fountain, waterfall, or slide.

It's a good idea to know how many pumps you have, what they all do, and what brand and horsepower they are.

## The Filter

There are three types of filters—sand, D.E.(diatomaceous earth), and cartridge. They all filter out tiny particles from your pool water.

### MINDFULNESS



It's important to know what type of filter you have.

Write down the type, make, model, and any numbers found on the filter on your pool profile sheet.

## Sand Filter

In a sand filter, water flows into a multiport valve, down through a thick bed of filter sand, back up the multiport valve, then back to your pool via the return jets.

**Pros:** They require little maintenance besides replacing the sand about every 5 years.

**Cons:** They're the least effective when it comes to filtering compared to the other two types of filters.

Even though it might not be the most effective, it's certainly the easiest to take care of, so this type is actually my favorite filter.



## D.E. (Diatomaceous Earth) Filter

This filter uses a fine white powder known as D.E., along with a set of filter grids or fingers (if you have a Hayward brand filter) to filter the water. The outside of the grids are coated with the powder, and the water is filtered as it passes through the water then flows back to your swimming pool.

**Pros:** They're very effective. They filter better than any other filter type.



**Cons:** They require a bit of maintenance. D.E. powder needs to be replaced on each backwash cycle (which we'll talk about later on), and the grids or fingers need to be cleaned at the end or beginning of every pool season.

## Cartridge Filters

Cartridge filters are basically a tank with a large round filter cartridge (or multiple cartridges) inside they look like an air filter from a car.

The water is pushed through the filter mesh and then back to your swimming pool.

**Pros:** They are more effective than a sand filter when it comes to cleaning the water if they are properly taken care of.

**Cons:** Like a D.E. filter they require some maintenance. Every so often you'll need to remove the cartridges and rinse them down with a hose. Also, at the beginning or end of each year, they should be soaked in a filter cleaning solution.



# Extra Equipment

All the components we just talked about are the main ingredients to a functioning swimming pool, but you can always add more to the party.

## Valves

If you have an above ground pool, the only valves you might see are called shut-off valves. These valves have only one function, and that's to shut off the water supply to your filter system. Generally, you'll see these valves at the front of your pump, but they could be located in other areas.



These valves are nice to have when you work on your filter system and you don't want to deal with water. Alternatively, you can simply plug up the skimmer, and the problem is solved.

For in-ground pools, you might have a 3-way valve or a multi-directional valve. Either way, their job is to change the flow of water from one pipe to another or split the flow to two pipes. Generally you'll see these valves on both the suction side and the pressure side of your filter system.

It's a good idea to mess around with these valves if you're not sure what their functions are, then label them for handy reference.

I wish I could tell you what they do, but every pool is plumbed differently, so you'll have to employ a little trial and error testing here.

## Heaters

There are a few types of pool heaters, including natural gas, propane, electric and solar. Although it's not a necessary piece of equipment when it comes to circulation and cleaning your pool, it's just awfully nice to have.



## Automatic Sanitizers

This handy little piece of equipment makes adding pool sanitizer to your pool super easy. Just fill it full of the correct sanitizer (chlorine, bromine or a mineral cartridge) and let 'er rip. This is the last piece of equipment in your filtration line.

You don't want to add the chemical feeder before a heater because the water coming out of the feeder has got a bunch of chemicals in it and will take a toll of the inside of a heater over time.



# Conclusion

Now you've got a good understanding of how your pool operates.



The water in your pool is sucked into the filter by the pump from the skimmers and drain. The water then runs through your filter (sand, D.E. or cartridge) and is pushed back into your swimming pool via the return jets. Voila!

## Order of Operations

1. Pump
2. Filter
3. Heater
4. Automatic Sanitizers



Hopefully, this very basic understanding should lay the groundwork for proper pool care so you and your family and friends can enjoy a crystal clear pool all season long.



"Swimming Pool" by Claudio Malacarne

Malacarne 10

# CIRCULATION

*Water is the driving force of all nature.*

*- Leonardo da Vinci*



Circulation is the key to filtering and cleaning your pool water. It also helps to spread the chemicals you add to the water.

## What Makes Good Pool Circulation?

Every pool should be equipped with a pump and a filter. Circulating the pool water is performed by your pump. The pump sucks in the water from the pool through the skimmer, or the rectangular hole in your pool, which is sometimes equipped with a falling door.

Once the water is sucked out of the pool by the pump, it passes through the pump and into your filter. The filter's job is to clean the water by filtering out particles that make your water dirty.

After it passes through the filter, it's pushed back into your pool through a jet, which is a little round hole in your pool wall. Some pools have multiple jets and multiple skimmers.

Your return jet should be multi-directional. If it's not, I would suggest getting a new jet fitting that will allow you to direct the water when it is pushed back into your pool. This whole process is circulation of the pool water.

## How To Improve Your Pool's Circulation

It's good practice to point your return jet(s) in a direction that will spin the water in your pool—hence, circulate.

If your pool only has one jet, point the jet to the opposite side from your skimmer and downward. This will circulate the water and also mix the water on the bottom of your pool up to the surface.

## Dead Areas

Dead areas are spots in your pool that have poor circulation. **Some commons spots include:**

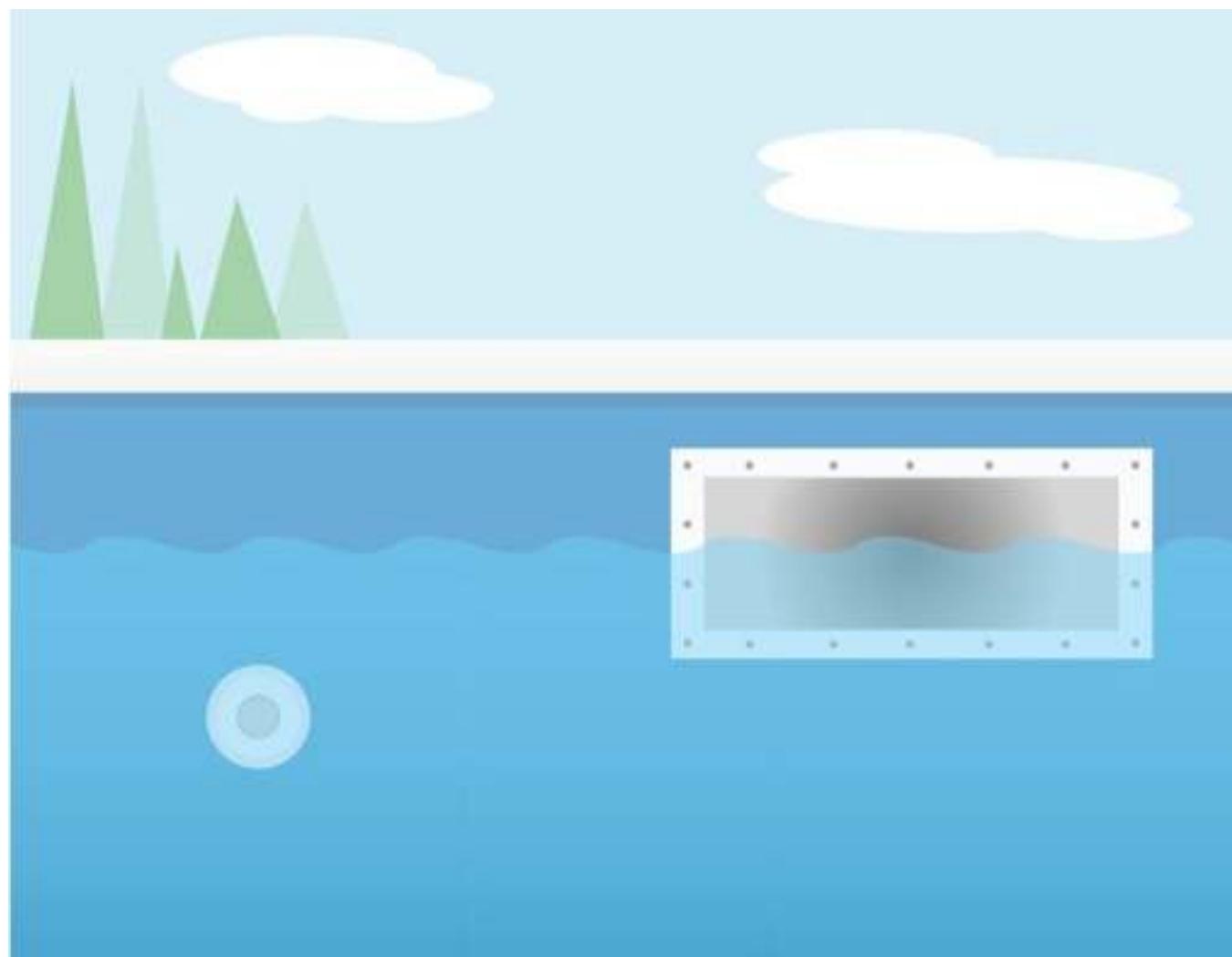
- Behind your ladder(s)

- In and around pool steps
- In cracks, creases, and crevasses
- Underneath the skimmer(s)

Sometimes these dead areas are unavoidable. You can do your best to point your return jets to improve these areas, but you may just have to take care of these areas manually. This is why it's important to always have a pool brush handy.

## The Water Level

In order to ensure proper circulation, make sure the water level is always the same. Your water level should hover in the center of the skimmer plate like the image below:



# Calculating How Much Water Is In Your Pool

Knowing how much water is in your pool is incredibly important. It will help you determine how long you should run your filter system and the quantity of chemicals to add to your pool.

## MINDFULNESS



Keep in mind that being close is ok here. You don't need to know how much your pool holds to the exact gallon. If you calculate the amount, it's fine if you just want to round up. If your pool ends up being 17,899 gallons, it's cool to say it's 18,000 gallons. Rounding up is always better!

We'll break down each mathematical formula to help you figure it out. However, if you don't want to do math the old fashioned way, you can use our online calculator to help you.

## ENLIGHTENMENT



To make things easy, you can use our online pool volume calculator to find out the volume of your pool in gallons.

## Same Depth: Square or Rectangular

**Length x width x depth x 7.5 = volume (in gallons)**

Length times the width will give you the surface area of the pool, and multiplying that by the depth gives you the volume in cubic feet.

There are 7.5 gallons in each cubic foot. So multiply the cubic feet of the pool by 7.5 to get the total number of gallons in your swimming pool.

## Variable Depth: Square and Rectangular

Use this formula if you have a “shallow end” and a “deep end.”

**Length x width x average depth x 7.5 = volume (in gallons)**

Measure the length, width, and average depth (see below) of the pool. Round each measurement off to the nearest foot.

If the shallow end is 3 feet and the deep end is 9 feet, and the slope of the pool bottom is gradual and even, then the average depth is 6 feet.

### MINDFULNESS



If most of the pool is 3 feet, then suddenly drops to 10 feet, treat the pool as two parts. Measure the length, width, and average depth of the shallow end, then take the same measurements for the deep end. Calculate them separately then add the total gallons together.

## MINDFULNESS



Make sure to use the depth of the actual water in your calculations, not the depth of the pool itself, to get the proper number of gallons.

## Circular Pools

**3.14 (pi) x radius squared x average depth x 7.5 = volume (in gallons)**

The radius is half the diameter, which is the distance across the broadest part of the circle. So if the widest length of your pool is 24 feet round, the radius is  $24 / 2 = 12$ . To get the radius squared, just multiply the radius times itself.  $12 \times 12 = 144$ .

Example: For a 24-foot round pool with a 4-foot depth, it would be:  
 $3.14 \times 144 \times 4 \times 7.5 = 13,564.8$  (which we'll round to 13,600 gallons).

## Kidney or Irregular Shapes

There are two methods used to calculate the capacity of irregular shapes. First, you can imagine the pool or hot tub as a combination of smaller, regular shapes. Measure these various areas and use the calculations described previously for each square or rectangular area and for each circular area. Then add these volumes together to determine the total capacity.

# Plumbing, Skimmers, Pumps, And Returns

In order to get good circulation, it's important to keep your pipes clean. All this requires is some good maintenance and proper positioning of your return jets.

## Setting Up Your Plumbing

**There are two steps here:**

1. **Pull water** from all your skimmers and main drains.
2. **Push water** around the pool via the return jets.

This is the part where you're gonna have to mess around with your plumbing valves. Each valve has a specific job.

During normal pool operation when the pool is clean and clear, set up your valves so you're pulling water from both your skimmers and the main drains at the bottom of your pool. That way, you're pulling water in from both the top of and the bottom of your pool.

There will be times when you'll only use one skimmer or just the main drains. For instance, if your pool is cloudy, or you have a lot of dirt and debris on the floor of the deep end, you'll want to only pull water from the main drains until the problem is solved. We'll talk more about this in the troubleshooting section.

## ENLIGHTENMENT



Label your valves by using a weather-proof marker. You can write directly on your PVC pipe or wrap your pipes with duct tape.

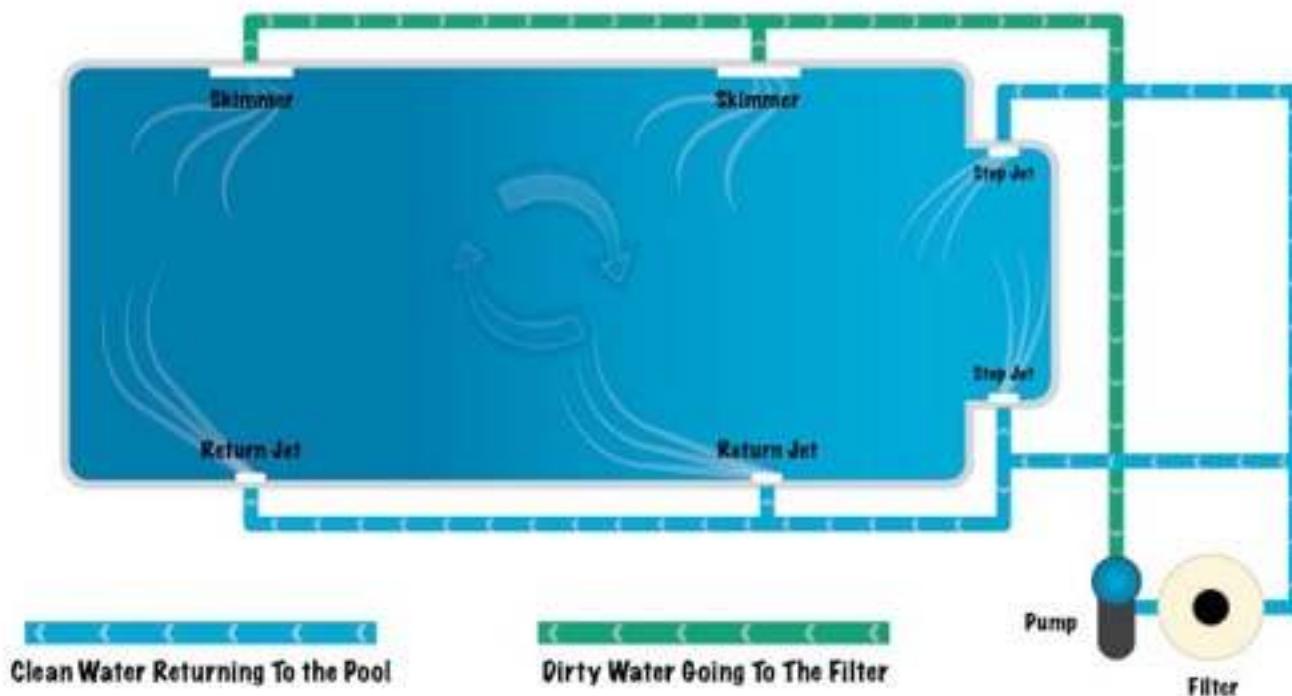
## Skimmer & Pump Maintenance

Keep the baskets in the skimmers and the pump clear of all debris. Every day, or as often as you can, check these baskets and empty them out, to ensure good water flow to the filter system. If you don't like getting your hands dirty, wear gloves.

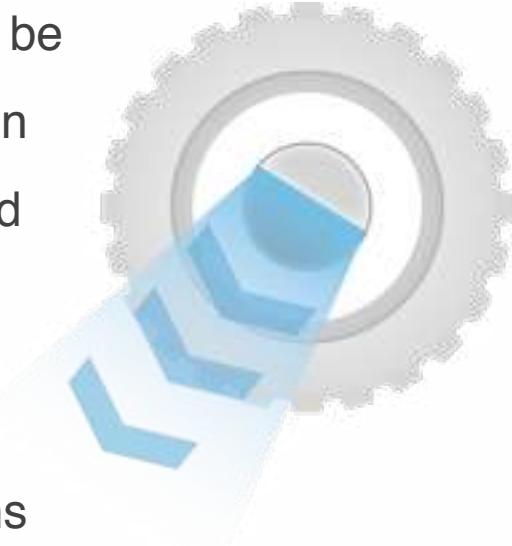


## The Return Jets

Make sure the return jets are moving the water around the pool properly.



Your return jets should have the ability to be angled in any direction. If they don't, invest in some new return jets. They're inexpensive and well worth it.



Angle your return jets down slightly, and point them all in the same direction, so the water spins around the pool.

Angling them down allows the jets to push debris up to the surface so your skimmers can grab it. It also helps distribute chemicals throughout the water.

Think of a cup of coffee. When you stir in your cream and sugar (or however you take it), you don't just put the tip of the spoon on the top, you dunk the whole spoon in and stir from the bottom.



# How Long Should I Run My Pool Pump?

Ideally you would run your pool's filter system 24 hours a day. However, that could end up costing more money than necessary for energy and maintenance. Let me show you how to save money but still circulate your water effectively.

## The Turnover Rate

The idea is to run all the water in your pool through the filter system at least once a day. This is called your Turnover Rate, and it's pretty difficult to determine.

An average filter system, if it was built correctly, should turn over the water 2-3 times a day.



**Warm and Hot Climates**  
8 to 12 Hours a Day



**Cool and Cold Climates**  
4 to 6 Hours a Day

With this assumption, you can safely run your filter for about 12 hours a day. That should (again, depending on your system) run all the water in your pool through the filter system at least once.

**I usually tell people to run their filter for 8-12 hours a day, and of course, the more the better.**

## What About Costs?

If you're concerned about spending too much on your electric bill, you can try calling your energy company and asking about the "best times." **Usually, the best times to run your filter system, which may save you money, is between 9:00pm and 9:00am.** This is when fewer people are consuming energy, which may drive down rates.

You could also split these times. For instance, you could run your filter for 6 hours during the day and 6 hours at night. This is perfectly fine, and adding a timer to your system will make it easy to automate.

However, if you're adding chemicals or cleaning your pool, you need to have your filter system running.

## Variable Speed Pumps

If you have a variable speed pump, you can run your system for 24 hours a day without using as much energy as a standard pump. You can run it at lower speeds when you're just filtering the water and higher speeds when you're adding chemicals or cleaning the water.

## VARIABLE SPEED PUMP



Both [Hayward](#) and [Pentair](#) make really great variable speed pumps.

## O-Rings

Throughout your filter system, there are black rubber o-rings which create a good seal to prevent leaks.

All o-rings should be in good shape before you start any pool season. **An easy way to check is to bend the o-ring and look for cracks.** O-rings should be smooth. If they show any cracking, replace them.

If the o-rings look good, add an additional layer of protection by using a teflon-based o-ring lubricant such as Magic Lube (which is my favorite). DO NOT use petroleum jelly (Vaseline) because it will damage your o-rings.

## MAGIC LUBE



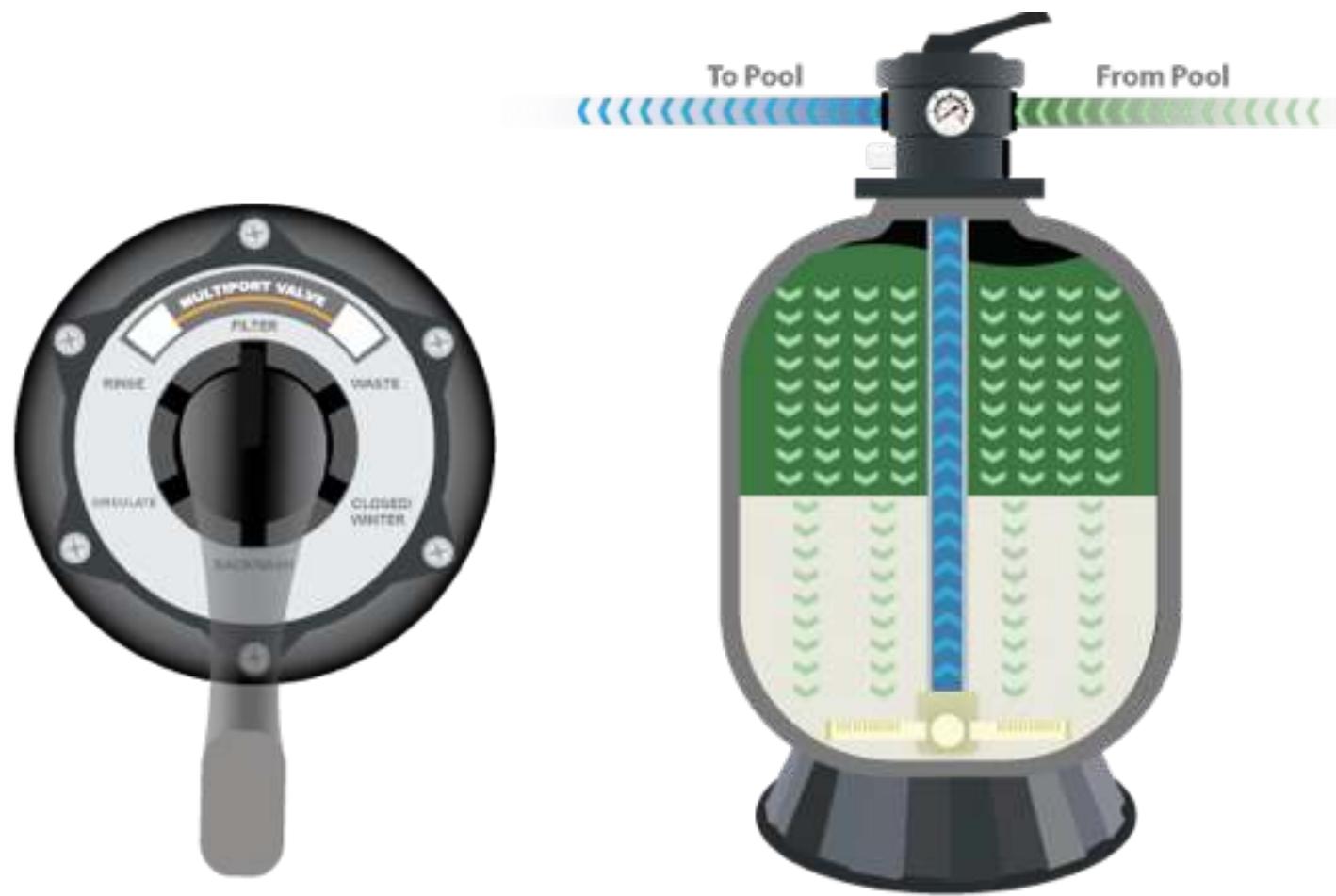
This is by far [my favorite brand of o-ring lubricant](#). It is easy to use and creates a good seal.

# Filter Operation & Maintenance

There are two types of valves you might run have attached to your filter system. The most common valve is called a **Mulitport Valve**, and it's located at the top or side of your filter tank. The second is called a **Push Pull Valve**. Let's break down each one.

Let's take a look at an sand filter multiport valve. It likely has 6 settings.

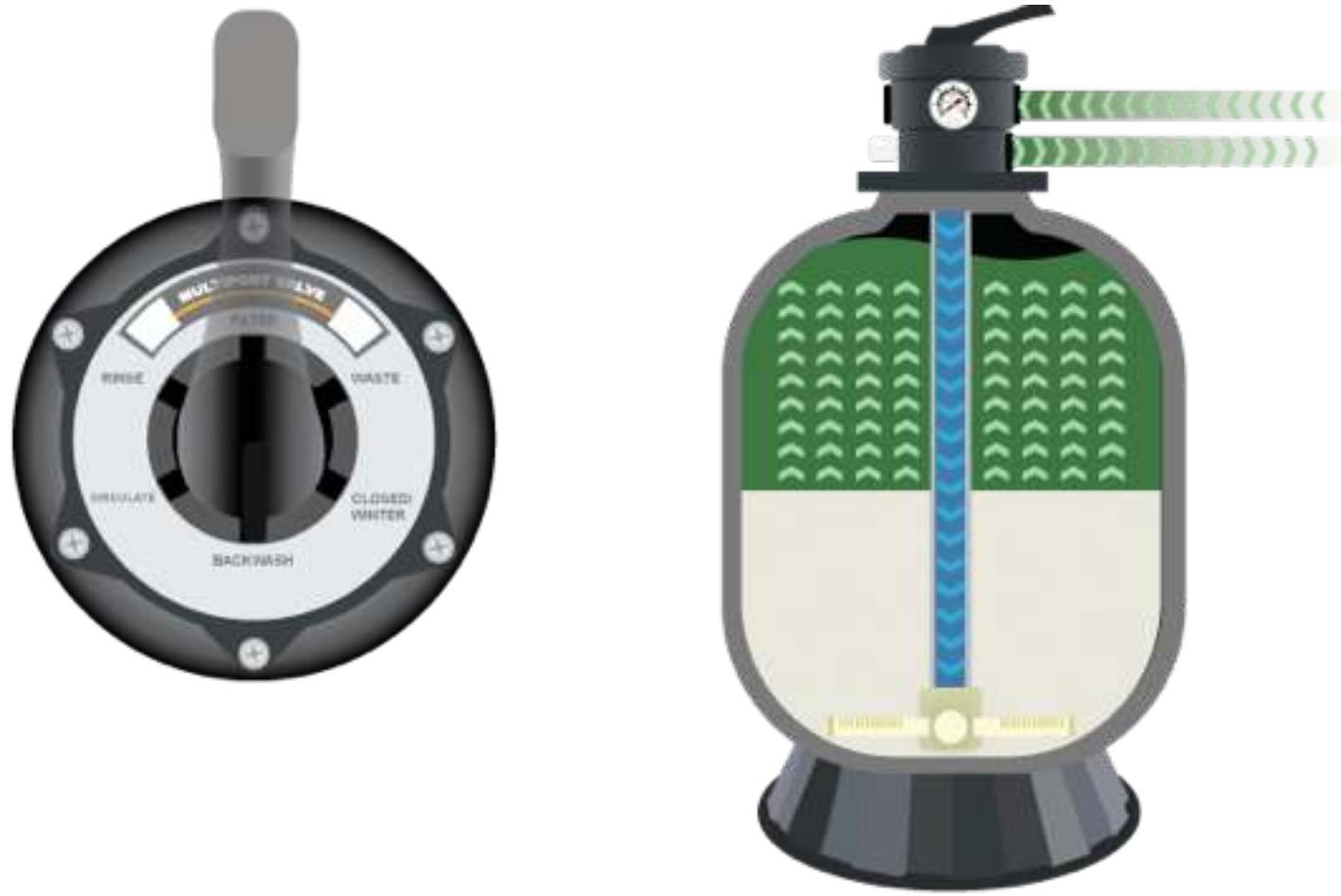




## Filter Setting

Direct pool water from your pump through the filter media and back into the pool.

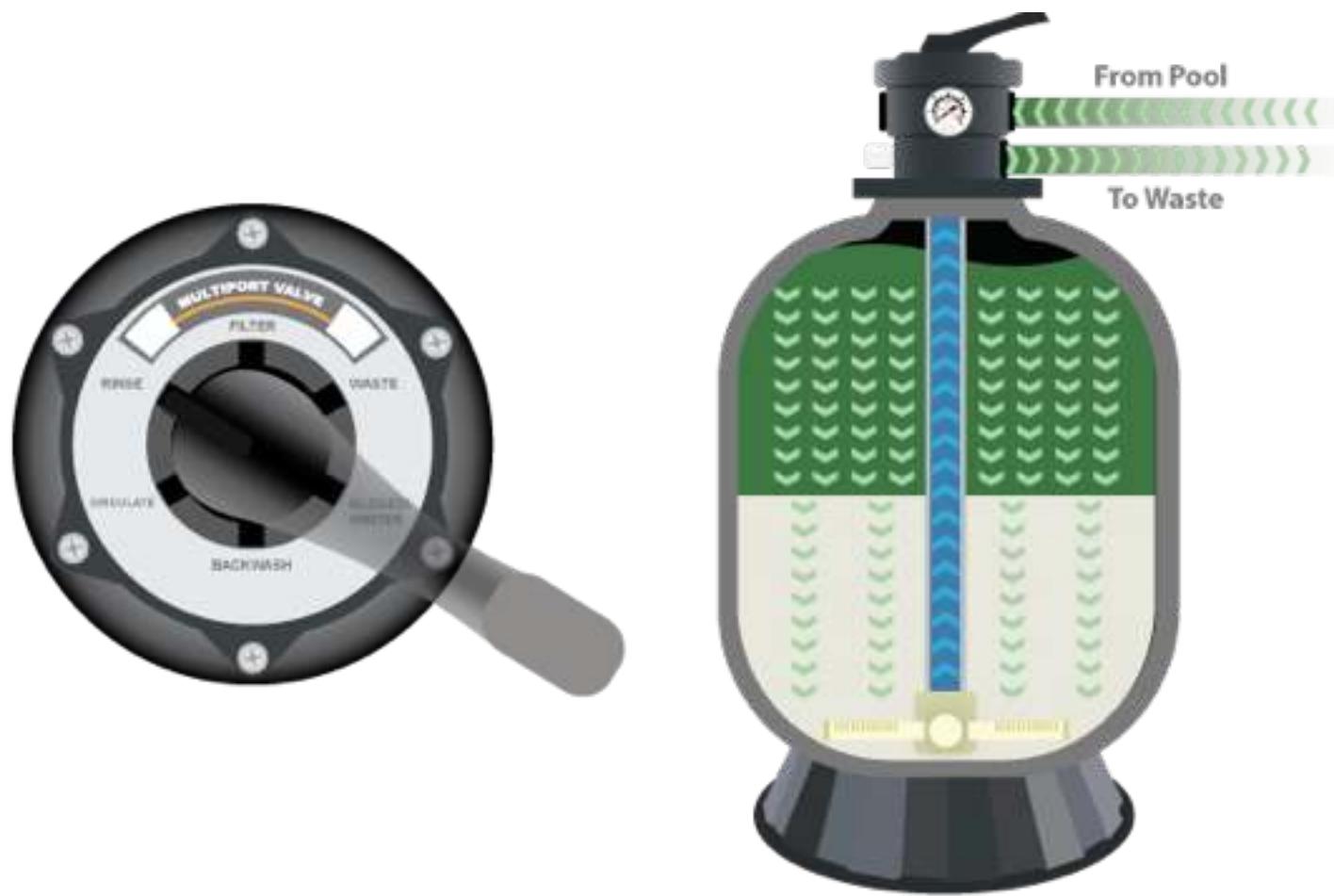
This is your main setting. You will use this setting about 90% of the time. When in doubt, just turn your multiport valve to the filter setting.



## Backwash Setting

Directs pool water from your pump through the filter and out through the waste port.

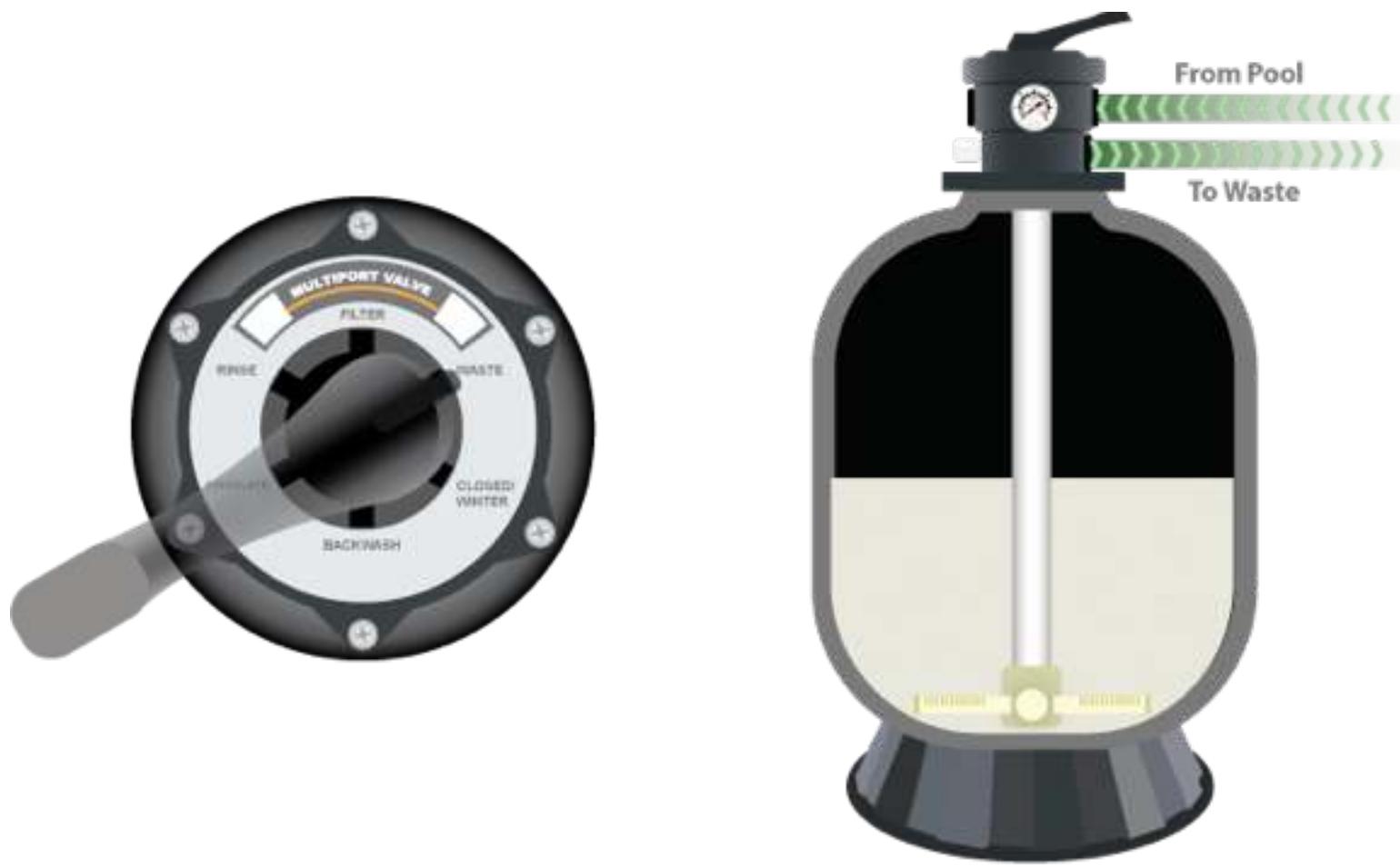
Use this setting when you're cleaning your dirty filter media. You should only backwash when your pressure rises 10 pounds over your normal pressure rate. I'll talk in more detail about backwashing later.



## Rinse Setting

Directs pool water from your pump through the filter and out through the waste port, rinsing the filter media clear of dirt.

You should always rinse your filter after backwashing to ensure no dirt gets back into your pool after backwashing.

