

The complete pool care and problem solving booklet

Making it easy to maintain crystal clear, healthy and algae
free pool water
at a fraction of the cost.

With this booklet and the helpline, you can
Easily transform any pool water condition into crystal
clear water

INTRODUCTION

(May sound complicated and can be skipped)

Surprisingly the water we drink from our taps may not be good enough for our pools. Tap water can have high or low pH levels. It can have too much or too little calcium and carbonates. It can have high levels of iron and other minerals that can cause stains, scale, and corrosion. Improper levels of pH, minerals and organic matter can and often will prevent pool chemicals from doing their work in the water.

The suitability of water for swimming pool use depends on its quality. Water quality is determined by the amounts and kinds of suspended and dissolved substances; the degree of acidity or alkalinity; temperature; color and transparency; taste and smell; and the presence of undesirable microorganisms.

All natural waters contain dissolved inorganic and organic substances. The total dissolved-solids burden of pool water may be as high as 2000 parts per million (ppm), the majority of dissolved solids are calcium, magnesium, sodium, potassium, sulfate, chloride, carbonate, bicarbonate, and silica.

Many pollutants may also be found in solution. These may be excessive amounts of substances normally present, such as oils, tannins, nitrates, phosphates, and certain metals, or they may be materials not naturally found, such as pesticides, poisons and agricultural remedies.

Suspended sediment is an important constituent of water quality, because it affects light penetration, and makes water undesirable for swimming. Sediment is also linked to other water-quality factors because pesticides, phosphates, and bacteria may be attached to sediment particles. Fecal-coliform bacteria in water are an important index of bacteria.

Water temperature is important because it influences the metabolic rate of aquatic organisms and the rates of chemical reactions.

Do not be alarmed by all the detail because you can simply jump across to the step by step procedure if you like.

We will briefly cover certain aspects of water and swimming pools and afterwards provide simple step by step procedures to resolve specific problems. Many pool companies are not even aware of some of these procedures and you can perform them at minimal or no cost.

Contents : Physical aspects
 Chemical aspects
 New pools
 Pool maintenance
 Chemical cleaning of pools
 Chemicals
 Step by step procedures to resolve common problems

Physical aspects

To make the most of your pool a basic understanding of the volume of water, filtration and factors that influence pool water, like rain, wind, temperature, number of swimmers (bathing load), etc. is important to understand your pool.

Volume of water

The volume of water in a pool can be roughly calculated as follows:

Use a tape measure and measure in meters. If a tape measure is not available then by counting the number of steps to measure the pool (each step = one meter) and using an average depth of 1,5 meters you may calculate a surprisingly accurate volume of pool water.

Rectangular or square pools

Length X width X average depth X 1000 = number of liters.

Eg. 8 meters X 4 meters X 1,5meters (depth) X 1000 = 48 000 liters

Oval or round pools

Maximum length X maximum width X average depth X 785 = number of liters.

For our purposes: A small pool contains 15 000 to 30 000 liters of water.

A medium pool contains 30 000 to 60 000 liters of water.

A large pool contains 60 000 to 100 000 liters of water.

Filtration

Filtration involves the removal of dust, leaves, algae (live and dead), dirt, body oils, other organic matter, suntan lotions etc. from the pool. If pool water is not filtered enough or adequately then an excess of pool chemicals must be used to maintain the pool and even then the pool water will tend to be problematic.

The amount of filtering needed varies according to the size of the pool, the condition of the filter, the condition of the pool cleaner, the bathing load (number of swimmers using the pool), the weather -- , wind, rain, sunshine, and the neighboring territory – nearby factories, open sandy ground, highways or airports.

How long should the pump run each day?

For a medium size pool the filter should run 8 hours out of every 24. For a small pool 6 hours of filtering time is generally enough and for a large pool the filter should run for 12 to 14 hours out of every 24. These running times are for summer and can be halved for winter.

How can you check the condition of the filter?

The pressure of the water returning into the pool during normal filtration should feel quite strong when you try to block the return jet with your hand. Note: If there is more than 1 return jet then by blocking one with your hand the water will just divert to the other jet, so here two people may be required. One person to block one jet and the other to feel the force of the water.

If the water force is weak and the jet can be blocked easily with your hand then the filter may be seriously clogged up and in need of very urgent cleaning -- to prevent all sorts of water complications.

Note : It is possible, although rare, for the filter to have very little or no sand in it and then a strong force of water will be felt and give us a wrong impression of the filter condition.

Another indication of a clogged dirty filter is when the automatic pool cleaner moves slowly or stops easily and needs frequent back washing.

