

Basic Pool Operations

Presentations by:

Tom Fink, R.S.
Cuyahoga County Board of Health
216-201-2001x1226
tfink@ccbh.net

Bill Schwandt
O.P. Aquatics
440-238-2800x1120
bschwandt@opaquatics.com

Lauren Stack
GENESIS/Pool & Hot Tub Alliance
216-470-1154
Lauren.Stack@nspf.org



Water Testing Tools

- Complete test kit
- “Operation Record” report forms
- Testing schedule
- Treatment tables
- Pool volume
- Proper size containers



Test Kits & Water Sampling

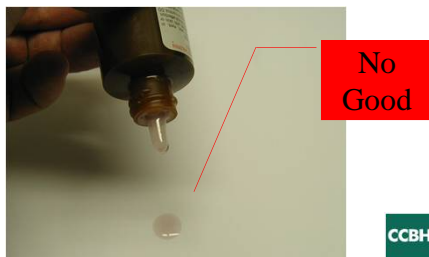


Where to take your sample

- Stay away from the inlet streams
- Do not skim the water off the top
- Push the comparator tube upside down into the water
- Avoid the corners of the pool



Use Fresh Reagents



Know what disinfectant you are using



Keep the tip of the bottle out of your test solution



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Keep the reagent bottle caps separate



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Use the caps for shaking test solution



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Use the proper background to view your test



Use the north sky or a white background

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Always have your water chemistry guide handy



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Rinse the Comparator After and Before Each Test



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**Do Not Leave the Color
Comparator in the Sun Every
Day**



Records

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[illegible]**Records,
page 2**

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Recordkeeping – Other Considerations

- Automatic chemical controller maintenance (cleaning probes, calibrating, etc.) as well as monthly flow switch testing
- Safety vacuum release system (SVRS).....must be tested/recorded monthly as well as any maintenance
- Any chemical that is added to the public swimming pool other than those chemicals that are routinely used for disinfection
- All injuries must be recorded as they happen. Major injuries/incidents should be reported to local health department (drownings, near drownings, etc.)
- All fecal accidents must be recorded as they happen. The response to the fecal accident shall also be recorded.

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Records must be retained for a minimum of 2 years

Recordkeeping – Other Considerations

All managers should retain paperwork pertinent to the drain covers currently installed on all pools and spas. Having the manufacturer name and model number on-hand for all drain covers allows for a way to quickly verify expiration dates and recall notices.

Water Chemistry

Simple and Easy



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Water Values: The Basic Approach

- What is it?
- How often do I test it?
- How much of it should I have?
- How did it get there?
- What will happen if I don't change it?
- How do I change it?

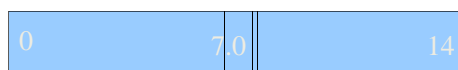


Chemical Safety

- Protect yourself---eyes/skin
- Never mix chemicals or scoops
- Add chemicals to water
- Follow the label
- Store right---store tight



pH---The Starting Point



Legal Range



pH

Base



Acid

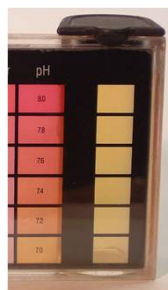


pH Test

- Test at the beginning of the day and every 4 hours
- With a controller
 - Test manually every 24 hours
 - Record every 12 hours
- Spray grounds & special features – every 6 hours



Test Kit pH Limits



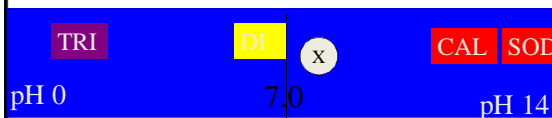
Test kit problem: high chlorine affecting pH test



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Chlorine has a pH!!!