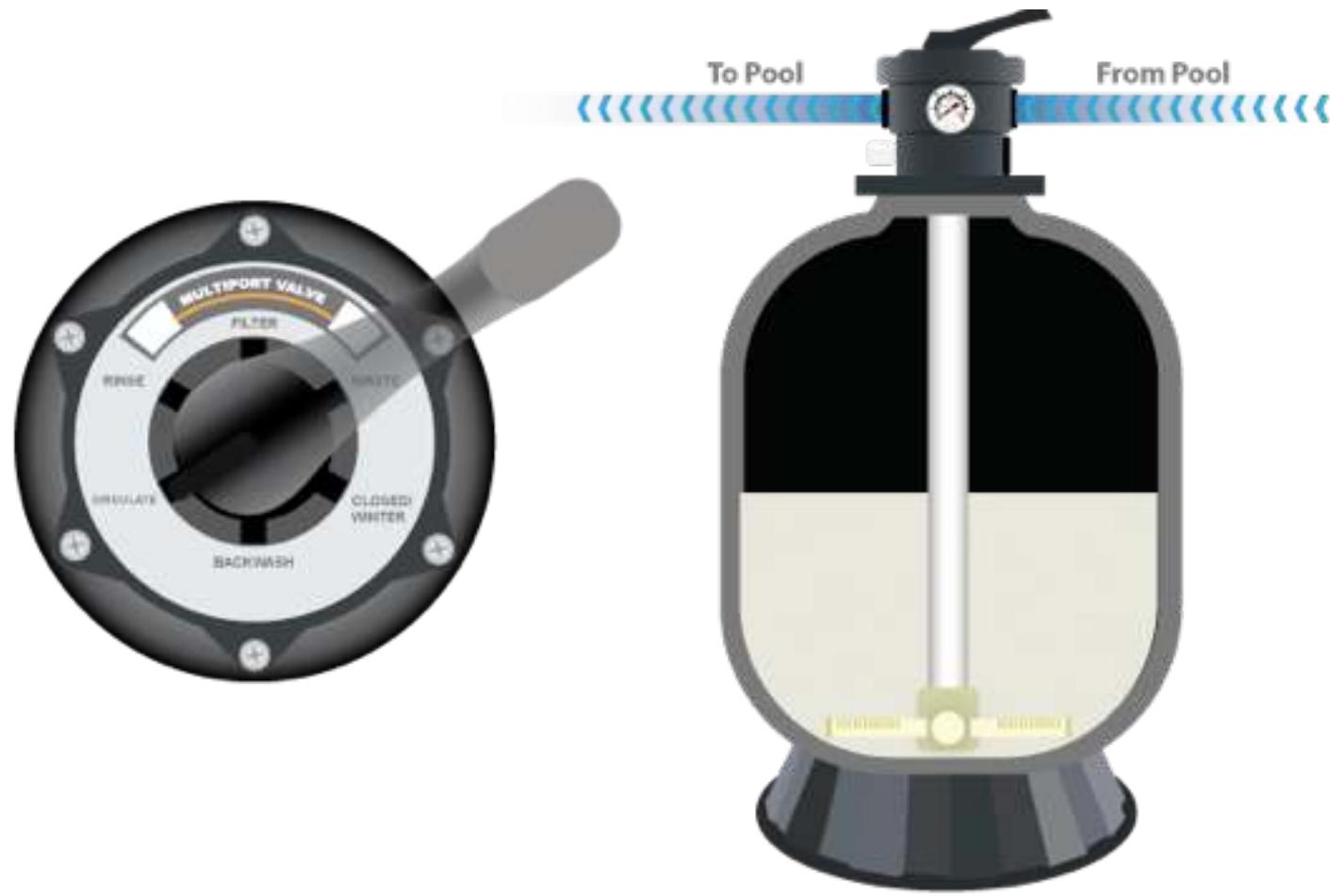


## Waste Setting

**Directs pool water from your pump through your multiport valve and out through the waste port, never touching the filter media.**

You will use this setting if you are manually vacuuming your pool and the dirt keeps flying back into the pool through the return line.

If your pool has a large amount of debris, such as opening in spring, you won't want to run all that gunk and dirt through your filter. It will be too much for the filter to handle, so a lot of that dirt will just end up right back in your pool. Using the waste setting bypasses the filter completely and just gets rid of all that dirty water.



## Re-circulate Setting

Directs pool water from your pump into your multiport valve and back into your pool, never touching the filter media.

This just spins the water around and around without cleaning it. Some chemicals, such as floc, require you to do this. You'll rarely use this setting.

## Winter/Closed Setting

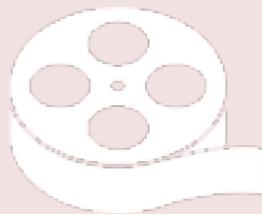
This setting closes all the ports in your multiport valve. It is used for closing your pool or for completely stopping water from going through the multiport valve.

## MINDFULNESS



Any time you move the handle on your multiport valve to switch positions or settings, you must turn off your pump. Keeping the pump running while moving the handle can cause you to blow the gasket in your valve. Not an expensive fix, but certainly one you want to avoid.

## HOW TO OPERATE A MULTIPORT VALVE



Here's a detailed [video on how to a multiport valve works on a sand filter.](#)

In the next section, we'll talk about backwashing your filter, which is a form of cleaning.

## Push Pull Valve

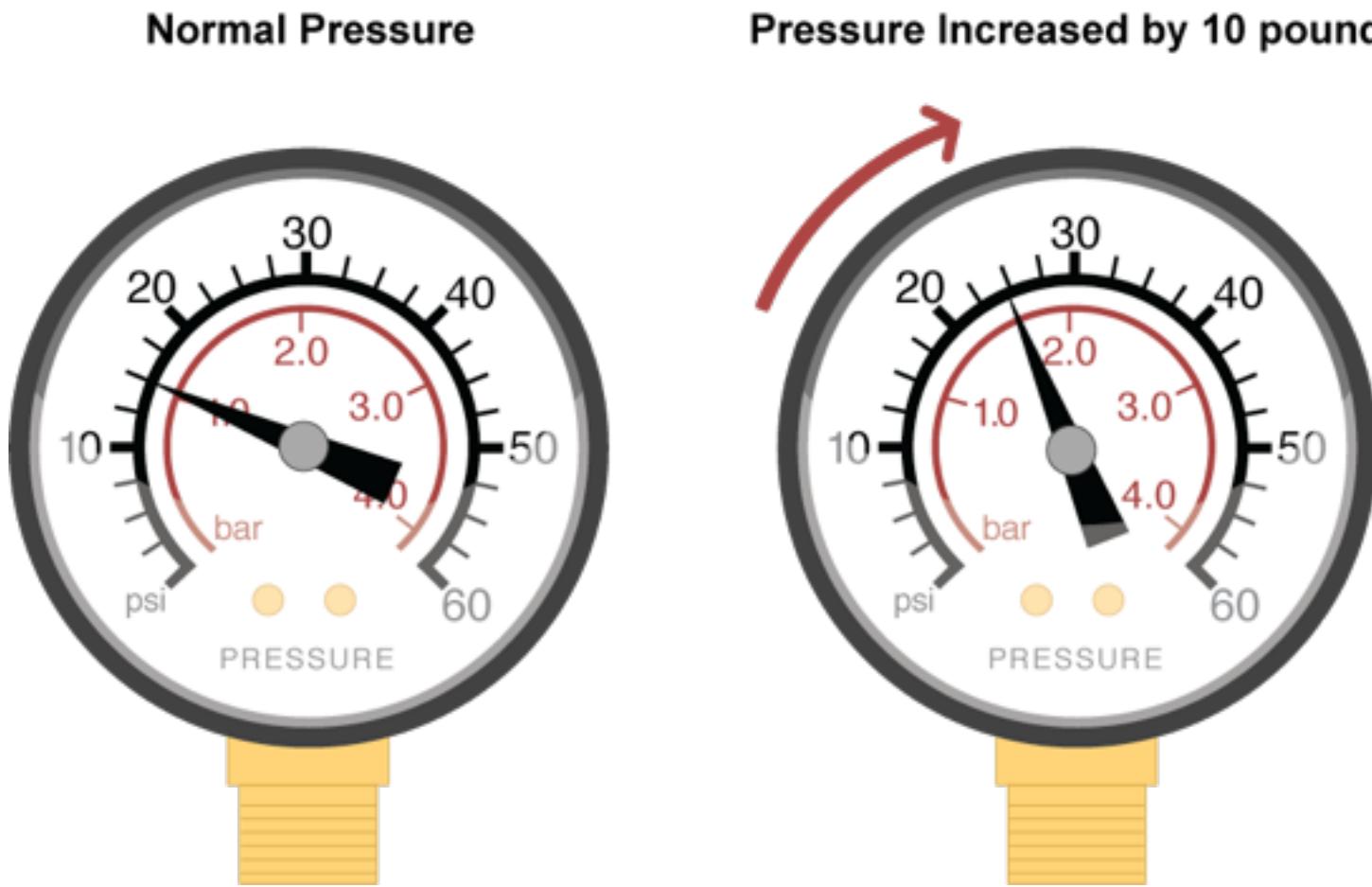
These simple valve only have two positions—filter and backwash and allow you to backwash a D.E. filter. All it does is direct the flow from the input to the output on your filter.

The valve starts out in the Filter position. This position allows water to flow from the pump, into the filter, and back out to your pool.



## Pressure Gauge

No matter what type of filter you have, you'll want to keep an eye on your pressure gauge. This gauge tells you how much pressure is in your tank, and it's measured in pounds. This will indicate when it's time to backwash your filter.



After you backwash your filter, take a note of the pressure reading. This will be your normal running pressure.

As your filter cleans your pool, it gradually fills up with dirt and debris. This causes the tank pressure to rise.

Once it rises to between 5 and 10 pounds over your normal running pressure, it's time to backwash your filter. We'll talk more about that in the next section.

## Pressure Relief Valve

There is a valve on your filter that you can twist to release air that may have built up in your tank. If you have a Push Pull Valve, you will need to use this in order to operate the valve.

Multiport valves also have one, and I often use it to see if there is any pressure that can be released. When you twist the valve, air is released and when the air has all escaped, water will start squirting out from the valve to indicate you've released all the air.

# Conclusion

Without proper circulation, you will always have problems with your water. It's the most important step in pool care, and it's often overlooked because many pool owners are not familiar with how their filter system works.

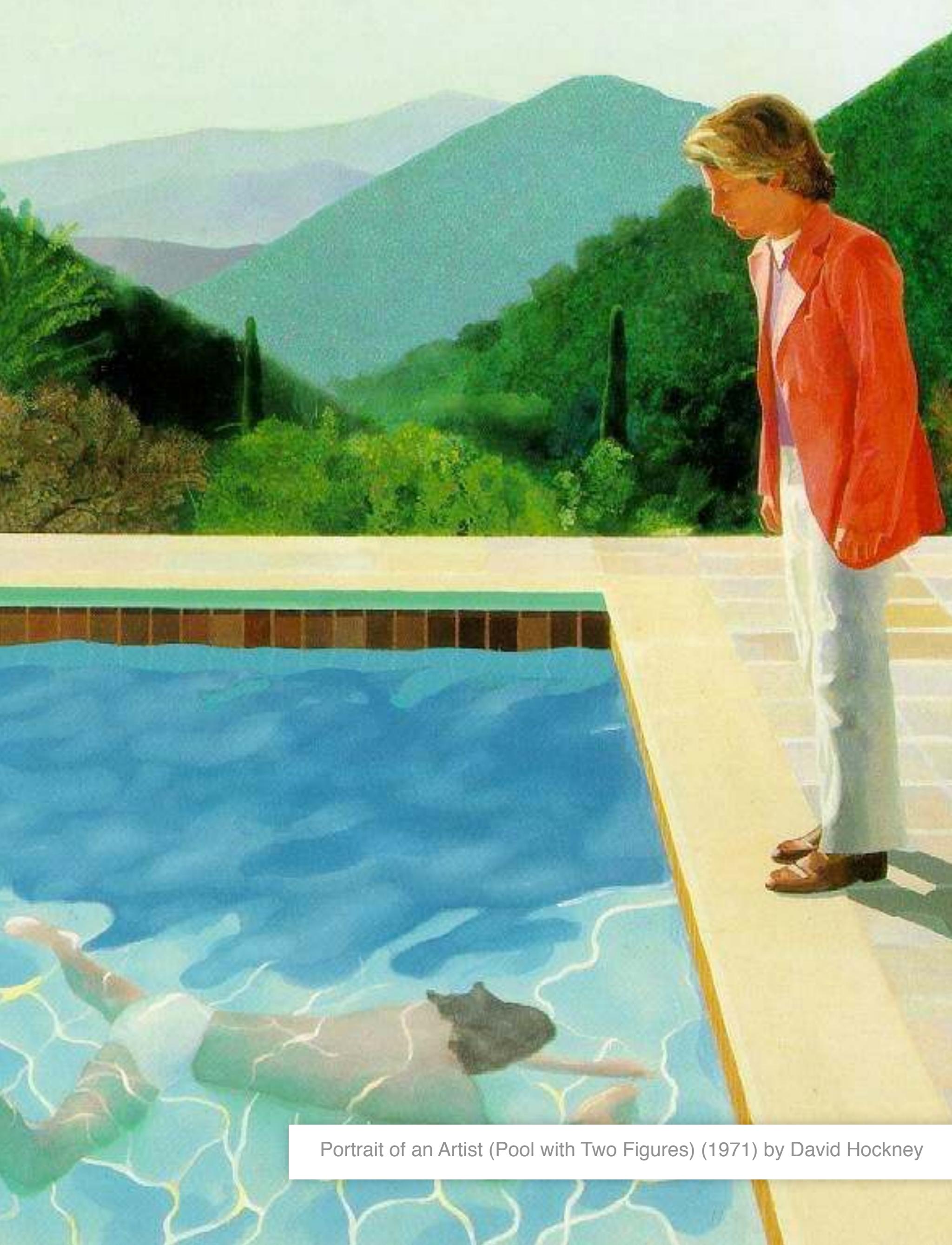


I hope that after reading this section, you have a better understanding of how to keep your pool clean. Remember, you are in control. You tell the water where to go and how often it's cleaned.

## You should now know:

- How many gallons are in your pool.
- How to direct your return jets properly.
- How to keep your skimmer clean.
- How water flows throughout your system.
- How to maintain good water pressure.

If there is anything you're fuzzy on, go back and make sure you understand it. Take this guide out to your system and follow along. It's important to fully understand your system and how to tame it. You are in control. The more you know, the better you'll be able to handle any troubleshooting issues or minor setbacks.



Portrait of an Artist (Pool with Two Figures) (1971) by David Hockney

# CLEANING

*All good writing is swimming under water and holding your breath.*

- **F. Scott Fitzgerald**



Cleaning your pool includes vacuuming, skimming, and brushing. If you do these tasks every week, you will keep your pool clean. You will also help to keep algae, stains, and cloudy water from occurring.

I like to compare it to brushing your teeth. If you didn't brush your teeth every day, you would develop cavities, plaque, and the dreaded gingivitis. You wouldn't neglect your teeth, so don't neglect your pool.

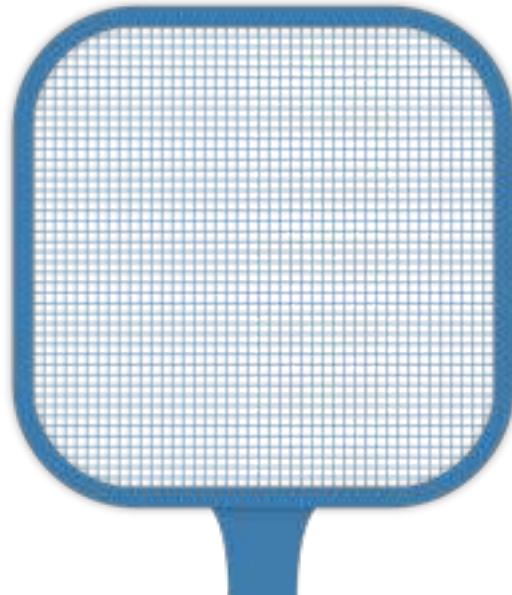
# Equipment

These items are the only cleaning equipment you'll need. Anything else is just extra and not a part of lean pool care.



**Pool Brush**

**Telescopic Pole**



**Skimmer Net**



**Vacuum Head**



**Vacuum Hose**



# Vacuuming (Automatic)

The easiest way to vacuum your pool is with an automatic pool cleaner. It will vacuum your entire pool without supervision.

## Pressure-side cleaners

These work with the help of the water coming FROM your filter system. The unit attaches to your return jet and uses the clean, filtered water to drive the unit, creating a water vortex that pushes debris into a mesh bag. After your pool is cleaned, you just empty the bag.



Both pressure-side and suction-side cleaners require your filter system. However, that's not the case for my favorite type of cleaner—the robotic cleaner.

## Robotic pool cleaners

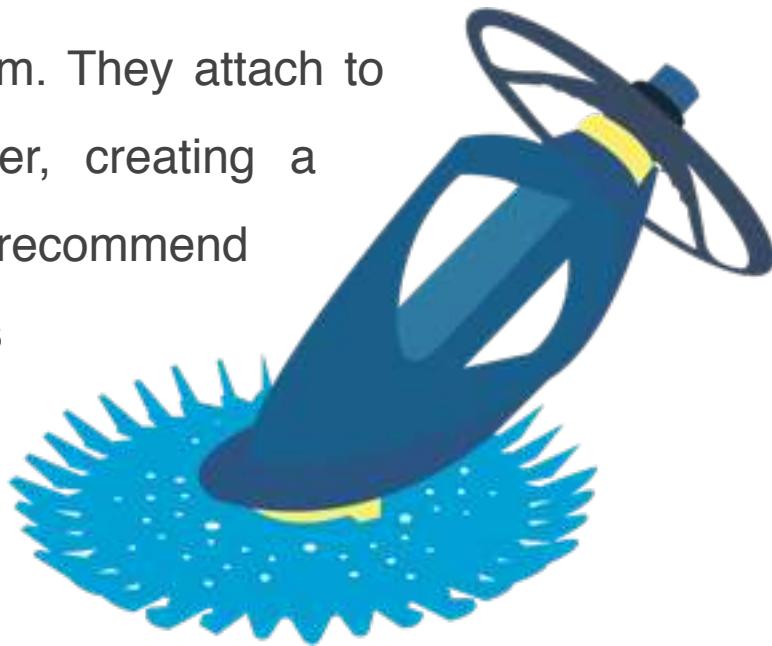
These are self-contained units that run on electricity. They drive around your pool and suck debris into a bag. This is as easy as it gets, folks – plug and play. The only downside to owning a robotic cleaner is the cost. Robotic cleaners cost more than other types of cleaners (unless your pressure-side cleaner requires a booster pump), and it will cost more to repair.



## Suction-side cleaners

These work just like a manual vacuum. They attach to your skimmer, which draws in water, creating a siphon to your filter system. I don't recommend this type of cleaner because it requires your filter to "filter" out the debris.

Worst case scenario is the vacuum sucks up a rock and hurts your filter system—definitely not good.



## Vacuuming (Manual)

If you don't own an automatic pool cleaner, you will need to vacuum the pool manually. You will also have to vacuum manually if you have major water issues.

**There are two reasons to know how to vacuum a pool manually:**

- Because you don't own an automatic pool cleaner – and shame on you because you NEED to own one if you have a pool.
- Because there is a major problem that can't be solved with an automatic pool cleaner, such as algae.

### 1. Attach The vac head to pole

## TOOLS



- [A vacuum head or vac head](#)
- [Telescopic pole](#) to attach the vac head
- [A vacuum hose](#) (long enough)
- [Skim vac or vacuum plate](#) (if needed)

Attach the vac head to the open end of the telescopic pole.

## 2. Attach the hose to vac head

Take one end of the hose and attach it to the top of the vac head. Use a hose clamp if the hose tends to slip off frequently.

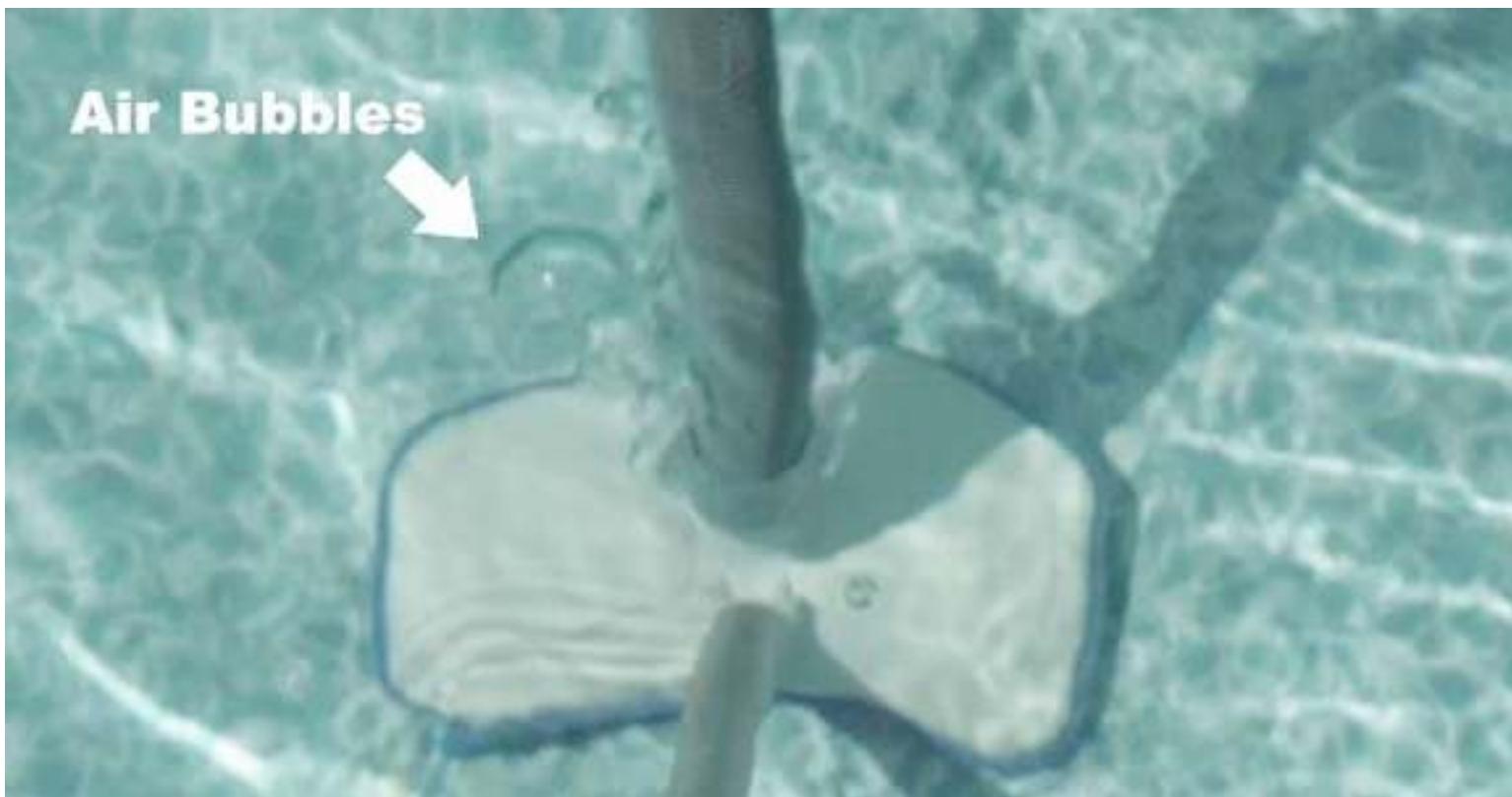


## 3. Put The Vacuum In The Pool

Place the vac head, pole, and hose in the pool – all the way to the bottom so that the vac head rests on the floor of the pool.

#### 4. Fill Up The Vacuum Hose with Water

With the pump running, take the other end of the hose and put it up against a return jet. This will push water into the hose to get the air out.



## MINDFULNESS



Bubbles will come up from the vacuum head on the floor of the pool. Once the bubbles stop, all the air is out of the hose.

## 5. Put Vacuum Hose In The Skimmer

If a vacuum plate is NOT being used, remove the basket inside the skimmer, block (with your hand) the end of the hose that has been filled up with water, and bring it over and into the skimmer. Insert the hose into the suction hole at the bottom of the skimmer.

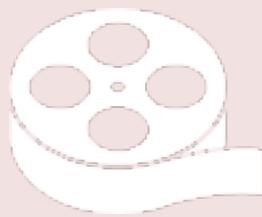


If a vac plate is being used, attach it to the end of the hose that was up against the return jet, block the opening, and bring it over to the skimmer. Be sure to create a good seal for maximum suction.

You now have suction from the vac head, through the hose, into the skimmer, and through the filter system. It's time to vacuum the pool.

When it comes to manually vacuuming the pool, slow and steady wins the race. If you try to rush, it will just kick up debris, which will settle back down and force another vacuuming session.

As a reminder, I recommend getting an automatic pool cleaner. You will thank me :-)



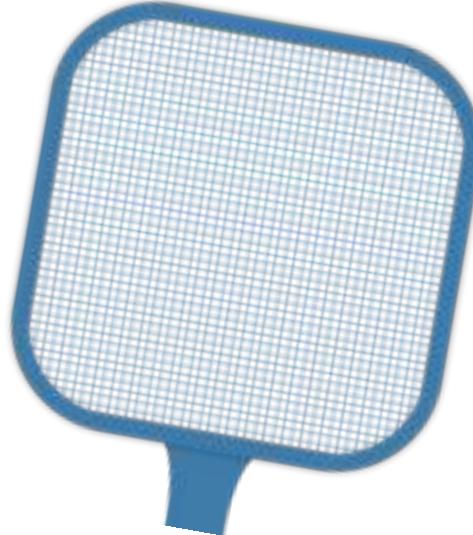
## HOW TO VACUUM YOUR POOL MANUALLY

Have no fear! If you don't know how to set up a manual vacuum, [I made a video](#). All you need is your telescopic pole, a vacuum head that attaches, and a vacuum hose.

# Skimming & Brushing

## Skimming

You can choose between a flat skimmer or a bag skimmer. I suggest going with the flat skimmer because it's easier to shake off the debris from the pool. Buy a skimmer net that is heavy-duty — cheap skimmer nets tend to break easily.



**Skim the surface daily.** This prevents debris from sinking to the bottom of your pool, which will leave you less debris to vacuum, and it prevents staining.

**Most effective way:** With the flow of the water in a circular motion.



# Brushing

Brushing is an important task that many pool owners neglect.

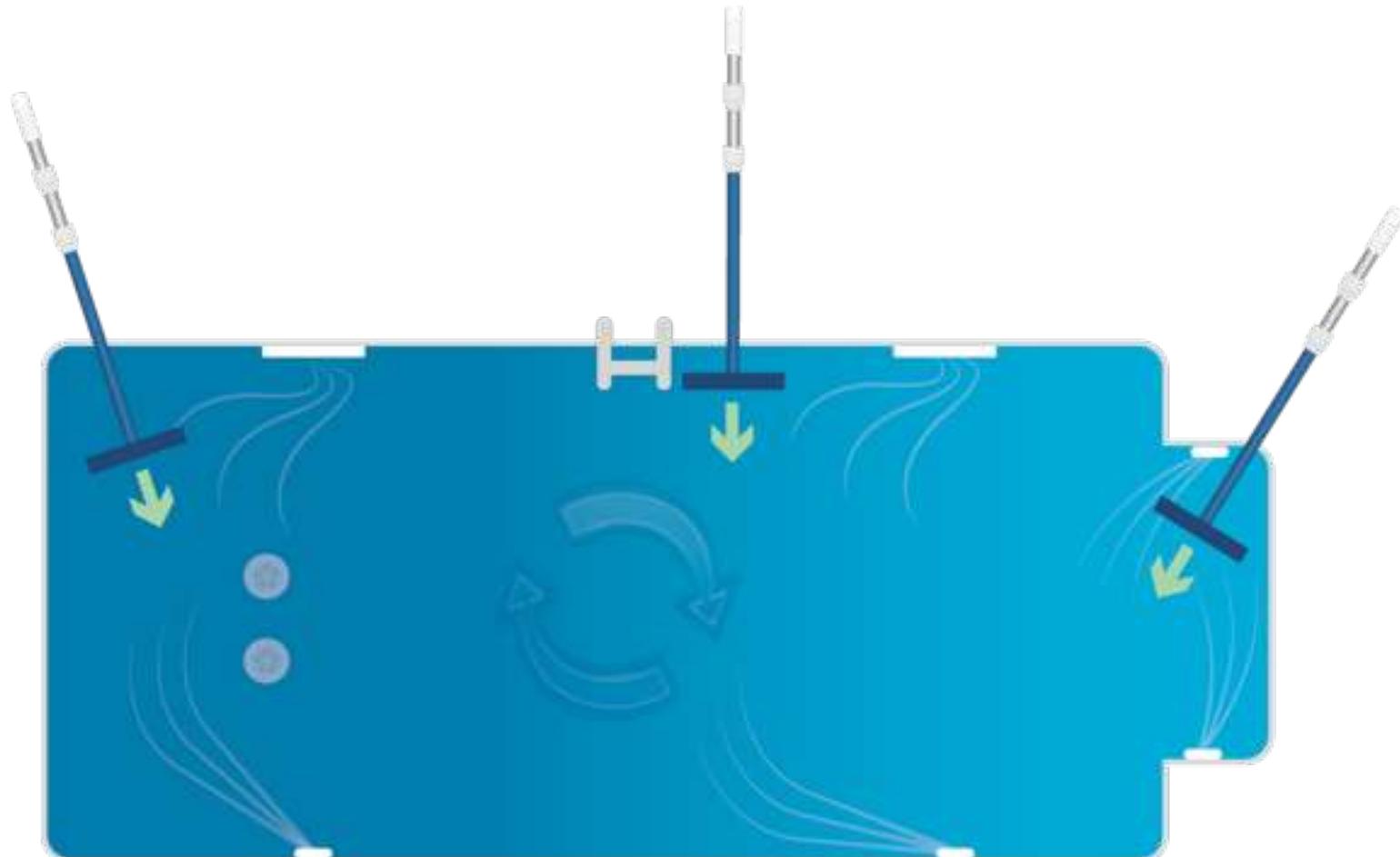


**Brush the walls, ladders, and corners of your pool at least twice a week.**

If algae starts to grow, brushing will push the algae into the water, making it easier for your sanitizer to kill it.

Just like skimmer nets, it's wise to purchase a heavy-duty pool brush. You'll be using it frequently, and cheaper brushes tend to break.

**Most effective way:** brush down toward the floor on the steps, crevasses and behind ladders (dead spots).



# Backwashing

Just like your pool water, you also need to keep your filter tank clean. It only requires a little maintenance to keep your filter running efficiently, and that's where backwashing comes in.

Backwashing is the act of running water through your sand or D.E. and out of the waste or backwash port to remove all of the dirt and debris your filter system has been collecting.

**You should only Backwash when the pressure in your tank rises about 10 pounds over your normal running pressure** (which will be the pressure your filter runs at after a good backwashing).



## ENLIGHTENMENT

The reason I say to ONLY Backwash when the pressure goes up is because having dirt and debris in your filter system is actually a good thing to a certain point. The more dirt and debris in your filter, the better your filter will clean, because that dirt and debris will help filter more dirt and debris. Get it?

## How to Backwash a Sand Filter

When you turn your filter's multiport valve to "backwash" and power up the pump, the pool water is reversed through the sand and pumped directly out of your pool via the "waste/backwash" valve.

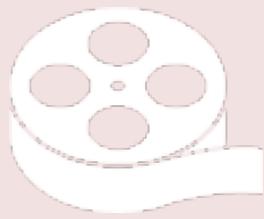
1. **Attach a long pool hose or backwash hose** to the waste or backwash port on your multiport valve on your sand filter. This might not be necessary if yours is already piped out.
2. **Turn your filter system off** and switch the multiport valve handle to “backwash” position.
3. **Turn your filter back on** and let the water rush out of the backwash port and through the backwash hose for about a minute or until the water runs clear.
4. **Turn your pool filter system off**, and turn the handle to the “rinse” position.
5. **Turn your filter back on and rinse** your filter for about 30 seconds.
6. Turn your pool filter system off again, and return the multiport valve to the original filter setting. You’re finished.

### MINDFULNESS



Never turn the multiport valve handle while the pool pump is on and running. This could cause the rubber diverter gasket inside your multiport valve to come loose or break. This will, in turn, cause water to leak out of the wrong ports while running.

## HOW TO BACKWASH A SAND FILTER



Want to see this in action? [Watch our video on backwashing a sand filter.](#)

## How to Backwash a D.E. Filter

1. **Turn off your filter system** and turn your multiport valve to the backwash position, or open your backwash gate if you have a push/pull valve.
2. **Turn your system back on** and run it for about two minutes, letting the water flow out of the backwash valve or port. It would be a good idea to use a backwash hose here.
3. **After two minutes shut your system off** and if you have a multiport valve, turn it to the “rinse” position. Turn your system back on, and run it for about a minute. If you have a push/pull valve, run in for about another minute.
4. **Now turn your filter system off.** Turn your multiport back to “filter” or shut your push/pull valve.
5. **Turn your system back on and add fresh DE powder** to your skimmer according to your filter’s instructions.

## How to Backwash or Bump a Hayward DE Filter

Turn your filter system off and open the backwash valve. Using the bump handle, bump the filter slowly 15 times. With the backwash valve still open, turn your filter system back on. Let it run for about two minutes. This will rinse out all of the D.E. that you shook off the fingers in your D.E. Filter.

Turn the filter system off and repeat this again to ensure all of the DE has been rinsed out. Bump it slowly 15 times and turn your system back on for about a minute.

Turn off your filter system and replace the cap, or close off your backwash valve, and start your filter system back up. Add more fresh DE to your skimmer.

## **How Much D.E. to Add After Backwashing**

The first thing you need to determine is the square footage of your D.E. filter. If it's not listed on the side of the tank, you can easily do a Google search to find out or contact your dealer.

D.E. is measured in pounds, so I recommend that you purchase a one-pound D.E. scoop. However, if you're in a pinch, you can also use a one-pound coffee can. Here is a chart that lists both:

# D.E. POWDER DOSAGE

FILTER SQ. FT.	1-POUND DE SCOOP	1-POUND COFFEE CAN
24	3 Pounds	6 Cans
36	4.5 Pounds	9 Cans
48	6 Pounds	12 Cans
60	7.5 Pounds	15 Cans



## ENLIGHTENMENT

What is D.E. or Diatomaceous Earth? It's a white powder composed of fossilized skeletons of one-celled organisms called diatoms. This powder is added to the filter and attaches itself to the grids inside creating a D.E. cake. This cake, along with the filter grids , help to filter out very fine particles. D.E. filters are the best kind of filter when it comes to cleaning your pool, but they do require a lot more work to maintain.

## How to Use a Push Pull Valve

In order to use the valve to backwash, you first need to:

1. Turn off your filter system.

2. Relieve the pressure in the tank using the pressure relief valve next to your pressure gauge.
3. Twist the handle on the valve to unlock it.
4. Pull up on the handle until you see water coming out of the backwash port.
5. Turn your filter system back on to backwash the filter. Water will be rushing out of the backwash port. Allow it to keep running until the water is clear.
6. Turn off your filter system.
7. Relieve the pressure again by using the pressure relief valve.
8. Push down on the handle and twist to lock it in place.
9. Turn your filter system back on.

## How to Clean a Cartridge Filter

Unlike sand and D.E. filters, you don't have to backwash a cartridge filter. Instead, a few times a year, you have to remove the cartridge from inside the filter and manually clean it.

1. Turn off your filter system and close all valves that will allow water to flow into the tank.
2. Use the pressure relief valve to remove the air in the tank. Drain the water from the filter.