Note: Worn leaking pool cleaner pipes and fittings must be checked and replaced as they may be causing the pool cleaner to stop easily although the filter may be OK. – The first sign of this will be bubbles of air returning into the pool.

If the filtration system is not in tip-top condition then extra filtering time should be allowed (as much as continuous -24hour- filtering until the problem is solved)

The filtration and back washing of pool water is of utmost importance and should never be neglected.

With regular back washing and topping up of pool water we partly replace the water and this helps to control the level of dissolved solids in the pool ---- "filtration and back washing of pools is like exercise for humans" Eco H2 Zero's Easy Filter Clean should be used twice a year.

Condition of the pool cleaner

The pool cleaner should be checked approximately every 6 months for wear and leaking pipes.

Any defects should be rectified according to the manufacturers directions. Leaking pipes allow air into the system which in turn feeds the algae growing in the sand filter and also reduces the efficiency of the filtration.

The bathing load

On entering the pool an average person introduces a multitude of organisms like body oils, skin flakes, suntan lotions, etc. to the pool water. Now when there are many people using the pool in a short period of time the water will contain a high amount of impurities. These must be removed and the water disinfected in order to maintain a clear, healthy pool.

If the filter normally runs for 12 hours per day and there has been a pool party with numerous swimmers, you could run the filter continuously during the party. After the party the filter should be back washed, the pump set to run 24 hours, 2 or 3 cups of chlorine added to the weir, or a sachet of Oxy Power. After 24 hours the filter should be back washed again and set back onto the usual filtering time. For very busy pools like swim school , school and hotel pools it is best to use the chlorine free "ZERO" from Eco H2 Zero.

The weather.

Most swimming pools are outdoors.

Algae spores, dust, dirt and chemicals are easily carried by the wind and constantly deposited in the pool. The stronger the wind, the more it can carry so during strong winds your swimming pool collects more wind borne impurities than during light or no winds.

Rain collects nitrogen and carbon dioxide on its way down from the clouds and lands in your pool. Nitrogen and carbon dioxide are the best possible fertilizers for algae in swimming pools. They are such good fertilizers that they may cause pool water to turn from blue to green in a matter of hours and this can explain the pools that suddenly turn green after rain storms. In some cases lightning strikes a pool, upsets the chemical balance and pools may turn green, but generally the water would soon be turning green anyway and the rain simply speeded up the process.

Sunshine warms up the pool water and is needed for plant and algae growth. At the same time sunlight dramatically shortens the time that chlorine can remain in pool water. Hence chlorine should only be added in the evenings.

From this brief look at how the weather can affect a pool it is clear that during windy, rainy and hot weather the pool water needs extra filtration and the chemicals in the pool - specially chlorine, get used up much faster than normal. The Eco H2 Zero products are not sensitive to sunlight and temperature.

Neighboring territory.

The neighboring territory will determine what type of dust, dirt, chemicals, etc. can be deposited in your pool. In built up residential areas, full of grass, trees, etc. the wind does not carry as much foreign matter. Pools near industrial areas are likely to collect a vast amount of gasses, chemicals, etc.

Pools near highways and heavy traffic collect many impurities including lead from exhaust fumes.

Pools near airports and power stations are subjected to aircraft fuel, soot, oils, dirt, etc. which can cause havoc in pools if not kept in check. Eco H2 Zero products are designed to remove oils quickly.

CHEMICAL ASPECTS

Water is highly complexed. It contains a myriad of metals, non-metals, salts, oxides, chemicals, oils, phosphates, etc.

For practical reasons a basic understanding of just a few factors will enable us to take care of 95% of pool water problems. These factors are 1. pH 2. Water balance 3. Total dissolved solids 4. Bacteria.

• 1. pH

pH is used to measure the acidity or alkalinity of pool water. ((Note: "alkalinity" and "Total Alkalinity" are not the same. Alkalinity refers to the pH scale and Total alkalinity (TA) is the amount of sodium bicarbonate in the water – which is part of the water balance)) It ranges from a pH of 1 (strongly acidic) to a pH of 14 (strongly basic or alkaline) with a pH of 7 being neutral. The action of pool chemicals is affected by the pH of the water and for this reason it is very important to control the pH correctly. Eco H2 Zero products are not very sensitive to pH, however

the pH of human tears is 7,2 and it makes good sense to keep pH as close to this as possible.

A practical example : -- To kill E. coli bacteria in pools, 3 X more chlorine is needed at a pH of 8.5 than is needed if the ph is 7.0

Acid is used to lower the pH in pools and bicarbonate of soda is used to raise the pH in pools. (Bicarbonate of soda also raises the TA) By using these two products the pH should be maintained between 6.8 and 7.2 for the most comfortable swimming, economical use of chemicals, minimal corrosion or scaling, and undisturbed water balance.