- Sodium hypo=pH 13.0 Calcium hypo=pH 11.8
- Dichlor = pH 6.8 Trichlor = pH 2.8



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pH

Too low

- Chlorine loss
- Corrosion
- Staining
- Etching plaster
- EYE IRRITATION



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pH Control Base Demand

To Increase pH---
add Sodium carbonate
(soda ash)

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pH control: base demand

To Increase pH Using Soda Ash
(Sodium Carbonate, 100%)
with the Taylor Base Demand Procedure

Drops of Taylor Base Demand Reagent	Volume of Water						
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	20,000 gallons	50,000 gallons	100,000 gallons
1 drop	0.21 oz	0.51 oz	2.56 oz	5.13 oz	10.3 oz	1.60 lbs	3.20 lbs
2 drops	0.41 oz	1.03 oz	5.13 oz	10.3 oz	1.28 lbs	3.20 lbs	6.41 lbs
3 drops	0.62 oz	1.54 oz	7.69 oz	15.4 oz	1.92 lbs	4.81 lbs	9.61 lbs
4 drops	0.82 oz	2.05 oz	10.3 oz	20.6 oz	2.56 lbs	6.41 lbs	12.8 lbs
5 drops	1.03 oz	2.56 oz	12.8 oz	25.6 oz	3.20 lbs	8.01 lbs	16.0 lbs
6 drops	1.23 oz	3.08 oz	15.4 oz	30.8 oz	3.85 lbs	9.61 lbs	19.2 lbs
7 drops	1.44 oz	3.59 oz	17.9 oz	35.9 oz	4.49 lbs	11.2 lbs	22.4 lbs
8 drops	1.64 oz	4.10 oz	20.6 oz	41.0 oz	5.13 lbs	12.8 lbs	25.6 lbs
9 drops	1.85 oz	4.61 oz	23.2 oz	46.1 oz	5.77 lbs	14.4 lbs	28.8 lbs
10 drops	2.05 oz	5.13 oz	25.6 oz	51.3 oz	6.41 lbs	16.0 lbs	32.0 lbs

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pH

Too High

- Low Chlorine activity
- Cloudy water
- Scale
- EYE IRRITATION



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pH control: acid demand

To Decrease pH add---

- Muriatic acid (liquid)
- Sodium bisulfate (dry)

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Changing pH: acid demand

TABLE E

To Decrease pH Using Muriatic Acid
(20° Baumé / 31.45% HCl)
with the Taylor Acid Demand Procedure

Drop of Taylor Acid Demand Reagent	Volume of Water					
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	50,000 gallons	100,000 gallons
1drop	0.37 fl oz	0.92 fl oz	4.58 fl oz	9.16 fl oz	1.15 gals	2.86 gals
2drops	0.73 fl oz	1.83 fl oz	9.16 fl oz	1.15 gals	2.86 gals	1.43 gal
3drops	1.10 fl oz	2.75 fl oz	13.7 fl oz	1.72 gals	1.07 gal	2.15 gal
4drops	1.47 fl oz	3.67 fl oz	1.15 gals	1.15 gals	2.29 gals	1.43 gal
5drops	1.83 fl oz	4.58 fl oz	1.43 gals	1.43 gals	2.86 gals	3.58 gal
6drops	2.20 fl oz	5.50 fl oz	1.72 gals	1.72 gals	3.44 gals	4.30 gal
7drops	2.57 fl oz	6.41 fl oz	1.00 gals	2.00 gals	1.00 gal	2.51 gal
8drops	2.93 fl oz	7.33 fl oz	1.15 gals	2.29 gals	1.15 gal	2.86 gal
9drops	3.30 fl oz	8.25 fl oz	1.29 gals	1.29 gal	3.22 gal	6.44 gal
10drops	3.67 fl oz	9.16 fl oz	1.43 gals	2.86 gals	1.43 gal	7.16 gal

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Changing pH: acid demand

TABLE F
To Decrease pH Using Dry Acid
(Sodium Bisulfate, 93.2%)*
with the Taylor Acid Demand Procedure