3. Remove the main clamp on your filter. If you don't know how to remove it, check your manual. Take off the top portion of your filter to expose the cartridge(s) inside.
4. Take the cartridge(s) out and set aside. If there is something locking it in place, make sure you take care of that before trying to forcefully remove the cartridge(s).
5. Check the cartridge(s) for fraying fabric or damage before cleaning. If you find any, the cartridge(s) need to be replaced.
6. At this point, you need a filter degreaser (or filter cartridge cleaner in a spray bottle) to spray down the cartridge(s).
7. Let the cleaner saturate the cartridge(s) for about 15 minutes, then rinse them down with a high-pressure garden hose (getting in between the pleats as much as possible). Do this very thoroughly to prevent foaming in your pool.
8. Put the cartridge(s) back in the filter tank, replace the lid, tighten the clamp, and turn your filter system back on.



## HOW TO CLEAN A CARTRIDGE FILTER

My friend Shelly from Filbur Cartridge Filters has put together a [comprehensive video](#) for your viewing pleasure!

# Additional Cleaning

Be sure the area around your pool is clean to keep that debris from ending up in your water. I recommend rinsing and brushing your pool deck once a week.

It's also wise to keep your filter area clean and free of debris so you have easy access to your equipment without being grossed out by "slimy things."



## ENLIGHTENMENT

In the next section, we'll talk about pool chemistry. Maintaining proper pool chemistry will make all these procedures much easier. High chlorine and off-balance water can cause corrosion to railings. Off-balance water can wreak havoc on ALL your pool equipment and everything around it.

## Decking

Decking refers to anything around the pool. If you have an in-ground pool with concrete decking, you can just scrub it with a brush and water. If you want to get fancy, you can pressure wash the deck, but that's not necessary if you keep it clean year round.

## Tile

If you have tile around your pool, I would just use a pumice stone for tile and concrete cleaning. Avoid using any chemicals to do this besides some white vinegar.

Remember, we want to use the least amount of chemicals as possible when it comes to pool care, even when we're cleaning.

When you use a pumice stone, make sure you constantly keep it wet while you're scrubbing the tile to avoid scratching.

## Heater

It's easy to keep your heater clean—just use it. Using your heater will keep the pipes clean and burn off any spider webs or nests that can build up inside.

## Ladders, Diving Boards & Slides

Your pool brush is a very ubiquitous tool. Use it to brush down your steps, ladders, diving boards and slides frequently to avoid any calcium build up or hard water staining.

## Railings

Remove the railings and use Naval Jelly or Coca-Cola to clean them. You can also use car wax to apply a layer of protection. You will only have to do this once a year if you keep your pool chemistry in check.

# Conclusion

Remember, a clean pool is a happy pool, and clean pools are more enticing to swim in. If you neglect your pool and it's perpetually dirty, you can bet your sorry ass that no one will want to swim in it, or at the very least, you'll be forced to do some last-minute spot vacuuming. This causes stress and will lead you to neglect your pool even more. It's a vicious cycle so don't go there.



## So let's recap:

1. Skim your water surface daily.
2. Brush your pool at least twice a week.
3. Vacuum your pool every other day (if needed). Or, better yet, keep your automatic cleaner going whenever the pool is not in use and the filter is on.
4. Brush and rinse the pool deck, steps, ladders, diving boards and slides weekly.
5. Keep the filter and pool area free and clear of debris.

With proper cleaning, circulation, and chemistry, you won't have any issues, and you'll enjoy using your pool a lot more.



Swimming Pool 3-D Chalk Art by Joe Hill

# CHEMISTRY

*The water in a vessel is sparkling; the water in the sea is dark.  
The small truth has words which are clear; the great truth has  
great silence.*

**- Rabindranath Tagore**



There are two basic elements to pool chemistry—water balance and sanitation. If you master these two things, then pool chemistry will be very easy for you.

This is the area of pool care that people have the most trouble with. With that said, I want you to remember my declaration to Zen Pool Care in the Introduction—keep it simple. That's what we'll do in this chapter.

# Water Source

First, I want to talk about the water that comes from your hose. It's important to know which type of water source you have—city water or well water.

## City Water Vs. Well Water

Depending on where you live and what type of water system you have, your water make-up can be vastly different. For instance, where I live, we have city water.

**City water** is provided by your city or town. It's plumbed directly to your house from a main water supply.

**Well water** comes from a well in the ground that resides on your property.

The big difference between well and city water is that the chemical make-up of city water is controlled by a professional facility, and well water is controlled by you.

Well water tends to have more minerals, including copper and iron, which can be bad for your swimming pool. So with well water, there are a few extra steps in chemistry, but it's nothing to worry about.

# Common Pool Water Contaminants

Since most swimming pools are located outside, and we all live on planet Earth, we experience a lot of the same water contaminants in our pools. Some common ones include:

- Leaves from trees
- Insects
- Human sweat, make-up, lotions, oils, etc.
- Micro-organisms such as bacteria and algae
- Natural elements such as calcium, various metals, and nitrogen

It's important to know your surroundings. For instance, if you live in an area with a lot of bugs, you may have to do a little more work to keep bugs away from your pool, and clean it more often.

If your pool is surrounded by a lot of trees, you might have to deal with pollen in the spring and a whole lot of leaves throughout the year.

No matter what, there are things in the environment, and on the people that swim, that are going to affect your pool's chemistry and cleanliness. It's your job to assess your situation and plan accordingly.

# Supplies

Here are the ONLY chemicals you'll need to take care of your water. Anything else not mentioned here is not needed.

- **Test Strips or Test Kit**
- **pH Increaser** (soda ash) & **pH Decreaser** (Muriatic Acid or Sodium Bisulfate)
- **Alkalinity Increaser** (sodium bicarbonate or baking soda)
- **Calcium Hardness Increaser** (Calcium Chloride)
- **Sanitizer** (chlorine, bromine, minerals, biguanide, or salt)
- **Chlorine Stabilizer** (Cyanuric Acid) (if you use chlorine)

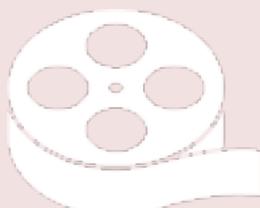


# Testing

It's important to learn how to test pool water, and do it at least once a week, to make sure the pH and alkalinity are balanced and keep your sanitizer level in check (i.e. chlorine at 3 ppm).

What most pool owners don't know, however, is there's a right and wrong way to test your water, no matter what type of testing you're doing. It all starts with the water sample.

## HOW TO PROPERLY TEST YOUR POOL WATER



You can [watch a full video on how to test pool water](#), or read below (or both).

## The Water Sample

To take a proper water sample, use a clean cup or bottle (with cap if you're taking it to the pool store), and hold it upside-down so the opening is facing the floor. Insert into the water elbow-deep, then turn it right side up to collect the sample.

**Do not take the sample near any return jets or the skimmer opening.** If possible, take the sample from the absolute middle of your pool.

Now you can take this sample to your pool store or check it yourself.

## Test Strips

This is my personal favorite. It's easy to do and very accurate.

1. Quickly drip one dry strip into your water.
2. Hold it still in the air for about 15 seconds (do not shake off the excess water).
3. Match up the colors of the strip to the back of the bottle to get your readings.



You really only need to check for pH, alkalinity and free chlorine. Use test strips at least once a week.

## Liquid Test Kit

There are advanced kits, but just stick with pH and chlorine. Phenol red is a red chemical you add to a small sample of water to check the pH. The redder the water, the higher the pH.

OTO is the chemical that tests for total chlorine. It's a yellow liquid you add to your sample. The more yellow, the more chlorine.



With a liquid test kit, it's hard to see the low end of the colors. **Make sure you use a white background to examine the colors to be accurate.**

# War

Taking care of your pool is a war, where bacteria is the enemy and chemistry is the boots on the ground. I didn't want to use a war analogy because this book is supposed to bring you peace, but this is the best and coolest way to explain how pool chemistry works.

**There are three factors in winning the war against bacteria:**

## **1. Effective Conditions (pH balance of the water)**



The offensive is more effective when the conditions are perfect. This is determined by the balance of the water. If your water is too acidic or too basic, the soldiers will have a harder time defending your pool against bacteria. It's your job to make sure conditions are perfect for battle, and that means keeping your pH balance in check.

## MINDFULNESS



The circulation of the water also contributes to ideal conditions. Hence, circulation is the first step in pool care.

## 2. Healthy and Trained Soldiers (sanitizer)



Now that the conditions are perfect, you can send in the troops for battle. The troops are your sanitizer, which includes your choice of chlorine, bromine, minerals, or biguanide.

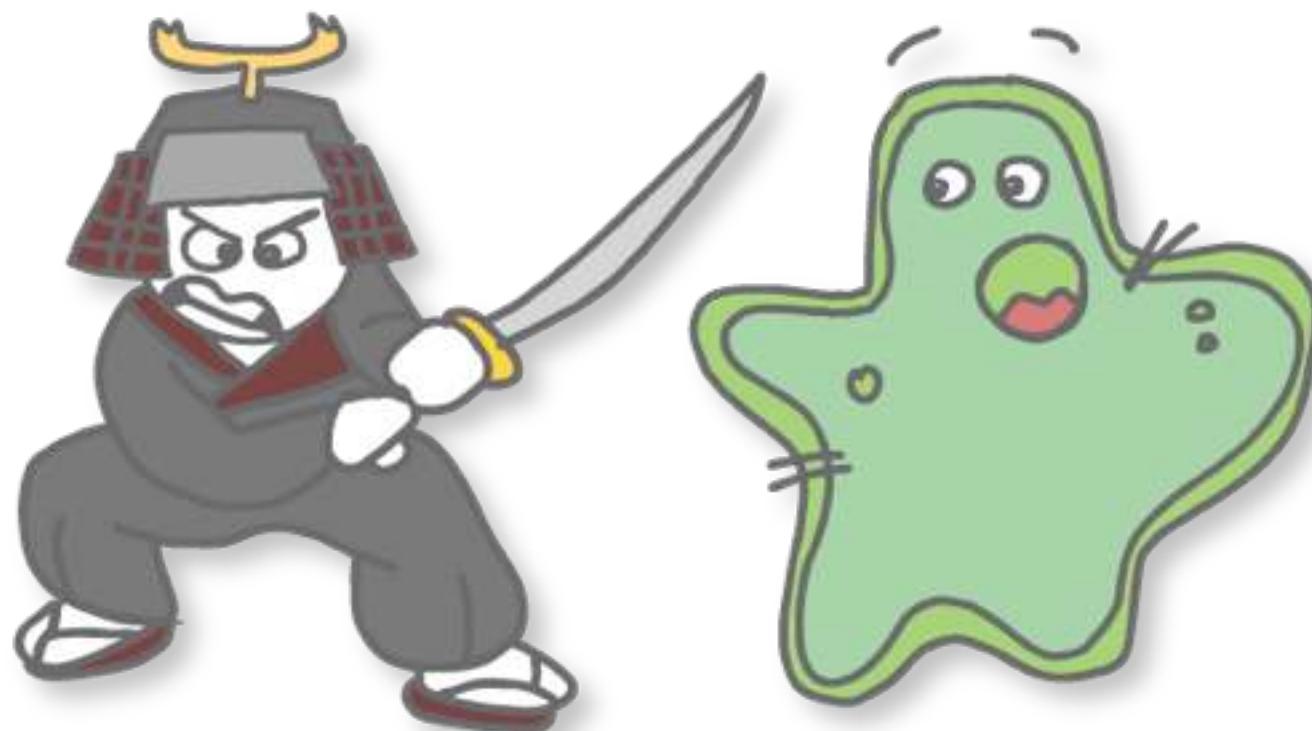
## MINDFULNESS



Cleaning like skimmer, vacuuming, and brushing, also helps your soldiers. You can think of these acts as air strikes. Cleaning both wipes out major areas that harbor the enemy and spreads them out for the sanitizers to easily destroy.

Each sanitizer kills bacteria differently, but they all need the best conditions to be the most effective. You can think of each little sanitizer particle as a soldier and each micro-organism in your pool as the enemy.

The soldiers kill the enemies and leave them on the battle field for the clean-up crew. This is where oxidation plays its part.



### 3. The Clean-Up Crew



Since your pool water houses an ongoing war between sanitizers and bacteria, you will need to send in The Clean-Up Crew once in a while to get rid of the fallen soldiers and bacteria.

Shocking your pool is the act of oxidation (we'll talk about this in more detail later), and it removes all of the fallen soldiers by turning them into gas.

#### MINDFULNESS

Your filtration system also helps clean up the battlefield.

Again, I want to point out that not all sanitizers work the same way, but this analogy will help you to understand the entire process as we move along in the details.

Without all of these elements of war, you won't have a clean pool. Without great conditions the soldiers can't fight. Without fighting soldiers, the clean-up crew has nothing to do, and that means there's nasty bacteria lurking in your water.

The War of Pool Care by Stephanie Halligan

# Balance

Your pool water is delicate, and in order to reach perfect pool harmony, it must be balanced.



Balancing your pool means keeping the pH of the water between 7.4 and 7.6, which is slightly above neutral on the pH scale.

There are three main ingredients to keeping this balanced—pH, alkalinity, and calcium hardness.

## pH

- **Proper Level:** 7.4 to 7.6
- **Add Directly to the Water**

pH is naturally unstable in water. Rainwater, swimmers, and just about anything that enters the water can affect the pH level. When pH is low, it means your water is acidic. When it's high, your water is basic.



To give you an idea of how pH works, our tears are pH neutral. If they had a low pH, it would burn when we cried. And if the pH was high, it would dry out our eyes.

Always keep a good supply of pH Increaser on hand because this reading can change frequently.

<b>INCREASE pH WITH SODA ASH</b>							
	<b>GALLONS IN POOL</b>						
<b>pH</b>	<b>1,000</b>	<b>5,000</b>	<b>10,000</b>	<b>15,000</b>	<b>20,000</b>	<b>25,000</b>	<b>50,000</b>
<b>7.2 - 7.4</b>	2/3 oz.	3 oz.	6 oz.	9 oz.	12 oz.	1 lb.	2 lbs.
<b>7.0 - 7.2</b>	3/4 oz.	4 oz.	8 oz.	12 oz.	1 lb.	1 1/4 lbs.	2 1/2 lbs.
<b>6.6 - 7.0</b>	1 1/4 oz.	6 oz.	12 oz.	1 lb.	1 1/2 lbs.	2 lbs.	4 lbs.
<b>Under 6.6</b>	1 1/2 oz.	8 oz.	1 lb.	1 1/2 lbs.	2 lbs.	1 1/2 lbs.	5 lbs.

<b>DECREASE pH WITH MURIATIC ACID</b>							
	<b>GALLONS IN POOL</b>						
<b>pH</b>	<b>1,000</b>	<b>5,000</b>	<b>10,000</b>	<b>15,000</b>	<b>20,000</b>	<b>25,000</b>	<b>50,000</b>
<b>7.6 - 7.8</b>	1 1/4 oz.	6 oz.	12 oz.	18 oz.	24 oz.	1 qt.	2 qts.
<b>7.8 - 8.0</b>	1 1/2 oz.	8 oz.	16 oz.	24 oz.	1 qt.	1 1/4 qts.	2 1/2 qts.
<b>8.0 - 8.4</b>	2 1/2 oz.	12 oz.	24 oz.	1 1/4 qts.	1 1/2 qts.	2 qts.	1 gal.
<b>Over 8.4</b>	3 oz.	16 oz.	1 qt.	1 1/4 qts.	2 qts.	2 1/2 qts.	1 1/4 gal.

# DECREASE pH WITH SODIUM BISULFATE

	GALLONS IN POOL						
pH	1,000	5,000	10,000	15,000	20,000	25,000	50,000
<b>7.6 - 7.8</b>	0.10 lbs.	0.5 lbs.	1 lb.	1.5 lbs.	2.0 lbs.	2.7 lbs.	5.3 lbs.
<b>7.8 - 8.0</b>	0.12 lbs.	0.66 lbs.	1.33 lbs.	2.0 lbs.	2.7 lbs.	3.3 lbs.	6.6 lbs.
<b>8.0 - 8.4</b>	0.21 lbs.	1 lb.	2 lbs.	3.3 lbs.	4 lbs.	5.3 lbs.	10.6 lbs.
<b>Over 8.4</b>	0.25 lbs.	1.33 lbs.	2.66 lbs.	4.0 lbs.	5.3 lbs.	6.6 lbs.	13.3 lbs.

## Alkalinity

- **Proper Level:** 100 - 150 ppm
- **Add Directly to the Water**

Alkalinity is a pH buffer, meaning it helps to keep the pH from changing drastically by absorbing major changes to the water before it affects the pH.



It's also a good idea to keep a hefty supply of alkalinity increaser on hand since this reading can fluctuate.

## INCREASE ALKALINITY WITH SODIUM BICARBONATE

(ppm)	GALLONS IN POOL						
	1,000	5,000	10,000	15,000	20,000	25,000	50,000
10	2 1/4 oz.	0.7 lbs.	1.4 lbs.	2.1 lbs.	2.8 lbs.	3.5 lbs.	7 lbs.
20	4 1/2 oz.	1.4 lbs.	2.8 lbs.	4.2 lbs.	5.6 lbs.	7 lbs.	14 lbs.
30	6 3/4 oz.	2.1 lbs.	4.2 lbs.	6.3 lbs.	8.4 lbs.	10.5 lbs.	21 lbs.
40	1/2 lbs.	2.8 lbs.	5.6 lbs.	8.4 lbs.	11.2 lbs.	14 lbs.	28 lbs.
50	3/4 lbs.	3.5 lbs.	7 lbs.	10.5 lbs.	14 lbs.	17.5 lbs.	35 lbs.

Baking soda will also raise the alkalinity and pH of your pool.

## Calcium Hardness

- **Proper Calcium Hardness**

**Level:** 175 to 225 ppm and 200 to 275 ppm for concrete pools.

- **Pre-Dissolve Before Adding**

Adding calcium hardness to your water will help protect your pool walls and equipment.



### MINDFULNESS



Calcium hardness should only be added once in the beginning of the season. If the calcium in your water is too high, you will have to dilute the water.

## INCREASE HARDNESS WITH CALCIUM CHLORIDE

(ppm)	GALLONS IN POOL						
	1,000	5,000	10,000	15,000	20,000	25,000	50,000
10	2 oz.	10 oz	1 1/4 lbs.	1 3/4 lbs.	2 1/2 lbs.	3 3/4 lbs.	6 1/4 lbs.
20	4 oz.	1 1/4 lbs.	2 1/2 lbs.	3 3/4 lbs.	5 lbs.	6 1/4 lbs.	12 1/2 lbs.
30	6 oz.	1 3/4 lbs.	3 3/4 lbs.	5 1/2 lbs.	7 1/2 lbs.	9 1/2 lbs.	18 3/4 lbs.
40	8 oz.	2 1/2 lbs.	5 lbs.	7 1/2 lbs.	10 lbs.	12 1/2 lbs.	25 lbs.
50	10 oz.	3 lbs.	6 1/4 lbs.	9 1/2 lbs.	12 1/2 lbs.	15 1/2 lbs.	31 1/4 lbs.

# How To Keep Your Water Balanced

It's important to keep your eye on your pH and alkalinity levels at least once a week by using a test kit or test strips.

You'll notice I didn't mention alkalinity decreaser. That's because it's not necessary.

- If your pH and alkalinity are low, alkalinity increaser will raise both. You may need to add a little pH increaser if the pH doesn't reach 7.4 – like fine tuning an instrument.
- If your pH and alkalinity are both high, pH decreaser will lower both.
- If just your alkalinity is high, your pH will also be high and you can use pH decreaser.

If your pool is properly balanced at all times, it will make your pool's sanitizer work more effectively.

# Sanitizer

The most common form of pool sanitizer is chlorine, but there are others you can use I'll run through each of them, including pros and cons, in this section.

## Chlorine

**Proper Chlorine Level:** 1 to 3 ppm



Chlorine is an extremely effective bacteria and algae killer, plus it's cost effective.

There are a few ways you can introduce chlorine into the pool water, including—chlorine tablets, granular chlorine, or powdered chlorine

Chlorine tablets are the most popular form. They come in 3-inch and 1-inch tablets and can be added to a floating chlorine dispenser, a chlorinator, or the skimmer basket(s) in your pool.

### MINDFULNESS



When buying chlorine make sure you look for Trichloro or Dichloro as an active ingredient. These types of chlorine products are stabilized. UV rays from the sun eat up chlorine, but if it's stabilized, it drastically slows down this process. We will talk more about chlorine stabilizer later.

# Bromine

**Proper Bromine Level:** 3 to 5 ppm

Bromine is chlorine's halogen cousin, and it's more commonly used in hot tubs and indoor pools because it doesn't give off that "chlorine" smell.



Bromine works a little differently than chlorine, and it's not as effective when dealing with certain types of algae. It's not recommended for outdoor pools in direct sunlight. Sunlight eats up bromine very fast because it's unstabilized.

# Biguanide

**Proper Biguanide Level:** 30 to 50 ppm

This is a chlorine alternative. It's an effective sanitizer for swimming pools and even makes the water feel smoother.

Sanitizers like Baquacil and SoftSwim are part of a total chemical package and should not be mixed with standard pool chemicals. You must stick with all the pool chemicals offered by these brands, including shock and algaecide.



These chemical packages are more expensive than traditional chlorine-compatible chemicals, and they come in liquid form.

# Minerals

**Proper Chlorine Level:** 0.5 ppm

Silver and copper minerals are introduced to the water by an mineral system that resembles a chlorinator. These minerals work to sanitize the water, but they are much slower than chlorine.

A mineral system is NOT a complete chlorine alternative—chlorine is still required, but only a small amount as backup.



# Salt System

**Proper Chlorine Level:** 3.0 ppm



In a chlorine swimming pool, the main business is hypochlorous acid (HClO). This molecule is what makes your pool swimmable and free of contaminants.

Salt water pools make hypochlorous acid (HClO) by using table salt or sodium chloride (NaCl) and electrolysis. The salt water passes through an electric current creating chlorine gas (Cl<sub>2</sub>), but you're also forming hydrogen gas (H<sub>2</sub>) and sodium hydroxide (NaOH). These form together to create hypochlorous acid (HClO) and sodium chloride.

It's important to understand how pool sanitation works so you can decide which type you'd like to use for your pool.

Salt water pools are a great and easy alternative to standard chlorine pools. It frees you up from handling chlorine tablets or granular chlorine. It also makes it a bit less expensive in the long run since salt is cheaper than pool chlorine.

With that said, chlorine is a great weapon against other harmful contaminants in your pool, and I recommend that you keep a safe level in your water at all times (3 ppm).

## **How to Properly Add Chlorine & Bromine Tablets to Your Pool**

My friend recently purchased his first home, and lucky for him, it came with a very large inground pool and a hot tub. Of course, when it came time to start his pool up, I was the first person he called.

His question was, "How do I add chlorine to my pool?" He was confused about whether to use a chlorine floater or add chlorine tablets to the skimmer baskets. He went online to find an answer but came up short.

Fear not, fellow pool owners! I have a definitive answer for you below.

## Floating Chlorine Dispenser vs. Adding Chlorine to Your Skimmer

First, I would stay away from using a floating chlorine dispenser (floater). If you have a vinyl liner, a floater could get hung up near a wall and dissolve chlorine in one area, which will bleach the liner. Also, floaters do not add chlorine to your water effectively because water does not pass through and evenly dispense the chlorine.

However, if using a floater or adding chlorine tablets to your skimmer baskets are your only two choices, I recommend adding tablets to your skimmer baskets.

Why? When your filter is running, the water will move quickly over the tablets dissolving them properly and push chlorinated water into your pool through the return jets, allowing the chlorine to spread throughout the pool.

### MINDFULNESS



Keep in mind, when the filter is not running , the tablets will still dissolve in the skimmer basket. This creates a very high concentration of chlorinated water in that specific area, which can be highly corrosive to your equipment.

If you plan on adding tablets to your skimmer baskets, every time you turn off the pump, remove the chlorine so you don't damage your pool equipment. Or, you can invest in a variable-speed pump that will allow you to run your filter system 24/7 without costing you a fortune in electricity.

## An Automatic Chlorinator is Your Best Bet

Your best bet is investing in an automatic chlorinator. Using one will keep your liner safe from bleaching. It will also reduce the frequency of adding chlorine. Chlorinators allow you to add a large amount of chlorine at one time and regulate the output.

I would avoid chlorine granules altogether. Granules are extremely time-consuming, and again, you risk bleaching your liner.

If you don't have a liner, any of these methods will be just fine, but the most effective methods are adding chlorine tablets to your skimmer baskets or investing in a chlorinator.



# How Much Chlorine Should You Add to Your Pool?

One 3-inch chlorine tablet works for 5,000 gallons of water. For instance, if you own a 20,000-gallon pool, add four tablets to your skimmer basket(s). Always round up! If you own a 16,000-gallon pool, you would round up to four tablets.

If you have a chlorinator, however, this doesn't matter — you just fill that bad boy up as much as it will hold and control the amount of chlorine that's added using the dial on the unit.



## ENLIGHTENMENT

I recommend using 3-inch chlorine tablets over 1-inch tablets because they are much easier to handle and often cost less because they are the popular choice among pool owners.



## MINDFULNESS

You will need to play around with it until you find the correct setting for your pool. I recommend you start low and keep increasing until your pool maintains a 1 to 3 ppm (part per million) chlorine reading. Use test strips to check this.

My friend decided to add chlorine tablets to his skimmer baskets. His pool is a mighty 40,000-gallons with two skimmers. He uses four chlorine tablets per skimmer, and with a brand-new liner, has not had any problems with bleaching.

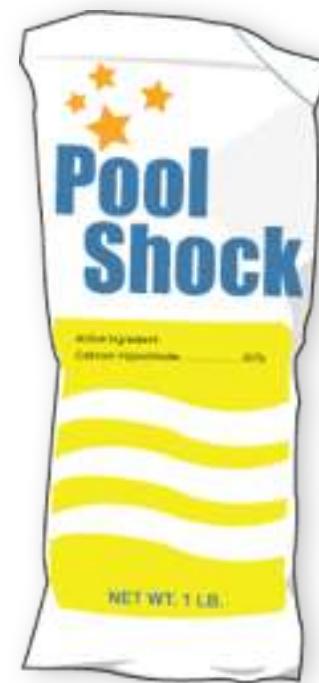
# Shocking

Shocking your pool is another term for oxidation.

When a chlorine particle attacks and kills bacteria or another organic material in your water, it forms a chloramine. That's a fancy term for chlorine that doesn't kill anymore. This particle just floats around in your water until it can be oxidized and broken apart.

In order to oxidize these chloramines, you must "shock" the water by adding enough chlorine to reach breakpoint oxidation.

I personally recommend using calcium hypochlorite pool shock at least once a week. Another option is or non-chlorine shock including Potassium Monopersulfate



## What is Breakpoint Oxidation?

To reach breakpoint oxidation, the chlorine reading must be 10 ppm over your combined chlorine reading.

Your chlorine has two readings: free chlorine (FC) and combined chlorine (CC). Free chlorine refers to the chlorine that is free and available to kill. Combined chlorine refers to those chloramines we just talked about.

## MINDFULNESS



Pool shock products are made with unstabilized chlorine or no chlorine at all. They will go in, do their job, and get eaten up by the sun's UV rays very fast. So always shock your pool at night or dusk and let it work overnight for eight hours (with the pump running).

You should shock your pool every week with the correct amount of shock, but what is shock?

***Shock Treatment – The addition of an oxidizing compound or a mixture of oxidizing compounds to the water to destroy chloramines and other undesirable compounds.***

*– Bioguard*

When you add chlorine to your pool, the chlorine molecules attach themselves to bacteria and other unwanted material. This forms a chloramine. Chloramines are essentially dead chlorine. They do nothing, and you should get rid of them – this is where shock comes in.

Shock oxidizes the chloramines, which turns it into a gas. When you smell chlorine, you are smelling chlorine that is NOT in the water—it's oxidized.

Now that I've told you WHY you should shock your pool, let's talk about HOW to shock your pool.

# Four Types of Pool Shock

There are four types of pool shock on the market today. It's important to understand the difference between them because they all work differently.

## Calcium Hypochlorite

This is the most popular chlorine pool shock. It contains about 65% available chlorine and is the cheapest choice. When adding to the water, you must first pre-dissolve each pound in a 5-gallon bucket of water to prevent bleaching. Pre-dissolving is necessary because this type of shock is slow dissolving, so it will not completely dissolve before it hits the bottom of the your pool. Once added, you will need to wait eight hours before swimming.

- 65% chlorine
- Pre-dissolve required
- Eight-hour wait time
- Adds calcium to the water
- Always add at night

## Lithium Hypochlorite

Since this shock contains no calcium, it is commonly used in areas that have a high amount of calcium in the water. It contains about 35% available chlorine and is more expensive than calcium hypochlorite. The one positive is you don't have to pre-dissolve this type of shock, but you still need to wait eight hours before swimming.

- 35% chlorine
- No pre-dissolve
- Eight-hour wait time
- Always add at night

## Di-Chlor (Grandular Chlorine)

Grandular chlorine is simply 60% chlorine, that you can pour it directly into the water. You will need to wait eight hours before swimming again, but, there is no need to pre-dissolve. It contains cyanuric acid (chlorine stabilizer) that protects the chlorine from being burned off by the sun. It's more expensive than calcium hypochlorite, but you can use it for regular chlorine dosages and shock treatments.

- 60% chlorine
- No pre-dissolve
- Eight-hour wait time

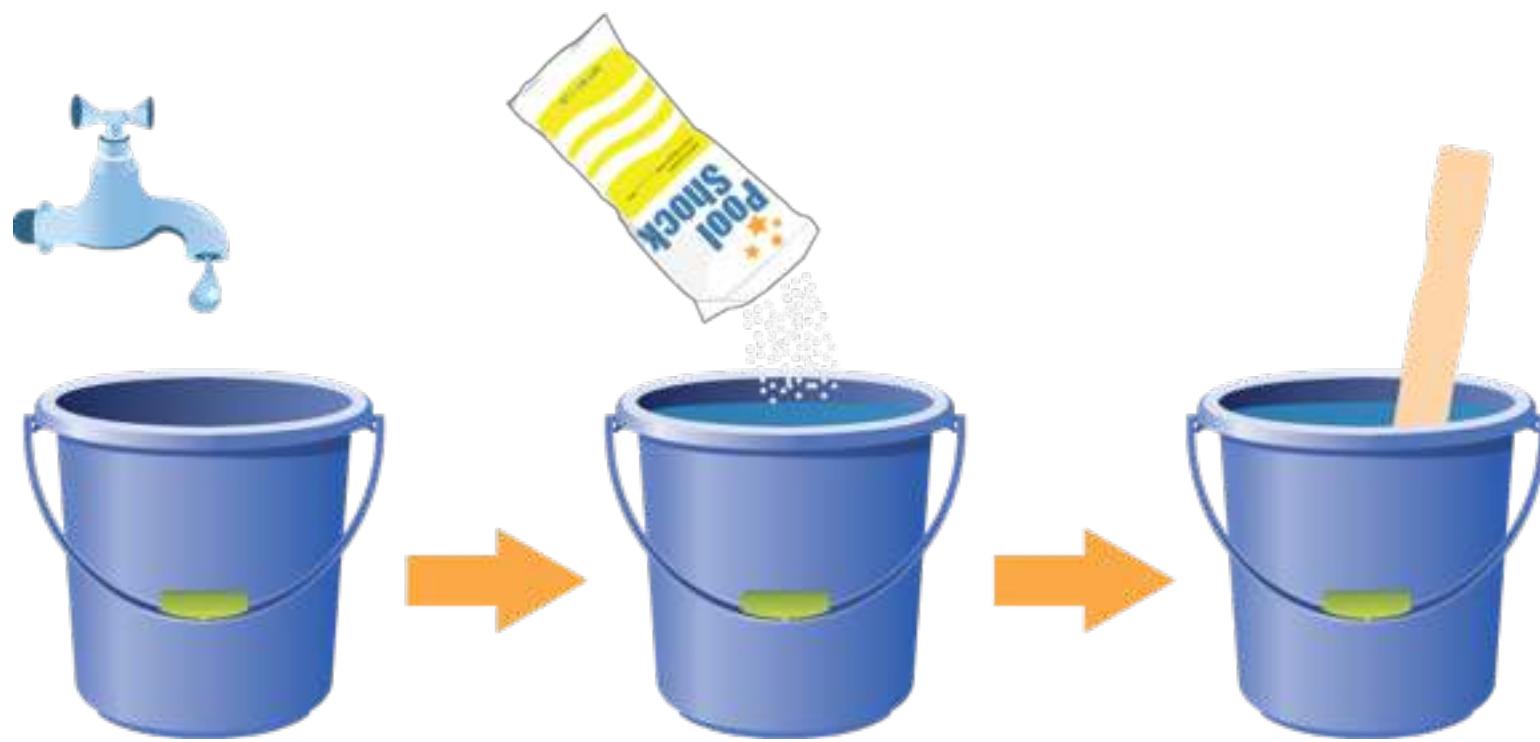
- Adds cyanuric acid to the water
- Add at night

## Potassium Peroxymonosulfate (non-chlorine shock)

Non-chlorine shock is typically used in bromine pools, but you can use it in chlorine pools as well. You do not need to pre-dissolve, and it only takes 15 minutes before you can swim again. However, this type of shock can be very expensive.

- No chlorine
- No pre-dissolve
- 15-minute wait time
- Add anytime

# How to Shock a Pool

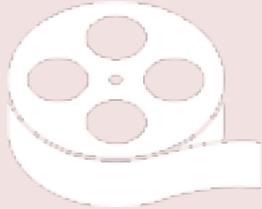


1. Always wear gloves and protective goggles.
2. Add 1 pound of shock to a 5-gallon bucket of water about 3/4 full.
3. Always add shock to water—not water to shock.
4. Wear clothes you don't care about – they might get bleached.
5. Warm water dissolves shock faster than cold.
6. DO NOT add shock directly to your skimmer!
7. Use a wooden stick and slowly stir in the shock making sure it dissolves completely, or as much as possible.
8. Slowly pour the bucket of pre-dissolved shock around your pool. If you find you have some undissolved shock at the bottom of your bucket, just dip into your pool water again and give it a slow swish

around. Pour it back into the pool to help dissolve some of that shock.

9. DO NOT mix all the bags together in one bucket. one bag at a time is ideal.
10. Always shock at dusk or nighttime. The chlorine works better when it's not being burned off by the sun.
11. Add shock every week to ensure a clean and algae-free pool.

## HOW TO SHOCK A POOL



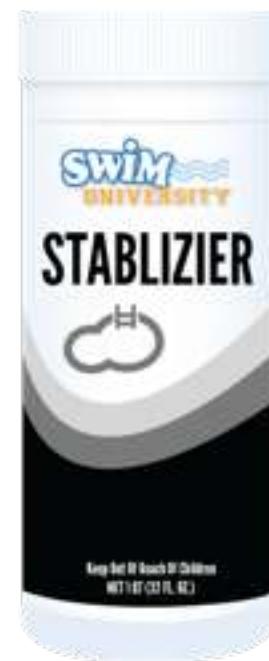
You can [watch a full video on how shock a swimming pool here.](#)

# Cyanuric Acid

Cyanuric acid, otherwise known as chlorine stabilizer or conditioner, is what protects your chlorine from being eaten away by the sun's ultraviolet rays. The sun can eat up to 1 ppm (part per million) of chlorine every hour if it's not protected.

Most chlorine that you find in tablet, stick, or granular form cyanuric acid as an ingredient, which is why you only need to add it at the beginning of the year.

After that, every time you add chlorine to your pool, you'll be keeping your levels of cyanuric acid in check. Be sure to keep an eye on these readings throughout the year. It should stay at around 40 PPM.