• 2. Water balance

Just as water tries to balance its level physicaly it also tries to balance itself chemicaly. Chemical balance is maintaining the essential amount of carbonates, calcium and pH so that the water has no desire to get chemical compounds from the pool cement, tile grouting, equipment, etc. When the water is balanced and at "rest" the pool chemicals can work properly and economically and hence the pool tends to be trouble free.

A reasonable water balance can be achieved as follows :

1. Once a week check and control the pH between 6.8 and 7.2 by using acid or Alkalinity balance.
2. Once a month check and control the total alkalinity (TA - carbonate content) between 60 and 120 ppm by using acid or Alkalinity balance once again but following instructions on the back of the "Alkalinity balance" packs.
3. Once a season check and control the calcium hardness between 170 and 400 ppm by using calcium chloride flakes, or replacing a portion of water. Details on "Calcium flakes" packs.

NOTE : Marbelite pools seldom have a calcium deficiency but fibreglass, painted and vinyl pools are prone to calcium deficiencies which in turn cause "TDS dropout", stains etc. ((see total dissolved solids))

• 3. Total dissolved solids.

Total dissolved solids or TDS refers to the amount of organic and inorganic matter dissolved in the water. Pool test kits do not measure TDS but by keeping a good water balance, regular back washing and adequate filtration, TDS problems can be avoided.

Fiberglass, painted and vinyl pools are prone to TDS problems. This is how they happen : ---

The pool water cannot get any calcium from the walls of fiberglass and painted pools. When it rains, the rain water does not contain any calcium either. Now with calcium free rainwater and existing calcium being depleted by back washing the water in these pools, a calcium deficiency develops. This calcium deficiency in turn upsets the water balance and the water eventually loses its 'buoyancy'. Once the water has lost its 'buoyancy' it can no longer hold the dissolved solids in suspension and in a matter of 10 minutes all these dissolved solids can fall out of suspension and attach themselves to the pool surface --- producing a dull, gray, light brown or dirty looking pool. ((This is commonly known as TDS dropout))

Alternatively with inadequate filtration and a build up of rotten plant matter from leaves in the pool, the TDS amount may become so great that even balanced water can no longer support all the dissolved solids and again TDS dropout may occur. The trouble shooting section deals with correcting TDS problems. The Aqua Magic and Cloudy-Go automatically help to prevent this problem. If the pool still gets the sudden stain then the best, fastest, long lasting product to use is our very popular, patented Pool Re-Nu!

- **4. Bacteria.**

Bacteria are found everywhere and about 2000 species have been identified. 30 Trillion bacteria weigh approximately 28grams or 1 ounce. A baby E. coli bacteria has a length of 2 microns and an adult measures up to 7 microns. (A human hair is approximately 100 microns thick) There are many species that are useful to man eg. in the production of cheese, etc. and there are few in comparison that are harmful to man. The bacteria that concern the pool owner are E. coli, salmonella and staphylococcus. The E. coli being the toughest.

When bacteria tests are done it is common to test for the E. coli and if they have been eliminated then it is safe to assume that the other weaker bacteria have also been eliminated.

There are numerous chemicals available to control bacteria in swimming pools and in South Africa chlorine is still the most common bactericide as it has not yet been banned as in some other countries.

Bacteria is invisible to the naked eye. If left uncontrolled some forms of bacteria can double in numbers every 20 minutes and it is therefore important that a suitable bactericide is used regularly to prevent any growth of bacteria. Our Oxy Power and Zero are currently undergoing even more intensive independent tests under laboratory conditions to determine how fast they kill bacteria. We want to show that bacteria is killed in less than 1 minute of exposure in a simulated swimming pool environment.

New technology is continually being developed for the disinfection and sanitation of pool water.

Although chlorine is the most commonly used disinfectant, a variety of other agents and processes are being used. These include : ozone, hydrogen peroxide, silver and copper ions, ultraviolet, bromine, etc. All of these have advantages and disadvantages. They all have their individual instructions for use, which should be followed. We believe that our new chlorine free methods will soon revolutionise the swimming pool industry.

New pools

When filling new pools it is advisable to have the water tested for mineral content at a pool service centre. If the mineral content is high (above 2 ppm) anti-staining products or alum powder should be used to reduce the risk of staining. Half of a Pool Re-Nu is perfect.

In a new pool (plaster, marbelite and tiled pools) it is important to keep the pH between 7.4 and 7.8 to prevent erosion of the new pool surface until it sets hard. (Your pool builder should advise you on this because if you do not follow given specifications you may void any guarantee or builders liability for damage to the pool.) Most reputable pool builders will fill and supervise the treatment of new pools.

