

HOW TO SERVICE AN AQUABRITE POOL

- Do's and Don't's

- use of chlorine.

(The same procedure applies to pools treated with The PoolFresh System)

- 1. Check the pH and DPD readings.** The DPD test should be read 15 minutes after adding the DPD No.1 tablet. If the reading is less than 2 (on the chlorine scale) add one pack of Aquabrite for every 50,000 litres of water in the pool.
- 2.** Carry out the usual maintenance jobs while waiting for the DPD reading: clean out the leaf & lint baskets, vacuum the pool, adjust the water level etc.
- 3. If the DPD reading (after 15 minutes) is less than 2.0 on the 'chlorine scale' then add one pack (1Kg) of Aquabrite for every 50,000 litres of pool water.** Check regularly, especially in summer.
- 4.** Aquabrite should be added to the pool **IMMEDIATELY** after storms or heavy usage to **PREVENT** any problems occurring - not used to fix it up, as is usual in the case of chlorine. (see algaecides)
- 5.** Check the copper concentration using the copper test kit provided. **The copper reading should ideally range from 0.6ppm to 1.0ppm(max).** Check regularly using the Aquamatics Copper Test Kit provided. The tablet-type and 'dip-stick' type of copper test kits are not sensitive enough.
- 6.** pH should range from 6.8 for (fibreglass pools) to 7.4 for all other types. **NEVER allow the pH to remain above 7.6 or below 6.5 (check weekly)**
High pH will cause the loss of copper ions and also shorten the life of Aquabrite in the pool.
- 7. Total alkalinity (TA) range from 80ppm to 120ppm.** Check every month.
(not so important with fibreglass, paint and vinyl)
- 8. Calcium hardness (CH) range from 100ppm to 250ppm.** Check every 3 months.
(applies to pebbled, tiled and Quartzon surfaces)
- 9. Total Dissolved Solids (TDS) should not be less than 300ppm or more than 1200ppm.**
Check every 3 months or after continuous heavy rain.
- 10.** Liquid or dry chlorine may be used with Aquabrite as a co-disinfectant and bleach for leaf stains. Add a dose, which does not exceed the stand-alone dose for free available chlorine, to the skimmer box with the filter pump running. Check the concentration using the DPD test kit but take a reading 30 seconds after addition of the DPD #1 tablet.
- 11. Do NOT add chlorine stabilizer (isocyanuric acid).**
- 12. Do NOT use aluminium-based pool clarifiers.** (see **HIGH COPPER READING**, p.4)

13. Do NOT adjust the pH with soda ash, pH UP, (sodium carbonate), only use buffer (sodium bicarbonate – or baking soda) dissolve first and add it around the pool or via the skimmer.

14. Do NOT use bromine or bromide compounds. This is important especially in the case where a spa shares the same filtration system as the pool. The spa water, which is traditionally treated with **bromine** tablets or sticks, will be mixed with the pool water, which is treated with the **Aquabrite System. The two systems are incompatible.** The spa should be treated with 60 grams of Aquabrite per 1000 litres of spa water followed by 20 grams of buffer (baking soda), instead of bromine. (see note 10 above)

15. Do NOT use algacides which contain copper. If the copper level needs to be increased then call Aquamatics technical staff or your supplier for assistance.

16. Do NOT add sodium carbonate peroxyhydrate (percarbonate) or sodium perborate compounds.

They are both very alkaline, incompatible with both Aquabrite and chlorine, and will increase the pH of the pool water.

AQUABRITE AND POOLFRESH PLUS ARE CHEMICALLY IDENTICAL.

NOTES:

Aquabrite is a special blend of peroxygen compounds, which form a slightly acid solution when Added to water. Each 5Kg of Aquabrite therefore requires about 1Kg of sodium bicarbonate to maintain the correct water balance in the pool. This is much more important in painted, tiled, vinyl and fibreglass pools than cement-based pools.

Aquabrite should not be confused with hydrogen peroxide (neutral liquid) or percarbonate-(also known as *peroxygen compound*)-strongly alkaline powder-neither of which are suitable substitutes for Aquabrite.

Aquabrite has three functions:

1. OXIDISER - OXYGEN BLEACH - (oxidises organic debris which enters the pool)
2. CATALYST - (activates the silver ions produced by the ioniser)
3. POOL ACID - (replaces some of the 'acid demand' in the pool)

NEVER mix Aquabrite powder or Aquabrite solutions with any other pool chemicals.