## ENLIGHTENMENT

Chlorine tablets, sticks, and granular are known as Cyanurates, which basically means they contain cyanuric acid as an ingredient. When you're buying chlorine, look out for chlorine made with calcium hypochlorite. Calcium hypochlorite is the active ingredient in chlorine-based shock, and it does not contain cyanuric acid.

## Testing For Cyanuric Acid

You can buy test strips that include cyanuric acid readings on them or you can buy a separate liquid test kit, although these can be inexpensive. Since you really don't have to keep a close eye on these readings, it's best to just take a sample of your water to your local pool store that offers free water testing. Have them check it there every once in a while.

## When Should You Add Cyanuric Acid?

Because most chlorine contains small amounts of cyanuric acid, you generally only have to add it once at the beginning of the year to. Once you have a good base of cyanuric acid in your pool, each time you add chlorine, it should keep it regulated throughout the year. However, if you have to drain a large amount water out of your pool for any reason, you may need to add more cyanuric acid to bring your levels back to normal.

## How To Add Cyanuric Acid

Cyanuric acid can be tricky to add to your swimming pool. Some chemical companies will tell you to dissolve it in a bucket of water. Other companies will tell you to add it directly to the pool. Keep in mind that cyanuric acid dissolves very slowly. I would recommend dissolving it in a bucket of water, no matter what the instructions say on the container. Cyanuric acid is in fact, an ACID, so adding it straight to your pool and having those slow-dissolving acidic granules sitting on your liner is not really a great idea.

## MINDFULNESS



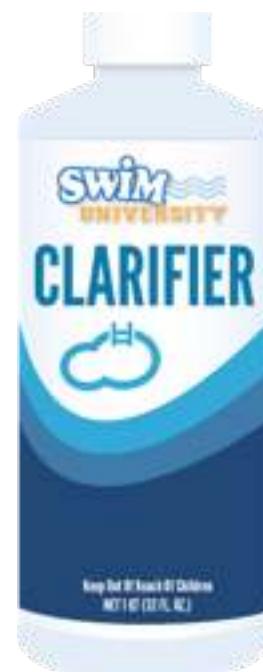
Whatever you decide, do not add cyanuric acid through the skimmer and through the filter. In fact, don't add any chemicals that way!

Cyanuric acid is a very important chemical when it comes to good pool care. It allows you to maintain a healthy chlorine reading without constantly adding chlorine to your pool. Those hot summer days can really wreak havoc on your pool's chlorine reading. Be sure to keep your levels in check all season long.

# Clarifier

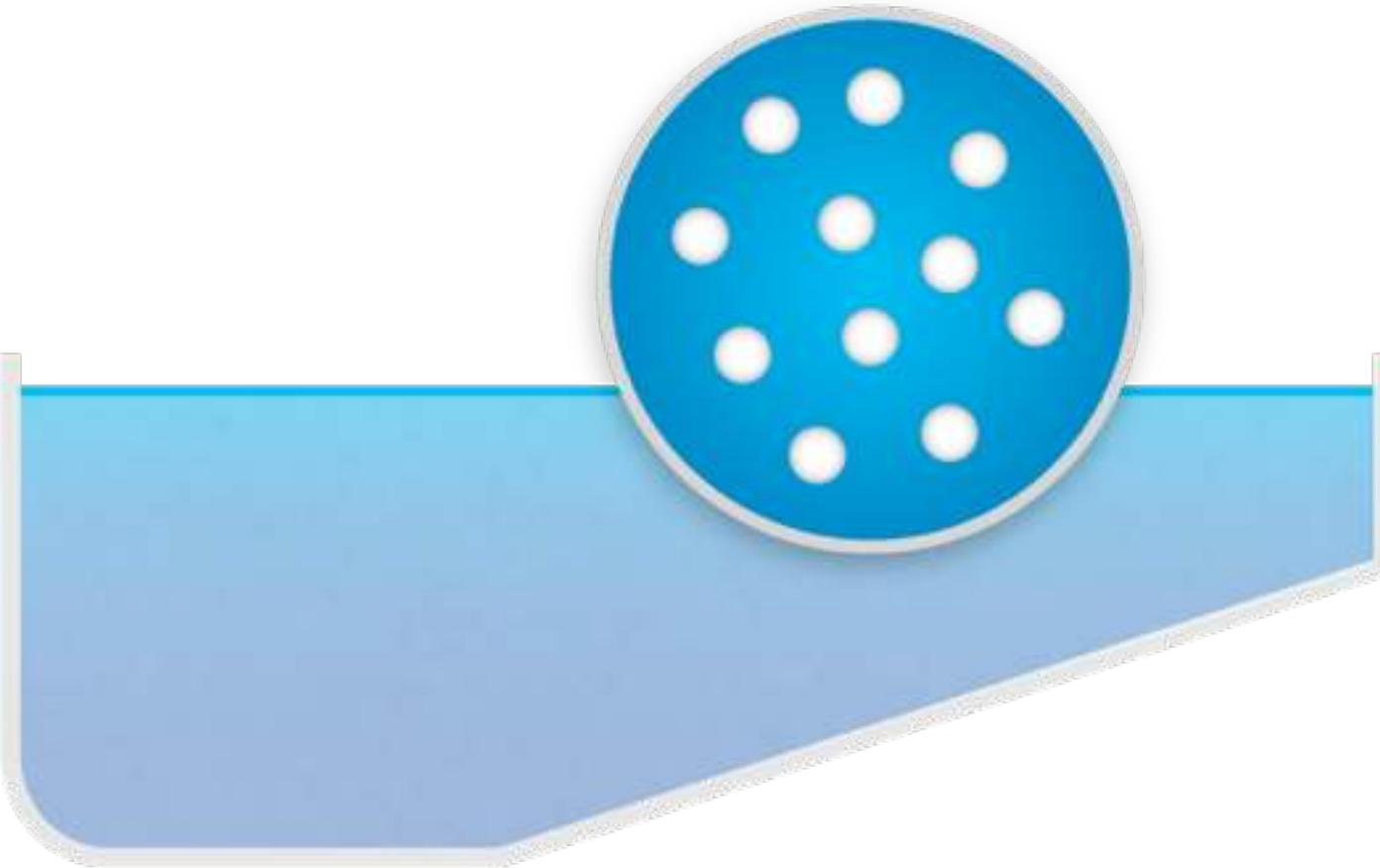
Clarifiers help your pool filter pick up those tiny particles that are making your water cloudy. They do this by coagulation. A clarifier takes those tiny particles and brings them together to form bigger particles that are easier for your filter to catch.

Since it helps your pool filter do its job, you need your pool filter to be running. If you have a cloudy pool, use a clarifier, then run your filter system 24 hours a day until your pool is clear.

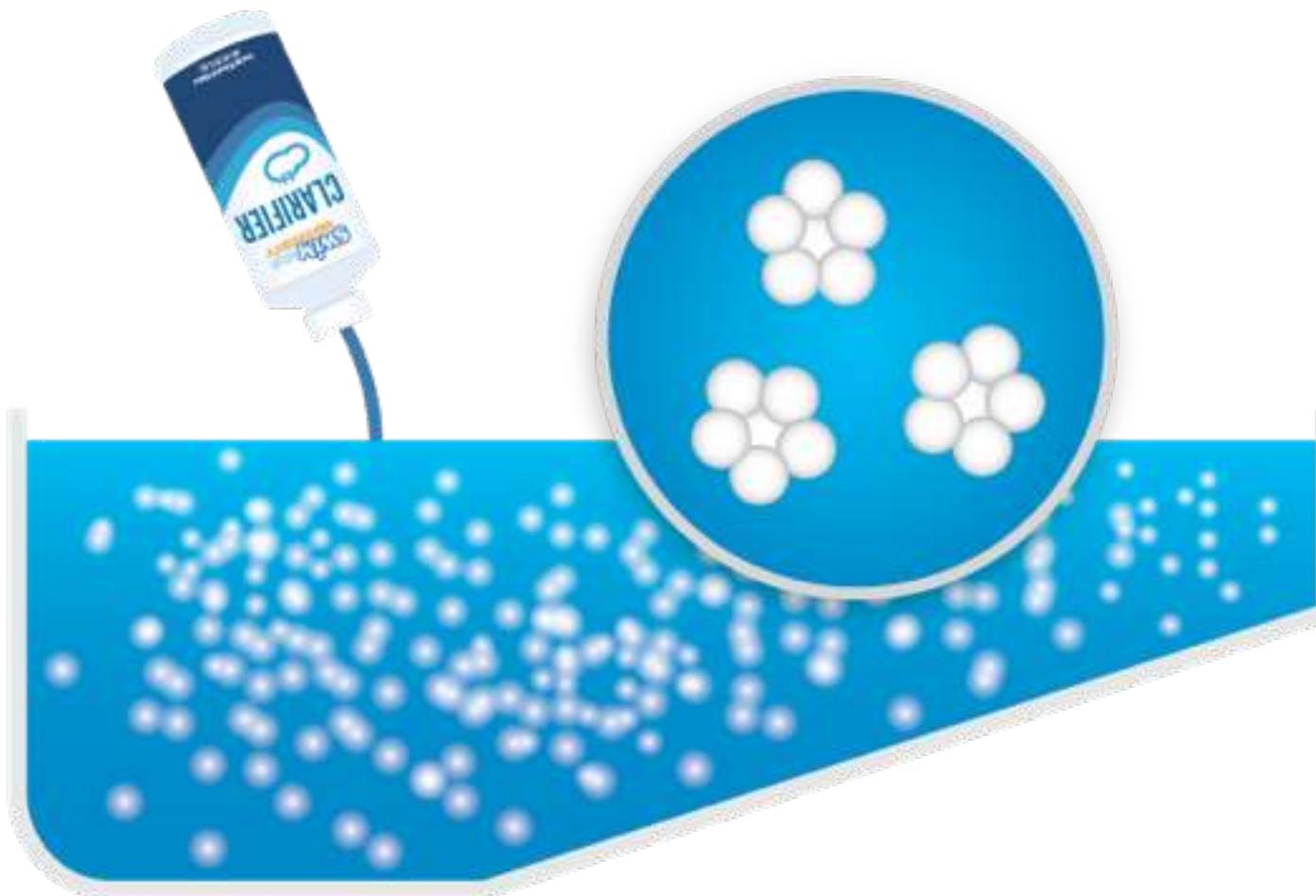


**Here are some tips to help clear your pool more efficiently:**

1. Turn your main drains on—allow the pool water from the bottom to get into your filter.
2. If you don't have a main drain, use your manual vacuum. Hook it up and leave it turned upside down at the bottom of your pool.
3. Swimming helps kick up the particles off the bottom of the pool so that your skimmer can capture the cloudy water.
4. If you have a sand filter, you can buy a filter enhancer, which allows sand filters to act like D.E. (Diatomaceous Earth) filters. I recommend using Bioguard's Sparkle Up. If you can't find it, you can pour a cup of D.E. into your skimmer and it will lay on top of your sand, which increases your pool's efficiency.



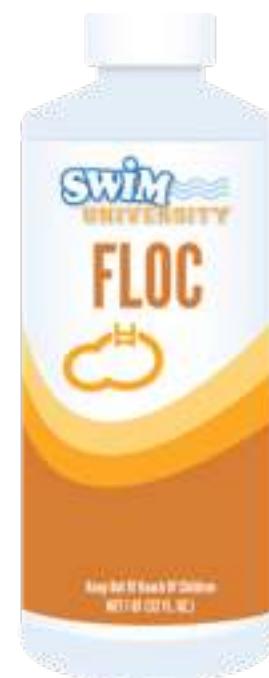
## Before Adding Clarifier



## Clarifier Coagulates Particles

# Floc

If all else fails and your pool is still cloudy, use Floc. Floc takes all those particles that are making your water cloudy and sinks them to the bottom of your pool. It acts fast, but YOU have to vacuum up the results.



Add the floc directly to the pool water and let your pool run for 2 hours. If you have a sand filter with a multi-port valve, turn it to recirculate during this time.

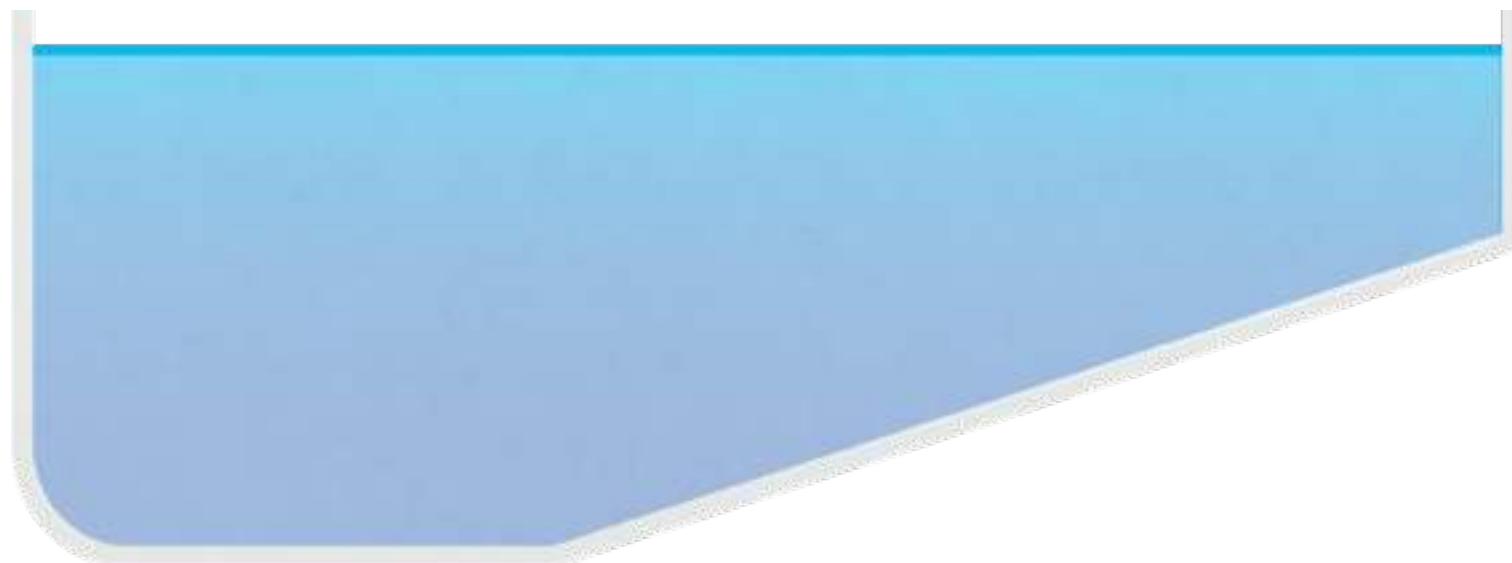
After the pool runs for those 2 hours and the chemical has a chance mix into the water, turn off the pool filter—completely still for the next 8 hours. Make sure you don't have a timer set; the pool must sit still for 8 hours. I would recommend doing this overnight.

The next morning, you will wake up and see a cloud at the bottom of your swimming pool.

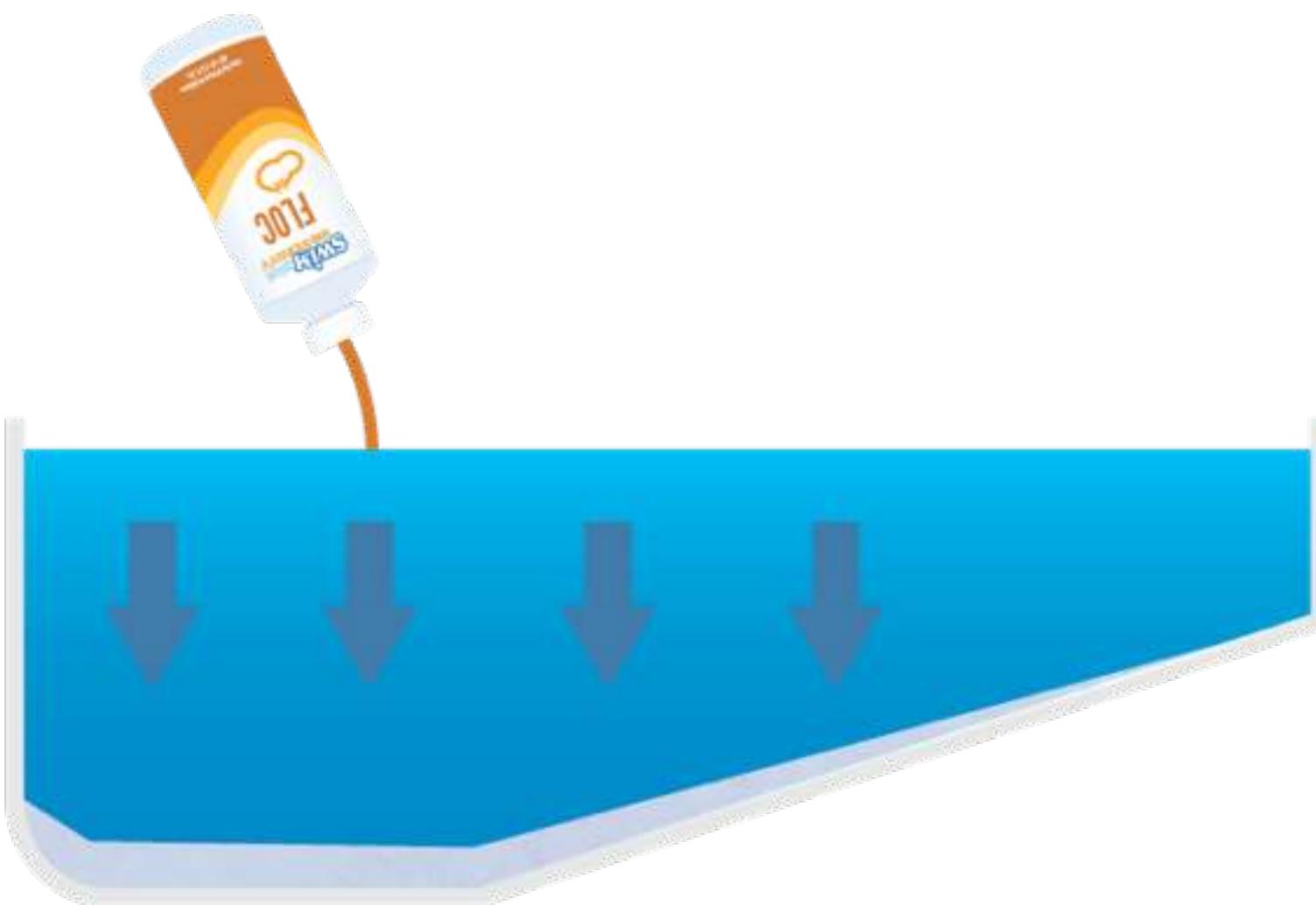
Your job now is to get that cloud out of your pool. To do that, you need to hook up your manual vacuum. You cannot use an automatic cleaner for this job. Also, you need to vacuum your pool to waste, meaning you'll be vacuuming the water OUT of your pool. Keep a garden hose running into your pool to keep filling it with fresh water while you vacuum.

It may take a couple of times vacuuming. If your pool completely clouds up from moving the vacuum around, take a break and allow the particles

to settle back to the bottom before continuing to vacuum. It takes some time, but you will end up with a sparkling clean pool.



## Before Adding Floc



## Floc sinks particles to the floor

## When To Use A Clarifier or Floc

The big difference between these two pool clearing methods is time. If you want your pool clear for a pool party you're throwing soon, we suggest floccing. It's fast, but it's work (elbow grease).

If you just opened your pool, or it's just a little cloudy and you don't mind swimming in cloudy water (perfectly safe BTW), then you can use a clarifier.

Clarifiers take time to work, but they are a LOT less work (elbow grease) on your part. Also, since you don't have to vacuum your pool to "waste," you will also save money on replenishing chemicals,...oh, and water.

Now that you know the difference between the two, next time your water is cloudy, you will have the knowledge to choose which method is right for you.

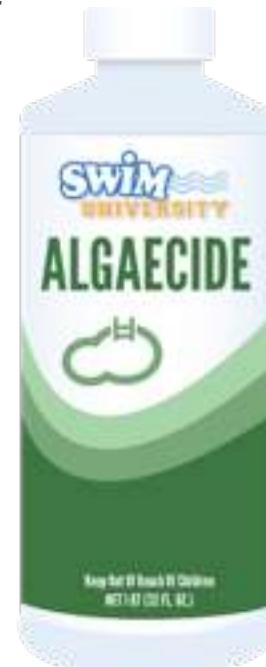
# Other Chemicals

If you only used pH adjusters, alkalinity increases, calcium, and a sanitizer, you could keep a clean and healthy pool all year long. However, there are a few more products you should be familiar with.

## Algaecide

Algaecide is a algae preventative. Use algaecide as a backup. If your chlorine levels dip down, and you don't catch it in time, the algaecide will keep the algae at bay until you can get the chlorine back up.

If you're currently having an algae problem in your pool, algaecide may not be your best option.



## Stain and Scale Remover (Metal Remover)

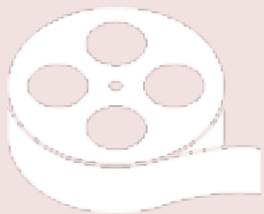
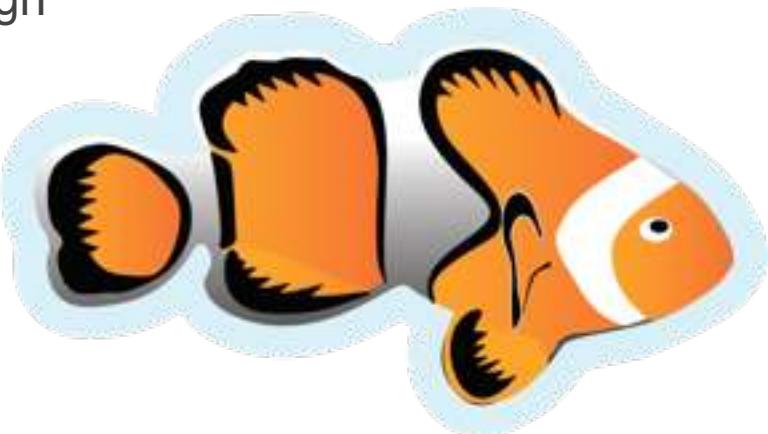
If you have metals in your water, like copper and iron, you can use a metal remover or stain and scale remover to keep those metals in a solution so that your filter can filter them out.

If metals come out of solution form, they can attach themselves to the walls and other parts of your pool and produce unsightly stains.



## Liquid Solar Pool Covers

I'm a big fan of these, even though they are technically an additional chemical. However, they won't affect your water chemistry, and they're much easier to use than a solar cover.



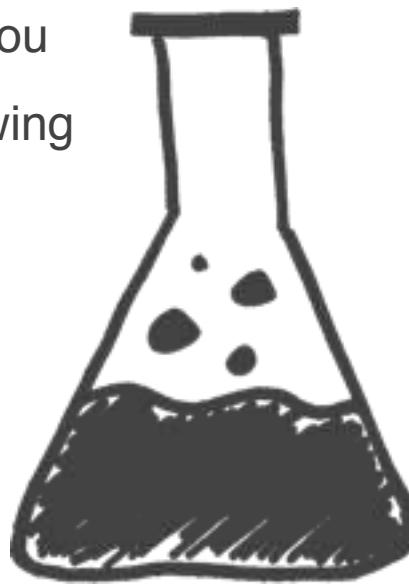
### DO LIQUID POOL COVERS REALLY WORK?

You can [watch a full video](#) experiment on liquid solar covers here.

# Conclusion

To maintain a safe and healthy swimming pool, you need to keep your pool chemicals at the following levels:

- **pH:** 7.4 to 7.6
- **Alkalinity:** 100 to 150 ppm
- **Calcium Hardness:** 175 to 225 ppm and 225 to 275 ppm for plaster pools
- **For Chlorine or Salt Water Pools:** chlorine at 1 to 3 ppm (I recommend you keep it at 3 ppm)
- **For Bromine Pools:** 3 to 5 ppm
- **For Biguanide Pools:** 30 to 50 ppm
- **For Mineral System Pools:** 0.5 ppm of chlorine



Make sure to practice good pool circulation and filtering, and keep your pool clean by brushing, vacuuming, and skimming frequently.



Backyard Oasis: The Swimming Pool in Southern California Photography, 1945-1982

# OPENING & CLOSING

*Don't be a fish; be a frog. Swim in the water and jump when you hit ground.*

- Kim Young-ha



If you live in an area that has seasons, chances are you'll be opening and closing your pool.

I will start by saying that opening is the easiest of the two, but with the following sections, you'll be a pro at both.

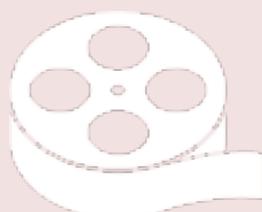
The goal here is to give you a series of simple steps, for both above ground and inground pools, to close it down and open it back up every year without any issues.

# How to Open an Inground Pool in 10 Steps

Are you ready to open your inground pool by yourself this year? Have no fear, it's easier than you think.

Opening your own swimming pool it will save you time and money, because you won't have to hire someone to do it for you. Sure you could hire a pool service to do it, but it is expensive, you may not get to choose when to open your pool, and most importantly, you'll miss out on the pride of pool ownership.

## HOW TO OPEN AN INGROUND POOL



[Click here](#) to watch my very first video where I explain how to open an inground pool with comedy.

Here is a very basic set of instructions. If you follow these 10 steps to open your pool, you'll be thanking the gods you didn't pay anyone, and you'll be swimming sooner!

## TOOLS



- Pool cover pump
- Winter cover cleaner
- Start-up chemical kit
- A friend

## 1. Remove Water and Debris From Your Winter Pool Cover

Remove all water, leaves, and debris from your cover. To remove the water, you can use a submersible pool cover pump.

Removing the debris can be tricky. Once the water is off the cover, you can use a broom to sweep off any large piles of debris. DO NOT use anything sharp or harsh on your cover.



### ENLIGHTENMENT

Once the water is removed, you could wait a day or two for the cover to dry and then blow the debris off with a leaf blower.

## 2. Remove Your Winter Pool Cover

Carefully remove the cover without getting any debris that remains on the top of the cover into the pool. If dirty water and debris do end up falling into the water, it's not a big deal. You will remove it from the water later.

## 3. Clean Your Winter Pool Cover and Store

Lay the cover out on your lawn or a nearby area. Use water, soap, and a soft brush to wash your cover. You can use a winter cover cleaner, and some cover cleaners will even allow you to store the cover wet.



## ENLIGHTENMENT

Invest in a heavy-duty plastic container with a lid to store your cover. This will extend the life of your cover by preventing bugs and rodents from eating or making a nest in your cover.



## MINDFULNESS

If you're using water tubes to secure your pool cover, make sure you empty and dry them out before storing.

## 4. Remove Winter Plug(s) and Skimmer Ice Compensator(s)

Walk around your pool and make sure all winter plugs are removed from any openings in your pool, including return jets and step jets. Replace with the proper eyeball or jet fittings.

## MINDFULNESS



If bubbles rise from the return or step jets when you remove the plugs, this is a sign that the lines (pipes) were properly blown out during winterization (pool closing).

Next, remove the ice compensator(s), also called a “gizmo” from your skimmer bucket(s) and remove the winter plugs from the bottom if your pool has them. Then put your skimmer baskets in place.

## 5. Re-Install Your Deck Equipment

Gather up your accessories and re-install them, including:

- Pool ladders
- Diving boards
- Step rails

Make sure you lubricate all bolts to prevent rusting throughout the summer months.

## 6. Fill Up Your Pool

Your pool might have been partially drained during winterization or lost water over the winter. If the water level in your pool is below the midway point of the skimmer opening, use your garden hose to fill it up.

## 7. Set Up Your Filter And Pump

Replace the drain plugs and other parts, including your pressure gauge, on your filter and pump. Your filter should have one major drain plug, and your pump may have one or two.

If you have a multiport valve, make sure you replace the air bleeder, sight glass, and pressure gauge. Sometimes these are all encompassed as one part.

**IMPORTANT:** Turn your multiport valve handle to “Filter.”



### ENLIGHTENMENT

Check the lid o-ring on your pump housing. This may be on the pump itself or on top of the filter basket section. Bend it with your fingers all around to check for any cracks in the rubber. A dry, cracked o-ring will cause your filter to pull air, which is not good. If this is the case, you should replace it. If the o-ring looks good, I suggest applying a Teflon-based o-ring lubricant (Magic lube is my favorite) to create a good seal and make it easy to remove the pump lid when needed.

Re-install any additional equipment, including a booster pump, heater or chlorine dispenser, and make sure all drain plugs are securely in place. If you forget to re-install a drain plug, you’ll know right away due to water shooting out from that spot! Turn off your pump and get that drain plug installed.

## 8. Fire It Up!

Turn on the power to your pump and filter. Make sure the system starts up properly. Check for any leaks or drips.

If your pump isn't pulling any water, you'll need to prime the pump. Turn off your filter system, remove the pump lid, and fill the housing with water. You can use a garden hose or a bucket of water from your pool. Replace the lid and turn your pump back on. This should help get the pump to pull water in from the skimmer(s) and main drain(s).

### MINDFULNESS



If the pressure on your tank seems high (over 15 psi), it might be a good idea to backwash your filter. After backwashing a D.E. (diatomaceous earth) filter, add fresh D.E. powder according to the manufacturer's instructions.

## 9. Clean It Up!

Using a plastic leaf net (preferably with a rubber lining) attached to your telescopic pole, remove any debris that's in your water with your net. If there's a large amount of debris on the bottom of your pool, carefully scoop it up with the leaf net. Try to remove as much debris from the water as possible.

Next, attach a pool brush to your telescopic pole and brush the walls and floor of the pool. This will help get the dirt into suspension and allow your filter to remove it.



## ENLIGHTENMENT

Make sure you turn your valves to pull water in from your bottom drain(s). This will help the filter collect the dirt and debris on the floor of your pool.

## 10. Shock and All

Take a sample of your water to a local pool supply store to get it professionally analyzed. You want to make sure your pH and alkalinity are properly balanced before adding any other pool chemicals.

Once your pool water is balanced, add the proper amount of sanitizer to your water (e.g. chlorine, bromine, or Baquacil).

I recommend double-shocking your pool using 2 pounds (or bags) of shock for every 10,000 gallons of water, or 5 gallons of liquid chlorine per 20,000 gallons of water.

## One Last Check

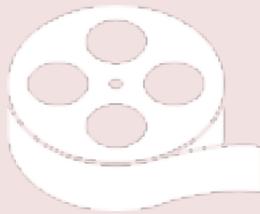
Let your pool run at least 24 hours and vacuum out any remaining debris using your manual vacuum. Retest the water using a home test

kit or test strips. If everything checks out, and the pool is clear or cloudy blue, it's ready for swimming!

# How to Remove, Clean, and Store a Safety Pool Cover

When it's time to open your inground pool, be sure to properly remove, clean and store your pool's safety cover by following these steps.

## HOW TO REMOVE & CLEAN A SAFETY COVER



[Click here](#) to watch a video on how to remove, clean and store your safety cover for the season.

### 1. Hose Off The Cover

Prior to removing your cover, hose it off while it's installed across the pool to remove any debris that has collected on top. If you have a solid cover (rather than mesh), remove any standing water with a cover pump.

### 2. Remove the Cover Springs and Screw Down Anchors

Using the installation rod that was supplied with your cover, remove all of the springs from the anchors.

Then, using the hex key provided with your cover, lower the brass anchors down into the deck. Doing this now will prevent the cover or

springs from getting caught up while removing the cover, which may cause damage.

### 3. Remove the Cover

While cover is still on the pool, starting at one end of the cover, accordion fold the cover in small sections until you reach the end. Then, carefully and without dragging the cover, remove it from the end of the swimming pool to a flat, clean area.

### 4. Clean the Cover

Use a mild detergent mixed with water or a recommended cover cleaner like [Natural Chemistry's Spray-On Cover Cleaner](#). For extremely dirty covers, you can use a pool brush to clean the cover.

#### MINDFULNESS



Make sure not to leave your cover laid out over a grassy area for any length of time, as this may harm your lawn.

### 5. Store the Cover

Once the cover is dry, fold in halves as many times as possible until the cover can fit into the storage bag provided. You will need your friend for this step.

Do not store the cover on the floor. Hang the storage bag high up so that no part of the cover is touching the floor, or store in a plastic bin, such as a large garbage pail, to prevent rodents from nesting inside of the cover and causing damage.

# How to Open an Above Ground Pool in 10 Steps

If you have an above ground pool, and it's time to open it, you should really think about doing it yourself. Opening an above ground pool is really easy. All you need is a friend, and the right supplies, and it shouldn't take you long at all.



## TOOLS

- Pool cover pump
- Soft broom or skimmer net
- Winter cover cleaner
- Start-up chemical kit

## 1. Clean Off The Winter Pool Cover

Remove all water, leaves, and debris from the top of the cover. To remove the water, you can use a submersible pool cover pump or basement sump pump that you can find at any hardware store.

To remove the leaves and debris, use a soft broom or skimmer net. Anything sharp or harsh will damage the cover. The more debris you get off the cover now, the less debris that could fall into the water while removing the cover.

## 2. Remove The Winter Pool Cover

Carefully remove the cover doing your best to keep any remaining debris from getting into the pool. If some dirt and debris does get into the water, it's not a problem. Using the proper cleaning equipment and chemicals later will sanitize and clean your pool.

### **3. Clean Your Winter Pool Cover and Store It**

Lay the cover out on your lawn or nearby area. Use water, winter cover cleaner (or carwash soap), and a brush to wash down your cover. By doing this, you will ensure a longer life for your pool cover, which can be a hefty investment if you have to replace it.

If you used water tubes to secure your winter cover to your deck, make sure you empty them and dry them out before storage.

Use a tightly covered plastic container to store your winter cover during the season. This will keep mice and other critters from making a nest or eating your cover.

### **4. Remove Winter Plugs and Ice Compensator**

Walk around your pool and make sure all plugs are removed from any and all openings, including the return jet and skimmer bucket.

If your skimmer bucket has an ice compensator in it, such as a Gizmo or an empty plastic bottle, remove it.

Re-install all your skimmer baskets and eye-ball fittings into the return lines.



## ENLIGHTENMENT

If you used a skimmer plate over winter, make sure you remove it before starting your filter system. Skimmer plates are designed to keep water out of your skimmer during the winter. It also allows you to keep your pool filled during the off-season.

## 5. Add Water To Your Pool (If Needed)

Depending on how you or someone else closed your pool, you may need to add water to your pool to bring it up to the proper level. Make sure your pool is filled to the halfway point of your skimmer.

## 6. Re-install Your Deck Equipment

For an above ground pool, this usually only includes the ladder.

## 7. Set Up Your Pump, Filter & Other Equipment

First, replace all the drain plugs, gauges, and other pieces to your filter system, pump, and other equipment. Then, connect all the hoses to your equipment.

1. Attach a hose from your skimmer to your pump.
2. Attach a hose from your pump to your filter.
3. If applicable, attach a hose from your filter to your heater, chlorinator, or any other extra filter equipment. If you don't have any, attach the hose directly to the return inlet.

If you have a multiport valve, make sure it's turned to the filter position.

## 8. Start Up Your Pump & Filter

Turn on the power to your pump. At this point, make sure the system starts up. Check for any leaks or drips, and make sure the ground wires are properly connected to the pump.



### ENLIGHTENMENT

If your pump is running dry, you may need to prime it. Shut off your filter system, remove the pump lid, and add water from your garden hose or a bucket of pool water. This will give the pump the boost it needs to start pulling water. Put the pump lid back on, tighten, and start the system again.

## 9. Clean Up Your Pool



## ENLIGHTENMENT

Backwash your filter after you start up your filter system. It's a good idea to start the season with a clean filter. After backwashing, if you have a D.E. filter, add more fresh D.E. according to the manufacturer's instructions.