Wherever possible, always fill new pools to correct level then adjust the pH, total alkalinity and calcium hardness before adding other pool chemicals. While concrete and marbelite pool surfaces are hardening, the use of automatic pool cleaners and wheeled vacuum cleaners may compress surface sediment into the pores of the walls and floors of the pool which can then form stain areas.

And now for the practical easy part.....

Pool maintenance

THE GOLDEN RULES :

- 1. Keep the filtration system clean, in good condition and run the filter long enough to cope with the amount of filtering that the water demands. In other words, increase the filtering time when there is a lot of rain, wind, heat and swimming.**
- 2. Weekly backwash the sand filter, or clean the cartridge filter thoroughly.**
- 3. Weekly check and correct the pH.**
- 4. Monthly check and correct the total alkalinity.**
- 5. Bi-annualy Check and correct the calcium hardness in fiberglass, painted and vinyl pools.**

Pool maintenance varies according to pool size and water condition , so we can look at some common water conditions separately :

a) Typical clean clear pool water .

The filter, filtering time, pool cleaner, pipes, pH and total alkalinity are all correct -- we assume.

- 1. Run the filter 8 hours per day in summer for medium size pools, longer for larger pools and shorter for smaller pools.**
- 2. Check and correct the pH weekly. Keep it between 6.8 and 7.2.**
- 3. Check and correct the total alkalinity monthly or after heavy rainfall. Keep it between 80 and 120 ppm.**
- 4. Backwash the sand filter weekly. Always clean the leaf baskets, unplug the pool cleaner from the weir and remove the vacuum plate (if any) before backwashing, to ensure the maximum flow of water for backwashing.**
- 5. Add chemicals as per instructions on packs or containers. Remember to compensate for heavy swim loads or rains etc.**

b) Cloudy / murky water.

Could indicate early signs of algae growth.

Could be as a result of high pH.

Could be as a result of high total alkalinity.

Could be an excessive amount of TDS (total dissolved solids) in the water.

Could be insufficient or inadequate filtration.

Do the following:

- 1. Clean the sand filter thoroughly. ----- Ordinary back washing is not enough.**

If the sand filter has not been opened in the past 6 months and the sand manually cleaned or changed, then do an open backwash (see appendix) or if this is not possible use the "Easy Filter clean" to clean the filter. If necessary then change the sand. The sand should look coarse. If it looks fine like beach sand, change it. If it looks like clay, change it.

2. Adjust the pH to between 6.8 and 7.2
3. Adjust the total alkalinity to between 80 and 120 ppm.
4. Add one pack of "Cloudy-Go"(for every 50 000 to 60 000 liters of water) to the weir with the 'now clean' filter running on 'filter'.
5. Filter continuously for 24 hours, do a normal backwash, filter for another 24 hours, backwash again, and continue this filtering / back washing until the water clears up. Then run the filter on the usual cycle. If necessary add another Cloudy-Go or an Aqua Magic.

GREEN MURKY WATER

Usually caused by green floating algae that has been allowed to develop due to

- High pH
- Low total alkalinity
- Heavy rains
- Heavy swimming load
- Insufficient chemicals
- Clogged dirty filter
- Insufficient filtration

Do the following :

1. Clean the sand filter thoroughly. ----- Ordinary back washing is not enough.

If the sand filter has not been opened in the past 6 months and the sand manually cleaned or changed, then do an open backwash (see appendix) or if this is not possible use the "Easy Filter Clean" to clean the filter. . If necessary then change the sand. The sand should look coarse. If it looks fine like beach sand, change it. If it looks like clay, change it.

2. Adjust the pH to between 6.8 and 7.2
3. Adjust the total alkalinity to between 80 and 120 ppm.
4. Add one Aqua Magic to the weir with the 'now clean' filter running on 'filter'.
5. Filter continuously for 24 hours, do a normal backwash, filter for another 24 hours, backwash again. Should clear in 1 to 3 days then run the filter on the usual cycle.

GREEN WATER -- VERY GREEN (pool cleaner not visible in the pool)

If the pump and filter have been out of order for some time or general neglect for some reason or one / some of the following :

- High pH
- Low total alkalinity
- Heavy rains
- Heavy swimming load
- Insufficient chemicals
- Clogged dirty filter
- Insufficient filtration

Do the following :

[[Note : The idea is to remove as much algae as possible by flocculating and filtering and then to add chemicals to kill the rest of the algae.]]