Although it has no chlorine smell it is still a strong oxidiser.

When a packet is opened the entire packet should be added to the pool unless the pool is less than 25,000L as there is no advantage in only adding a part of the sachet. It is not destroyed by the sunlight on the pool so the extra will last longer.

DANGER !

Do not allow Aquabrite powder or Aquabrite solutions to come into contact with salt or chlorine as the *extremely poisonous chlorine gas* may be produced.

The Ionic control unit generates copper and silver ions from the electrodes.

The silver ions are a bactericide and kill coliforms, pseudomonas, legionella and other organisms. (see our Technical section) www.aquamatics.com.au

The copper ions kill or prevent most varieties of algae from growing in the pool.

ALGAECIDES

On rare occasions there may be a copper-resistant strain in which case an algacide may

be used. We recommend Liquid Gold, concentrated Black Spot Treatment, Metal Free Algaecide and Algimycin, all of which contain poly-oxyethylene(dimethyliminio)² (ethylene)² dichloride as the active ingredient. Use algaecides carefully and follow the instructions for use. Don't use copper-based algaecides or benzalkonium chloride.

Silver ions kill bacteria.

Silver ions which have been activated with Aquabrite kill bacteria faster than chlorine in contaminated pool water. Chlorine reacts with nitrogenous compounds and its biocidal properties are diminished as a result.

Silver ions don't react in this way but the positive ions *target specific negative sites on the bacterial membrane* which then inhibits transpiration of the organism.

There are also irreversible chemical reactions with proteins in the protoplasm.

Degeneration of the membrane results in the organism's rapid destruction.

However, **it is necessary to maintain the silver in an active form** to ensure optimum performance of the system.

This means the addition of Aquabrite to give a DPD reading of 2.0, or above, on the 'chlorine' scale of the test kit, (after 15 minutes reaction time.)

Unlike Aquabrite, chlorine is largely destroyed by sunlight and side reactions occur with nitrogen contaminants (ammonia and amino acids) in the water to form 'smelly' chloramines. Aquabrite is able to destroy the chloramines as they are formed (see Commercial Pools).

POSSIBLE PROBLEMS AND THEIR SOLUTIONS.

1). HIGH COPPER READING.

Over-ionisation possibly due to excessive operating times of the Ionic unit for the volume of water being treated.

This may be confirmed by a high copper reading in the water, although a high copper reading does not necessarily mean that the copper originated from the Ioniser electrodes.

Other sources of copper should also be investigated such as gas heat exchangers, copper piping or the use of copper-based algaecides.

To remove excess copper from the water treat the pool with poly-aluminium chloride or filter alum. Follow the instructions on the pack for the treatment of pool water. As a rule of thumb, every kilo of filter alum will require half a kilo of soda ash (sodium carbonate).

It is a good idea to *fill the pool right to the top* and take the cartridges out of the filters or the 'fluffy' alum floc will quickly block the filter membranes.

Where multiport valves are fitted, set the multiport valve to the 'RECIRCULATE' position. The (aluminium hydroxide) floc, which is formed, will adsorb metal ions from the water under neutral or *slightly alkaline* pH conditions and then settle to the floor of the pool over a period of several hours, usually over-night.

The *extra water* is required to allow for vacuuming the settled sediment to waste the next day.

2). LOW COPPER READING.

This may be due to:

a). Insufficient operating time per day.

Action to take:

Check instructions for correct operation.

Run Mk5 1Hr per 10,000 litres in summer.

“ Mk 9 “ “ 20,000 “ “ “
“ Mk10 “ “ 100,000 “ “ “

Halve these times for winter settings.

b). TDS high or salt water in the pool.

‘Over-range’ lamp on. Fit heat-shrink sleeves over electrodes or drain, clean and refill the pool.

c). Electrodes require replacement.

Fit a new pair of electrodes obtainable from Aquamatics.

d). Aluminium clarifiers being used.

Add special start-up kit to pool. Check filter, use polyelectrolyte clarifier instead of alum type.

e). Ionic unit undersized for the pool size.

Fit an additional unit to boost ions.

f). Pool leaking and being frequently topped up.

Locate and fix the leak.

g). Continuous heavy rainfall.

Low conductivity water – needs to be chemically balanced.

h). The pool is being topped up with tank water.

Tank water and some dam waters have very low mineral content. This water is unable to support ionisation and should be balanced (see section 5)

i). Zeolite filter media in the filter.