Here's the tough part. If your pool is clean and clear, congratulations! If it's not, it's time to get your hands dirty.

Before adding any start-up chemicals, you must clean your pool. This includes: brushing the walls and hard-to-reach places, vacuuming the pool floor and skimming the surface.

## 10. Add Start-Up Chemicals

Now it's time to add the start-up chemicals. Take a sample of your pool water to your nearest pool dealer and ask for a complete water test to get your pool water balanced.

After adding the proper balancing chemicals, I recommend shocking your pool using 2 pounds of shock for every 10,000 gallons of pool water or 5 gallons of liquid shock per 20,000 gallons of pool water. This is what we refer to as double-shocking. You should do this at dusk or nighttime to ensure a proper shocking.

## And Finally...

Let your pool run at least 24 hours, then vacuum out any debris. Retest the water and if everything checks out...

# How to Close An Inground Pool in 6 Steps

Unfortunately, it's that time of year again. The time of year to break out the winter cover and close up the pool. Boo.

However, it doesn't have to take a long time. You can successfully learn how to close an inground pool in just a day without paying anyone.



## TOOLS

- Pool cover
- Water tubes (if you don't have a safety cover)
- Winter plugs for the return jets
- Gizmo(s) to plug and protect your skimmers
- Winter closing kit
- Air compressor/blower
- WinterPill (helps to keep the pool clear all winter- it's not needed but I recommend it)

## 1. Remove Deck and Skimmer Equipment

Start closing your pool by removing your diving board, ladders, rails, safety ropes, and any other equipment you might have in and around the pool, but leave your filter system intact for now.

Once you have the deck equipment removed, you can remove the eye ball fittings from all your return lines and the skimmer baskets from your skimmers.

## MINDFULNESS



If you have a dedicated line for an automatic cleaner, remove the plastic adapter. All return lines should be large, threaded openings that will all fit the same-sized rubber plug with a wing nut.

## 2. Test and Clean The Pool Water

Test your pool water and make sure your pool is properly balanced. I suggest you take a sample of water to your local pool dealer to get the water thoroughly checked.

You can also use your home test strips to make sure the pH is between 7.4 and 7.6, your alkalinity is between 100ppm and 150ppm, and your sanitizer level is correct.

## MINDFULNESS



Your chemical ranges can be on the high side when closing your pool because, chances are, they will drop during winter.

Before adding winter chemicals, make sure your pool is the cleanest it can possibly be. Vacuum the floor of your pool with an automatic cleaner or manually. Brush down the walls and steps, and skim the surface of the water.

### 3. Add Winter Chemicals

Once your pool is balanced and thoroughly cleaned, you can add winterizing chemicals.

#### MINDFULNESS



If you buy a chemical kit, some will not require you to run your pump and filter while adding the chemicals. If this is the case, you can save this step until right before you put the cover on. Otherwise, now is the time to add the chemicals while your filter and pump is operational. Check the directions on your kit.

### 4. Backwash and Clean The Filter And Pump

Before you blow out the lines (remove the air) make sure your filter and pump are clean.

Once the filter is backwashed, open up your pump lid and remove any debris that from basket. Put the basket back in when you're done, and put the lid back on.

Also, make sure you turn your filter back to "Filter" on your multi-port valve before blowing out the lines.

At this time, if you are not using a winter skimmer plate, you should drain the pool to 6 inches below the skimmer.

## 5. Blow Out The Lines

### MINDFULNESS



If you are unsure how to do this properly, even after reading this section, I suggest you hire a reputable company to come and blow your lines out for you. If you do not do this step correctly, you run the risk of your pipes cracking underground. Come spring, this can be very expensive to fix. Also, if you do not have a good air compressor, buy one or hire someone to do this for you.

Start by making sure your valves are turned so that the skimmers and the main drain are all open. If you don't have a main drain at the bottom of your pool, then you will only be dealing with one opening.

Hook up the air compressor to your pump by unscrewing the drain plug that's on the pump housing (the part with the lid) and thread your air compressor into the drain plug opening. You may need to purchase an adapter for your air compressor if you don't have the proper threading.

Start blowing air into the lines until you see bubbles coming from the return lines and the skimmers. Let it run for about two minutes.

Look for whichever line is blowing first. You'll see bubbles coming from the return lines or the skimmers. We'll assume that the bubbles are coming from the skimmer first.

With your gizmo or rubber plug, plug up the hole in the bottom of the skimmer where the air is coming from. If you're using a gizmo, just thread the gizmo in the hole. A gizmo is a long hollow, plastic tube that threads into the skimmer opening and prevents your skimmer from cracking in the winter. The gizmo is an ice compensator, so if water gets into your skimmer and freezes during the winter, when the ice expands, the gizmo will absorb the expansion rather than your skimmer, which protects your skimmer from cracking. If you don't have a gizmo, and you are just using a rubber plug, make sure you throw in a plastic soda bottle (with the cap on) to act as your ice compensator. Do this in all your skimmers.

Next, walk around your pool and plug up all the return lines (which should be blowing air bubbles) with rubber plugs nice and tight. You don't want to see any more bubbles coming out after you put the plugs in. The main drain will be the last to blow, but never fear—you don't have to swim to the bottom and plug it up.

Turn off the air compressor.

Lastly, if you have a heater, you are going to need to blow the water out of that as well. Again, if you are unsure of how to do this, please hire a professional.

Remove the drain plugs from the heater and turn the air compressor back on. You now want to direct all the air into your heater, so close off all the valves except the one to the heater. You should start to see water

coming out of the heater drains. Keep the air compressor running until you see no more water.

Replace the drain plugs on your heater, and remove the drain plugs from the filter and chlorinator, if you have one.

Turn off the air compressor and remove it from the pump. Store all the drain plugs in the pump housing for safe keeping.

## 6. Put The Winter Cover On

Place the cover over your pool. If you use a safety cover, consult your manual on how to put this on.

If you are using a simple plastic cover, make sure there are no rips or tears. If there are, you can patch them by placing duct tape on both sides of the cover. If you use water tubes to secure your cover, only fill them about 85% of the way to allow for expansion when they freeze. Make sure the tubes are not leaking before putting them on.

### MINDFULNESS



It is not recommended to use anything but water tubes to secure your plastic covers. Water tubes, if they happen to fall into your pool, will not cause any damage to your liner or concrete. Brick or cinder blocks can cause serious damage.

# Do I Need to Put Antifreeze In My Pool When I Close It?

In some parts of the world, it's important to close and winterize your inground swimming pool, which includes blowing out all the lines so that frozen water won't crack the pipes underground during the cold winter months — which can be an extremely expensive fix.

A few months ago, I was asked a question via our Facebook page, wondering if pool antifreeze was needed if the lines of the pool were blown out. Below is the full question from Sherri:

*Hey Matt! I have an inground pool and just had some help with the winterization from my uncle who also has a pool. In years past, pool antifreeze was added to the plumbing after the lines were blown. My uncle said he said he has never done that since the lines were blown. I watched your video and noticed no mention of adding the antifreeze. My question is, do I need to put antifreeze in my pool when I close it after blowing the lines? If so, where do I put it in and how much? Thanks so much! I enjoy your videos and the site is great since I also have a hot tub! I'm in Ontario, Canada.*

- Sherri D.

Swimming Pool Antifreeze is a chemical you can add to the water in your pipes to keep the water from freezing during the winter. However, if the pool was properly winterized, and the pipes were completely blown

out, there should be no water in the pipes to freeze. Therefore, you do not need to add antifreeze if the pipes have been blown out.

I highly recommend that you close your inground properly, which includes having the lines blown out. I would avoid using antifreeze at all costs. Adding more chemicals to your pool than what is needed is never my recommendation.

### MINDFULNESS



You might find information from other sources that will suggest adding antifreeze as a backup in case the lines weren't blown out properly. If this is something you want to do, because you don't feel confident in the job, then go for it. Pool antifreeze is made to be safe for your water when it enters back in during the spring.

## What If I Don't Blow Out The Lines?

That said, if you're on a budget when it's time to close a pool and don't want the hassle of either hiring a professional or blowing out the lines yourself, then adding antifreeze is your only option to keep your pipes from cracking during the winter.

## MINDFULNESS



Do NOT use car antifreeze!!! Instead, you can buy pool antifreeze here.

If this is the option you have to go with, here are a few steps to walk you through it:

1. Remove the baskets from your skimmer(s). If there's a plug already in it, remove it so you can add the antifreeze.
2. Make sure the water level of your pool is drained below the skimmer.
3. Add the antifreeze into the open hole in your skimmer(s). Use the chart below to determine how much you'll need to add.

## ANTIFREEZE REQUIRED

PVC PIPE SIZE	PER 10 FT. PIPE
1"	1/2 gallon
1-1/4"	3/4 Gallon
1-1/2"	1 Gallon
2"	1-3/4 Gallon



# How to Close An Above Ground Pool in 6 Steps

With a little help and the proper know-how, you can successfully close down your above ground swimming pool in a matter of hours.

## TOOLS



- Pool cover (for oval or round pools)
- Cover winch and cable
- Cover clips (highly recommended)
- Water bags (if you have a walk around deck)
- Air pillow (a must have for all above ground pools!)
- Return plugs (rubber or plastic)
- Winter skimmer cover
- Winter chemical kit
- WinterPill (helps to keep the pool clear all winter — it's not needed but I recommend it)

## 1. Test and Clean The Water

Before you begin closing your pool, get the water tested – at your local pool store or using your own test strips – to make sure the pool is properly balanced.

Make sure your pool's pH is between 7.4 and 7.6. and the alkalinity is between 100 and 150ppm. It's better to be on the high side of these ranges when closing the pool.

Also, before you start adding any winter chemicals, be sure your pool is as clean as possible. That means, vacuuming the entire pool, brushing down the walls, and skimming the surface.

## 2. Add Winter Chemicals

If you have a winter chemical kit, just follow the directions when adding the chemicals.

If you don't have a kit, shock the pool with chlorine shock, then add the recommended amount of winter algaecide according to the back of the bottle for your size pool.

Since you are closing the pool yourself, you can use a 15-minute fast-dissolving shock before you put the cover on instead of using a typical calcium hypochlorite shock that require an eight hour delay. If you decide to use standard shock, make sure you add it to the pool the night before you want to close it.

### MINDFULNESS



Some winter chemical kits don't require you to run the filter when adding. Make sure you check the directions to see which type of kit you have. If your kit doesn't require your filter and pump to be running, you can perform this step right before you put the cover on.

## 3. Plug It Up

Remove the eyeball fitting on your return line and plug it up with a rubber plug with a wingnut.

On the skimmer, remove the basket and store it away for the winter. If you want, you can use a winter skimmer cover. Winter skimmer covers are plates that cover the entire skimmer. By using one of these, you won't have to drain the pool below the skimmer, which can come in handy.

If you don't want to use one of these, make sure the water level is low enough to allow the skimmer can drain out water if it rains. Do not plug up the bottom of the skimmer.

### MINDFULNESS



If water fills up in your empty skimmer over the winter and then freezes, it can cause your skimmer to crack. Also, if snow or an obscene amount of water fills it up, the weight could be bad for your skimmer wall. Err on the side of draining too much water from your pool at closing time.

## 4. Winterize The Filter and Pump

### The Pump

Completely remove all drain plugs and remove the pump, chlorinator (if you have one), and all the hoses. Store all the drain plugs (including the ones from the filter) in the pump basket to keep them all together. You won't want to lose them. Keep the pump, chlorinator, and hoses indoors to prolong their lives.

## The Filter

If you have a sand filter, set your multiport valve to winterize and remove the drain plug at the bottom. Let the filter completely drain out. If your multiport valve has a bleeder valve and a sight glass, remove those too and store them in the pump basket.

If you have a D.E. filter, drain it, rinse off the grids (or fingers) with a hose to get all the excess D.E. off, and leave the valves open.

If you have a cartridge filter, drain it, rinse off the cartridge with a hose, store the cartridge indoors for the winter, and leave the valves open.

## Storage

After you've disconnected your filter and pump system, you should store all your equipment indoors. This includes your filter, pump, chlorinator, heater, and any other equipment you might have. If you have a sand filter, this can be a difficult piece to move indoors because of the weight of the sand. If you want to leave it outside, make sure all the drain plugs are removed. That way, if water or condensation builds up inside the tank and freezes, it won't crack the filter tank.

Other filters, such as D.E. and cartridge, should be light enough to easily store indoors.

## 5. Drain It And Add The Air Pillow

At this time, drain the pool about 4 inches below the skimmer unless you are using a winter skimmer cover.

This is also a good time to remove the ladder or any other equipment you have in the pool.

Blow up the air pillow and place it in the middle of the pool. You can use a thin rope to secure it to either side of the pool so that it stays in the middle, or look at getting a Pool Pillow Pal.

### MINDFULNESS



It honestly doesn't matter if the pillow stays in the middle of the pool all winter. The reason above ground owners use an air pillow is to prevent the sides from bearing the pressure when the water turns to ice and expands. It's not needed, but it's highly recommended.

## 6. Put The Cover On

Place your pool cover over top of your pool—and over the air pillow – and secure it using the cable and winch, water bags, or a combination of winter cover clips and a cable.

I recommend using a combination of winter cover clips and a cable and winch if you have a walk-around deck. I recommend also using water bags (not bricks or anything else that could damage your liner if it fell into the pool).

Make sure that throughout the winter you keep an eye on your cover and try to keep the cover relatively dry. We recommend buying a small sump pump in order to keep water off your winter cover.

# Off-Season Pool Care

Even when your pool is closed for the season, it's still important to practice pool care. If you do, your pool will be in great shape when it comes time to open again.

A few things you can do:

- Keep the area around the pool free and clear of debris, including fallen leaves.
- Keep the cover clean by removing water and debris frequently.

When it rains, you should use a cover pump on a siphon to remove the water as fast as you can so your cover stays dry, allowing leaves to blow right off. However, if you live in an area that gets snow, that's a little different, which brings us to...

## How to Remove Snow From a Pool Cover

If you live on the East Coast (or anywhere else in the country for that matter), then you may be left with a bunch of snow on your swimming pool cover. It's extremely important to get the snow off your pool cover as soon as possible and here's why...

## Why It's Important To Remove Snow From a Pool Cover

If you have an above ground swimming pool, all that snow weighs down on the cover, pulling the pool walls in towards the center. This could damage the top rail, fence and walls of your swimming pool.

If you have an inground swimming pool, the heavy snow can cause the cover to stretch, damaging your cover.

For safety covers, it's important to make sure that the snow doesn't pile on and rip the cover. It could also pop out the cover anchors or even your pool's coping.

Let's think about how much snow weighs. There are 7.48 gallons per cubic foot of water – that's about 62.4 pounds of snow!!!

**Wet Snow:** Assume wet snow would be equal to 1 inch of rain or 5 inches of snow. This means you would get a resulting  $62.4 / 5 = 12.5$  pounds!

**Light, Powdery Snow:** This snow would be equal to 2.5 inches of water and 12 inches snow, you would get  $62.4 / 12 = 5.2$  pounds!



Once the snow melts, it will turn into water, and now you will need a pool cover pump or siphon to get the water off the cover. If you have a mesh safety cover, you will still need the pump to get the water out of your now overflowing pool.

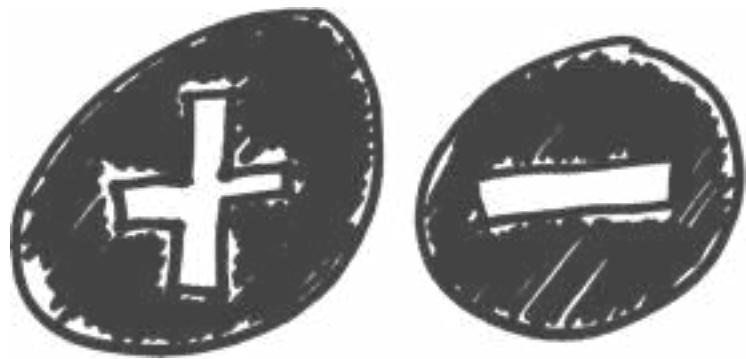
## How To Remove Snow From a Winter Cover

Here are a couple of quick tips on how to remove snow from a pool cover properly. Remember, you don't have to do this, but you risk pool damage otherwise.

- Use a long broom and push snow off the cover.
- DO NOT use a shovel or anything with sharp edges. This can damage your winter cover by putting holes in it, allowing the dirty water to leak through.
- As it snows, use the broom to keep the snow from collecting.
- If the snow is light use a leaf blower. If you use a leaf blower while it snows, you won't build up all that snow weight.

# Conclusion

I hope that, after reading this section, you might consider opening and closing your pool yourself.



I will admit that I tend to recommend that you hire a company to close your inground swimming pool, or at least blow out the lines. This is in the one area of inground pool closing that can get a little tricky and can cause major issues if not done properly.

Other than that, it's very easy to open and close a pool, and it requires very little time and tools to do it. I do highly recommend you have at least one friend to help. Make a fun day out of it!

You've now officially finished *The Art of Pool Care*. You now know how to take excellent care of your swimming pool on a daily basis.

In the next section, we talk about some troubleshooting, and I'll walk you through all the common issues and how to diagnose and fix them.



Lastplak Skate Bowl, Amsterdam 2012

# TROUBLESHOOTING

*I grew up watching 'Superman.' As a child, when I first learned to dive into a swimming pool, I wasn't diving, I was flying, like Superman. I used to dream of rescuing a girl I had a crush on from a playground bully.*

**- Tom Hiddleston**



Pardon my French, but shit happens. And when it does, we have to know how to take care of it.

From your pool turning green to equipment breaking down, I'll walk you through all the common issues you might run into and how to remedy them.

# Pump

Your pump is the power house behind your entire filter system. Sometimes it can run into problems moving the water around. Let's address some of the most common issues you might run into with your pump.

## Pump Stops Working

If your pump stops working or won't turn out, check these possible causes:

- Did the breaker trip? If so, just reset the breaker and make sure the fuse is still good.
- Confirm there is still power going to your pump. Check the outlet to make sure there's still juice.
- Make sure your water level is filled halfway up the skimmer so there is plenty of water getting to your pump.
- Check that all the valves are open and allowing water to flow to your pump.
- Clean out the pump strainer basket and the skimmer baskets so they are clean and free of any debris.
- If you have a timer on your pump, make sure it hasn't elapsed.

- Check the lid on your pump strainer. Make sure the o-ring is lubed and creating a good seal and the lid is properly tightened.
- If you've checked all these areas and your pump still doesn't work call a professional.

## How to Prime a Pump

When you first open your pool, it's common for your pump to need a bit of priming. Priming is the act of giving your pump enough water so it will start pulling from the pool. Basically, it's like giving your pump a motivational pep talk to get it in gear.

Here's how to prime a pool pump in 3 easy steps!

### 1. Turn Your Multiport Valve to Recirculate

This will bypass the filter system so the water comes into the pump, through ONLY your multiport valve, and right back into the pool — never touching the inside of your filter.

NOTE: Make sure you've removed any plugs from your skimmer(s) and return jet(s) so the water can flow into your pump.

### 2. Fill The Pump With Water

Open up your pump by removing the lid (make sure all the drain plugs are in place so that your pump doesn't leak water).

Using your garden hose fill the pump housing where the basket is. This is priming in a nut shell. What we're doing is filling the lines from the skimmer to the pump so there's enough water to create suction into the pump.

I recommend filling for at least two minutes to ensure the water is entering the lines. You can also use a hose nozzle and spray water into the pipe directly by pointing the nozzle into the opening inside the pump housing.

### 3. Turn On The Filter System

Once you've finished filling up the pump with water, put the lid back on the pump housing and fire up the system. Hopefully, you've added enough water to get the pump running. You'll know you achieved this when the pump housing starts filling up with water and there is no visible air bubbles in the lid.

It might take a few tries to prime the pump, but if you're lucky, you'll nail it on the first try.

You may need to prime the pump during the season, too. Sometimes your pump will run dry (but you should NEVER let this happen). Perhaps the water level dipped down below the skimmer or something blocked the skimmer from pulling in water. No matter what the cause, you should do your best to keep it from happening. Running a pump with no water can cause damage to the pump and motor.

# Air Bubbles

Do you see air bubbles shooting out of the return jets in your swimming pool? It's a very common problem (especially when you open your pool in the spring), and one that can be easily solved with a few troubleshooting tips.

Commonly, the air is coming from the suction side of your swimming pool — this means anywhere before the water enters the filter. There are three places you can check to see if air is getting into your system.

## 1. The Skimmer(s)

Check the water level. If your pool doesn't have enough water, your skimmer(s) might be pulling in air. Be sure that the water level is in the middle of your skimmer's opening. Here's an illustration depicting where your water level should be:

Check the skimmer baskets. Make sure your skimmer baskets are not damaged and seated properly to ensure good water suction.

Check the weir. The weir (or skimmer flap) is the door that "flaps" in front of your skimmer — it's there to trap large debris from escaping back into your pool and to regulate water flow into your skimmer. Sometimes it can get jammed, so make sure it's freely moving back and forth. If you don't have a skimmer weir, I would recommended getting one to maximize efficiency of your skimmer.

## 2. The Pump

Check the pump lid. First off, if the lid is cracked, that's the problem right there, however, the most common issue has to do with the lid's o-ring.

Turn the pump off, remove the lid, and check the o-ring for cracks. Just bend the o-ring between your fingers — around the whole o-ring — to check for any signs of cracking. If it looks like your o-ring is splitting or dry-rotted, you need to replace the o-ring. If there are no signs of cracking, that's a good thing. Use a Teflon-based o-ring lube all around the o-ring to ensure you've got a good seal. Check the pump basket. Sometimes if your basket is cracked, it won't be seated correctly in the housing. Replace a cracked filter basket and make sure it's frequently cleaned and always properly seated so the lid seals correctly.

Check the drain plugs. On the pump housing, you will have at least one drain plug. Make sure the drain plugs are not leaking or loose. You can apply some Teflon tape (plumber's tape) to the drain plug threads for a tighter seal.

## 3. The Union(s)

If you have an inground pool, you might have some unions in your plumbing. Unions are threaded connectors between piping that will allow you to easily replace your filter equipment without having to cut any pipe.

Inside the union, you should have yet another o-ring to check for damage. If it's damaged, replace it. If it's not, make sure the o-ring is

properly seated inside the groove it belongs in. If the o-ring is not in its groove, it will not create a proper seal and allow air to get into your system.

## Loudness

There are two types of noises your pump could make if there's a problem. One is a very loud noise that's keeping everyone awake in the house and annoying your neighbors, and the other is a bothersome hum. Let's take a look at both.

### Hums

The first thing to check if your pump is humming is the breaker. It may be that the breaker was tripped and resetting it will solve the problem.

Another cause might be a bit more serious. Your pump has a defensive mechanism built into it called a Thermal Switch, which shuts down the pump if it starts to overheat. The humming may be caused from power getting to the pump, but nothing is moving. Call a professional to help you with this issue.

### Really Loud Noise

If the noise is really loud, it could be coming from two areas of your pump—the motor or the impeller. The motor is the big heavy metal part at the back. If the bearings went out in the motor, there's not much you

can do (unless you know how to take apart of motor and replace the bearings). In this case, I would take it to get repaired or replace it.

If it's not the motor, the noise may be caused by the impeller, which is the spinning turbine that moves the water around. This is the case if the noise is coming from the plastic housing right in front of the pump. You could fix this yourself if you're up for the job.

You may have to reset or replace the impeller along with the impeller seal that's attached to the metal rod from your motor.

If you're not mechanically inclined, you can certainly call a professional.

# Filter

Your filter works hard every day to keep your swimming pool clean, so it's no surprise it can run into problems. Let's address some of the most common issues you might run into with your filter.

## Sand In The Pool

If you notice sand at the bottom of your pool and you own a sand filter, guess what? That's where it came from.

If you don't own a sand filter, and live no where near sand, chances are it's not sand. Actually, it might be yellow (mustard) pool algae. To test, brush it up. If it forms into a cloud, you have yellow pool algae.

So how did the sand get outside of your filter and into your pool? Inside your sand filter is a pipe that runs down the center of the sand. At the bottom of that pipe are laterals. Here is a picture of what I'm talking about:

Either your standpipe or your laterals may be cracked — chances are it's one or more of the laterals located at the bottom of the standpipe since the standpipe is pretty thick and harder to crack than the laterals. Only one of the laterals needs to crack in order to leak sand into your pool.

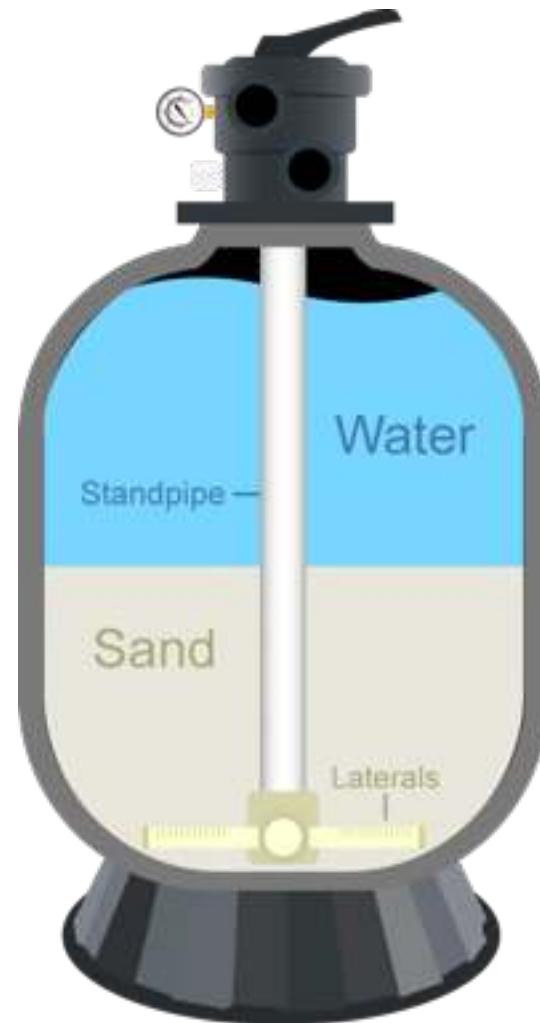
You may never find out how it happened. Maybe your filter got moved shifted the standpipe, and under the heavy weight of the sand, the

laterals cracked. Or perhaps your filter is old and it was just its time. No matter how it happened, you need to fix it.

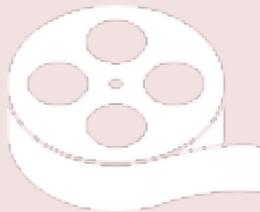
## How to Fix a Broken Sand Filter Standpipe or Laterals

Here's the thing. You have to take apart your sand filter, remove all the sand, replace whatever piece is broken, and add new sand back. I say it's a bitch because it's a time-consuming project but it's not difficult. In fact, you don't need a professional to fix this for you because it's actually pretty easy.

Below is a link to a video I filmed on how to change the sand in your sand filter. In this video, I demonstrate how to remove the old sand from your filter and replace it with new sand. This process took us about two hours, and after watching this video, you can do it with little or no problems.



### HOW TO CHANGE THE FILTER SAND



A simple [step-by-step guide to changing the sand in your swimming pool's sand filter.](#)

Of course you'll need to add the step actually replacing the broken pieces inside your filter before adding the new sand back in.

## How to Get Sand Out of Your Pool

Once you have the filter back up and running, still need to get that pesky sand out of your pool.

To do this, you'll need to hook up your manual vacuum. This was covered in an earlier chapter, and here's a link to a useful video.

Instead of vacuuming with your multiport valve set to "Filter," you will need to set your valve to "Waste." This will pull the water from your pool and directly out of the backwash port so the water never enters the filter. Vacuum the sand directly out of the pool, not through your filter, or else the sand will get stuck in the laterals inside your filter.

Of course, you'll want to do this quickly because you'll lose a lot of water in the process. I recommend you overfill your pool before you start so you have a lot of water to work with, and you can also keep your garden hose running into the pool. Basically, just vacuum as fast as possible so you don't waste a lot of water.



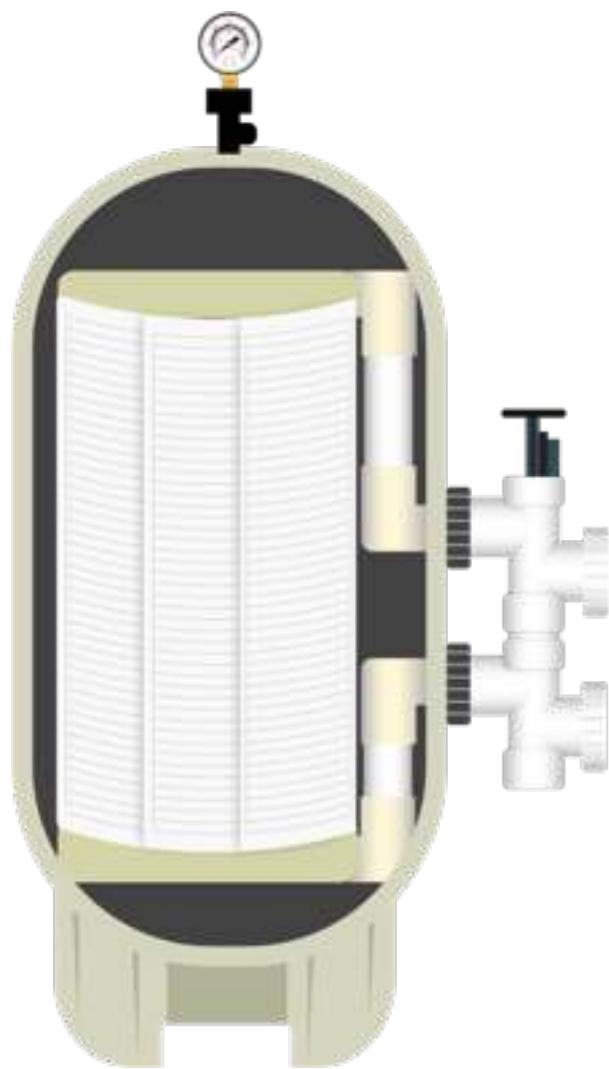
### ENLIGHTENMENT

Before vacuuming, use a brush to get all the sand into one area so it'll be easier to vacuum, just like sweeping your kitchen floor and using a dust pan at the end.

## D.E. In The Pool

Just like with a sand filter, when you find D.E. powder in your pool, it means something is broken inside your filter, and it's probably your filter grids.

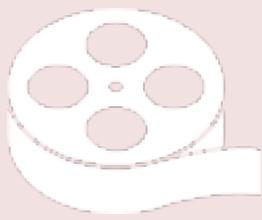
1. Shut off your pump and open your D.E. filter to expose the grids.
2. Remove the grids and rinse off the caked-on D.E. powder with a hose.
3. Remove the top manifold and take out each grid and rinse them down again.
4. While you have each grid separated, examine them with a close eye. Look for rips and tears in the fabric around the grids. Feel for any broken ribs. Also, check the pipes and manifold for any cracks.
5. Replace any broken or ripped pieces, then put the grid manifold back together and in the tank.
6. Close up the tank and turn the filter system back on. Don't forget to add more D.E.
7. Vacuum up the D.E. in your pool once your filter is fixed.



# Algae

Are you planning a huge party and now your pool water is green? Does it seem like you always have green pool water no matter what you do? Does it seem like there is no way to get rid of the algae in your pool?

## HOW TO GET RID OF POOL ALGAE



[Check out this video I made](#) about getting rid of algae in your swimming pool.

## Pool Algae: 3 Ways to Get Rid of it

First, let's learn a little bit about algae and how it's formed. According to the Merriam-Webster dictionary it's:

*...a plant or plantlike organism of any of several phyla, divisions, or classes of chiefly aquatic usually chlorophyll-containing nonvascular organisms of polyphyletic origin that usually include the green, yellow-green, brown, and red algae in the eukaryotes and especially formerly the cyanobacteria in the prokaryote.*

To simplify that, algae is small plant-like organism which grows in pool water. There are three common forms:

## 1. Green Algae

This is the most common of all the swimming pool algae because it grows due to lack of proper sanitation and filtration. Sometimes you'll see this algae free floating in your swimming pool which can cause your entire pool to turn green.

You may also see this algae cling to the wall of your pool or the bottom. The good thing about this type of algae is that it's easy to get rid of. It may only show up in little spots in your pool that have poor circulation, in which case, a little sanitizer or algaecide will do the trick.

## 2. Yellow Algae or Mustard Algae

This is a stingy type of algae that grows on the walls of your swimming pool in spots that don't get a lot of sun. It's the second-most common algae you'll find in swimming pools and sometimes can be mistaken for sand or pollen.

This algae is difficult to get rid off and won't be killed off by any normal dose of sanitizer (such as chlorine) or algaecide. You need to kill it by super shocking your swimming pool, or else you'll be battling with it all season long.

## 3. Black Algae

If you ever had yellow algae and thought that was tough, think again. Black algae are the stingiest of all the algae. The only good thing about it is it's not very common. What makes this algae so hard to get rid of is

its defense mechanism it and it's strong roots. This algae looks like little black spots on your swimming pool wall.

The part that you can see has a protective layer on it to protect itself, and the roots are strong and grow deep into the plaster of your pool walls. Just like yellow algae, this strain can appear even if you are taking care of your pool normally and all your sanitation levels are correct. To kill it, you will need a strong pool brush and lots of shock.

## Why Do I Have Green Pool Water?

Where there's water, there's algae. This is why swimming pools need to be treated with chemicals to ensure nasty bacteria and other growths are killed as quickly as possible.

The main reason why algae grows in your pool is because it hasn't been treated with a sanitizing chemical, like chlorine, or hasn't been treated enough. And if your pool is lacking sanitation AND the water is stagnant, you're even more likely to get algae. That's why it's important to keep the pool water moving with your filter and pump. It's hard for algae to grow when the water is moving.

Algae also loves dark places that don't get much water circulation, like under your ladder, on your pool steps, and all corners, creases, and crevices.

These are all great spots for algae to feed and multiply.

So now that we have a general understanding of what pool algae is and why it forms, we must destroy it!

## Method #1: Superchlorination (Shock)

This is my favorite and the most effective method for actually killing algae in your swimming pool.

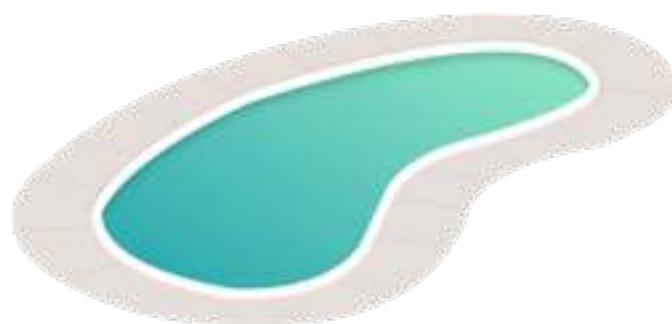
The following are not different types of algae, just different amounts. The more algae in your pool water, the darker the green color will be.

**NOTE:** 1 pound of shock normally treats up to 10,000 gallons of water.

### Light Green Pool Water

If you have a light green pool, **double shock** to kill algae.

- 10,000 gallon pool or less—  
add 2 pounds of shock
- Up to 20,000 gallons—add 4  
pound bags of shock.
- Up to 30,000 gallons—add 6 pound bags of shock.