- 1. Top up the pool water and make sure the pump and filter are in running order.**
- 2. Pre-dissolve 4 kg of Alum powder per 50 000 liters pool water, in water and distribute this mixture around the pool. Run the pump for 10 minutes to stir up the pool water, then stop the pump. Allow the water to settle overnight or for at least 10 hours.**
- 3. The following day slowly vacuum the settled sediment to waste using a vacuum sweeper (8 wheeler).**
- 4. Open up the sand filter and manually wash the sand (open backwash the filter) or change the sand if it is older than 4 years.**
- 5. Adjust the pH to between 7.0 and 7.4. ----- Preferably 7.0.**
- 6. Adjust the total alkalinity to between 60 and 120 ppm.**
- 7. Add one 450g sachet of " Aqua Magic" and one "Algae Extreme"(for every 50 000 to 60 000 liters of water) with the 'now clean' filter running on 'filter'.**
- 8. Filter continuously for 24 hours, do a normal backwash, filter for another 24 hours, backwash again, and continue this filtering / backwashing until the water clears up. Then run the filter on the usual 12 hour cycle.**
- 9. If the water is still green after 3 days add one more Aqua Magic packs per 50 000 liters of water.**
- 10. If after another 3 days the water is still not clear then contact us.**

DIRTY OR GREY / STAINED LOOKING POOL WALLS AND FLOOR.

Could be a build-up of scale over a period of time.

Could be a old swimming pool.

Could be a slow build-up due to a constantly high TDS. (High amount of dissolved solids from borehole water, municipal water or inadequate filtration.)

Could be TDS drop out. This normally happens rapidly or overnight and commonly affects fibreglass, painted or vinyl pools, and is due mostly to low calcium hardness in the water or grossly unbalanced water.

Commonly occurs after lots of rain because the rain has no calcium and the calcium hardness (content) of the water drops below a break point.

BELOW IS THE TREATMENT FOR MARBELITE OR CEMENT LINED POOLS

FOR FIBREGLASS, PAINTED OR EPOXY POOLS – JUST USE A 2KG PACK OF POOL RE-NU.

Do the following : MARBELITE OR CEMENT LINED POOLS

- 1. Top up the pool so that the walls can get cleaned up to the top. Take the pool cleaner out of the pool.**
- 2. Thoroughly backwash the sand filter, then set the multiport valve on to BY-PASS or RECYCLE. If you don't the dirt from the filter will wash into the pool when you add the acid !!!**

3. Pour 3 containers (3 X 5 Liters) of "Pool Acid " (wear goggles) very slowly and carefully into the weir while the pump is running (on by-pass). Try and get the makes that are marked 30% strength, as some pool acids have as much as 4 litres of water mixed with 1 litre of acid. (This amount of acid is to treat an average 50 000 to 60 000 litre pool -- use more for larger and less for smaller pools.)
4. Set the multiport valve on 'FILTER', switch the pump on again, and add one 2kg bag of Pool Re-Nu.
5. Allow the pump and filter to run continuously for 24 hours, then backwash. If there is little or no improvement in the first 12 hours, contact us to help determine the root of the problem.
6. If the walls have improved but need more cleaning, add one more Pool Re-Nu. Repeat step 5.
7. After the filter has run a total of 3 X 24 hours set the filter back to the normal cycle
8. Adjust the pH to between 6.8 and 7.2 by adding Alkalinity Balance.
9. Adjust the total alkalinity to between 60 and 120 ppm by adjusting with alkalinity balance.

For severely stained old pools:

Chemical cleaning of pools (MARBELITE AND CEMENT LINED POOLS)

All pools at some stage or other get stains of some sort. These stains can be from leaves, calcium deposits, rust, black algae, copper or chlorine reactions, TDS dropout, etc.

Chemical cleaning of pools, like 'acid washing' of the old days, can only remove stains that are due to something sticking to the pool surface. It can not remove stains that occur within the marbelite or black algae root stains.

For black algae roots, Algae Extreme and time has been found to be the best method.

Chemical cleaning procedure:

1. Top up the pool so that the walls can get cleaned up to the top.
2. Thoroughly backwash the sand filter, then set the multiport valve on to BY-PASS or RECYCLE and switch the pump on. If you don't do this, the dirt from the filter will wash into the pool !!!
3. Pour 3 containers (3 X 5 Liters) of "Pool Acid " (wear goggles) very slowly and carefully into the weir while the pump is running (on by-pass). Try and get the makes that are marked 30% strength, as some pool acids have as much as 4 litres of water mixed with 1 litre of acid. (This amount of acid is to treat an average 50 000 to 60 000 litre pool -- use more for larger and less for smaller pools.)
4. This next step is for very old calcium stains or old stains and not normally necessary otherwise.
After adding the acid in step 3, wait 5 minutes then add 10 litres of hydrogen peroxide slowly and carefully into the weir. (50% strength)
NOTE: Acids and hydrogen peroxides MUST NEVER BE MIXED !!! All warnings on containers must be strictly noted and full protective clothing as well as goggles must be worn when handling these chemicals in case of splashes, spills, etc.
5. Allow the pump to continue running (on by-pass) until all the stains and marks have been removed. This could take from 1 to 2 days.