Drop of Taylor Acid Demand Reagent	Volume of Water					
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	50,000 gallons	100,000 gallons
1drop	0.49 oz	1.23 oz	6.16 lbs	12.3 oz	1.54 lbs	3.85 lbs
2drops	0.99 oz	2.46 oz	12.3 oz	1.54 lbs	3.85 lbs	7.70 lbs
3drops	1.48 oz	3.70 oz	1.16 lbs	2.31 lbs	4.62 lbs	11.6 lbs
4drops	1.97 oz	4.90 oz	1.54 lbs	3.08 lbs	6.16 lbs	15.4 lbs
5drops	2.46 oz	6.16 oz	1.93 lbs	3.85 lbs	7.70 lbs	19.3 lbs
6drops	2.95 oz	7.39 oz	2.31 lbs	4.62 lbs	9.24 lbs	23.1 lbs
7drops	3.45 oz	8.63 oz	2.70 lbs	5.39 lbs	10.8 lbs	27.0 lbs
8drops	3.94 oz	9.85 oz	3.08 lbs	6.16 lbs	12.3 lbs	30.8 lbs
9drops	4.44 oz	11.1 oz	3.47 lbs	6.93 lbs	13.9 lbs	34.7 lbs
10drops	4.93 oz	12.3 oz	3.85 lbs	7.70 lbs	15.4 lbs	38.5 lbs

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Alkalinity-the pH buffer

- Should be 80-120ppm
- See page 14 for cyanuric acid considerations
- Too low
 - Corrosive water
 - pH bounce

Legal Minimum-60 ppm

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Alkalinity-the pH buffer

- Too high
 - Cloudy water
 - Scaling water
 - pH becomes stubborn
 - pH drifts upward

No Legal Upper Limit

Test once a week

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Alkalinity Control

Increase with Sodium Bicarbonate (Baking Soda)

TABLE G

To Increase Alkalinity Using Baking Soda
(Sodium Bicarbonate, 100%)

Desired Increase in ppm	Volume of Water					
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	50,000 gallons	100,000 gallons
10ppm	0.90 lbs	2.24 oz	11.2 oz	1.40 lbs	2.80 lbs	7.00 lbs
20ppm	1.79 oz	4.48 oz	1.40 lbs	2.80 lbs	5.60 lbs	14.0 lbs
30ppm	2.69 oz	6.72 oz	2.10 lbs	4.20 lbs	8.40 lbs	21.0 lbs
40ppm	3.58 oz	8.97 oz	2.80 lbs	5.60 lbs	11.2 lbs	28.0 lbs
50ppm	4.48 oz	11.2 oz	3.50 lbs	7.00 lbs	14.0 lbs	35.0 lbs
60ppm	5.38 oz	13.4 oz	4.20 lbs	8.40 lbs	16.8 lbs	42.0 lbs
70ppm	6.28 oz	15.7 oz	4.90 lbs	9.80 lbs	19.6 lbs	49.0 lbs
80ppm	7.17 oz	1.12 lbs	5.60 lbs	11.2 lbs	22.4 lbs	56.0 lbs
90ppm	8.07 oz	1.26 lbs	6.30 lbs	12.6 lbs	25.2 lbs	63.0 lbs
100ppm	8.97 oz	1.40 lbs	7.00 lbs	14.0 lbs	28.0 lbs	70.0 lbs

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Alkalinity Control

Decrease with Muriatic Acid or Sodium bisulfate

TABLE I
To Decrease Alkalinity Using Muriatic Acid
(20° Baumé / 31.45%)