## Dark Green Pool Water

If you have a dark green pool, **triple shock it.**

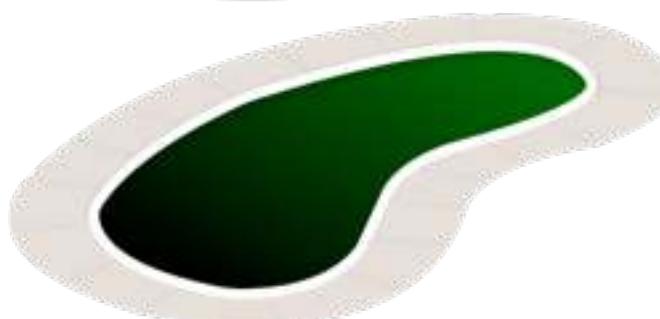
- 10,000 gallon pool or less—add 3 pound bags of shock.
- Up to 20,000 gallons—add 6 pound bags of shock.
- Up to 30,000 gallons—add 9 pound bags of shock.



## Black Green Pool Water

If you have a black green pool, **quadruple shock it.**

- 10,000 gallon pool—add 4 pound bags of shock.
- Up to 20,000 gallons—add 8 pound bags of shock.
- Up to 30,000 gallons—12 pound bags of shock.



### MINDFULNESS



With vinyl liner pools, you should dissolve each 1-pound bag in its own bucket of water before putting it in the pool. This will prevent your liner from being bleached.

## Method #2: Floc Your Swimming Pool

Floc (or flocculant) is a chemical which takes all small particles in your pool (like algae) and settles them to the bottom. After all the particles have settled to the bottom, it's your job to vacuum them completely OUT of your swimming pool.

This method can be time-consuming, but it gets rid of algae fast if done correctly.

Here is a step-by-step guide to floccing your swimming pool:

1. **Turn off your pump and turn the valve to “Recirculate”** if you have a multiport valve. This will stop the water from flowing through your filter and just spin the water around and around to help mix in the chemical.
2. **Add the recommended dosage of flocculant to your pool.** Floc comes in liquid and powder form. Make sure you check the directions for the right dosage for your swimming pool.
3. **Circulate the water for about two hours** to get the chemical fully mixed in, then turn off your pump and let the water sit overnight. During this time, the chemical will start to bind the particles together and settle them to the bottom of the pool. In the morning, you will wake up to a nice healthy particle cloud at the bottom of your pool.

4. **Hook up your manual vacuum cleaner.** Before you turn your filter on, make sure you have your multi-port valve set to “Waste.” When you vacuum this thick cloud OUT of your pool, you don’t want that thick, nasty water going through your filter. Your filter will not be powerful enough to clear the water that fast, so the cloudy (or green) water will just shoot back into your pool through the return lines. Make sure you’ve hooked up your backwash hose to the backwash/waste port and direct the hose where you want your dirty water to go.
5. **Set up your garden hose by the pool and turn it on while you vacuum.** Since you are vacuuming to “waste” a lot of water out of your pool, it’s best to have your garden hose replacing the water with clean water as you vacuum out the dirty stuff.
6. **SLOWLY vacuum the bottom of the pool.** You’ll be sucking out this thick, dirty water from your pool, so if you move the vacuum too quickly across the pool floor, it will kick up all that debris. If this happens and it becomes too cloudy to see what you’re doing, turn off your pump and let it sit for a couple of hours to resettle. Then go back and continue vacuuming. You may have to do this several times depending on how much debris you need to vacuum (I told you it might be time consuming).

With a little bit of elbow grease, and this inexpensive chemical, you can have your pool cleared in one day, and be right back to enjoying your pool.

When you are done vacuuming and everything looks good, I suggest double-shocking your pool to make absolutely sure ALL the algae has either been removed or destroyed.

## Method #3: Use Swimming Pool Algaecide

Normally algaecide, like pesticide, is used as a preventive and should be used throughout the pool season. But there are some algaecides that contain b14 or metals, such as copper or silver, which can kill algae. These algaecides may have to be added in large doses depending on the brand, but mixed with shock, they can do the trick just as effectively as plain shock.

I only recommend algaecide as a preventive. You can add a few ounces every week to prevent algae from growing in your swimming pool. The reason is, once you start talking about algaecides that can actually kill algae, the price starts going up. Also, you don't want to add too many metals to your swimming pool. Metals in your water cause staining.

There are algaecides that are known as "polyquats." These are great preventive algaecides that I recommend, but I would not use them in large doses to kill algae. They can cause excess foaming in your water.

To sum it up, some algaecides DO kill algae, but not all. Make sure you ask your local pool store which algaecides are the killing kind. Or make sure you read the specs carefully if you are buying an algaecide online.

# Which Method Is The Best?

All of these methods work. In fact, you might visit three different pool stores or three different websites and they will usually just promote one way of doing it. This is why getting your pool care information from different places can cause confusion.

My recommendation is using Method #1. It's cheap, it's easy, and it KILLS all the algae. I only use Method #2 when I'm in a pinch.

# Cloudy Water

A cloudy pool can be a very difficult and time-consuming to get it clear. Sometimes your swimming pool can mysteriously turn cloudy overnight!

I'll explain the reasons your pool can get cloudy in the first place, then share a few methods on how to fix cloudy water. It won't be a difficult and time-consuming process if you follow these methods.

Before we talk about how to fix cloudy pool water, let's first understand what causes it.

## Why Do I Have Cloudy Pool Water?

There are many causes of cloudy pool water, but I have broken it down into three main causes.

- 1. The Environment:** Everything around your pool can cause your water to be cloudy, that including weather, birds, construction, trees, gardens, the sun, people, and pool algae.
- 2. The Pool Filter:** If your filter system is not working properly, or you're not running your filter at least 8 hours per day, then you are at high risk for cloudy pool water. Your filter system constantly cleans the water in your pool. Without it, you're left with stagnant water that could easily become cloudy.

3. **Pool Chemicals:** An excessive amount of pool chemicals can cause your water to be cloudy, including high pH, high alkalinity, high chlorine or other sanitizers, and high calcium hardness.

Be sure you shock your swimming pool every week with the proper amount of shock for you size pool.

Sometimes you'll get cloudy pool water after shocking. This is common and should dissipate over time. Just keep your filter running, and it should clear up. Also, look into a new brand of shock (make sure you buy shock that has a main active ingredient of calcium hypochlorite). Cheaper shocks that you get from the big box retailers, such as Walmart and Sam's Club, are not the best choices.

## How To Clear A Cloudy Pool

Once you have fixed all the possible problems that can cause your water to be cloudy, we need to actually clean that cloudy water. Here are three ways to clear a cloudy swimming pool:

### 1. Use A Pool Clarifier

It's always a good idea to use some sort of pool water clarifier weekly. Pool clarifiers work to gather the tiny particles that cloud your pool water and bring them together to create bigger particles your filter can easily catch. This is also called a coagulant, which is a term used when describing blood clots.

The particles alone are too tiny to be picked up by your pool filter, so this chemical “clots” them together so your filter can trap them.

Most swimming pool chemical retailers will carry more than one form of clarifier. Just ask if the chemical is a coagulant, and you will be well on your way to a crystal-clear swimming pool.

## 2. Use Pool Floc (Flocculant)

A chemical called floc or flocculant is a great idea if you need your swimming pool cleared up quickly.

Lets say you have a pool party tomorrow and your swimming pool is cloudy. By using Pool Floc, you can clear your cloudy swimming pool overnight (with a little extra work on your part). Floccing your swimming pool is a great method, but it's time-consuming.

Pool flocculants work by gathering all the particles that are making your water cloudy and sending them to the bottom of your pool, creating a huge cloud on the floor of your pool. Unlike a water clarifier, this chemical DOES NOT help your filter to pick up the particles because all of the cloudy pool particles are now at the bottom.

At this point, you will need to manually vacuum up that cloud. Do not use an automatic pool cleaner. When vacuuming, you want your filter setting to be on the “waste” or “backwash” option (if you are using a DE filter or cartridge filter, make sure that the drain plug is removed).

The idea here is to vacuum up the cloudy water completely OUT of your pool, because putting that much dirty water through your filter WILL NOT work and will send all that dirty water right back into your pool.

By vacuuming out to “waste,” it does not run through your filter system. You are going to lose a lot of water in your pool, so make sure you are running a hose of fresh water into your pool during vacuuming.

Also, you must use a manual vacuum for the process. Automatic pool cleaners will not work and will just end up blowing the cloudy you created at the bottom of your pool, right back up. Again, it is difficult and a lot of water is wasted, but it will clear your pool in 24 hours if done properly.

### **3. Use Your Filter System and Bottom Drain(s)**

Your pool’s main skimmer is located at the top of your pool and helps to clear the top, which does not help to collect any cloudy particles that are at the bottom of the pool. Knowing this, we need to help the filter get to those particles.

You can achieve this two ways:

1. Constantly stir up the water, by swimming or with a pool brush, so push the particles closer to the top of the pool.
2. Turn on the bottom drains.

Every inground pool should be equipped with 1 or 2 bottom drains. When these are open the filter can pull water from the bottom of the pool where the cloudy particles are, and circulate the clean water back to the top.

This works great, but what if you have an above ground pool that doesn't have bottom drains? We have come up with a little trick to mimic the effect of a bottom drain in an above ground pool.

Simply hook up your manual vacuum cleaner, as if you were about to vacuum your pool. Then leave the vacuum at the bottom (in the middle of your pool) and turn it upside down. Now your pool filter will be pulling water from the bottom of your swimming pool using your manual vacuum and releasing the clean filtered water up top. Voila!

These are three different methods of how to clear a cloudy pool by using swimming pool chemicals and your pool's equipment. Check out some of our related articles to get more information about cloudy swimming pools.

# Foam

Foam in a pool is due to the water being “thick.” This thickness creates bubbles—lots and lots of bubbles. The bubbles are filled with air that can come from your return jets or the wind outside.

**Some common causes of pool foam are:**

- Hair care products (shampoo, gel, mousse, hair spray, etc.)
- Body lotions, deodorant, makeup
- Laundry detergent or soap
- Cheap pool chemicals, too many chemicals, or a high level of total dissolved solids (TDS)
- Algaecide

## How To Prevent Pool Foam

### Rule #1: Algaecide

One of the main causes can be the type of algaecide you use. You want to look for algaecide that is “non-foaming” and don’t overuse it. Follow the directions on the back of the bottle. You should only need a few ounces per week. And keep in mind, you really don’t need algaecide if you follow basic pool chemistry and keep your water clean.

Cheap chemicals you might pick up at a big box store such as (Walmart, Sam's Club) could be harmful to your pool water. I have seen chlorine tablets that are unstabilized – a huge waste of money – and algaecide that comes in gallons. Find a highly concentrated algaecide that won't cause foaming.

## Rule #2: Shower

This may be a tough rule for your kids to follow, but rinsing off in the shower before swimming can prevent foam from developing. The shower will rinse off any makeup, shampoo, or soap residue on the body before introducing it into the pool.

## Rule #3: Watch Out For Pranksters

Funny as it may be, I have heard stories of pranksters throwing bubble bath liquid or laundry detergent into pools. This is not cool. It is very hard to get rid of. In fact, you will likely have to drain and refill the pool quickly or order to get rid of the foam. This is very rare, of course.

# How To Get Rid of Pool Foam

If the foam is caused by algaecide, it will break down on its own. Just give it a few days to disperse. You can skim the foam off the surface to help speed things up.

To get rid of foam, you need to make sure your chemicals are properly balanced and at the correct levels.

Use test strips to check the pH and alkalinity, and adjust them to the proper levels if needed (pH should be 7.4 – 7.6, and alkalinity should be between 100 – 150ppm).

If adjusting these levels alone doesn't get rid of the foam, shock the pool by adding chlorine or non-chlorine shock. I suggest just adding 1 pound per 10,000 gallons of water. For instance if you pool is 21,000 gallons, you would add 3 pounds of shock. As usual do it at dusk and let your pool filter system run overnight.

If all else fails, you can purchase an anti-foam chemical to add to the water. This will get rid of the foam right before your eyes. I would only use this if you're in a pinch – right before a party or before you have guest over and don't want to be embarrassed that your pool looks like a washing machine.

# Pink Slime & White Water Mold

Pink slime and white water mold seem to go hand-in-hand. They are commonly misunderstood in the swimming pool world, but we are going to clear some things up.

Here are the facts about pink slime and white water mold:

- They ARE a naturally occurring problem.
- They are NOT caused by pool chemicals (i.e. biguanide-based chemicals).
- Pink slime NOT an algae, it's a bacteria.
- White water mold is a fungus.
- They are NOT harmful to humans.
- They can grow in any type of swimming pool.
- They love PVC piping.
- They are very resistant to pool chemicals.

When toilets, showers, sinks, and bathtubs get that orange color stain, that's pink slime – not metals. Pink slime and white water mold can grow wherever there is water.

[NOTE: Since they are very resistant to pool chemicals, including chlorine, we are going to be using some mega doses to get rid of it, so be prepared.]

Now that you've identified the problem and learned the facts, let's get rid of it.

## Getting Rid of Pink Slime and White Water Mold

### 1. Clean!

Manually clean and remove all the pink slime and white water mold you see. Check inside the filter system, in and around the skimmer and return jets, behind ladders, and in shady spots of your swimming pool.

### 2. Shock!

Before you add any chemicals to your pool, make sure to pH (7.4 – 7.6) and alkalinity (100 – 150 ppm) are at the right levels.

I recommend quadruple-shocking your pool with chlorine shock. That means adding 4 pounds of calcium hypochlorite shock per 10,000 gallons of water. Yes, this is a lot, but like I said, these elements are very resistant to pool chemicals, including chlorine.

### 3. Filter!

Run your filter continuously for 24 hours. Afterward, chemically clean your filter system using a filter cleaning product.

## 4. Test!

After about four days running your filter system, and continuing to clean your pool using a brush and manually vacuuming, it's time to test your water.

Use a test kit or test strips, or bring a sample of your water to your local pool dealer to get it tested. Bring your pH and alkalinity back up to the right levels.

## How to Prevent Pink Slime and White Water Mold

We know these are naturally occurring problems, so we have to defend our pool against them.

Just like using bleach in your toilet to prevent pink slime, we are going to do the same with a pool, but instead, we use chlorine.

Make sure you keep the proper level of chlorine in your pool at all time – 3 ppm (parts per million). And brush and vacuum your entire pool often – I recommend doing this twice a week.

# Stains

To address this problem, you must identify the source of the stain, and introduce the appropriate solution as soon as possible.

**Pool stains generally fall into two categories:**

- Metal or rust-based: Metals can accidentally be introduced into pools from well water or corrosion from copper pipes.
- Organic: Leaves, berries, and other organic debris can also leave stains if allowed to settle on pool surfaces.

The best way to distinguish metal from organic stains is by color. Different color combinations provide good indicators of exactly what substance is causing a given stain:



## Green and Brown Stains:

These stains are most likely organic stains caused by leaves or other plant matter.

**Red and Blue Stains:** These stains are more than likely from brightly colored berries; check the area around the pool for the offending bush.

**Blue, Green and Black Stains:** When a stain is a mixture of dark blue, green, and black, and there is no evidence of organic matter, it is likely to have been caused by copper.

**Green, Brown, and Red Stains:** This combination indicates iron as the culprit.

**Brown, Black, and Purple Stains:** This dark color combination is caused by manganese.

Once you've determined the likely cause of a stain, it's time to test the theory and confirm the source of the problem. If an organic stain is suspected, try applying a small amount of chlorine directly to it. An organic stain will come away easily.

Metal stains, on the other hand, react best to ascorbic acid, the kind found in citrus juices. The best method is to apply crushed vitamin C tablets to the stain, and see if it is removed or lightens. I'll go into more detail about removing stains in the next section.

# How To Get Rid of Pool Stains

## For Organic Pool Stains

Organic stains are best addressed by super chlorinating the water, then brushing. First, test the water to check the balance of pH and alkalinity – pH should be between 7.4 and 7.6, while alkalinity should be between 100 and 150 ppm (parts per million). Adjust the levels if necessary.

For multiple or large stains, the water should be triple shocked by adding 3 pounds of calcium hypochlorite pool shock for every 10,000 gallons of water. Remember always to shock at dusk, or at night, for best results, and keep your filter system running for at least 8 hours.

Once it's been shocked, thoroughly brush all the stains, then let the pool circulate for at least another eight hours. Continue to brush the stains intermittently, and keep the chlorine level high until the stains are finally gone.

## For Metal Pool Stains

Metal stains usually require professional intervention. The first step is to take a water sample to your local pool care retailer to determine exactly what kinds and levels of metals are plaguing your pool. You won't be able to test for these levels yourself. After that, a professional can recommend a special additive designed to remove metal stains.

Add the chemicals according to manufacturer's instructions, brushing the stain to help the process along. If the additives and brushing don't do the trick, you may have to use a targeted citrus-based stain remover, also available at pool care retailers, to attack the stain directly.

## Future Prevention

Preventing pool stains is easy, and it's just as important as any other facet of pool maintenance.

To keep organic stains from forming, make sure to keep the correct level of sanitizer (e.g., chlorine) in the pool at all times.

Make sure pH and alkalinity are balanced to keep the sanitizer working properly. Keep your pool clean by regularly vacuuming (manually or with an automatic pool cleaner) and skimming the surface of the water.

The best preventative measure against metal stains is to test water regularly for the presence of metals and address it before stains form. If your pool is prone to metal contamination due to well water or other factors, be sure to use a stain-and-scale product as part of your regular pool maintenance. These products sequester minerals in solution, which prevents them from binding to pool surfaces.

In the case of a copper problem, it's worth noting that low pH can also cause a recurrence of stains. Low pH indicates acidic water, which corrodes copper and introduces it into your pool. Always keep your pH level between 7.4 and 7.6.

# Leaks

Pool leaks can occur anywhere in or outside your pool. Before searching for the leak in your pool, make sure you check your entire filter system area, including the pump, filter, heater, and chlorinator.

If you have an inground pool, leaks can also occur through a cracked pipe underground. If you suspect this, call a local pool professional to pressure test the lines for possible cracks.

Before you start searching for the leak, you must determine that you have a leak and not losing water from water evaporation, so let's start there. How to Determine if you Have a Leak (The Bucket Method)

What You'll Need:

- 5-gallon plastic bucket (preferably without a handle)
- Black marker (Sharpie) or duct tape

## 1. Fill and Mark The Bucket

Fill a plastic bucket about 3/4 full of water. Mark where the water line is on the inside of the bucket with a Sharpie marker or strong tape.

## 2. Float the Bucket

Float the bucket in the pool (shallow end for ingrounds) and mark the water line on the outside of the bucket with a marker or tape. Let it float for about two or three days.

### 3. Time to Check The Results

If the water inside and outside the bucket has gone down the same amount, your pool is losing water due to evaporation. However, if the water level has gone down more outside the bucket than inside the bucket, your pool has a leak.

To find the leak yourself without hiring a company, here's how:

## How to Find a Pool Leak (Ink Method)

What You'll Need:

- A pair of goggles
- A snorkel
- Red or dark food coloring or Leak Finder Ink

### 1. Let The Pool Leak Until It Stops

Start off by just letting the leak drain the water. This is tricky because if the leak is at the bottom, then it will drain all the way, and we want to avoid that. However, if you think it's coming from the top of the wall, then let it drain.

When the pool stops draining, then you will know it's somewhere along the wall at the water level when it stopped.

## 2. Check The Ground and Walls Around The Pool For Wetness

This will help determine the area of the leak. Now you know the height of the leak, because it's where the water stopped draining. This step gives you the area because the ground or pool wall will be wet.

Narrow down the area as much as possible before using the dye to find the leak. Once you've got a good idea where the leak is, jump in the pool and find the exact location with the dye.

## 3. Use Food Coloring (Or Dye) To Pinpoint The Leak

Go to the area where you think the leak might be. Move slowly and try not to disturb the water.

Squirt the dye in the water close to the wall. Stay very still. If the leak is near, you will see the dye move towards the leak source like a current. If you suspect your leak is at the bottom of your pool, put on those goggles and do the same thing. Keep still so the dye moves toward the leak rather than swirling around your movement.

# How to Fix a Pool Leak

If you own an inground pool made of concrete, plaster, or fiberglass, you have the option of doing it yourself, but I recommend calling a professional, preferably the company that originally put in the pool.

# How To Patch A Leak In Your Pool (Vinyl Liner)

The smaller your pool, the easier it is to find a leak. But just because you have a leak doesn't mean you have to replace the liner. There are vinyl liner patch kits that work underwater.

[WARNING: Do not entirely drain a vinyl liner pool. Once the vinyl touches air it will start to shrivel up and become brittle. This will cause a problem when you go to refill your pool, as it could cause tears in your liner.]

Your vinyl patch kit comes with a big sheet of clear or blue vinyl. Cut out the patch in a big circle—and make it larger than the leak hole. Don't use a square patch—the corners are easy to pull up when using the pool.

Cover the entire back of the patch with the glue that comes with the kit. If you are not under water, apply the patch over the leak hole and apply pressure for 2 minutes.

If your leak is underwater, fold the patch in half, with all the glue inside, so that the glue will come in little contact with water. Go to where the leak hole is, and in one motion, open it up while applying it to the leak hole underwater. Apply pressure to the patch for 5 minutes. If the patch does come off over time, you can always re-patch it.

# Chlorine Demand

Sometimes, when you have a lot of debris and other organic material overtaking your pool, it will require a lot of chlorine to handle the situation. This is called chlorine demand.

You will notice this problem if your tests continue showing no chlorine, even after adding plenty of chlorine or shocking the water. This means your pool has a lot of work to do fighting its containments and needs all the chlorine you can feed it. So feed the beast!

## Common Causes

It's most likely to occur in spring when you open your pool. When the water has been stagnate and untreated, as it is all winter, it can gain a lot of organic and inorganic debris that will take a lot of chlorine to neutralize. This could also happen if the pool is open but hasn't been cared for in a long time.

Heavy rainfall could also be a factor depending on the chemical makeup of the rainwater. There is no way to test this for sure, but if you have trouble maintaining a chlorine reading after a rain storm, chances are you have chlorine demand.

Be sure to keep fertilizers or other non-pool chemicals away from your water as well.

## How to Cure Chlorine Demand

Your pool demands chlorine, so feed it what it wants. I recommend using calcium hypochlorite pool shock and adding 3 pounds per 10,000 gallons of pool water. For example, if you have a 21,000 gallon pool, I would add 9 pounds of pool shock.

Before adding pool shock, make sure your cyanuric acid (chlorine stabilizer) levels are correct (30 to 80 ppm), and remember to shock at night because the sun eats up chlorine.

## Is Chlorine Demand the same as Chlorine Lock?

Chlorine demand is sometimes referred to as “chlorine lock,” but these are not the same issue. Chlorine lock is when chlorine is not working because it’s being “locked up” or inhibited from doing its job by cyanuric acid (chlorine stabilizer). According to the experts over at TroubleFreePool.com, it’s safe to say that chlorine lock just isn’t a real issue. In fact, there is no proof that an excessive amount of cyanuric acid will cause the chlorine “lock.”

Don’t confuse the two. Chlorine demand is real and solvable by adding enough chlorine to your pool until you start to see a reading on your liquid test kit or test strips. Chlorine lock is a false issue, but keep in mind that some pool companies and experts will use these two phrases interchangeably. Take comfort in the fact that whichever phrase used, both are solvable by feeding the beast.

# 5 Tricks to Keep Ducks and Other Birds Out of Your Pool

Here are 5 tricks for keeping ducks (and other birds) out of your swimming pool all season.

## 1. Use a Solar Cover



Solar covers not only keep your pool heated and free of debris, but they also keep ducks from swimming and pooping in your water (or can at least keep the poop from fully mixing in).

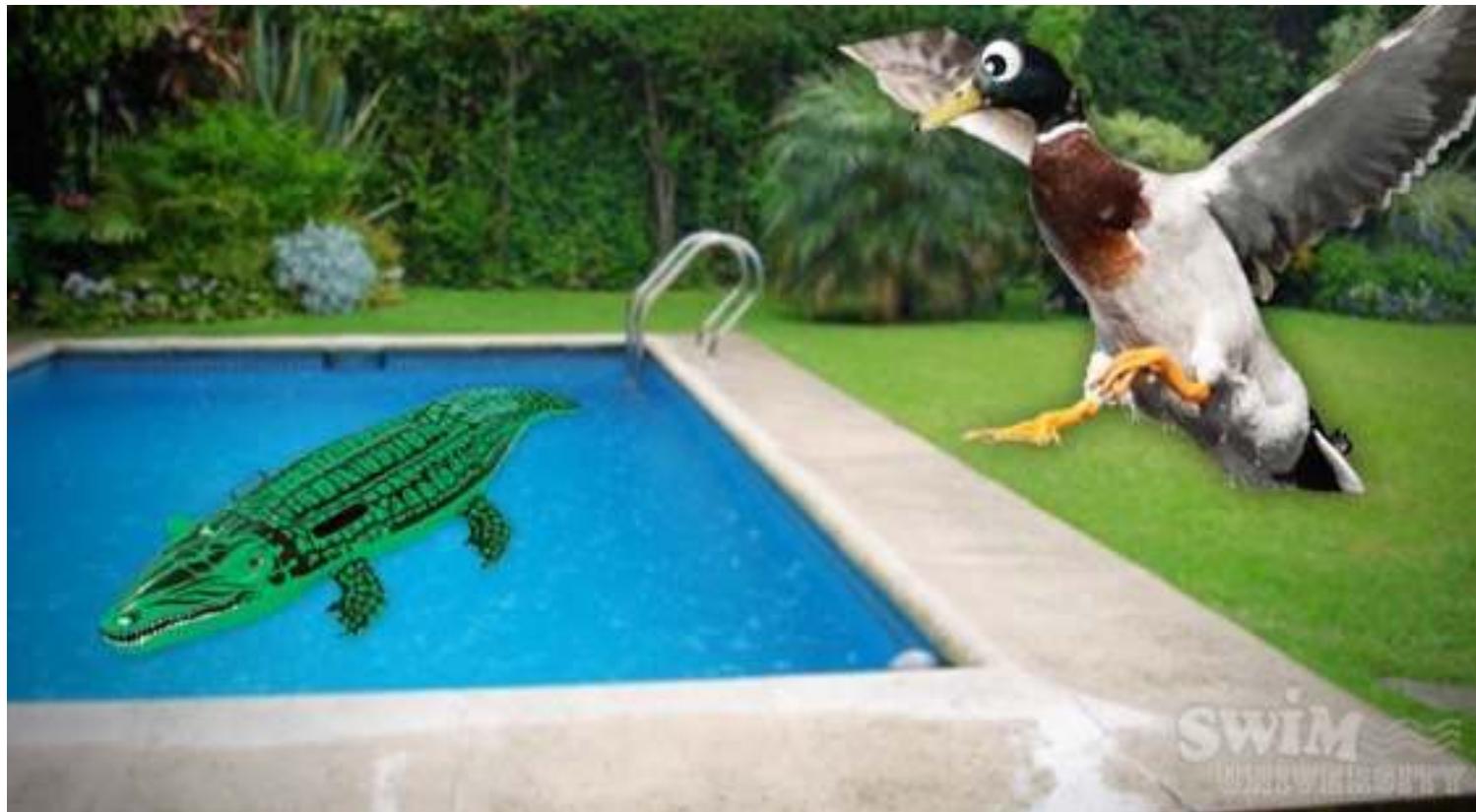
If you already have a solar cover (and you should), then good for you! You don't have to worry about ducks if you keep your solar cover on when you're not home.

## 2. Use an Automatic Pool Cleaner



Ducks are easily frightened. They fear predators, and nothing looks more like a predator than a moving, underwater automatic pool cleaner.

## 3. Inflatable Pool Toys



Keep a few inflatable pool toys in your pool when it's not in use. Use the ones that look like other predatory animals, including an alligator, whale, snake, or bobbing dolphin.

## 4. Get a Dog



Ducks hate dogs and vice versa. Dogs are one of the duck's natural predators, and their bark alone will scare them away. This is more of a reactive method than a prevention method, but it does the trick. Hopefully your dog(s) can see the ducks even from inside the house so their bark will scare them away.

## 5. Duck Off



The Lo-Chlor company makes a pool chemical called Duck Off that breaks the surface tension of the water. This chemical makes it so the ducks cannot successfully float on the surface.

I would use this as a last resort because I don't like the idea putting unnecessary chemicals in the pool.

To better explain the science behind this chemical, I'll turn to your elementary school science class:

Take a bowl of water and sprinkle a bunch of cracked pepper on the surface. Then, lather up your index finger with dish soap and submerge it in the center of the bowl.

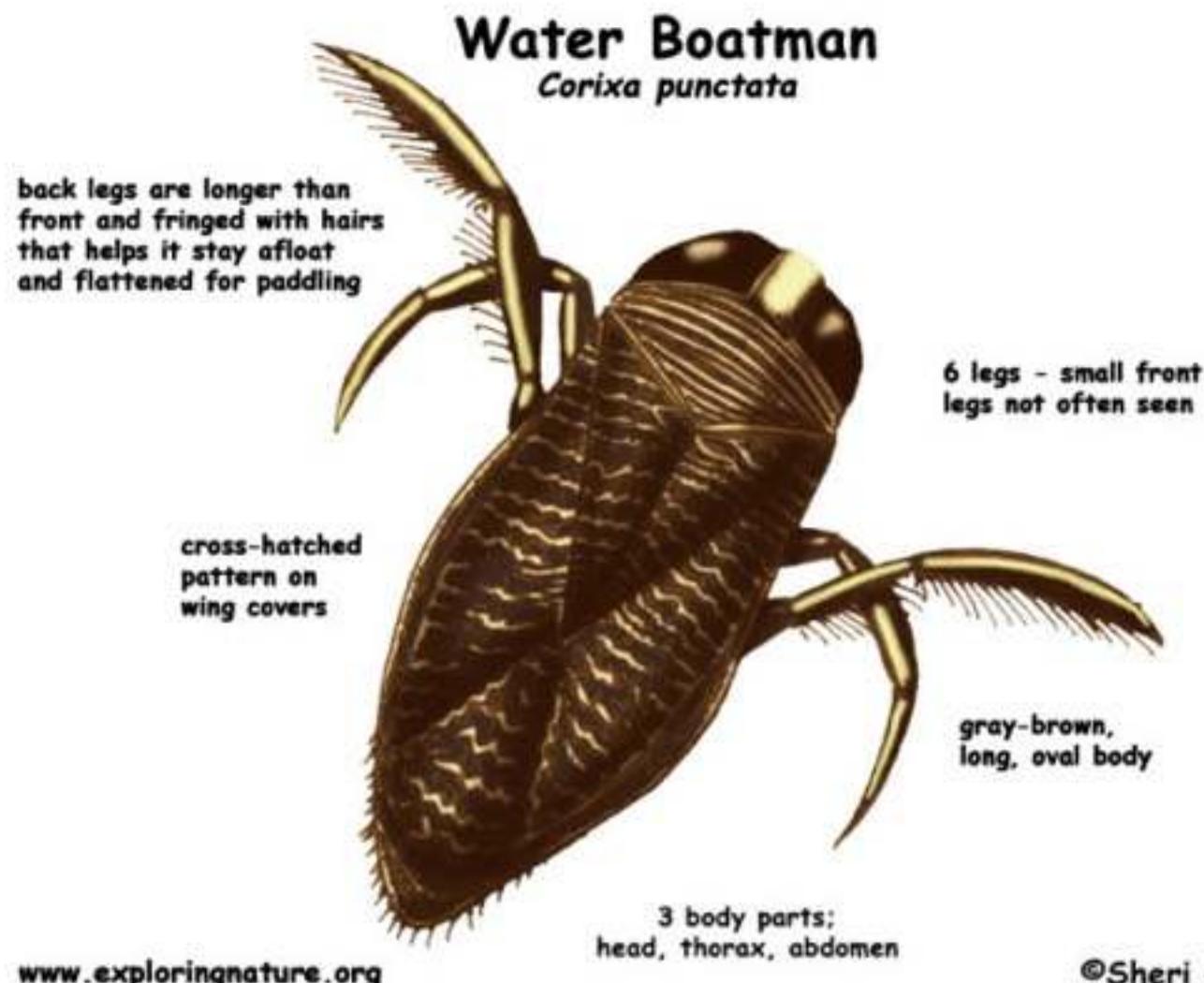
What you'll see is the pepper magically race to the edge of the bowl, like roaches scattering when the lights come on. It's a cool trick and does

well at parties to impress new friends — I should know because I did this trick a few months ago at a party.

## How To Get Rid Of Water Bugs In Your Swimming Pool

### Water Boatmen

These are oval looking bugs. They eat algae, other water micro organisms and mosquito larvae. They are gross, but they do not bite. They breath air, so they can drown. They can also fly and tend to lay eggs in pool algae.



## Backswimmers

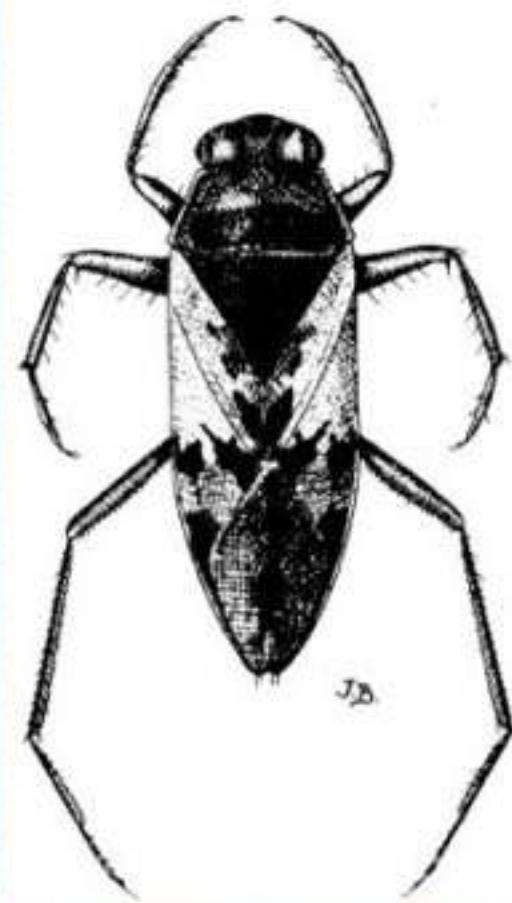
These are a little more common in my experience. They are thin and they breath air, so they surface a lot and skim across the water. They eat other bugs like water boatmen and beetles.

These bugs BITE, so be careful. They also fly and lay eggs in pool algae just like water boatmen.

(When I was a kid we use to call these bugs skimmer bugs).

**Hemiptera:  
Notonectidae**  
(no-toe-NECK-ti-dee)  
**backswimmer**

- Dorsum convex, **light-colored**, without cross striations
- Front tarsi **not scoop-shaped**; hind legs fringed for swimming
- **Usually larger than corixids**, up to 15 mm
- Aquatic predators that **swim upside down**, thus the common name "backswimmer"



# How Do You Get Rid Of Water Bugs?

In order to kill these aquatic pests, you must take away their food supply. We know that water boatmen eat algae and backswimmers eat water boatmen. So, we need to start by getting rid of the pool algae, and in order to do that, we must shock!

For this purpose, I would recommend double-shocking your pool. That means for every 10,000 gallons of water your pool holds, add two 1-pound bags of chlorine shock (calcium hypochlorite). Remember that shock should always be added at dusk or nighttime to prevent the sun from burning it off too quickly.

After you successfully shock your pool, use your pool brush to scrub down the walls and floor of your pool. This will loosen up any algae that has been growing and release it into the water so the chlorine shock can kill it.

Note: Even if you don't think you have algae, do this anyway just to be sure. Sometimes you might have growth spurts so small you don't even see them.

The goal here is to get rid of the food supply for the water boatmen. Without the water boatmen, the backswimmers will have nothing to eat and will look elsewhere for food.

