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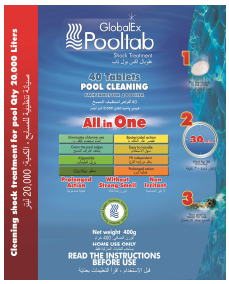

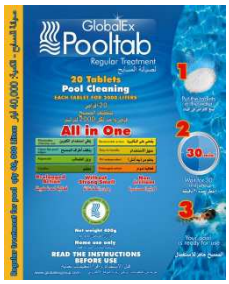

POOLS
WATER QUALITY & RECORD KEEPING STANDARDS

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SECTION 1: WATER QUALITY PARAMETERS

A) CHEMICAL PARAMETERS

There are five main chemical parameters which are important in the operation of public pools. They are:

1) **pH**
• pH is defined as a measure of the acidity and basicity of pool water.
• Recommended range in public pools: **7.2 - 7.8**
• Pool Problems:

	Low pH	High pH
Problem	corrosion	scaling
	chlorine loss	chlorine inefficiency
	staining	cloudy pool
	eye & skin irritation	eye & skin irritation

2) **Total Alkalinity (TA)**

• Total alkalinity (TA) is the measurement of the ability of pool water to resist changes in pH. Total alkalinity is the governor of pH.
• Recommended range in public pools: **80 - 120 ppm** (ppm - parts per million)
• Pool Problems:

	Low TA	High TA
Problem	pH bounce	pH drift to 8.4
	corrosion	scaling
	staining	cloudy pool

3) **Hardness**
• Hardness is the amount of calcium in solution in pool water.
• Recommended range in public pools: **200 - 300 ppm**
• Pool Problems:

	Low Hardness	High Hardness
Problem	water will etch plaster, pit metal or roughen pool surfaces	scaling
	staining	cloudy pool

4) **Disinfectants**

• A disinfectant is an agent which reduces the level of micro-organisms present in significant numbers to safe levels as established by Health Authorities.

• **Chlorine Dioxide** used in public pools is available in tablet.
- Globalex Pooltab 20 Grams tablets
- Globalex Pooltab tablets 0.8 grams

Recommended residuals for total CLO^2 are:
All Public Pools Classes and Class B: Whirlpool, Spa Types of Pools **1 - 4 ppm**
Indoor and Outdoor

B) PHYSICAL PARAMETERS

Water Temperature

Recommended water temperature range:

1. All Public Pools Classes Except Class B: Spa/Whirlpool Types of Pools **21°C - 32°C**
2. Class B: Spa/Whirlpool Types of Pools **36°C - 38°C**

C) BACTERIOLOGICAL STANDARDS

There are five bacteriological standards that public pools must meet. They are as follows:

Test Standard Comment
E. coli = 0 per 100 ml sample
Note: repeat sample must be taken to confirm presence of E. coli Indicator of the effectiveness of disinfection and recent fecal contamination

Staphylococcus aureus = 50 or less per 100 ml sample
Note: repeat sample must be taken to confirm presence of Staphylococcus aureus at levels above the standard Indicator of water contamination

Pseudomonas aeruginosa = 10 or fewer per 100 ml of sample
Note: repeat sample must be taken to confirm Pseudomonas aeruginosa at levels above the standard. This organism is a pathogen in pools, spas and whirlpools.

Standard Plate Count = 250 or fewer per 1 ml of sample
Note: repeat sample to confirm SPC at levels above the standard. Indicator of a deficiency in the treatment process. Test "just in time" made with the Hiegiena SystemSure PLUS.

The summary of the water quality requirements are outlined in Appendix 1.

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SECTION 2: TESTING METHODOLOGY

A) REQUIREMENTS FOR POOL OPERATORS

All pool operators are to perform and record the following tests at the indicated time intervals:

- **Test Time Intervals**
- **(Frequency)**
- **Comments**

1) **Total CLO^2 Residual** if used disinfectant in the pool 2 hours before opening and evening when pool is in operation This is level of CLO^2 in the pool water available to kill harmful germs. **The total CLO^2 residual must exceed 1 ppm in the pool**

2) **Total MICRO-BIOLOGICAL LEVEL** each 4 hours test the micro-biological level in the pool with the Hiegiena SystemSURE PLUS. The level does not exceed 250. All the tests collected can be downloaded into a computer and archived into the SURE trend – Data analyses system.