Desired decrease in ppm	Volume of Water					
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	20,000 gallons	50,000 gallons
10ppm	1.02 fl oz	2.56 fl oz	12.8 fl oz	1.60 qts	1.60 qts	3.99 qts
20ppm	2.04 fl oz	5.11 fl oz	1.60 qts	1.60 qts	3.20 qts	2.00 gal
30ppm	3.07 fl oz	7.67 fl oz	1.20 qts	2.40 qts	1.20 gal	3.00 gal
40ppm	4.09 fl oz	10.2 fl oz	1.60 qts	3.20 qts	1.60 gal	3.99 gal
50ppm	5.11 fl oz	12.8 fl oz	2.00 qts	3.99 qts	2.00 gal	4.99 gal
60ppm	6.13 fl oz	15.3 fl oz	2.40 qts	1.20 gal	2.40 gal	5.99 gal
70ppm	7.16 fl oz	17.9 fl oz	2.80 qts	1.60 gal	2.80 gal	6.99 gal
80ppm	8.18 fl oz	20.4 fl oz	3.20 qts	1.60 gal	3.20 gal	7.99 gal
90ppm	9.20 fl oz	23.0 fl oz	3.59 qts	1.80 gal	3.59 gal	8.99 gal
100ppm	10.2 fl oz	25.6 fl oz	3.99 qts	2.00 gal	3.99 gal	9.99 gal

You Must COLUMNATE!

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Test Kit Problem: High Chlorine Affecting Alkalinity Test



Chlorine

- Disinfection
- Oxidation

Legal Minimums:

- Pools - 1.0 ppm
- Spas - 2.0 ppm
- Spray Grounds & Special Features - 2.0 ppm (at nozzle heads)

No legal maximum

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Forms of Chlorine

- Sodium hypochlorite
 - Liquid, lost to sunlight
- Calcium hypochlorite
 - Powder or tablet, lost to sunlight
- Dichlor
 - Granular, sunlight stable
- Trichlor
 - Tablet, sunlight stable

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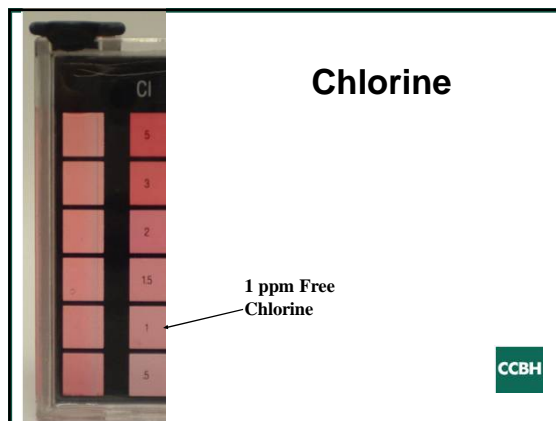
Sodium Hypochlorite is the product of salt systems

Chlorine

- Test at the beginning of the day and every 4 hours
- With a controller
 - Test manually every 24 hours
 - Record every 12 hours
- Spray grounds – every 6 hours
- Special features – every 6 hours

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Chlorine



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High Chlorine Affecting Chlorine Test

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To Increase Chlorine

Amount of Chlorine Compound to
Introduce 1 ppm Chlorine*

% Available Chlorine*	Volume of Water						
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	20,000 gallons	50,000 gallons	100,000 gallons
5%	1.02 fl oz	2.56 fl oz	12.8 fl oz	1.60 pts	1.60 qts	1.00 gal	2.00 gal
10%	0.51 fl oz	1.28 fl oz	6.40 fl oz	12.8 fl oz	1.60 pts	2.00 qts	1.00 gal
12%	0.43 fl oz	1.07 fl oz	5.33 fl oz	10.7 fl oz	1.33 pts	1.67 qts	3.33 qts
35%	0.15 oz	0.38 oz	1.91 oz	3.82 oz	7.63 oz	1.19 lbs	2.38 lbs
60%	0.09 oz	0.22 oz	1.11 oz	2.23 oz	4.45 oz	11.1 oz	1.39 lbs
65%	0.08 oz	0.21 oz	1.03 oz	2.05 oz	4.11 oz	10.3 oz	1.28 lbs
75%	0.07 oz	0.20 oz	0.95 oz	1.77 oz	3.77 oz	9.5 oz	1.17 lbs
90%	0.06 oz	0.15 oz	0.74 oz	1.48 oz	2.97 oz	7.42 oz	14.8 oz
100%	0.05 oz	0.13 oz	0.67 oz	1.34 oz	2.67 oz	6.68 oz	13.4 oz