After you have shocked the pool, got your chlorine level up and have been running your filter system, make sure you get rid of all the

remaining bugs. Since the bugs need air to survive, you can use this trick to kill them.

## How Do You **KILL** These Bugs?

Get a bucket (preferably with a lid) of pool water and pour oil in it. You can use standard cooking oil. Since oil and water don't mix (duh), the oil will float to the surface. Skim out the bugs from your pool, using your net, and put them in the oil bucket. Close it up and wait for them to die.

Sounds like torture I know, but it will get rid of them. The less bugs, the less chances more bugs will come.

# Phosphates

My friend Dave — who lets me film pool care videos at his house — called to tell me he was having a problem with algae. He went to the pool store to get his water tested, and he was told he had a high amount of phosphates that needed to be removed.

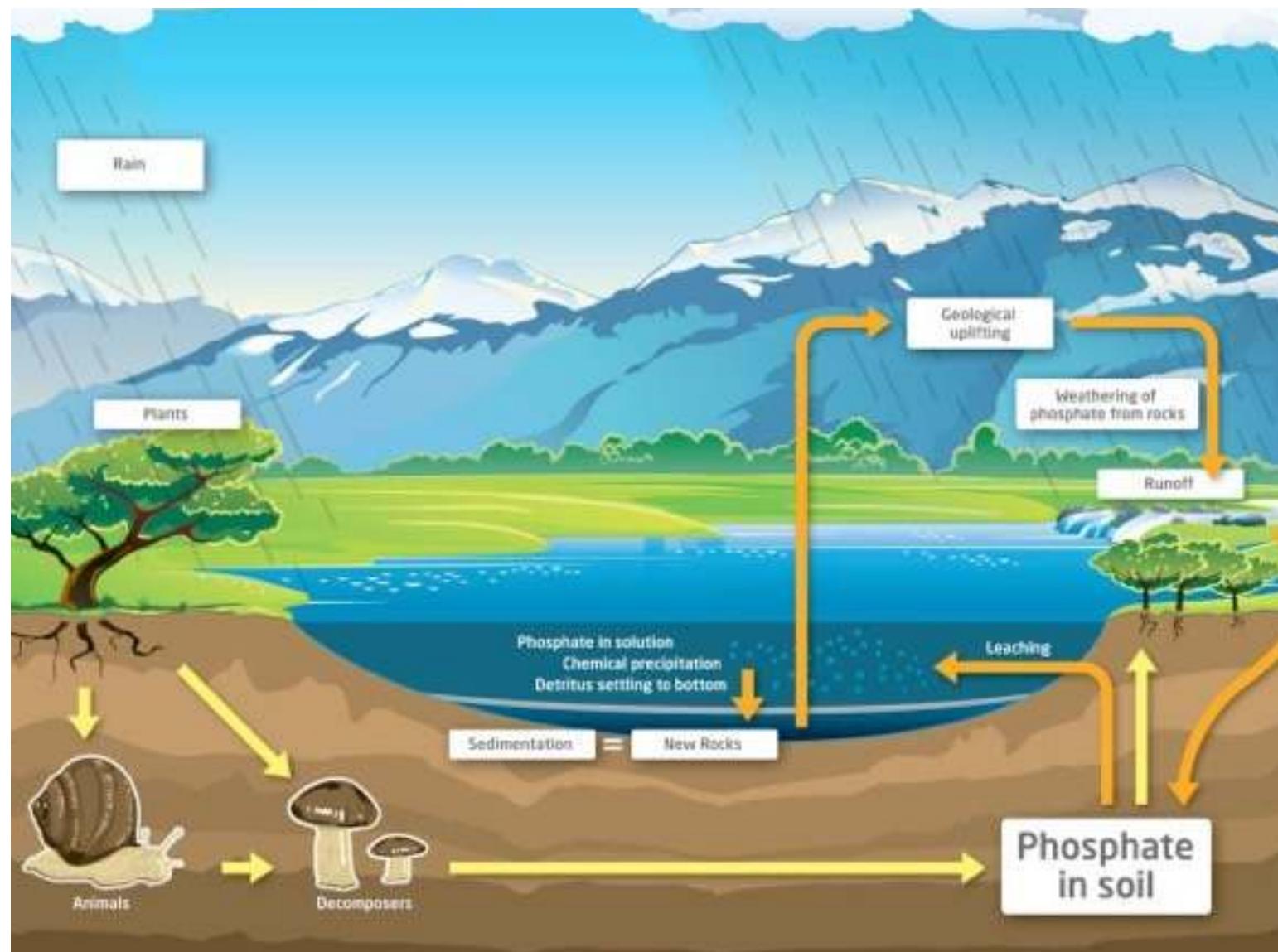
Dave did as he was told and added a phosphate remover to his water. What happened? He still had a green pool. He spent over \$25 for a chemical that did nothing to solve the problem he was having, and it even left white sediment on the bottom of his pool. Now he had two problems.

## What Are Phosphates, and Why Are They in My Pool Water?

Phosphates are usually brought up when you have either green or cloudy water. The truth is, you will ALWAYS have phosphates in pool water. They are introduced to your pool in several ways, including:

- Vegetation (leaves and dirt in your pool)
- Tap water
- Makeup, lotions, and hair products
- Pool chemicals
- Lawn fertilizers (if added directly into the water)

They are impossible to avoid, and they are “algae food.” Algae can digest phosphates which will help it grow quickly.



## Do I Need To Remove Phosphates?

**Short answer:** Probably not.

Phosphate removers are usually sold as a preventative — much like algaecide. As long as you keep a constant appropriate level of chlorine (or whatever sanitizer you use), you need not concern yourself with removing phosphates. Save your money!

If you’re having problems with either algae or cloudy water, your first line of defense is to test your water with test strips. First, make sure your pH

and alkalinity levels are correct. Then, check your chlorine. Low or non-existent chlorine levels will allow algae or cloudy water to appear.

If you see algae, first make sure your pool is getting enough chlorine. Then, shock the water to kill the algae. I won't go into detail here, but you can check out these articles that will help you defeat algae and cloudy water.

To prevent algae and cloudy water from occurring in the first place, keep a close eye on your pH, alkalinity, and chlorine levels — especially chlorine. If your chlorine level dips for a couple of really hot days, you are asking for an algae bloom.

To learn more about the facts and myths on phosphates in your pool water, I suggest reading this article — it's very informative. One of the experiments concluded with the following statement:

Algae growth rates were unaffected at each phosphate level and phosphates are not likely a problem until they reach very high levels above 1,000 ppb (parts per billion).

That said, I would only check your phosphate level if your chlorine additions fail to get rid of the algae. If the phosphates level exceed 1,000 ppb, then go ahead and lower your phosphate levels, but continue to kill algae using chlorine. Remember, removing phosphates WILL NOT get rid of pool algae or cloudy water.

Despite all the phosphate remover Dave used in his pool, it wasn't until he boosted his alkalinity, shocked with chlorine, and ran his pump for 24

hours that he woke up to a crystal clear pool. If only I had written this article and sent it to him before he spent money on a phosphate remover — he'd be \$25 richer.

# Green Hair

I'm sure you've heard it before – swimming pools can turn blonde hair green. Most people are under the false impression that chlorine is to blame. The truth is, chlorine is not the main enemy, but it's a sidekick.

## What Turns Blonde Hair Green In A Swimming Pool?

**The answer is:** Copper!

Copper is a metal that is found in some swimming pools, particularly ones that are filled using well water. Copper can also enter the pool water from certain copper-based algaecides.

## So How Does Copper In Pool Water Turn Your Hair Green?

The copper in the water is oxidized by chlorine, which then binds to the proteins in the hair strands. The metal will produce a green tint in the hair. Simple chemistry.

## Will Blonde Hair Turn Green in a Saltwater Pool?

**Short answer:** Yes.

Saltwater pools are chlorine-based pools. However, instead of adding chlorine manually with tablets or powder, salt is added to the water,

which runs through an electrically charged generator, turning the salt into chlorine.

If you have copper in the water, and the chlorine created by the salt oxidizes it, it may turn your hair green just like a regular chlorine swimming pool.

## 3 Ways To Prevent Green Hair

Start by getting your pool checked for metals, especially copper. You can use test strips at home, but I recommend taking a sample of your water to your local pool store to have it professionally evaluated.

### 1. Stop Using Copper-Based Algaecides

Some algaecides contain copper. They are very effective in killing algae, but they can also cause staining and, of course, green hair.

Look for polyquat algaecides to use in your pool as a weekly algae preventative, such as Algaecide 60. Or don't use algaecide at all and just keep your chlorine level in check.

### 2. Remove The Metals In The Water

If you have metals in your water, be sure to remove them by using a chemical made for this purpose or a pre-filter you can attach to your garden hose while filling your pool, such as Natural Chemistry METALfree.

### 3. Hair Conditioner and Other Treatments

You can also protect your hair by using a leave-in conditioner before swimming. Also, washing your hair as soon as you get out of the pool.

When you visit your regular hair salon, and ask for a “seal coat” or a “gloss coat” that seals many cuticles on the hair. This will prevent the copper from attaching to the hair strands and turning it green.

At home, you can use a “hot oil” treatment that you can pick up at a local drugstore or beauty supply shop.

These simple techniques will protect your hair from the metal in the water. If those don’t work, or you don’t have the means to do them, you can always wear a swim cap.

## How To Fix Green Hair From a Swimming Pool

We’ve outlined two different remedies you can use to get rid of green hair you got from swimming in a pool.

### Professional Shampoo

If your hair is already green from the swimming pool, you can use a shampoo that chelates the metal...

Chelate: A chemical compound in the form of a heterocyclic ring, containing a metal ion attached by coordinate bonds to at least two nonmetal ions.

In other words, this type of shampoo removes the green tint from your hair. Here are a few recommendations:

- UltraSwim Chlorine Removal Shampoo
- TriSwim Shampoo
- Reflect H2O Swim Shampoo

## Homemade Remedies

If you love Bloody Marys or V8, then this home remedy shouldn't be a problem for you.

Applying a liberal amount of tomato juice to your hair and scalp for 5-10 minutes works wonders. Then simply wash it with shampoo and use regular conditioner.



Underwater Dog Photography by Seth Casteel, Catherine Ledner and Dale Berman

# EXTRAS

*Somehow I kept my head above water. I relied on the discipline, character, and strength that I had started to develop as that little girl in her first swimming pool.*

**- Esther Williams**



Remember, just because you're in charge of taking care of a swimming pool doesn't mean you can't have fun.

In the following sections, I'll break down some extra things you need to know about pool care. From swimming with your dog(s) to finding things around your house to clean your pool, I'll cover it all.

Enjoy this section (like you did with all the others)!

# 3 Tips to Keep Your Pool Clear While on Vacation

If I had to make a guess, I would say about 80% of the population likes to take a summer vacation (or if you're European, a "holiday") instead of a winter vacation.

Personally, I like taking my vacation in the winter. I do a lot more winter activities than summer activities, but enough about me.

Being that most of our readers take summer vacations and own swimming pools, I figured I would share a few tips on how to take care of your pool while you're away. I used to get asked this question a lot when I worked at the pool store. It's not as hard as you might imagine.

## 1. Find a Neighbor or a Friend

This is the key to success when it comes to keeping your swimming pool clear while you're away.

The ideal candidate is someone who owns a pool themselves. Since they should already know what to do. Tell them to check on the pool once a day and provide them with a simple checklist, including:

- Empty the skimmer basket(s)
- Skim the surface of the pool
- Check the filter pressure and backwash if needed

- Test the water with a test kit or test strips
- Add any necessary chemicals (only if they know what they're doing)

## 2. Get A Timer

Hopefully, your pump already has a timer. If not, I would invest in one. They are a crucial part of proper pool care.

Set the timer to run the pool 8-12 hours a day. If you can split up the times, great! If not, it won't be a problem for it to run 24 hours a day. Running your pump and filter is very important to keep your pool clear, and it's better to leave a timer in charge rather than a human.

## 3. Get Your Water Checked Before You Go

Take a sample of your pool water to your local pool store and get it professionally checked.

Correct any issues with water chemistry before you go. You want to make sure that your pH and alkalinity are properly balanced and your sanitizers levels are correct.

You want your pool to be clean and crystal clear before you leave.

# Hacks

John walked into his backyard and noticed it was time to skim the pool. A fine layer of pollen, leaves, dead bugs and other forms of debris left quite a mess.

John begrudgingly walked over to his shed to grab his pool skimmer, but to his surprise the skimmer net had been destroyed! The netting was dry-rotted, torn and rendered completely useless.

John was a resourceful man, and he wasn't about to let this stop him from enjoying a clean pool. His eyes lit up as he stared at the windows on the back of the house.

He walked over to a window on the first floor, removed the screen and cleaned his entire pool with it in under 5 minutes. John never bought another skimmer net, but instead, invested in more window screens.

I've put together this list of pool maintenance hacks to keep your swimming pool water clean, clear, and warm that are as resourceful as John's window-screen pool skimmer.

## 1. Use your vacuum as a main drain

Inground pools have drains at the bottom of the deep end that pull water into the filter. Above ground pools, however, lack this benefit, including the ability to clear the water faster by drawing water from the deep end into your filter.

Hook up your manual vacuum and place it in the middle of your pool UPSIDE DOWN to act as a main drain. This will clear you water faster if you're experiencing cloudiness.

## **2. Use pantyhose to collect debris**

Old panty hose work great for filtering out debris before it enters your pool's filter system. Just take an old pair and wrap them around your skimmer baskets. They will help collect more debris and finer debris than the skimmer basket alone.

You can also wrap pantyhose around your skimmer net (or window screen). When they get full, just throw them out and start fresh with another old pair.

## **3. Add D.E. powder to your sand filter**

Sand filters can have a hard time filtering out fine particles in your water. It usually takes longer to filter out cloudy water with a sand filter than with a D.E. filter. However, you can use a small cup of D.E. powder with your sand filter to boost the effectiveness of your filter.

Just add a cup of D.E. powder to your skimmer and let it run through your system. The D.E. will aid your sand filter in picking up finer particles from your water.

## **4. Use a tennis ball to remove oils from the surface of the water**

The tennis ball will absorb oils left behind by swimmers, including natural body oil, suntan lotions, makeup, and hair products.

Just place a couple of tennis balls in your pool and let them float around. Or you can drop them into your skimmers as long as your skimmer basket is in place.

## **5. Clean pool tile with a baking soda paste**

Mix together baking soda and a little bit of water to form a paste. Then use a sponge or brush with of paste to scrub the tiles around your pool. The baking soda won't negatively affect the water.

## **6. Use baking soda to increase pH and alkalinity**

Baking soda or soda ash is used to increase the alkalinity of your pool water, which will also increase the pH.

Alkalinity is a pH buffer, and I like to think of it as pH's bodyguard. Since pretty much anything can affect your pool's pH, especially rain water, the alkalinity will take the blow allowing your pH to remain relatively stable. You should keep your alkalinity reading between 100 and 150 ppm (parts per million).

## **7. Clean off your winter cover with a leaf blower**

During the winter, your cover will become littered with leaves and debris. It's good practice to keep your cover as clean as possible in order to preserve it so it can live a long and useful life. Cleaning the cover can be challenging, but not if you own a leaf blower.

On a dry day, you can fire up your leaf blower to remove all the dirt and debris off your cover. Just be careful not to cause any damage to the cover in the process.

## **8. Dryer sheets and lemongrass to keep bees and other insects away**

Avoiding bugs and bees can be a bitch because to safely get away, you have to go underwater — and you can't hold your breath that long (unless you're David Blaine).

Try placing dryer sheets around your pool. Afraid it will look trashy? Use them for decorative basket liners. Problem solved!

Got wasps? Stuff a brown paper bag with three or four crumpled plastic bags. Gather, tie and hang the paper bag where wasps congregate. They will think it is another wasp's nest and keep their distance.

If you live in an area prone to mosquitoes, lemongrass is a must-have for your herb garden or deck. The skin of the plant contains citronella, which is widely used in outdoor candles to ward off disease-carrying mosquitoes.

Both quotes courtesy of SpryLiving.com

## 9. Make your own solar rings to keep your pool warm

There are many things you can buy to keep your pool warm, including a solar cover, a gas heater, or a heat pump, but why not just make your own solar heating technology by creating solar rings?

Check out this video:

## 10. Remove liner stains with pH decreaser and a sock

If you have a stain on your liner, you can quickly figure out the cause and remove it by using pH decreaser. Just pour some granulated pH decreaser in an old sock and tie it to your telescopic pole. Let the filled sock rest on the stain for about 2 minutes.

If the stain lifts, then it's most likely a stain caused by metals. You will need to remove the metals from your water using a chemical specially made for this purpose. This chemical works by coating the metal ions in your water so that they won't stain. It also allows your filter to filter-out these metal ions from your water.

If the stain doesn't lift, you might have an organic stain which can be removed with a high dosage of chlorine and plenty of brushing.

# Landscaping

If you're looking to quickly landscape around an inground pool on a budget, you have come to the right place. Here is a step-by-step guide filled with useful tips that will help you complete your inground pool landscaping project in two days or less.

## 1. The Goal

My friend David, owner and lead designer of Revolutionary Gardens, says...

The goals for landscaping are going to be different for everyone. I have yet to work with a pool owner who didn't want an attractive, low-maintenance planting design that offers privacy and didn't drop debris in the pool.

Sounds like a good goal, right? You want your landscaping project to be low maintenance, provide privacy, and minimize the amount of debris in your pool.

## 2. The Design

Get out a blank sheet of paper (or graph paper) and draw — to the best of your ability — the outline of your pool and the concrete or stone around it. Also, make sure to draw the perimeter of your yard. I recommend using a ruler or graph paper to get the best results. And use

a pencil, because I guarantee you will be making a lot of changes to your design.

If there is anything that's already included in your current landscape that you'd like to use, be sure to add it in your drawing.

Pick a theme for your landscape. I recommend checking out some inspirational pool landscaping photos. I've included a few below for you to check out:

- Pool Landscaping on Pinterest
- Pool Landscaping Ideas on Houzz
- Photo Gallery of Pool Landscaping on Southern Living

Remember that landscaping isn't just about grass and plants. Incorporate some lighting elements in your design as well.

For more information about designing, I recommend you check out this article: [Do it Yourself Pool Landscape Design](#).

Here are some things to keep in mind while designing your landscape:

- Use more stone, including using brick as edging, to break up the flow from your concrete decking.
- Keep it spacious. Don't crowd your pool area with plants and lights. Remember, the focal point is the pool.
- Use potted plants close to the pool and keep bedding (mulch) further away.

### 3. The Plants, Soil & Mulch

**The Soil:** “I typically look for a screened topsoil blend that has some compost mixed in,” says David. “Screened means it’s passed through a giant sieve, eliminating large clumps, rocks, and undesirable debris from the soil. Good topsoil is a joy to work with.”

For the best and cheapest soil, you want to mix new topsoil with your existing soil.

**The Mulch:** Look for organic mulch made of shredded bark, pine needles or a local product. Avoid alternatives like tumbled glass or recycled tires — they won’t break down and add nutrients to the soil.

**The Plants:** When it comes to choosing the right plants, it’s best to know what works best and what to avoid. As far as what to avoid, David says:

I tend to avoid anything with a lot of thorns (barberry, pyracantha, hawthorne) or sharp/spiky foliage (hollies, junipers). Certain trees, I like magnolias, can be very messy and will drop leaves and litter all season long, making it more difficult to keep the water clean. I also keep my summer-flowering plants a little farther away from the pool to discourage bees from bothering the swimmers.

Try using these plants around your pool:

- Evergreen Trees
- Ivy (for ground cover)

- Shrubs
- Ornamental Grasses
- Long Blooming Flowers

I recommend you check out this article from PoolProducts.com, where they talk about choosing the right plants for the area you live in.

## 4. The Tools

As with any landscape project, it's only as complicated as you want to make it. A wheelbarrow, a pick, a shovel, and a steel rake will serve you well for most home landscape projects. And a broom or blower for cleanup, too.

To save money, borrow tools from your neighbors and friends before going out and purchasing your own. Just don't forget to return them.

Additional useful tools include:

- Buckets for Mixing Topsoil
- Hedge Shears and Trimmers
- Garden Hoe for Weeding
- Garden Hose
- Gardening Gloves

## 5. Preparing the Area

Start by cleaning the area around your pool. Check for any rocks in the soil and remove them.

Remove all plant pots, debris, trash, metal, and your garden hose. Make sure your area is clean and ready to be worked in.

Soak the ground the night before so it will make it easy to remove any weeds. The weeds will come up easier if the ground is soft.

### Start Weeding First

Use the tip of your garden hoe to remove any weeds in your soil. As you tackle the weed, you want to pull out the entire root system. Be sure to remove all the weeds from the area before adding new plants. Remove any additional root systems you find in the soil.

### Preparing the Plants

If you bought new plants, remove them from their pots, massage the root system to loosen them up and soak them in a bucket with water for about 30 minutes. Don't submerge the entire plant — just the base.

Take this time to also remove any dead leaves off the plants.

## 6. Get to Work!

It's time to start planting! Keep plants spaced out to allow for the root system to spread. Don't plant too close to any walls or near your pool—because this can affect the pH of the soil.

## Potted Plants

Add clay pots in various sizes around the pool. Mix together existing soil and good topsoil. When you dig the hole for a plant, dig the hole deep enough for the plant plus an extra inch deeper and around the plant to allow the root system to take off. Use potted plants close to the pool.

Potted plant tips:

- Water potted plants more frequently than the rest of your plants. They tend to dry out faster in the pots.
- For a bigger area, put multiple potted plants together.
- Use potted plants as a means of transition. For example, place them at the end of a bench wall, on both sides of a door or gate, or beside pool patio furniture to help bring the pool layout together.

You can find out more information about using potted plants and landscaping around your pool from this article: Inground Pool Landscaping 101.

## Lighting

If you are using solar lights around your pool, make sure they get direct sunlight. Before adding the light to the soil, loosen it up with a small shovel and gently insert the light into the soft soil. Most solar lights have plastic stems so you don't want them to break when adding them.

If you use tiki torches (which are very inexpensive), don't fill up the torches all the way with fluid, just add enough to soak the bottom of the wick. Keep an eye on your fluid levels before you light them to make sure you have enough fluid for the night.

# Swimming With Dogs

There are things you should know about protecting your dog and your pool before you decide to let your best friends in the water. I reached out for advice from a bunch of experts to get the truth about letting dogs in the pool.

## Should You Let Your Dog in the Pool?

Most forms of exercise, mental stimulation, and enrichment you can provide for your dog can benefit them — just don't overdo it. When it comes to dogs swimming in pools I say, "Go for it!" Just remember to mind the health and safety of all family members, including your dog.

*The decision to allow and/or encourage your dogs to use your swimming pool is a matter of personal choice. If you allow your dog to use the pool, it is vital that you follow some basic training and safety procedures. These include teaching your dog to find the steps so they can get out and, to the best of your ability, being able to prevent the dog from having access to the pool without supervision.*

*- Steven Appelbaum, AnimalBehaviorCollege.com*

If you decide to let your dog swim, follow these tips before you start.

## 9 Tips for Swimming with Your Dog in the Pool

1. The dog's nails should be kept trimmed. An enthusiastic dog, or one that is using you as a floatation device, may rake you with sharp nails — not to mention the pool liner (if you have one).
2. Groom your dog before swimming. Dogs that have lots of hair can do a number on your filter system. Clean out your skimmer baskets on a more frequent basis.
3. Be careful about using dog toys in the pool. Many dogs have chipped their teeth from grabbing at a toy that has bumped up against the concrete edge.
4. Put your dog in a life jacket. Even a swimming breed, like Labrador Retrievers, can benefit from a life jacket. A tired or nervous dog will swim upright, head straight out and back legs down. Instead, a life jacket gets them swimming better. Dogs with smaller legs may have a harder time with swimming than a larger breed of dog, so this is where a life jacket will come in handy.
5. Dog owners should introduce swimming very slowly to a dog. Have your dog walk into shallow water with you, or carry your dog into the pool. If your pet is comfortable, they will take off swimming. Otherwise, watch for flying paws. Dogs are very adaptable, and most take to the water with no problem, but life vests are a great alternative for dogs who don't like the water or can't swim.

6. Rinse them off after a swim to prevent irritation to the skin and eyes. You shouldn't shampoo after swimming unless it is conditioning. Waterless Bath is a natural enzyme product that also uses aloe vera to soothe your dog's skin and soften the coat. This can be used between regular baths and after swimming.
7. Use sunscreen for dogs. Dogs need sunscreen just as much as their human counterparts. Make sure it is labeled for use on pets to ensure safety. Try using Epi-Pet Sun Protector Spray for Pets.
8. Don't let your dog drink pool water. Always keep an ample supply of fresh water around so your dog can drink without drinking from the pool. Also make sure you give your dog many opportunities to relieve themselves after a swim as they're likely to ingest water and may need to urinate more often.
9. Dogs are known to have poor depth perception, so use a big potted plant to mark the exit of your pool. If you don't have steps, provide a non-slip ramp. Check out the Gamma Skamper Ramp Pool Ramp for Pets.

## Teach Your Dog How to Swim in the Pool

Owners should introduce swimming very slowly to a dog. To get your dog into the pool, start at the first step. This should allow them to have four feet wet but still feel like they can get out.

Don't restrain them. Just gently cradle under the tummy and feed them a couple of tasty treats. Let the dog get curious, and resist the

temptation to pull them into deeper water. When the dog begins to access the first step on their own, try coaxing them to the second step. A larger dog can stand here, get the body wet and still have all fours on a hard surface.

Find a friend or neighbor with a strong-swimming dog. Seeing a dog swimming easily may help build your dog's confidence. Swimming with your dog may also be comforting, but watch for clawing paws. Start slow and have patience. Also keep in mind, some dogs just don't like the water.

## **Pool Care Tips After Swimming With your Dog**

Use a pool enzyme chemical. Oils and build-up on a dog's skin adds organics and phosphates to the pool water. You can use chemicals like Pool Perfect and PHOSFree. I would double up on the dosage — so instead of once a week, do it twice a week if the dog is swimming regularly.

Keep your chlorine at an acceptable range (1 – 3 ppm). And make sure your pH (7.4 – 7.6) and alkalinity (100 – 150 ppm) are balanced.

Additional Tips:

- Shock your pool after heavy use. If you're having a party and swimming with dogs, shock it that night.

- Constantly check the skimmer and pump baskets for debris, including dog hair.
- If the pressure is high on your filter (about 5 – 10 psi above normal running conditions), backwash the filter.

## Is your Dog Ready to Swim?

Besides all these tips for swimming with your dog, remember, dogs are just like humans. They react to water the same way and they can also fall victim to drowning. I always, always swim safely, especially with dogs and novice swimmers.

A post about swimming with dogs would not be complete without a photo gallery of dogs in swimming pools, in my humble opinion. So I leave you with this small collection of adorable dogs in water.

All the expert advice was provided by:

- Amy Robinson of DroolSchool.com
- Tamara Dormer of Best Friends Animal Society
- Natalie Behlman with Unleashed by Petco
- Jennifer Davis of Natural Chemistry
- Adpt.com

# Pool Temperature

Any member of the Coney Island Polar Bear Club would tell you that swimming in frigid water is an adrenaline rush, or a “boon to Meanwhile, devotees of Iceland’s Blue Lagoon go bananas for the 104-113 degree (40 – 45°C) hot springs. One thing is for certain—varying degrees of water temperatures can have major effects on your body.

While there can be serious health concerns on both sides of the spectrum, a little nudge in one direction or another can have a big impact on your health. But it may not have as big an impact on your fat burn as you’d like.

## When The Pool is Too Hot

The 2012 London Olympic pool raised some questions when the sweltering summer heat caused the water temperature inside to reach a sweltering 90 degrees (32°C).

When asked about the heat, the British and U.S. teams just “shrugged off” the worries. Michael Phelps, Ryan Lochte, and Tyler Clary took the slight temperature shift in stride, according to the *Guardian UK*. For speed swimming, slightly warmer temperatures are optimal.

Olympic racing and FINA events mandate a water temperature between 77 – 82 degrees (25 – 28°C), whereas synchronized swimming requires an 81-degree pool.

For diving, the temp is set to a temperate 79 degrees (26°C).

When pool temperatures are warmer, it allows the athletes' bodies to perform at maximum endurance without causing shocks to your system, although too warm can prove dangerous. Dr. Kenneth Kamler, sports medicine expert, explained to CNN that if the water temperature is too hot, the trapping of body heat can cause muscle spasms, which in turn can be fatal, as the swimmer doesn't always realize this over-exertion is occurring.

In 2010, the world learned a painful lesson when U.S. National team swimmer Fran Crippen died because the water was too hot. Officially, the water was 84 degrees (29°C), but many swimmers said it felt more like 86 (30°C), and many complained of swollen limbs and disorientation. Three were hospitalized.

Dr. Michael Bergeron, a heat/hydration expert, told CBS News that, just like other sports, the temperature surrounding a swimmer has a lot to do with body heat dispersion. Although the medical field has done quite a bit of research on cold-water exertion limits, not a lot has been done on the impact of hot water on athletes.

## When The Pool is Too Cold

Speaking of the research done on cold water and athletes, there could be dangers hiding under your pool cover next winter. Although Polar Bear clubs around the world may swear by their practice, it's not all it's cracked up to be.

Swimming in cold water has garnered some recent buzz for “burning fat,” but the research is inconclusive. Although your body works a little bit harder to maintain an optimal temperature, the myth that cold water burns fat stems from the fact that you do burn calories when drinking cold water, but those calories don’t necessarily equate to fat burn.

The calculations are based on the notion that the very definition of a calorie is raising the temperature of water— and your body will be on overdrive working to warm up if you’re surrounded by cold water. This doesn’t mean ditch your swimming regimen all together. Just don’t torture yourself with uncomfortably cold water.

Cold water can become dangerous very fast. Your body has a “fight or flight” reaction to it, explains Professor Mike Tipton (Human & Applied Physiology at University of Portsmouth) to CNN. The invigorating feeling you get is your body in shock, and it can cause irregular heart rhythms in healthy people and cardiac arrest in those with heart problems.

The extreme constriction of blood vessels as your body struggles to keep its organs warm also causes many to gasp and inhale water in attempt to deal with their freezing surroundings. This can occur in water that’s below 70 degrees (21°C), as water wicks away body heat much faster than the air.

## When The Pool is Just Right

While there seems to be a very small range of optimal temperatures for swimming and working out, the good news is that our bodies can adapt

to temperatures quickly. Professor Tipton advises that those interested in Polar Bear clubs will find that within only five 3- to 5-minute immersions in cold water, the body begins adapting and developing a tolerance that may slice your risk of shock in half.

As far as warm water goes, the preparation for handling it isn't as well researched, but it's best to keep warm water for lounging around in.

If you're looking for a perfect pool temperature, not too hot, not too cold, 77 – 82 degrees (25 – 28°C) is the way to go. Goldilocks had it right.

# Heating a Pool

There are three ways to speed up heating a pool—natural solar heat, heat pumps, and traditional gas heaters.

## Gas Heaters

**Gas heaters** work by using gas AND electric to heat up a coil inside some copper tubing. The water passes over this heating coil which warms the water as it enters back into your pool.

This is the fastest way to heat your pool, but also the most costly and energy inefficient. In other words, not for the tree-huggers at heart.

GAS POOL HEATER SIZING CHART		
Size Heater	Gallons In Pool	Sq. Ft. Surface Area of Pool
100 - 200 BTU	1,000 - 10,000	Up to 300 sq. ft.
200 - 300 BTU	10,000 - 20,000	Up to 500 sq. ft.
300 - 400 BTU	20,000 - 40,000	Up to 800 sq. ft.
400 BTU	40,000 - 80,000	Up to 1,200 sq. ft.

## Heat Pumps

**Heat pumps** use only electric. They work by using the sun's free heat and collecting and absorbing energy from the outside air. It's then compressed and transferred to the pool water.

It's more energy efficient and cheaper to operate than a gas heater, but there is more of an upfront cost.

HEAT PUMP SIZING CHART			
Surface Area (Sq. Ft.)	75 Degrees (desired temp)	80 Degrees (desired temp)	85 Degrees (desired temp)
300	54,000 BTU/hr	72,000 BTU/hr	90,000 BTU/hr
450	81,000 BTU/hr	108,000 BTU/hr	135,000 BTU/hr
648	116,640 BTU/hr	155,520 BTU/hr	194,400 BTU/hr
800	144,000 BTU/hr	192,000 BTU/hr	240,000 BTU/hr
1,125	202,500 BTU/hr	270,000 BTU/hr	337,500 BTU/hr
1,500	270,000 BTU/hr	360,000 BTU/hr	450,000 BTU/hr

## Solar Covers & Liquid Solar Covers

If you're looking to save money or have an above ground pool, then I would go with either using a solar cover or a liquid solar cover. Both are great choices.