Some filter media, which is used as a replacement for sand, adsorbs metal ions from pool water. Ask your supplier for additional Ionic Starter Kits.

3). LIME GREEN WATER.

This may be due to:

a). pH too high (above 7.6)

Action to take:

Reduce to normal range with pool acid (7.0 to 7.4 range)

b). Aquabrite level too low (less than 1.0 ppm after 5 min reaction time)

Add Aquabrite to obtain a DPD reading above 3.0 ppm (requires 24 hrs to take effect, then add 1litre of liquid chlorine)

c). Total alkalinity too high or too much buffer added at once.

Limit the addition of sodium bicarbonate to 1Kg per day.
Do not let the pH rise above 7.6.

d). Calcium hardness too low.

Adjust in line with ‘Chemical Balance’.

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|-----------------------------------|---|
| e). Inadequate filtration. | Extend the daily filtration time to 1 hour per 10,000 litres of pool water in the pool. |
| f). Solar heating effect. | Add 2L liquid chlorine to pool while the solar pump is running. |
| g). Peroxides or biguanides used. | Add potassium monopersulphate (1Kg per 10,000L of pool water) to 'burn-out' the biguanides. |

4). CLOUDY WATER.

This may be due to:

- a). Calcium hardness too high.
pH too high.
- b). Carbon dioxide gas.
- c). Low copper reading.
- d). Inadequate filtration time.
- e). Backwashing sand filters too often.
(also sand filters on indoor pools)
- f). Filter requires backwashing.
- g). Hole in septum of D.E. filter.
- h). Air being sucked into the pump.

Action to take:

- Replace some of the pool water with fresh water.
Lower the pH of the pool.
- Formed when buffer is added to acidic pool water or acid is added to pools with a high total alkalinity. The water will clear after a few hours.
- Check that the Ionic unit is working. Check electrodes and replace if badly worn.
- Set longer filtration times on the pool time- clock.
- A sand filter which is too clean filters water poorly. Add a handful of filter powder to the skimmer.
- If a sand filter is full of rubbish there is insufficient turnover of the water so the water in the pool remains largely unfiltered. Backwash the filter more often. Empty the skimmer basket and the lint filter.
- Check for D.E. powder on the floor of the pool under the return outlets.
- This can usually be seen as air under the lint filter lid

and a stream of fine bubbles from the return to pool outlets.

Check for holes in pool hose or low water level in the pool. Also cracked or ill-fitting lint filter lid gasket. Replace with a new lightly-greased gasket.

- i). Pool-water level too high so that the skimming action is prevented. Lower water level to half-way up the skimmer plate.
- j). Multiport Valve gasket failed. Inspect and replace the gasket.

CHEMICAL BALANCING OF THE WATER AFTER FILLING THE POOL.

Some pool service people find this a chore and have difficulty understanding why various chemical factors are really necessary.

Basically, the pool water should exhibit certain qualities:

- 1). Aesthetically pleasing in terms of clarity, colour, smell and taste.**
- 2). Free of substances which cause skin or eye irritations.**
- 3). In a sanitary condition. No algae or slime (biofilm) on the sides of the pool or within the filtration system and no algae or bacteria in the water.**
- 4). Free from toxic chemicals.**

Control 1 & 2 above by adding certain chemicals* to the water and filtering all the water in the pool each day. Sand or diatomaceous earth (D.E.) filters are used especially on larger pools. Cartridge filters are often used on spas and small pools. Correct maintenance procedures for each type of filter is very important to maintain optimum water clarity.

*Oxidisers are used to burn out both soluble and insoluble organic contaminants and 'polish' the water to appear crystal clear. Acids or alkalis are used to adjust the pH. Clarifiers, algaecides and numerous other chemicals are available to the swimming pool serviceman, who must be familiar with their application, compatibility and limitations.

Either a low or high pH and/or low TA typically causes eye and skin irritation.

The pH can be stabilised in a pool by adding sodium bicarbonate (buffer) and calcium chloride (hardener) then adjusting with dry pool acid to within the correct pH range.

Dry pool acid will need to be added a few times until the pH stabilises.

Never throw large amounts of chemicals into the pool. They may bleach, discolour or etch the pool interior. Never throw any calcium hypochlorite into an Aquabrite pool.

Dissolve chemicals in water in a plastic bucket and distribute as evenly as possible around the pool or add them slowly to the skimmer box with the filter pump running.