6. After the cleaning process is completed, dissolve 4 kg of alum powder in water and pour this completely dissolved mixture evenly into the pool with the pump still running on by-pass.
7. Now the pH and Total alkalinity will be very low because of all the acid that was added and must be corrected by adding Alkalinity balance directly into the pool water.
The Alkalinity Balance will automatically raise the total alkalinity and pH to a reasonable level and further adjustment and testing can be done later.
8. Now switch the pump off and allow the water to calm overnight (at least 10 hours). During this time the dissolved alum powder will collect most of the dirt from the water and settle it on the pool floor.
9. Using an "8 wheel vacuum sweeper" slowly vacuum the settled sediment from the pool floor to "waste".
Do this slowly so that the sediment doesn't float up into the water. If too much sediment is disturbed allow it to settle again and repeat the vacuuming later.
10. Adjust the pH to between 6.8 and 7.2 and..
11. ..Adjust the total alkalinity to between 60 and 120 ppm by using Alkalinity Balance.
12. Add one pack of "Aqua Magic"(for every 50 000 to 60 000 liters of water) to the weir with the filter running on 'filter'.

COMMON WATER PROBLEMS

If you properly maintain the water many common problems may never arise because most of them are either caused by inadequate filtration or incorrect water balance. However many forms of algae, and stains may occur despite your best efforts.

Algae

Algae commonly occur in 5 general forms:

a/ Free floating green algae; b/Green algae; c/Blue-green algae; d/ Mustard algae; e/ Black algae.

Algae is one of the most persistent forms of plant life. It is very resourceful and thrives in sunlight, warmth and high pH. It can cover an entire pool surface within hours, and once established can foster the growth of bacteria and become very difficult to remove from your pool.

Early warning signs are a/ Slippery pool surfaces; b/ Spots on the walls; c/ Green or cloudy water.

By keeping the pH at correct levels and compensating for heavy swimming loads, wind and rain the chances of algae growth are minimised.

Algae is easier to kill when immature, and gets harder to remove the longer it has been allowed to grow. When killing algae enough algaecide must be used to kill ALL the algae or it will grow back at an astonishing rate. and you have to start all over again. Also during treatment the filter must be running continuously and backwashed often to remove the dead algae, or the dead algae may rot and in turn form fertilizer for the other algae.

When algae grows in groups or colonies (against the walls), it should be brushed regularly during groups treatment. The reason for this is that the dead outside colonies protect the inside colonies from the algaecide. By

brushing off the dead colonies you expose the inner colonies to the algaecide and will progressively kill the entire colony.

Stains.

Calcium deposits -- light brown or biscuit colored stains.

Stains from a build up of calcium deposits can form slowly over a period of time and build up until they look ugly. Calcium deposits can come from top up water high in calcium or from granular chlorine where the calcium content is as high as 30%. Because chlorine is a powerful bleaching agent, these and other stains are normally bleached and largely invisible. When the stain gets too heavily built up or you stop using chlorine the stain becomes more visible.

Mineral / metal deposits -- various colours.

Most water sources contain relatively large amounts of dissolved iron, manganese, and a multitude of other dissolved salts. While these salts remain dissolved in the water they remain invisible and do not seem to be a problem. However these dissolved salts can come out of solution and cause stains on the pool surfaces. Generally a high pH, low total alkalinity, or high dissolved salt content can allow staining to occur.

Chemical reactions -- gray, black, yellow.

There are many types of paints and pool coatings available. They contain hardners and colouring agents so that once applied they can dry quickly, hard and look good. Some pool chemicals can react with the paint chemicals to produce all sorts of stains. More so when the pools have been newly painted. Fortunately almost all stains are very easy and inexpensive to remove

Stains that seep through the marbelite.

Sometimes the re-enforcing wire used in the construction of the pool may rust. This then results in the rust marks becoming visible in the pool. These rust marks may appear in a regular pattern like a grid of squares or evenly spaced lines. To rectify this type of problem the pool has to be re-lined with fibre glass, epoxy, paint, etc.