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Chlorine Consumption

- pH
- Bather load
- Sunlight
- Rainfall
- Airborne contaminants
- Water temperature

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Chloramines

- Caused by insufficient chlorine levels
- Poor sanitizer
- Foul chlorine odor
- EYE IRRITATION
- Standard DPD kit - test for TC and FC
- Solution...
 - Superchlorinate to ten times combined chlorine

**Ohio pool code – 1.0 max for combined chlorine

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Record Free and Total Chlorine

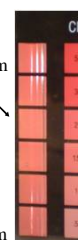
Daily testing		Sunday			
Test	Time of test				
	Free Cl (ppm)				
	Combined Cl (ppm)				
	Total Cl (ppm)				
	Total bromine (ppm)				
	pH				
	Water clarity				
	Water temp(°F)				
	Cyanuric acid (ppm) as applies				
	Total alkalinity (ppm)				
	*Monopersulfate (MPS) as applies				

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Combined Chlorine



Total Cl=2.0ppm



Free Cl=1.0ppm

Total Chlorine 2.0ppm

Free Chlorine 1.0ppm

Combined Chlorine 1.0ppm

Superchlorinate to 10.0 ppm

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Superchlorination

Amount of Chlorine Compound to
Introduce 1 ppm Chlorine*

% Available Chlorine*	Volume of Water						
	400 gallons	1000 gallons	5000 gallons	10,000 gallons	20,000 gallons	50,000 gallons	100,000 gallons
5%	1.02 fl oz	2.56 fl oz	12.8 fl oz	1.60 pts	1.60 qts	1.00 gal	2.00 gal
10%	0.51 fl oz	1.28 fl oz	6.40 fl oz	12.8 fl oz	1.60 pts	2.00 qts	1.00 gal
12%	0.43 fl oz	1.07 fl oz	5.33 fl oz	10.7 fl oz	1.33 pts	1.67 qts	3.33 qts
35%	0.15 oz	0.38 oz	1.91 oz	3.82 oz	7.63 oz	1.19 lbs	2.38 lbs
60%	0.09 oz	0.22 oz	1.11 oz	2.23 oz	4.45 oz	11.1 oz	1.39 lbs
65%	0.08 oz	0.21 oz	1.03 oz	2.05 oz	4.11 oz	10.3 oz	1.28 lbs
75%	0.07 oz	0.20 oz	0.95 oz	1.77 oz	3.77 oz	9.5 oz	1.17 lbs
90%	0.06 oz	0.15 oz	0.74 oz	1.48 oz	2.97 oz	7.42 oz	14.8 oz
100%	0.05 oz	0.13 oz	0.67 oz	1.34 oz	2.67 oz	6.68 oz	13.4 oz

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Cyanuric Acid

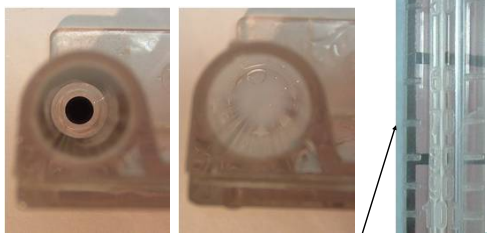
- Present in Di and Trichlor
- Can also be added as a separate product
- Serves to mask chlorine from sunlight
- Reduces chlorine effectiveness
- Can only be reduced by draining water
- DO NOT shock with Di-chlor!

Test weekly (if using di- or tri-chlor)

****Legal Maximum 70ppm****

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Cyanuric Acid Testing Test Quickly!