Test Testing Frequency Comments

3) pH ½ hour before opening and every four hours when pool is in operation High or low pH cannot affect the efficiency of chlorine dioxide to kill harmful germs but can create uncomforted feelings for bathers

5) Water Temperature:
   a) once a day for all public pool classes except Class B: whirlpool, spa types of pools
   b) every four hours for Class B: whirlpool, spa types of pools This is important for the comfort of users of the pool.

6) Total Alkalinity
   a) once a week for all public pool classes except Class B: whirlpool, spa types of pools
   b) once a day for Class B: whirlpool, spa types of pools This is important in maintaining the recommended pH levels in a pool.

7) Hardness once a week May cause staining or cloudiness if the proper levels are not maintained.

B) REQUIREMENTS FOR PUBLIC COMMUNICATION

During the opening, publish the results as soon as available

1) Temperature of the pool (s)
2) Micro-biological (SPC) level (250 = 0)

SECTION 3: EQUIPMENT

Pool operators should have equipment capable of testing the following pool water parameters:
- Chlorine dioxide - Hardness - pH
- Temperature
- SPC (Higiena SystemSure Plus)

SECTION 4: RECORD KEEPING

Daily pool operational records must be maintained by the pool operator and be available for the public and audit.

For all public pools except Class B: whirlpool, spa types of pools, operators must use Form A: Daily Record of Operation (see Appendix # 2).
For Class B: whirlpool, spa types of pools (as defined in Section 4(1) b(ii) of Public Pool Regulations, operators must use Form B: Daily
Record of Operation (see Appendix # 3).
Data must be retained for a period of one year from the date of making the record.

SECTION 5: TROUBLE SHOOTING

As listed below, this section identifies the most common water quality problems experienced in swimming pools, determines the possible causes and provides possible recommendations (remedies) to issue.

PROBLEM	POSSIBLE CAUSE	REMEDY
ALGAE GROWTH • green algae • slippery walls • algae stains • black algae		
	. Hot sunny weather	Maintain high level of CLO^2 (2 or 3 ppm).
	. Pool temperature too high	Keep below 26.7°C (80°F) If possible.
	. Poor circulation (dead spots in pool)	Reposition directional outlets and check efficiency of pump. Hand dose corners. Check flow rate.
	. Low wet spots on deck	Eliminate, if possible. Hand dose with Concentrated CLO^2.
	. Low level of CLO^2	Maintain a FAC greater than 4.0 ppm overnight. Brush walls vigorously, then vacuum.

PROBLEM	POSSIBLE CAUSE	REMEDY
ATHLETE'S FOOT Fungus on pool decks		Exclude people 20 minutes and treat with CLO^2 200ppm.
CARBONATEPRECIPITATE • scale/cloudy/reside		because High pH and total alkalinity K Maintain pH of 7.2 to 7.4 until total alkalinity decreases to 80 ppm. Raise calcium hardness to obtain "balanced" water.
CLO^2 CONSUMPTION HIGH		Because Heavy bather load, high dirt load, heavy rain or wind storms : Super CLO^2 8 ppm
CLO^2 LEVEL TOO HIGH		It is not a problem till to 20 ppm for bathers If necessary resolve with: Dilution, Aeration, Sunlight (corona discharge if available).
CLO^2 LOW		Demand above normal due to heavy swimming load, hot sunny weather, algae, debris blows into pool - leaves, etc. Check the sand filter and vacuum. Check the table dosage .