In rare cases a pool may develop stains or marks as a result of a high water level in the ground in which the pool is built. A quick test may be done by trying to scrape away a portion of the stain with a scraper or sharp metal object. If the stain cannot be removed by scraping, this may indicate that the stain is seeping in through the pool walls. However it may be difficult to determine the exact source of the stain.

In a practical example a pool may be cleared of stains by high powered chemical stain removal. Here the stains are leached right out of the marbelite and the pool looks like new again. Only to find that 4 or 5 months later the exact same stains come back again. This could indicate that the stains are seeping through the marbelite and the best solution would be to re-line the pool with fibreglass or a good quality epoxy or paint.

Stains that appear when chlorine is no longer used.

Chlorine is a powerful bleaching agent and when it is replaced by non-chlorine pool products the regular bleaching of the pool surface may no longer happen. Coupled with this, high tech water treatments may also make the water so clear that on a calm day one can clearly see a pin size object in the deep end. As a result of truly crystal clear water, a very low impurity (TDS) content and lack of bleaching, the pool may show up a slightly mottled surface or calcium deposit stains, etc.

Treatment for these stains may vary according to their age and nature.

Stains from algae and scale.

When algae colonies have formed in pools their roots grow into the pool surface and cause damage. If allowed to progress the damage becomes more extensive and dark grey stains may be left behind when the algae is removed.

Scale may form on the pool surfaces as a result of high pH, high total alkalinity and or high calcium.

Scale is easily removed but if left long enough it will become extremely hard and resistant. Then specialised treatment is needed.

Brown stains on pool walls and floor (TDS dropout).

Brown stains on pool walls and floors commonly occur in fibreglass, painted or vinyl pools if the calcium hardness drops below 200 parts per million.

Calcium hardness should be checked and raised if necessary every 6 months.

Calcium hardness can be tested with a 5 in 1 test strip or at a pool shop --
- do not let them sell you hundreds of rands worth of unnecessary chemicals!!! Just test the water.

When pool owners use lots of granular chlorine in their pools they do not easily get a low calcium problem because 30% of the chlorine they use is CALCIUM, and therefore they might land up with too much calcium in the pool which then causes scaling and deposits to build up on the pool walls and floor.

CHEMICALS

Eco H2 Zero products are high quality, easy to use products and all have detailed information on what they do and how to use them. They are always full strength and never diluted so that the pool owner gets best value for money. Any pool owner can get free advice on pool problems by making a simple phone call or e mailing. Details on each pack.

Name: Aqua Magic

One 450g pack treats up to 60 000 liters of water for 4 to 6 weeks.

Uses : Kills GREEN, BLACK, MUSTARD and BLUE-GREEN ALGAE

and helps prevent algae re-growth after rains.

Is a powerful FUNGICIDE.

Does not disturb WATER BALANCE, promotes CRYSTAL CLEAR WATER.

**Makes pool water GENTLE ON EYES AND SKIN.
Makes pool water SAFE to backwash onto GARDEN PLANTS.**

Benefits : Gentle on eyes and skin, safe for pets, birds and bees to drink water, can be added while children swim, backwash water into garden and free of harsh chemicals.
It kills algae, clears cloudy water and removes oils and contaminants. Makes your pool water progressively healthier and saves you money from day 1.

**Greatly reduces pool chemical needs and costs.
Reduces TIME spent on swimming pool maintenance.
Makes the pool water gentle on HUMANS, PETS, BIRDS, BEES
& GARDENS.**

**Name: Algae Extreme
All it does is kill algae.**

Uses : Kills GREEN, BLACK, MUSTARD and BLUE-GREEN ALGAE

Benefits : Use for severe algae infestations. Even more effective if used together with aqua Magic. Cannot be neutralized by Pool Re-Nu, so works well when you want to treat algae and stains at the same time.

Name : Pool Re-Nu.

Description-

1. STAINS : Swimming pools can be stained when chemical reactions go wrong. In particular when chlorine reacts with other chemicals in a pool and the whole pool turns brown. Other colours and types of stains also occur, mostly without any warning. Pool re-nu is designed to reverse these stains, make the pool shell look like new again and is particularly effective in fibreglass pools. It is NOT DESIGNED FOR MARBELITE POOLS because of the rough surface. It is also less effective on old stains that have been there for months or years, however it may still do a surprisingly good job.

2. SATURATED OR STAGNANT WATER : When water has been in a pool for a long time it has collected loads of chemicals and wind borne contaminants that cannot be filtered out of the water. Eventually the water gets to a state where nothing works anymore. Pool re-nu is ideal and solves this problem very easily.