When using a bucket *always add the chemical to the water* a little at a time then mix. NEVER add water to chemical as considerable quantities of heat may suddenly be produced, possibly causing an explosive reaction.

Never mix chemicals together: poisonous gases, heat or explosions may result.

The total alkalinity reading should ideally start at about 80 ppm.

That's equal to 1.5 Kg of buffer for every 10,000 litres in the pool

(assuming there is zero alkalinity already existing in the water before starting).

Too much sodium bicarbonate in the water can lead to high pH and high acid demand.

Calculate the amount of sodium bicarbonate to add as follows:

Example: If the total alkalinity reading of the pool water is 40mg/L.

$$\frac{(80-40) \times 1.5}{80} = 0.75$$

Add 0.75 Kg of sodium bicarbonate for every 10,000 litres of water in the pool.

The calcium hardness needs to be about 100 ppm for pebble, tiled and Quartzon.

(It's not a factor in paint, fibreglass or vinyl liner interiors, but helps to stabilise the pH)

That's equal to 0.75 Kg of calcium chloride for every 10,000 litres of water in the pool.

The calcium hardness varies considerably in town water supplies all over Australia so it is best to check the calcium hardness before adding any calcium chloride.

Too much calcium hardness *can be more trouble than too little and may contribute to cloudy water appearance.*

Calculate the quantity of calcium chloride to add as follows:

Example: If the calcium hardness reading is 50mg/L.

$$\frac{(100-50) \times 0.75}{100} = 0.375$$

Add 0.375 Kg of calcium chloride for every 10,000 litres of water in the pool.

Remember that calcium chloride crystals will adsorb water from the air (hygroscopic) so be sure to tightly seal the container after use. Do not add the calcium chloride to the pool until at least one filter cycle after the addition of the sodium bicarbonate.

After adding the chemicals allow several hours to elapse (preferably run the pump overnight) before attempting to adjust the pH.

The chemicals react with each other and also other minerals in the pool water.

The waiting time is required for the entire contents of the pool to get into equilibrium with the atmosphere. Many tonnes (one cubic metre is one tonne) of water take several hours to thoroughly mix.

Adjust the pH of the pool by adding either hydrochloric acid (liquid) or sodium bisulphate (dry pool acid). To determine how much to add-do an acid demand test.

If using hydrochloric acid it is a good idea to carry acid which has been diluted with an equal part of water. This reduces the vapour pressure of the acid and eliminates the fumes. Hydrochloric acid vapours are toxic and may cause respiratory distress.

Never adjust the pH of the pool with any other forms of acid.

Dry pool acid is preferred. It's much easier to carry and dispense and has no vapours. Its chemical name is **sodium bisulphate**. (not sodium bisulphite)

Control 3 & 4 above by maintaining a residual sanitiser in the water to oxidise contaminants and kill microscopic life forms.

Chlorine is compatible with the Aquabrite System but bromine is not. Commercial pools are obliged to use chlorine and the combination of oxidisers has added advantages (see Commercial Pools, below)

The combination of copper, silver and Aquabrite ensure that there is no biofilm slime on the pool surfaces. Check that the ioniser is operating correctly and that the electrodes are in good condition. They get smaller with time and will last about 2 to 3 years in the average, well maintained pool.

The residual sanitiser is the combination of copper and silver ions and Aquabrite, as already described.

The electrodes normally take on a muddy brown colour. They do not need routine cleaning as they change polarity regularly.
Only clean them if they are entirely blue-green with copper carbonate or have been allowed to dry out in that condition.

HOW TO CLEAN THE ELECTRODES.

Make up a solution of dry pool acid and warm water – about a cupful of dry acid to 4 litres of warm water in a plastic bucket.

Without unscrewing them first from either the lint filter lid or flow cell end cap, stand the electrodes (immerse) in the acid solution for a maximum of 20 minutes for cleaning. The blue solution remaining in the bucket can be poured into the skimmer rather than wasted as it contains valuable copper and silver ions.

Hydrochloric acid solution is unsuitable for cleaning as an electrically insulating layer of silver chloride is formed on the surface of the electrodes.

NEVER use phosphoric acid or nitric acid in a swimming pool. They are both nutrients for algae and bacteria.

For further information contact AQUAMATICS, (Phone: (02) 9939 2444)
or your local supplier.