70 ppm

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Bromine

- Test at the beginning of the day and every 4 hours
- With a controller
 - Test manually every 24 hours
 - Record every 12 hours
- Special Features and Spray Grounds
 - every 6 hours

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Bromine

Legal minimums:

- Pools - 2.0 ppm
- Spas – 4.0 ppm
- Spray Grounds & Special Features – 4.0 (at nozzle heads)

No legal maximum

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Bromine

Advantages

- Sanitation efficiency is pH independent
- Odors are less offensive
- Bromamines are good sanitizers

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Bromine

Disadvantages

- More costly
- Lowers alkalinity
- Not as stable as di or trichlor in sunlight
- No stabilizer available

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Calcium Hardness

- Should be 200-400 ppm
- Too low---corrosive water
- Too high---scaling Water

No legal requirement for testing or limits

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Changing Hardness

- Increase
– Calcium chloride
- Decrease-
DRAIN WATER

TABLE J
To Increase Calcium Hardness Using
Calcium Chloride (77%)

Desired Increase ppm	Volume of Water					
	400 gallons	1,000 gallons	5,000 gallons	10,000 gallons	20,000 gallons	100,000 gallons
10ppm	0.75lb	1.88lb	9.41lb	18.8lb	37.6lb	188.0lb
20ppm	1.50lb	3.76lb	18.8lb	37.6lb	75.2lb	376.0lb
30ppm	2.25lb	5.64lb	28.2lb	56.4lb	112.8lb	564.0lb
40ppm	3.00lb	7.52lb	37.6lb	75.2lb	150.4lb	752.0lb
50ppm	3.75lb	9.41lb	47.0lb	94.1lb	188.0lb	941.0lb
60ppm	4.50lb	11.29lb	56.4lb	112.8lb	225.6lb	1,128.0lb
70ppm	5.25lb	13.17lb	65.8lb	131.6lb	263.2lb	1,317.0lb
80ppm	6.00lb	15.05lb	75.2lb	150.4lb	300.8lb	1,504.0lb
90ppm	6.75lb	16.93lb	84.6lb	169.2lb	338.4lb	1,693.0lb
100ppm	7.50lb	18.81lb	94.1lb	188.0lb	376.0lb	1,880.0lb

- No required testing

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Total Dissolved Solids

- Corrosion
- Staining
- Salty tasting water
- Reduced chlorine effectiveness
- No upper limit
- SOLUTION...Drain water

CCBH provides testing for TDS

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Equipment Replacement

- Form submission to the Ohio Department of Health with basic information
- \$50.00 fee
- Send to
Ohio Department of Health Revenue
Processing
P.O. Box 15278
Columbus, OH 43215-0278
- Required for the following changes:

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Equipment Replacement

Replacement of a filter with one of a different media or different filtration rate or backwash capacity.



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Equipment Replacement



Replacement of chemical feeding equipment to erosion feed device- vice versa, different reagent, or different rated flow capacity



Equipment Replacement

Replacement of a pump with a pump of a different horsepower or flow rate.



Equipment Replacement

- Replacement of SVRS



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Maintenance & Troubleshooting: Filters



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All Filters Must Run 24/7

Diatomaceous Earth Filters

- Use the proper amount of DE
- One pound per 10 sq. ft. of filter area



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Diatomaceous Earth Filters

- Holes in elements or bad "O" rings
will cloud the pool with DE
- Clean elements
 - FIRST...TSP or commercial cleaner to remove oils
 - SECOND...if needed, dilute acid to remove scale



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Sand Filters

A dirty sand filter works better



Wait for a 10 psi pressure increase



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Cartridge Filters

- Watch for a pressure rise of 10 psi or drop in flow
- Wash—filter cleaner—dry out
- Have a backup cartridge on-hand



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Maintenance & Troubleshooting: Loud/Hot Pumps

- Cavitation caused by:
 - Improper throttle valve setting
 - Leak in suction piping or hair/line strainer
 - Closed valves
 - Clogged skimmers or strainer basket
- Deteriorated seal or motor bearing

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Maintenance and Troubleshooting: Chlorinators

Loss of prime

- Hole in suction line
- Bad check valve
- Foot valve floating
- Worn peristaltic tube