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PROBLEM	POSSIBLE CAUSE	REMEDY
CLOUDY WATER		CLO^2 treatment chock at 4ppm, check the pH maybe too high or to Low. Check alkalinity even too high and Reduce until balanced. Check Calcium hardness too high and Lower until balanced. Maybe Poor circulation in certain areas; so, Readjust directional ball inlets. Check and/or repair filter elements.
CLOUDY RED-BROWN WATER		This is usually due to precipitated iron. Chock with 8 to 10 ppm CLO^2
COLOURED WATER BROWN, BLUE, BLACK		(usually after initial filling of pool) Metallic ions in the water; brown is iron, blue is copper, black is manganese. Chock with 8 to 10 ppm CLO^2

PROBLEM	POSSIBLE CAUSE	REMEDY
COLOURED WATER GREEN .		Algae bloom Chock with 8 to 10 ppm CLO^2
COLOURED WATER - MURKY BROWN		Insufficient backwashing, Inadequate filter run, Channels in filter run , so,Increase the backwashing time or Increase the backwashing rate. Change the sand.
CORROSIVE WATER		corroded/stained fixtures, pump/heater pipe corrosion. Maintain pH at 7.4 to 7.5, Increase total alkalinity to 80 - 120 ppm.
FOULED POOL .		Fouled by vomit and/or feces a) Clear the pool of bathers b) Stop the recirculating pump and shut off the chemical feeders. c) Remove the offending matter by use of a leaf skimmer, handheld scoop, etc. d) Vacuum with discharge directed to the sewer. Discharge approximately 5% of the water to the sewer. e) chock the pool to 10 ppm CLO^2. f) Clean the deck and equipment. Use a strong CLO^2 solution 200 ppm.

For greater details –see Appendix #4

PROBLEM	POSSIBLE CAUSE	REMEDY
pH FLUCTUATING		Low total alkalinity, Add sodium bicarbonate ($NaHCO_3$)

SAND IN POOL	Failure of filter underdrain system Remove filter sand, check and replace underdrains as necessary. Maybe Filter sand grain size inadequate Filter sand should meet manufacturer's specifications.
SCALE FORMATION ON POOL EQUIPMENT	pH too high, Total alkalinity too high, Calcium hardness too high; so, Balance pool water according to Langelier's saturation index
SCUM ON POOL WALLS	Body oils and cosmetic lotions used by swimmers: Impose Shower with soap and warm water before entering pool. Recommend bathing caps be worn. Scrub pool walls.
SLIPPERY POOL DECKS	Algae growth; so, Clean with 200 ppm CLO^2 solution. Let stand 10 minutes, Repeat if necessary.
TURBIDITY	Insufficient back washing. filter sand and Check manufacturer's instructions. More vacuuming cover when closed (if possible); increase turnover rate; Maintain design flow rate and check filter's backwash more often if necessary. a) Flush supply and make-up lines occasionally. c) Add CLO^2 and Vacuum precipitate to waste.
WHITE RING AROUND THE WATER LEVEL TILE	Calcium salts in hard water, high pH Make Lower pH with sodium bisulphate or muriatic acid And Maintain pH level of 7.2 - 7.8

SECTION 6: WHEN TO CLOSE A POOL

1. Pool contaminated with **fecal material and/or vomitus**.
2. Pool water is **cloudy** and the bottom drain cannot be seen from the pool deck.
3. **Chemical Imbalance**.

• If the pool water chemistry becomes imbalanced to a point that minor adjustments cannot correct it, and a significant amount of chemical must be added, it will be necessary to close the pool.

4. Unsatisfactory **bacteriological tests**.

- repeat sample confirms the presence of *E. coli* ;*
- repeat sample confirms presence of greater than 50 *Staphylococcus aureus* per 100 ml sample*
- repeat sample confirms the presence of greater than 50 *Pseudomonas aeruginosa* per 100 ml sample*

* Refer to Guidelines for Applying Public Pool Bacteriological Standards details.

5. Pool has no disinfectant residual (CLO^2).
6. Mechanical Failure

• Improperly working filters and pumps will not be able to effectively do their job.