3. PROBLEM POOLS : Some pools are very problematic. They turn green easily or are permanently cloudy. They just never come right. Then the pool owner buys more chemicals to fix the pool and unfortunately makes matters worse. Pool re-nu takes care of this automatically.

NOTE – WILL NEUTRALISE MOST POOL CHEMICALS IN THE WATER.

Uses : Removes stains in swimming pools caused by metals, minerals, leaves, etc.

Rejuvenates old, tired water.

Use in "chlorine locked" pools.

Use in pools filled with borehole or brackish water.

Benefits : Can REMOVE the most stubborn STAINS within MINUTES.
EASY to apply --- add to pool and watch stains DISAPPEAR.
SAVES costs, no need to empty pool water or expensive specialised labour.

Can make a tired looking pool LOOK LIKE NEW.
Prepares borehole water for use in swimming pools.

Name : Alkalinity Balance.

Uses : Raises the total alkalinity in pools, enhances pool chemical ECONOMY.

Stabilises pH, PREVENTS corrosion and corrects water balance.

Benefits : Save money on pool chemicals.
Pool walls, pool pump, fittings, etc. last longer without corrosion.

Helps other chemicals work better.

A correct water balance promotes a problem-free pool and reduces time spent on pool maintenance.

Prevents pH from rising above 8.3 if too much is added.

Name : Cloudy-Go.

Uses : Removes fine suspended matter that causes cloudy pool water.

Removes oils from the water before they clog the filter sand.
Chelates and sequesters metals in the pool.

Benefits : Cloudy-Go addresses the problem with a "magnetised" medium to attract and remove neutral and negatively charged particles. It also chelates metal ions and sequesters other materials. So it works in 3 ways to clear the pool water. It is a small 400g product that can be used whenever a customer wants that extra sparkle in their pool. Very easy to use, works QUICKLY and effectively.

Name : Alum Powder 2kg

Uses : A super - heavy duty flocculant to quickly remove mud, excessive algae, etc. from pool water.

Benefits : Very easy to use, and avoids expensive pool company costs. Where pools have been green for a long time, the alum powder quickly settles the ALGAE on the pool floor so that it can be vacumed out.

When heavy rains fill the pool with MUD, alum powder sorts it out.

Name : Easy Filter Clean

Uses : Super cleans your filter sand easily without the filter being opened.

**Benefits : Saves the cost of replacing filter sand.
Makes the sand filter work better and longer.
Quickly reduces filter related pool problems.
100 % Biodegradable.**

Name : Spa Magic

Uses : Sanitises spa baths and jacuzzi's

Benefits : All in one treatment for spa's and jacuzzi's to kill algae, kill bacteria, clear the water and treat water that may lay stagnant in pipes for an extended period.

Spa baths and jacuzzi's have a very high concentration of bathers in their relatively small volume of water. So they need a powerful very effective oxidiser, sanitiser and fungicide all in one.

Spa burst kills bacteria, oxidises organic matter like body oils and skin particles, and kills all forms of fungi. It also leaves a long lasting trace of anti-mould and anti-bacteria in the water. This prevents water from smelling foul if it has been standing in the pipes for a long time.

Name : Zero 365

Uses : Add once a year to a pool. Then it gets re charged over and over (like a rechargeable battery) It is bromine based and will not evaporate from the pool.

It can be recharged with Oxy Power or an ozone generator(tests being conducted at present). It can also be recharged with most oxygen releasing products.

Benefits : It is a powerful combination of bromine and oxygen that does not give

off chlorine smells and does not form trihalomethanes. It effectively does everything that chlorine would do in the pool. It is being used in penguin re habilitation centers where chlorine would affect the animals.

Name : Oxy Power

Uses : Releases oxygen to regenerate Zero 365 and as a weekly chlorine free additive for use together with Aqua Magic.

Benefits : chlorine free alternative, is safe to store and handle and after releasing Oxygen, biodegrades into carbon dioxide and water. No harmful by products.
Ideal for use in public pools, schools, gyms and hotel pools.

Name : Orange Oil

Uses : Cleans scum lines around pools and jacuzzi's. Prevents black mould from forming under Jacuzzi covers, kills mould in showers, safe to clean bird cages and dog kennels. Removes adhesives, stickers and glue. Use in kitchens and food prep areas.

Benefits : This product is a gem, once you use it you will likely replace all kitchen and bathroom cleaners with it. It is made from actual oil extracted from the skin of oranges. It is biodegradable, non toxic and safe to use everywhere. Surprisingly it will remove dirt that many cleaners cannot. Even removes odors from pets and cat sprays. Strong enough to clean ovens and gentle enough to clean hands repeatedly.

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