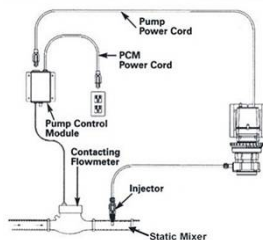


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Maintenance & Troubleshooting: Chlorinators

Injector problems

- Lost/worn spring
- Clogged - Clean by:
 1. Chlorine
 2. Water
 3. Acid
 4. Water
 5. chlorine



Maintenance & Troubleshooting: Controllers

- Keep probes clean
- Don't frequently "tweak"
- Manually check pH
- ORP calibrate by pros



Maintenance & Troubleshooting: Controllers

- Set point vs. calibration
- With long runs, dilute chemicals or turn down feeders

Maintenance & Troubleshooting: Controllers

To verify proper functioning, add dilute (1:10) acid to the skimmer.

- The displayed pH should go down
- The ORP should go up

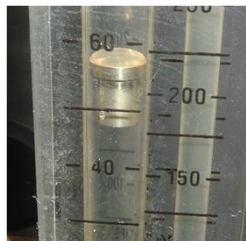
No response is most likely a bad probe



Troubleshooting: Flowmeters

If it's not moving, it's not working

- Improper installation
 - Facing wrong direction
 - Too short a run of pipe
 - Float ridge upside down
- Dirty
 - Knock sand loose
 - Clean with mild acid



Algae

- A plant dependent upon temperature, pH, chlorine, and turbidity
- Causes taste, odor, chlorine demand, slippery spots.



Algae Control

- Chlorine is the best algaecide
- Chlorine, good circulation, and occasional brushing is all that *should* be needed
- There is no such thing as pink algae
- Use an algaecide specific for the color



Facility Safety



Recreational Water Illness (RWI) Prevention

Formed Stool Incidents

- Clear the pool of bathers
- Net out visible fecal material
- Check pH and disinfectant levels
- Increase disinfectant to 2ppm minimum
- Keep swimmers out for 30 minutes



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RWI Prevention

- Diarrheal Incidents
- Same steps as formed stool incidents, except:
 - Increase free chlorine to 20 ppm for 12.75 hours
 - Backwash filters/drain to waste
 - Reduce chlorine back to normal levels and return pool back to normal operation

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RWI Prevention

- This level of Crypto inactivation cannot be reached in the presence of 50 ppm chlorine stabilizer, even after 24 hours at 40 ppm free chlorine, pH 6.5, and a temperature of 77°F (25°C). Extrapolation of these data suggest it would take approximately 30 hours to kill 99.9% of Crypto in the presence of 50 ppm or less cyanuric acid, 40 ppm free chlorine, pH 6.5, and a temperature of 77°F (25°C) or higher.

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RWI Prevention

- Diarrhea Incident with Chlorine Stabilizer in Water
- Similar steps as diarrhea incidents, addition steps include:
- Check cyanic acid level, lower to 15ppm or less
- Increase free chlorine to
 - 20 ppm for 28 hrs
 - 30 ppm for 18 hrs
 - 40 ppm for 8.5 hrs

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Pool Closure

- No circulation/filtration
- Water quality
 - Insufficient chlorine
 - Out of range pH
 - Insufficient clarity
- Main drain cover loose/missing
- Fecal Accidents
- No or non functioning SVRS
- No lifeguard when required



“Critical Violations” listed in pool code

Barrier Requirements

- Minimum 48” in height from ground to top of fence
- The gap within the perimeter barrier or between the perimeter barrier and a building or the ground cannot exceed 4” or 6”, depending on the date of construction.
- Gates or doors must be self-closing, self-latching, and lockable



Safety & Rescue Equipment

Equipment is easily accessible

- Reach pole w/ shepherd's crook
- USCG floatation device
- 30 ft throw line
- Spine boards
- aid kit



Emergency telephone

- Post emergency phone location and phone numbers



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Signs

- Provide information
- Warn users
- Well written



- Depth markings, No Diving
- Warning, No Lifeguard
- Danger, Pool Closed
- Children must be supervised
- Swimming alone is not recommended
- Slides, Spas, Splash