SECTION 8: APPENDICES

APPENDIX 1: WATER QUALITY REQUIREMENTS FOR VARIOUS CLASSES OF PUBLIC POOLS

Parameter/Standard Class of Pool Type of Pool Indoor Outdoor

pH A, B, & C
(All Classes)
7.2 - 7.8 7.2 - 7.8

Total Alkalinity A, B, & C
(All Classes)
80 - 120 ppm 80 - 120 ppm

Hardness A, B, & C
(All Classes)
200 - 300 ppm 200 - 300 ppm

Disinfectant:
Chlorine Dioxide POOLTAB
(minimum acceptable limit 1.0 ppm)

Parameter/Standard Class of Pool Type of Pool Indoor Outdoor

E. coli
(All Classes)
0 per 100 ml of sample
0 per 100 ml of sample

Staphylococcus aureus
(All Classes)
50 or fewer per 100 ml of sample
50 or lower per 100 ml of sample

Pseudomonas aeruginosa
(All Classes)
10 or fewer per 100 ml of sample
10 or less per 100 ml of sample

Standard Plate Count
(All Classes)
250 or fewer per sample
250 or lower per sample

Signature of Recording Person

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FORM A DAILY RECORD OF OPERATION Appendix 2

(For use in all Public Pools except Class B: whirlpool, spa, types of pools) ***ppm - parts per million**

FORM A
(For use in all Public Pools except
Class B: whirlpool, spa, types of pools)

DAILY RECORD OF OPERATION

Appendix 2

***ppm - parts per million**

NAME OF POOL	LOCATION	OPERATOR & TELEPHONE NO.	DATE	DAY

HOURLY WATER TESTS

TEST		½ HOUR BEFORE OPENING TIME:	4 HOURS AFTER OPENING		8 HOURS AFTER OPENING		12 HOURS AFTER OPENING		16 HOURS AFTER OPENING	
			TIME:	No. of Bathers	TIME:	No. of Bathers	TIME:	No. of Bathers	TIME:	No. of Bathers
Free Available Chlorine Residual (If chlorine is used as a sanitizer)	ppm*									
Total Chlorine Residual (If chlorine is used as disinfectant)	ppm									
Total Bromine Residual (If bromine is used as disinfectant)	ppm									
pH										

DAILY TEST

WATER TEMPERATURE	°C

WEEKLY TESTS TO BE PERFORMED EVERY MONDAY

TOTAL ALKALINITY	ppm	STABILIZER (CYANURIC ACID) CONCENTRATION - USED IN OUTDOOR POOLS ONLY	ppm	HARDNESS	ppm

COMMENTS (ITEMS OF NOTE) _____

_____

_____

Signature of Recording Person

NOTE: KEEP THIS RECORD FOR ONE YEAR FROM DATE OF THE RECORD

FORM B **DAILY RECORD OF OPERATION** **Appendix 3**

(For use in all Class B: whirlpools, spas, natural hot water pool, roman bath, hydro-swivel or hyrdo-therapy pool)

***ppm - parts per million**

NAME OF POOL	LOCATION	OPERATOR & TELEPHONE NO.	DATE	DAY

HOURLY WATER TESTS

TEST		½ HOUR BEFORE OPENING TIME:	4 HOURS AFTER OPENING		8 HOURS AFTER OPENING		12 HOURS AFTER OPENING		16 HOURS AFTER OPENING	
			TIME:	No. of Bathers	TIME:	No. of Bathers	TIME:	No. of Bathers	TIME:	No. of Bathers
Free Available Chlorine Residual (If chlorine is used as disinfectant)	ppm*									
Total Chlorine Residual (If chlorine is used as disinfectant)	ppm									
Total Bromine Residual (If bromine is used as disinfectant)	ppm									
pH										
Water Temperature	°C									

DAILY TESTS

TOTAL ALKALINITY	ppm	STABILIZER (CYANURIC ACID) CONCENTRATION - USED IN OUTDOOR POOLS ONLY	ppm

WEEKLY TEST TO BE PERFORMED EVERY MONDAY

HARDNESS	ppm

COMMENTS (ITEMS OF NOTE) _____

Signature of Recording Person

NOTE: KEEP THIS RECORD FOR ONE YEAR FROM DATE OF THE RECORD

APPENDIX 4: CLEANING AND DISINFECTING POOLS CONTAMINATED WITH FECAL MATERIAL AND/OR VOMITUS

Procedures for all Public Pools Classes Except B: Whirlpool, Spa Types of Pools

A. Pools Contaminated With Fecal Material - Normal Formed Stools

Step 1 When fecal material is noticed in the pool, immediately evacuate everyone from the pool.