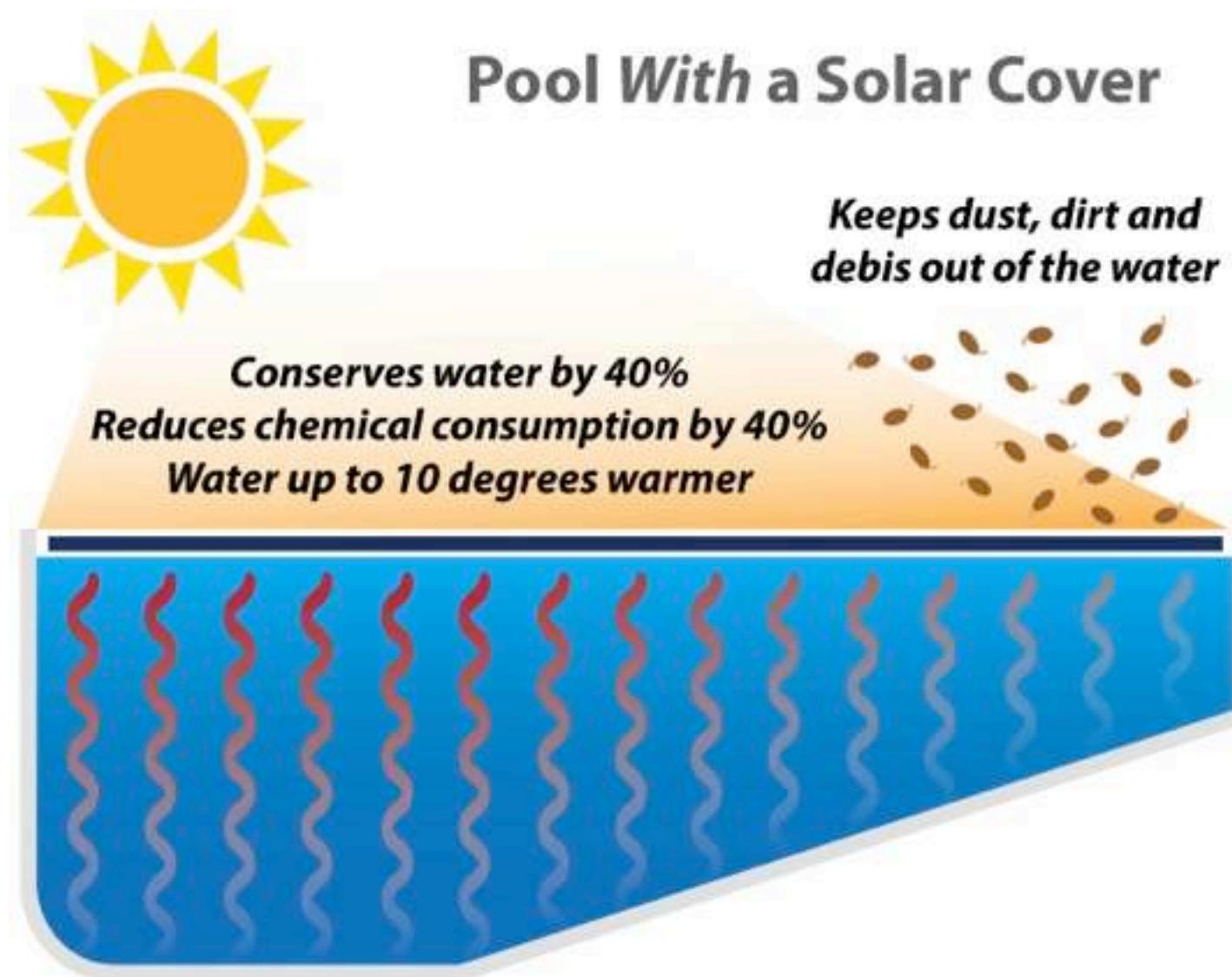
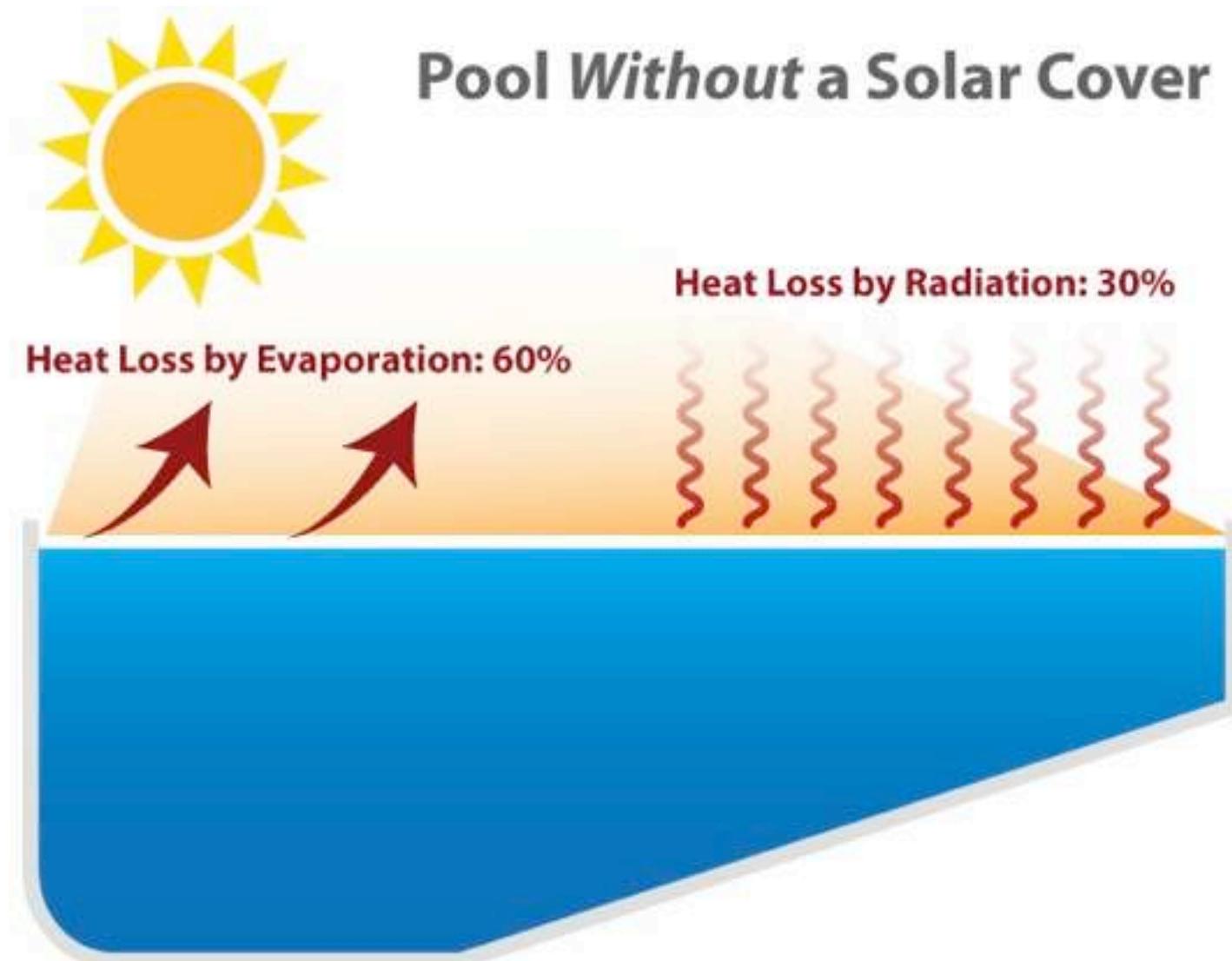
Here's the good news if you already have a pool heater—you can use a solar cover or liquid solar cover to save money on your gas and electric bill.

Using a solar cover with a pool heater is just like heating up your coffee in the morning then putting a lid on it to keep it warm for your drive to work.

Besides saving energy, using a solar cover will help keep debris and leaves out of your water and also cut down on your chemical consumption due to the reduction in water evaporation.

Solar covers are an all-around great thing to own and use, even if taking them on and off your pool can be a tedious. To make it easier, cut the solar cover into manageable pieces for removal, or invest in a convenient solar reel.

The follow image depicts exactly how solar covers work.



# Cooling Down a Pool

Let's say we've been hit with a heatwave in the U.S. and it's getting harder and harder to keep cool. Your swimming pool is now 90 degrees from all that heat! What is a pool owner to do?

There are ways to cool down your swimming pool. The most practical one is to run your filter at night when the air is cooler. This will help the water to evaporate, thus making your pool a bit more refreshing in the morning.

However, that won't drastically cool down your pool, and you're not going to install a water cooling system, so is there any alternative?

Of course! But it's a bit more drastic. It's almost humorous, but you COULD fill your pool with ice. I know it sounds a bit weird, and it is, but if you had access to large quantities of ice at a good price, then why not?



I was checking out some other pool blogs on the internet including the River Pools & Spas Blog. There was an interesting post titled “Record Heat Wave of 2012 Leads to Huge Increase in Swimming Pool Sales.” In the comment section below the article, someone came up with an equation to determine how much ice you would need to cool down your pool depending on the pool size.

To cool down a 10,000 gallon pool only 5 degrees requires 2,187.5 pounds of ice, which is insane! But, the equation so cool, I had to create an online calculator just in case you wanted to know what it would take to cool down your swimming pool.



Panton Swimming Pool

# RESOURCES

*In everyday life there is always mañana. There is no urgency.*

- **Mark Spitz**



As promised, here are some additional resources you can use to help make pool care just a little easier.

In this chapter you'll find your printable Pool Profile page, a daily and weekly maintenance schedule that you can put on your fridge for the whole household to see, and a glossary of terms you can use when you help others with their pool or to look like an expert the next time you walk into your local pool supply store.



## SWIMMING POOL DATASHEET

- Above Ground Permanent
- Above Ground Seasonal
- Inground Gunite/Concrete/Plaster
- Inground Fiberglass/Composite
- Inground Vinyl lined

### Homeowner Information

Homeowner's Name \_\_\_\_\_ Phone \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

### Size & Stats

Length \_\_\_\_\_ Width \_\_\_\_\_ Round \_\_\_\_\_ Gallons \_\_\_\_\_

How Many Inlets? \_\_\_\_\_ How Many Skimmers? \_\_\_\_\_

Additions:  Diving Board  Sliding Board  Above Ground Deck

How Many Ladders? \_\_\_\_\_ How Many Steps? \_\_\_\_\_

### Equipment

**Type of Filter:**  Sand  D.E. (Diatomaceous Earth)  Cartridge

Filter Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

**Type of Pump (Horse Power):**  3/4 HP  1 HP  1-1/2 HP  2 HP  2-1/2 HP  3 HP

Pump Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

**Type of Heater:**  Natural Gas  Propane  Electric  Heat Pump

Heater Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

**Type of Chemical Feeder:**  Chlorine  Bromine  Mineral  Salt

Heater Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

**Type of Automatic Pool Cleaner:**  Pressure-Side  Suction-Side  Robotic

Pool Cleaner Brand \_\_\_\_\_ Model \_\_\_\_\_ Serial # \_\_\_\_\_

# Glossary

**ACID:** Liquid (muriatic acid) or dry granular (sodium bisulfate) substance used to lower the pool's pH (toward a more acidic condition) or to lower total alkalinity levels

**AIR RELIEF VALVE:** Located on the top of the filter and sometimes accompanied by a pressure gauge, this is opened to release air trapped in the filter. Also called a bleeder.

**ALGAE:** Over 20,000 species known to exist. Algae may form on your pool surfaces or it may bloom in suspension. We typically know algae to be green but it may also be yellow (mustard algae), black, blue-green, or any shade in between. It may form in separate spots or seem to grow in sheets. Pink algae is not algae at all but a form of bacteria. Algae are living breathing organisms that need warmth, sunlight, and CO<sup>2</sup> to thrive. Click here to learn more about algae and how it affects your pool.

**ALKALINITY:** Alkaline refers to the condition where the water's pH is above 7.0 (neutral) on the pH scale. It is the opposite of acidic. Alkalinity is the amount of carbonates and bicarbonates in the water, measured in "parts per million" (ppm) of Total Alkalinity.

**AUTOMATIC POOL CLEANER:** A device which agitates or vacuums debris from the walls and floor of the pool.

**BACKWASH:** The process of thoroughlyleaning the filter medium and/or elements by reversing the flow of water through the filter to waste.

**BALANCED WATER:** Balanced water exists when all of your chemical parameters are where they should be. The key components of water balance are pH, Total Alkalinity, Calcium Hardness, and Temperature, as measured using the Langelier Index of water balance.

**BALL VALVE:** A device with a hollowed out ball inside which can be turned with an external handle to decrease or increase flow.

**BIGUANIDES:** The name for a certain class of sanitizers which use the polymer PHMB, the only non-halogen sanitizer available for pool and spa use. Soft Swim and Baquacil are manufacturers of these sanitizers.

**BICARBONATE:** An intermediate form in the deprotonation of carbonic acid.

**BLEEDER:** See Air Relief Valve

**BOOSTER PUMP:** Secondary to the filter pump, a booster pump is used to power an automatic pool cleaner such as Polaris or Letro.

**BREAKPOINT CHLORINATION:** When you shock your pool, the goal is to reach a high enough level of free-chlorine, measured in ppm, to break apart molecular bonds, specifically the combined chlorine molecules. When breakpoint is reached with sufficient additions of chlorine, everything in the pool is oxidized.

**BROMAMINES:** A combined bromine -ammonia molecule. Unlike chloramines, which are strong-smelling and offer no sanitizing properties, bromamine compounds continue to sanitize.

**BROMINE:** A member of the halogen family, commonly used as a sanitizer in spas because of its resistance to hot water with rapid pH fluctuations.

**BTU:** British Thermal Unit. A unit of measurement for the use of gas by a gas appliance. Pool heaters are rated by their consumption.

**BUFFER:** A base such as sodium bicarbonate (baking soda). When added to your pool, it will increase alkalinity, which increases the buffering capacity of the pool. It is your pool's resistance to pH change.

**CALCIUM:** Calcium is a soft grey alkaline earth metal.

**CALCIUM CARBONATE:** Known as scale, crystalline deposits of calcium may form on your pool surfaces, equipment, or even line your pipes like cholesterol in your arteries. Properly balanced water can prevent this.

**CALCIUM CHLORIDE:** The flaked calcium salt used to raise levels of calcium hardness in your pool water. Also good for melting snow.

**CALCIUM HARDNESS:** The level of the mineral calcium dissolved in the pool water, as measured by a titration test.

**CAPACITOR:** The capacitor is the battery for your pool motor. It provides the energy needed while starting, to reach 3450 rpm quickly. Replace your capacitor when the shaft can be spun freely with a wrench or by hand, and when powering the motor, you hear a 'buzz' or a 'hum' from the motor, but no impeller movement. Replace your old capacitor with an exact match to the MFD number on the new capacitor.

**CARBON DIOXIDE:** A gas, which when present in the water, provides necessary food for the growth of algae.

**CARTRIDGE:** A type of filtration where the cartridge is a pleated, porous element through which water passes.

**CAVITATION:** A general term used to describe the behavior of voids or bubbles in a liquid. Cavitation is usually divided into two classes of behavior: inertial (or transient) cavitation and non-inertial cavitation. Inertial cavitation is the process where a void or bubble in a liquid rapidly collapses, producing a shock wave. Such cavitation often occurs in pumps and impellers. Non-inertial cavitation is the process where a bubble in a fluid is forced to oscillate in size or shape due to some form of energy input, such as an acoustic field. Such cavitation can be observed in pumps.

**CHANNELED SAND:** When water has worked open “holes” in the sand and is streaming right through (without really going through the sand).

**CHECK VALVE:** A one way flow device.

**CHELATOR:** A chelating agent is a water soluble molecule that can bond tightly with metal ions, keeping them from coming out of suspension and depositing their stains and scale onto pool surfaces and equipment. Similar to sequestering agents, chelators are found in such products as Resist and Sea-Klear.

**CHLORAMINES:** The chlorine molecule is strongly attracted to nitrogen and ammonia. When these two combine they form a chloramine, which

are undesirable, foul-smelling, space-taking compounds. Shocking the pool will get rid of these compounds.

**CHLORINE:** A member of the halogen family of sanitizers, its use in swimming pools is in the elemental form of a gas, liquid, granular, or tablet compound. When added to water, it acts as an oxidizer, sanitizer, disinfectant, and all-around biocidal agent.

**CHLORINE, FREE AVAILABLE:** Free Available Chlorine is chlorine which is active, not combined with an ammonia or a nitrogen molecule, and ready to react to destroy organic material.

**CHLORINE, COMBINED:** That portion of total available chlorine left over when free available is subtracted. It's the measure of chlorine which has already attached itself to other molecules or organisms. Most of this is made up of chloramines.

**CHLORINE, TOTAL AVAILABLE:** The sum of combined and free chlorine levels. With a DPD test kit, one determines free available level, then total available. The difference, if any, is the level of combined chlorine.

**CHLORINATOR:** Device which allows for the safe, controlled introduction of chlorine into the water.

**CHLORINE DEMAND:** The quantity of free available chlorine removed during the process of sanitizing. The amount of organic and non-organic material contained in the water will demand a certain level of oxidizer to be destroyed.

**CIRCUIT BREAKER:** A switch which allows manual override of an electrical circuit. It also automatically breaks the circuit when current fluctuations are detected.

**CIRCULATION SYSTEM:** The circuit of plumbing which continuously carries the water out of the pool, through the pump and filter then returns it to the pool.

**CLARIFIER:** A clarifier is a chemical used as a coagulant for suspended micro particles. It helps the filter by clumping smaller particles into filterable sizes.

**COAGULANT:** The properties of a chemical used in the assemblage and precipitation of suspended material which may make the pool appear cloudy.

**CONDUIT:** A pipe, usually gray PVC or flexible PVC designed to carry wires from a source (time clock) to a load (pump motor).

**CONTAMINANTS:** Any micro-particle or organism which reduces water clarity or quality and may present a health hazard. All of our filtering, circulating, and sanitizing is directed toward killing contaminants.

**COPING:** The capstone on top of the bond beam which finishes the edge around a pool or spa. It may be pre-cast concrete or brick. On vinyl liner pools, pre-fabricated coping is usually part of an integrated system for the wall, vinyl liner, and deck.

**COPPER:** An effective algaestat and algaecide. Elemental copper as elemental is used in many pools in products like Pooltrine.

**CONDITIONER / CHLORINE STABILIZER:** Also called Cyanuric Acid (CYA) or stabilizer, this chemical provides a shield from the sun around the chlorine molecule, extending the efficacy and saving you money.

**CORROSION:** The effects of a acidic pool environment—one in which the pH and/or alkalinity are very low. Corrosion results in the form of etching, pitting, or erosion of pool equipment and surfaces.

**COUPLING:** A plumbing fitting designed to join two pieces of pipe.

**COVER, AUTOMATIC:** Solid reinforced vinyl which rolls onto a reel on one end of the pool and attaches on the sides into small aluminum tracks. It can be be motorized or hand-crank style. Some models may snap the sides into small anchors placed into the deck providing more shape flexibility. Provides safety (with water pumped off - cover pump), debris protection, and heat/chemical/water retention.

**COVER, HARD:** A cover which rests on the edge or coping of the spa or small pool. Provides a barrier to debris and possibly people, while keeping the heat trapped in.

**COVER, SOLAR:** Sometimes called a thermal blanket, this cover floats on the surface, magnifying the sun's rays to warm the water and also prevents chemical/heat/water evaporation.

**COVER, WINTER:** A barrier to sun and debris, winter covers secure the pool from contamination. These are subdivided below.

**COVER, MESH:** These stretch tightly across the pool like a trampoline. They are the only covers which can be called “safety covers” in that the mesh polypropylene allows precipitation to pass through.

**COVER, SOLID:** These are usually made of some form of plastic or vinyl and are secured around the edges either by aqua blocks, similar weight, or the edges attach to anchors set in the concrete or wood deck.

**DIATOMACEOUS EARTH:** The filtering medium of the D.E. filter, this dry powder is the fossilized remains of ancient plankton diatom.

**DICHLORO-S-TRIAZINETRIONE:** a chemical compound. It is an oxidizer, bactericide, algaeicide, and cleaning agent that reacts with water to form hypochlorous acid, which is related to bleach.

**DISINFECTANT:** Chemicals or processes which work to destroy vegetative forms of microorganisms and other contaminants. Examples are chlorine, bromine, Soft-Swim, and ionizers. Also includes copper and silver algaecides.

**DIVERTER VALVE:** Used in a twin-port skimmer, a diverter allows the operator to manipulate the amount of flow from the main drain and skimmer to the pump.

**DPD:** A method of testing for chlorine levels in the pool water. Unlike OTO, DPD testing allows determination of total and free available chlorine levels which, through subtraction, gives us combined levels.

**DRAIN:** Also called the “main drain,” this plumbing fitting is the start of one suction line to the pump and is usually situated at or near the center bottom of the pool.

**DRY ACID:** Sodium bisulfate, a granular form of acid used to lower pH and alkalinity in the water. It is safer and less caustic than muriatic acid. Usually available as a pH decreaser.

**EFFLUENT:** The water that flows out of the pump on its way through the filter, heating, treating equipment, and then returning to the pool. Also known as the pressure side.

**ELBOW:** A 90-or 45-degree plumbing fitting. Used where your pipes take a turn.

**ENZYMES:** Used in swimming pool formulations designed to break down and digest oils in a pool or spa similar to the way enzymes are used in oil spill clean-up efforts.

**FILL WATER:** Used in filling or adding to the water level. Whether from the hose or from a well, your fill water brings its own chemical make up and water balance (or lack thereof).

**FILTER:** A device used to remove particles suspended in the water by pumping water through a porous substance or material.

**FILTER ELEMENT:** A device inside a filter tank designed to entrap solids and direct water through a manifold system to exit the filter. Cartridge filter elements and D.E. filter grids are two examples.

**FILTER MEDIA:** A fine material such as sand, diatomaceous earth, polyester fabric, or anthracite coal that removes suspended particles from water passing through it.

**FILTER PUMP:** The device that pulls water from the pool and pushes it through the filter on its way back to the pool.

**FILTRATION RATE:** The rate of water pumped through a filter, in gallons per minute (gpm).

**FOAMING:** A term used to describe surface foam on your water, especially in spas/hot tubs. Foaming is caused by high TDS levels working in combination with soft water and oils. Certain low grade algaecides can foam when added to pool or spa. Use enzymes for foam control.

**FLOCCULENT:** Essentially the same as a coagulant, this chemical (such as alum) is used to combine suspended alkaline material and/or algae into a heavy gel, which sinks to the bottom for vacuuming to waste.

**FLOW RATE:** The quantity of water flowing past a specific point in a specified time (e.g., the number of liters flowing through the filter in one hour).

**GAS VALVE:** An electronic valve in the pool heater that directs gas flow from the meter to the pilot and the burner tray.

**GASKET:** A gasket is a mechanical seal that fills the space between two objects, generally to prevent leakage between the two objects while

under compression. Gaskets are commonly produced by cutting from sheet materials, such as gasket paper, rubber, silicone, metal, or a plastic polymer.

**GUNITE:** A dry mixture of cement and sand mixed with water at the "gun"; hence the name. A gunite operator "shoots" the pool's rough shape and finishes with a trowel.

**HALOGEN:** A member of the family of elements fluorine, bromine, chlorine, and iodine.

**HARD WATER:** That water which is high in calcium hardness and other salts.

**HEATER:** A device used to heat the water. It may be electric, fuel-operated or solar-powered.

**HEAT EXCHANGER:** A set of 8 or 10 ribbed copper tubes that absorb the heat produced below it and transfer it to the water cycling through its tubes.

**HEAT PUMP:** The antithesis of the air conditioner, the heat pump's cooling coil removes heat from the air while the condenser coil transfers it to water cycling through it.

**HP:** Horsepower (hp) is the name of several non-metric units of power. The most occurring conversion of horsepower to watt goes 1 horsepower = 745.7 watts.

**HYPOCHLORITE:** A family of chlorine compounds such as calcium hypochlorite and lithium hypochlorite, both granular, and the liquid

sodium hypochlorite. When these compounds contact water, they release hypochlorous acid, the active sanitizing agent.

**IMPELLER:** The rotating vanes of a centrifugal pump; that create the flow of water. The impeller is shaft-driven by an electric motor.

**INFLUENT:** The water coming into and up to the impeller from the suction lines. These pipes are under vacuum pressure.

**IONIZER:** An ionizer is a device mounted on your return line, and through which water flowing will receive charged metal ions. Manufacturers may use a copper anode and/or silver. Copper is an algaecide and algaestat, while silver is known for its properties as a bactericide. This electric, limited technology has been replaced by the Vision System.

**IRON:** Usually introduced into the water from iron plumbing or from well water, ferric iron can stain surfaces, while ferrous iron will turn your water a clear green color.

**LADDER BUMPERS:** Rubber caps or inserts which protect the pool plaster or vinyl liner from the sharp steel ends of the ladder.

**LATERALS:** Elongated, capped plastic nipples at the bottom of a sand filter which are slotted to allow for water passage while keeping the sand in the filter tank.

**MAGNESIUM:** A light, ductile, silver-white, metallic element. Its presence in high non-chelated concentrations can lead to stains and scale when conditions are right.

**MINERALS:** Calcium, manganese, magnesium, nickel, copper, silver, iron, cobalt or aluminum. Their presence in high non-chelated concentrations can lead to stains and scale when conditions are right.

**MICROORGANISM:** A living, breathing creature in your pool. The purpose of disinfectants are to remove such infectants.

**MECHANICAL SEAL:** A seal behind the impeller which prevents water from running out along the shaft of a motor. Also known as a pump seal.

**MOTOR:** A machine for converting electrical energy into mechanical energy. Your motor is known as the dry end of the filter pump. It drives the impeller, which moves the water.

**MULTIPORT VALVE:** A 4-or 6-position valve combining the functionality of several valves into one unit, revolutionizing pool plumbing.

**MURIATIC ACID:** The liquid dilution of hydrochloric acid used to lower pH and alkalinity, and to remove mineral stains and scale. Extremely caustic and corrosive.

**NITROGEN:** When combined with chlorine, nitrogen creates chloramines, which do not belong in your pool. Nitrogen can be found in many swimmer wastes (perspiration, suntan oil, hair tonics, etc.) or be introduced by other means.

**NON-CHLORINE SHOCK:** A granular form of potassium permonosulfate used to oxidize materials such as microorganisms, contaminants, or chloramines.

**O-RING:** A loop of elastomer with a round (o-shaped) cross-section used as a mechanical seal or gasket. Designed to be seated in a groove and compressed during assembly between two or more parts, creating a seal at the interface.

**OTO:** Another method of testing for free available chlorine levels in your pool, as in an OTO test kit. **OXIDATION:** The "burning up" of organic waste and compounds in the pool water. It also refers to what you may see on your metal pool surfaces if your water is corrosive. Rust is a form of this kind of oxidation.

**pH:** The scale of relative acidity or alkalinity, expressed in logarithmic numbers from 0-14, with 7.0 being neutral. What's really being measured is the hydrogen ion concentration. Some would say pH stands for Power of Hydrogen.

**PLASTER:** A common type of interior finish applied over the concrete shell of an in-ground swimming pool.

**PLUNGER:** The sliding disc assembly that changes valve position in a push-pull valve. For example, up for backwash and down for filtration.

**POTASSIUM PERMONOSULFATE:** See non-chlorine shock.

**POLYMER:** An algaecide/algae stat made up of repeating polymer molecules. Used for green algae and available in varying strengths.

**PPM:** Parts per million. A method of assigning value to certain concentrations of chemicals in the water. For example, alkalinity should

be kept at 80-120 parts per million, by weight and in relation to the water it's dissolved in.

**PRECIPITATION:** To precipitate is to come out of solution or become insoluble by result of chemical action. Material forced out of solution, purposefully or accidentally, will then settle, stain or scale, or remain suspended in the water.

**PRESSURE CHECK:** A test for the rate of water flow. Also a test for leaks in plumbing by placing a line in question under pressure and waiting for the pressure to drop.

**PRESSURE GAUGE:** A device indicating pressure in a filter system. Provides a determination of how the system is operating and informs us when service is required.

**PRESSURE SIDE:** The return side of the plumbing. The section from the pump impeller towards the pool.

**PRESSURE SWITCH:** A switch used in pool heaters which opens when the flow rate is insufficient for safe heater operation. This disrupts the circuit in the heater, preventing it from firing.

**PUMP:** A mechanical wet-end, powered by an electric motor, which causes hydraulic flow and pressure for the circulation of the pool water.

**PUMP STRAINER BASKET:** A device placed on the suction side of the pump, which contains a removable strainer basket designed to trap large debris in the water flow without causing restriction. Sometimes called a pump leaf trap.

**PUSH-PULL VALVE:** A two-position valve used for backwashing sand or DE filters.

**PVC:** Polyvinyl chloride, which is used to make flexible and rigid PVC pipe used for pool plumbing.

**RATE OF FLOW:** Quantity of water flowing past a designated point within a specified time period, measured in gallons per minute (gpm).

**REAGENT:** The chemical indicators used in testing water balance. (All the little bottles or tablets in your test kit.)

**RESIDUAL:** Usually refers to free available chlorine levels remaining in the pool after initial treatment or activity with contaminants.

**RESTRICTED FLOW:** The term used to describe a condition preventing full flow of water. Restriction can occur with full skimmer or strainer baskets, obstructions in the plumbing, dirty filter, undersized plumbing or equipment, or placing devices like heaters, cleaners, or fountains in the circulation system. Restriction on the suction side creates higher vacuum (or suction). On the pressure side, it creates higher pressure.

**SAND FILTER:** A filter tank, usually fiberglass or ABS plastic, filled with sand and gravel. The pump diffuses water over the top of the sand bed, forces it through the sand, and into the laterals on the bottom.

**SANITIZER:** A chemical agent used to remove unwanted contaminants.

**SCALE:** Usually whitish in color, scale forms on pool surfaces and equipment when mineral salts are forced out of solution. A scaling

condition is one in which calcium hardness, pH, and/or alkalinity levels are out of balance.

**SEQUESTERING AGENT:** A sequestering agent ties up minerals tightly in solution, preventing their precipitation, which colors the water and/or stains the pool. Synonymous to chelators, these are commonly called stain and scale chemicals.

**SKIMMER:** A surface skimmer is a plumbing fitting set at water level, containing a weir mechanism and a debris basket. The skimmer is part of the suction side of the circulation system.

**SKIMMER BASKET:** Beneath the lid, the basket strains debris, as the first line of defense in filtering the water.

**SKIMMER NET:** Attached to a telescopic pole, a skimmer net is a very useful tool in keeping the pool clean. Also called a skimmer net are the flat, "dip and flip" nets, which aren't so useful.

**SHOCK:** As a noun, it loosely describes the products used in shocking, such as hypochlorites, potassium permanganate, or hydrogen peroxide. As a verb, it describes the act of bringing the sanitizer level up so high that breakpoint chlorination is reached. When breakpoint is reached, a "shock" (or perhaps a "lightning bolt" is a better analogy), is sent through the water, tearing apart molecules and slashing through cell walls. Ultimate purification, man.

**SHOTCRETE:** A different type of application of the concrete and sand mix which is used to "shoot the shell" Gunite is pumped dry and mixed with water at the gun, whereas shotcrete is pumped wet.

**SODA ASH:** A base used to counteract an acidic condition by raising pH.

**SODIUM BICARBONATE (baking soda):** Another base, however its properties will increase alkalinity more than pH. Used to raise total alkalinity levels.

**SODIUM BISULFATE:** An granular form of acid used to counteract a scaling condition by lowering pH and/or alkalinity.

**SODIUM HYPOCHLORITE:** Liquid chlorine used in pools, identical to, yet stronger than Clorox bleach.

**SODIUM DICHLOR:** A granular form of chlorine that is stabilized with cyanuric acid. Used for shocking and super-chlorination.

**SOFT WATER:** Water that has low calcium and/or magnesium content.

**STABILIZER:** See cyanuric acid. Stabilizers, also called conditioners, can be added directly to your pool to extend your chlorine efficacy. Cyanuric acid is already added to certain "stabilized" products such as trichlor tablets and sodium dichlor.

**STANDPIPE:** Vertical pipe that carries water from the hub and lateral assembly to or from the multiport valve on a top-mount sand filter.

**STRAINER BASKET:** The second line of defense in removing debris from your pool is a basket at the pump. The holes in this are smaller than those in a skimmer basket and prevent the pump impeller from clogging up.

**SUCTION SIDE:** The plumbing prior to and carrying water to the pump. This side is under vacuum pressure.

**SUPER-CHLORINATION:** Applying 7-10 times the normal amounts of chlorine to the pool as an added "boost" for contaminant removal. Some refer to super-chlorinating as being less than shocking, in that breakpoint thresholds are not reached, or the terms may be used synonymously.

**TEST KIT:** A method used to test the water balance and sanitizing level of your pool water.

**TIMER:** A mechanical device that controls the timed operation of your electrical equipment, primarily your filter and booster pumps.

**TOTAL ALKALINITY:** The "buffering" capacity of the water. Or the ability of the pool water to resist changes in pH. Additions of sodium bicarbonate will increase total alkalinity, expressed in ppm.

**TOTAL DISSOLVED SOLIDS (TDS):** A measure of everything that has ever dissolved in the water; all the matter that is in solution. High TDS levels can oversaturated your water, causing all sorts of reactions.

**TRICHLORO-S-TRIAZINETRIONE:** A chemical compound used as an industrial disinfectant, bleaching agent, and as reagent in organic

synthesis. This white crystalline powder, which has a strong "chlorine odor," is sometimes sold in tablet or granular form

**TURBIDITY:** Cloudy, dull, hazy water, due to micro-particle suspension.

**TURNOVER:** The amount of time it takes your pump to move all the water in your pool through the filter and back again. Usually, pools are designed for an eight-hour turnover.

**ULTRA VIOLET LIGHT:** Ultraviolet (UV) light is electromagnetic radiation with a wavelength shorter than that of visible light, but longer than soft X-rays. It is so named because the spectrum starts with wavelengths slightly shorter than the wavelengths humans identify as the color violet (purple).

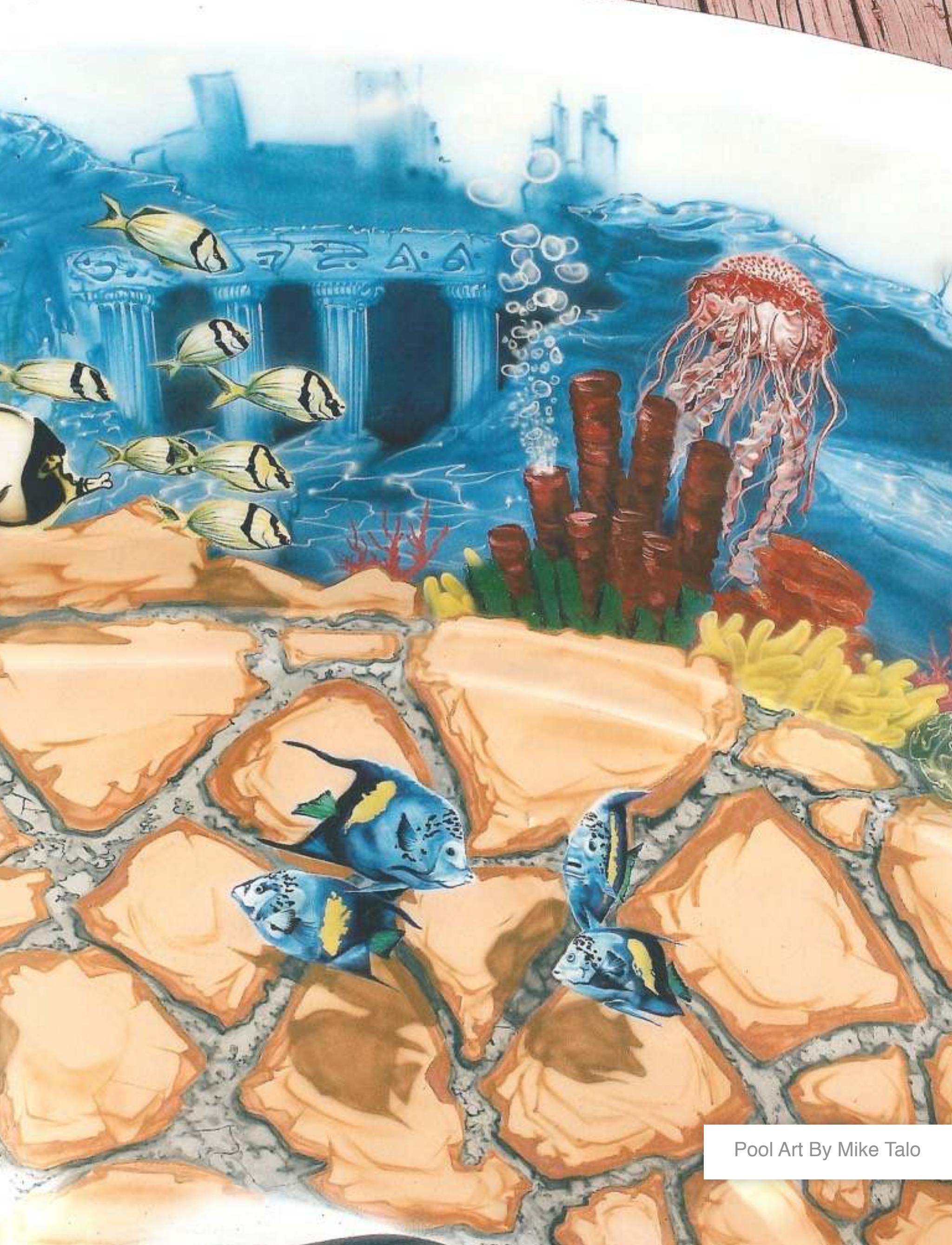
**UNDERDRAIN:** The lower collection system in a filter which directs filtered water back towards the pool. It also distributes water in reverse during backwashing. See laterals.

**VACUUM:** Refers to the low-pressure condition created in the suction line. Also refers to the cleaning process of sucking leaves, algae, and debris from the pool floor.

**VALVES:** A device placed in the plumbing line which restricts or obstructs water flow to create desired hydraulics, or may permit flow in one direction only (as in a check valve).

**VINYL LINER:** One type of interior pool finish. The liner is draped over a sand or cementitious floor, and locked into the top of the pools wall.

**WEIR:** The device in a skimmer that controls the amount of water coming into the skimmer, and keeps debris inside. It's that "flapper-gate" thing.



Pool Art By Mike Talo

Happy Swimming