Lifeguard Requirements

- Pool greater than 2000sqft
- 50 or more bathers - refer to table
- Diving board
- Zero depth entry
- Slides over 10ft
- Pool over 6000sqft must have written plan showing adequate lifeguard coverage

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Chemical Storage/ Safety

- Have Safety Data Sheets Available
- Protect from getting wet
 - Store chemicals off the floor
 - Provide covers for all containers
 - Repair leaks in equipment room immediately
- Avoid cross-contamination
- Separate storage for incompatible chemicals
- Discard unused chemicals and empty containers



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Chemical Storage/ Safety

- Keep other materials (i.e.: pesticides, gasoline, paint, etc.) away from pool chemicals
- Keep the area clean
- Use only the labeled containers for storage
- Do not store near possible ignition sources



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Chemical Handling

- Personnel training
- Documentation of chemicals added to pool
- Use appropriate PPE
- Use separate scoops & cleanup containers
- Close the pool, and re-open only after water chemistry check
- Do not eat, drink, or smoke while handling pool chemicals

ALWAYS ADD CHEMICALS TO WATER

CCBH

Emergency Response Planning

Establish and practice emergency procedures
Develop a written plan

Ensure emergency phone
is within 500 ft of pool

Train all staff in CPR and
first aid

Documentation of incident



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Federal Law -Virginia Graeme Baker P&SS Act 12.17.07

- Suction fitting that comply with ANSI/APSP16 or successor standard
- Law strives to:
 - Enhance the safety of public and private pools and spas
 - Reduce child drownings in pools and spas
 - Reduce the number of suction entrapment incidents, injuries, and deaths
 - Educate the public on the importance of constant supervision of children in and around water
 - Encourage the use of multiple safety steps at all pools and spas

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VGB Act

- Pools and spas operating off a single main drain (other than an unblockable drain) must also add one or more of the following options
 - A safety vacuum release system (SVRS)
 - A suction-limiting vent system
 - An automatic pump shut-off system
 - A disabled drain (NOT IN OHIO)
 - Any other system determined by the CPSC to be equally effective as, or better than, the others listed

CCBH

VGB Act

Pools exempt from these requirements:

- Have dual or multiple main drains more than 3 ft. apart (ADJACENT EDGES)
- Pools with single main drains that are unblockable
 - Includes all components of suction outlet, sump, cover, hardware, must be 18" x 23"

Skimmer equalizer lines are included and must have compliant covers or must be plugged

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Americans with Disabilities Act

- 2010 revisions to the 1991 ADA guidelines included changes to pool and spa requirements
- The latest rule making requires that all pools and spas in public accommodations provide "accessible means of entry".
- The primary means of entry must be a pool lift or sloped entry.
- The secondary means in a larger pool may consist of a transfer wall, transfer system or accessible pool steps.

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Model Aquatic Health Code

The Model Aquatic Health Code is the first science-based code, designed to help reduce risk, prevent disease and injuries in recreational water experiences. The MAHC will ensure that the best available standards and practices for protecting the public health are available for adoption by state and local agencies.

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Rule Review – Ohio Pool Code

- ODH review process began in August 2014
- Proposed changes:
 - Therapy pools no longer exempt
 - Perimeter barrier added to critical violations
 - Mandatory training for operators
 - Revised disinfection residuals (cyanuric acid will require higher disinfection residuals – 3 ppm in pools, spas, & spray features)
 - 10 ppm max free chlorine; 8 ppm max free bromine
 - Discontinued cyanuric acid containing disinfectants in indoor pools
 - Updated injury reporting process
 - Emergency phone distance reduced to 250ft
 - New design requirements for under water shelves (tanning ledges)



Thank you



CUYAHOGA COUNTY BOARD OF HEALTH

YOUR TRUSTED SOURCE FOR PUBLIC HEALTH INFORMATION

5550 Venture Drive Parma, Ohio 44130
216-201-2000 www.ccbh.net