Commercial Pools

All State Health Departments require the compulsory addition of chlorine to commercial pools and spas. “Commercial” pools include public pools, swim schools and any pool to which the public have access.

Question: If they are chlorinated then why do they need The Aquabrite System?

There are several reasons:

- 1) Biofilm Control. The introduction of copper and silver ions prevents the formation of biofilm slime, which harbours colonies of bacteria and protozoa. (see item 6, below)

- 2) Destroys chloramines.
Reduces chloramines and the 'chlorine smell' in the air within the pool zone of heated indoor pools, which can be responsible for eye-irritation, swimmer's asthma and skin rashes.

- 3) Backup sanitation. Provides residual sanitation of the pool in the event of failure of the automatic chlorinator.

- 4) Dual oxidation. (chlorine + Aquabrite) maintains a higher ORP and aesthetically better quality water than chlorine alone.

- 5) Tinea control. Splash-out water which puddles and evaporates loses its chlorine first but copper and silver ions with Aquabrite concentrate as the water evaporates.
This is important in controlling fungal foot infections.

- 6) Legionella control. There is overwhelming evidence that copper and silver ions prevent the growth of legionella sp. by destroying their biofilm habitats.

- 7) Economy. Reduces chlorine usage, total dissolved solids build-up and frequency of back-washing.

For further information contact: info@aquamatics.com.au

100 Reasons for Cloudy Swimming Pool Water!

1. Inconsistent chlorination (or other sanitizer /shock).
This is probably the No.1 reason.
2. Dead algae is still in the pool.
If you had algae (the pool was green), but you killed it, and now the pool is cloudy blue or grey - dead algae may be the problem.
Some types of dead algae are quite difficult to remove, especially with sand or cartridge filters. You need a clarifier like Sparkle Cube.
3. Live algae are in the pool. (95 % of the time) - if your pool is green and cloudy, it's algae. Kill it with either chlorine or a polyquat algaecide!
(Black Spot Treatment from Chlorine Discounters or Algizine from Bioguard)
4. Pump oversized for sand filter. (very common on above-ground pools)
5. Pump not running long enough or filter needs back-washing.
6. Pool shocked with calcium hypochlorite or with liquid chlorine. (pH and/or calcium too high)
7. Adding sodium bicarbonate AND calcium chloride at the same time.
8. Too much sodium bicarbonate. (alkalinity increaser)
9. Overdose of calcium chloride. (calcium increaser)
10. Too much sodium carbonate (pH increaser). Never use this with copper/silver systems.
11. pH has drifted too high - poor pool 'housekeeping'.
12. Saturation index is too high. Balance the pool water.
13. Pool water has not been replaced for 5 years or more.
14. Iron or manganese in the fill water.
15. High calcium in fill water.
16. Dissolved air in the fill water.
17. Dissolved air in pool water due to tiny suction leak from pool cleaner.
18. Bubbles in the water from suction piping leak or solar tubing. (can make water look milky!)
19. Bubbles in the water from low pool water allowing skimmer to suck air. (pump cavitation)
20. Bubbles in the water because pump drain plug was improperly installed.
21. Bubbles in the water from leak at pump (lint filter) strainer lid.
22. Bubbles in water from suction - side of chlorinator connection (injector).
23. Too many people in the pool. (cloudy 24 hours later!)
24. Organic loading too high from ducks, roosting birds or possum droppings etc.
(cloudy and green 24 hours later!)

25. Bather load is too high for the pool size.
26. Bather load is too high for the pump/filter.
27. PHMB (Baquacil, Softswim, etc.) has been used to treat the pool for 2 or more years without draining.
28. Added chlorine to PHMB (Baquacil, Softswim, etc.) pool.
29. Added copper-based algaecide to PHMB (Baquacil, Softswim, etc.) pool.
30. Added incompatible stain control agent to PHMB (Baquacil, Softswim, etc.) pool.
31. 'Topped off' PHMB (Baquacil, Softswim, etc.) pool with fill water containing chlorine, copper or iron.
32. Filter blocked up because of PHMB (Baquacil, Softswim, etc.) use.
33. Filter blocked up for other reasons.
34. Filter sand solidified with calcium or other minerals.
35. Broken internal filter piping.
36. DE filter not cleaned properly.
37. DE has built up and 'bridged' septum grids in filter.
38. DE filter leaking DE into the pool.
39. 'Bump' type DE filter is broken internally.
40. No DE in DE filter.
41. Cartridge filter not cleaned or not cleaned properly.
42. Cartridge filter cartridge ruined through improper cleaning and erosion of filter membrane.
43. Cartridge filter cartridge 'pleats' have collapsed.
44. Cartridge filter has holes in it.
45. Cartridge filter improperly installed, allowing water to bypass filter.
46. Cartridge filter cartridge rubber seals missing or need to be replaced.
47. Multiport valve set on "Recirculate".
48. Multiport valve spider gasket damaged causing water to bypass the filter.
49. Multiport valve plumbed wrong way round.
50. Sand filter has 'channelled' due to cementing by lime or mud-balling.
51. Sand lost out of sand filter.
52. Sand filter not backwashed completely.
53. Sand filter backwashed using two speed pump on low.

54. Coarse sandblasting sand used instead of filter sand.
55. Overdose of polyelectrolyte clarifier.
56. Overdose of stain/scale chemicals.
57. Overdose of filter alum (aluminium sulphate or poly - aluminium chloride (PAC)).
58. Use of alum as filter aid instead of flocculant.
59. Use of alum at low pH or low alkalinity levels.
60. Overdose of other flocculant.
61. Stabilizer much too high (>200 ppm).
62. Pump strainer basket clogged up.
63. Pump impeller clogged up. (gum - nuts , pebbles or pine - needles often to blame)
64. Pump impeller worn down due to sand in pipes.
65. Pump impeller worn down due to a small piece of gravel or wire in volute.
66. Pump impeller not turning due to stripped threads on impeller.
67. Pump overheated, cracking case, and creating impeller bypass.
68. Pump not pumping due to air trapped in pipes.
69. Two - speed pump left on low continuously.
70. Old brass (or cast iron) pump impeller is worn out.
71. Piping blocked up with chemicals.
72. Piping blocked up with golf ball.
73. Piping blocked up with billiard ball.
74. Piping blocked up with plastic toy soldier.
75. Valve that should be open, is closed.
76. Valve that should be closed, is open.
77. Gate valve stem broken, stopping proper flow.
78. Ball valve stem broken, stopping proper flow, or allowing improper flow.
79. Non - return valve not seating properly.
80. Old epoxy paint chalking off.
81. Poor quality non-epoxy, non-rubber base paint chalking.
82. Poorly applied paint chalking/flaking.
83. Newly plastered pebble or Quartzon pool still releasing plaster dust.

84. Excessive tree pollen in pool, especially in early summer.
 85. Builders cement dust blown into pool.
 86. Rainwater run - off (mud, ooze) has entered the pool.
 87. Oil/sun-tan lotion spilled in pool.
 88. Pine sap or other tree sap in pool.
 89. Pool vandalized with soap, detergent, motor oil, etc.
 90. Use of excessively alkaline 'chlorine-free' chemicals, such as percarbonate, perborate, tetraborate or soda ash, all are totally incompatible with chlorine, bromine Aquabrite and PoolFresh Plus.
 91. Use of copper / silver ionisers with insufficient oxidiser.
 92. Use of 'minerals' or 'catalysts', without sufficient shocking (oxidation).
 93. Repeated use of "foamy algacides". (benzalkonium chloride)
 94. Repeated use of tile line, or water line, cleaning products.
 95. Use of "phosphate removing" anti-algae products (ALWAYS causes cloudiness; but will eventually clear!)
 96. Use of "phosphate remover" with inefficient sand filter. (may NOT clear)
 97. Brushing an epoxy painted pool.
 98. Brushing an acrylic painted pool.
 99. Plaster dust from recently applied plaster or cement.
 100. Plaster dust from recently acid washed pool .
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Terminology/definitions.

1. Units of measurement: ppm (parts per million) & mg/L (milligrams per litre) are quantitatively the same units of concentration.
 2. Acid. A substance which when added to water causes a lowering of pH.
 3. Alkali. A substance which when added to water causes the pH to rise.
 4. pH is an indication of the concentration of either acid or alkali in water.
The pH scale ranges from 0 (very acid) to 14 (very alkali) with the neutral point 7.0
The 'normal' pool pH range is from 6.8 to 7.6
 5. DE powder. Diatomaceous earth - filter media powder.
 6. Dry pool acid. Sodium bisulphate.
 7. PHMB. Poly-hexamethylene biguanide.
 8. Polyquat. A polymeric quaternary algacide.
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