Step 2 Remove the fecal material from the pool by using a scooping device and dispose of the stools into a toilet. Clean and disinfect the scooping device.

Step 3 Super treatment the contaminated area of the pool to at least 10 ppm for a minimum of 20 minutes.

B. Pools Contaminated With Diarrhea or Vomit

Step 1 When diarrhea or vomit is observed, immediately evacuate all patrons from the pool.
Step 2 If possible, identify the person responsible for the accident and request that they immediately go to their doctor. Ask for their name and telephone number.

Step 3 Shut off the re-circulation pump and other chemical feeders.

Step 4 Remove vomit and any visible diarrhea with a scooping device and dispose of the material into a toilet. Clean and disinfect the scooping device.

Step 5 Vacuum to waste any remaining diarrhea or vomit.

Step 6 Super treatment the pool to a minimum concentration of 20 ppm 60 minutes.

Step 7 Turn on the re-circulation equipment and chemical feeders.

Procedures for Class B: Whirlpool, Spa Types of Pools

Step 1 Close the pool.

Step 2 If necessary, remove any fecal material or vomit with a scooping device and dispose of the material into a toilet. Clean and disinfect the scooping device.

Step 3 Turn the heater off. Wait until the heater unit has cooled.

Step 4 Drain the pool. Use protective rubber gloves and a face mask when working around the tank and mechanical equipment.

Step 5 Ensure that the pool area is well ventilated.

Step 6 Clean the pool basin with a mild tub and liner cleaner. Ensure that all grease and scum has been removed. Rinse the cleaner to drain.

Step 7 Fill the pool to the halfway point of the skimmer mouth ensuring that the air lines of the hydro jets are flooded.

Step 8 Shock the water with a CLO^2 of 20 ppm.

Step 9 Turn off all equipment that functions when the filter pump is on (i.e. chemical feeders, pH controller and other chemical controllers).

Step 10 Turn the filter pump on and circulate for a minimum of two and a half hours.

Step 11 Turn the hydro jet pump on for a minimum of 20 minutes.

Step 12 Disinfect the deck area surrounding the pool with a 200 ppm CLO^2 solution

Step 13 At the end of two and a half hours, backwash the filter according to the manufacturer's requirements.

Step 14 Drain the pool and hydro jet lines.

Step 15 Refill the pool and immediately repeat backwashing the filter.

Step 16 Top up the pool water level and turn on any equipment which functions with the filter pump.

Step 17 Balance the water chemistry by using an approved test kit. A Langelier index between plus 0.3 and minus 0.3 is acceptable. 0.0 is optimum.

Step 18 Maintain the required disinfectant level. An available CLO^2 residual of 2 ppm to 4 ppm is recommended. Do not exceed 10 ppm

APPENDIX 5: GLOSSARY

ACID A chemical compound which releases hydrogen ions in a water solution.

ALGAE Plant life of many colors which grows in water in the presence of sunlight and carbon dioxide. In swimming pools it produces slippery spots and cloudy, uninviting water. Removed by POOLTAB chock treatment, only.

ALGICIDE A chemical which will kill algae.

ALGISTAT A chemical which inhibits growth of algae.

ALKALINITY The amount of bicarbonate, carbonate, or hydroxide compounds present in a water solution. Total alkalinity is a measure of the buffering capacity of water against rapid pH change.

ALUM An aluminum compound applied in pools to produce a gelatinous floc in sand filters, or to coagulate and precipitate suspended particles out of solution. Useless when POOLTAB is used.

AMMONIA A chemical compound that contains nitrogen and hydrogen that combines with free chlorine in pools to form chloramines or combined available chlorine.

APPURTENANCES Accessory objects or parts.

BACKWASH Reversing the flow of water through a sand filter for the purpose of cleaning it.

BASE A chemical which neutralizes acids by releasing hydroxyl ions in a water solution. A chemical which raises the pH when added to swimming pool water. Examples of bases are sodium carbonate (soda ash) and sodium hydroxide (caustic soda commonly known as lye).

BACTERIA Single-celled microorganisms. Some bacteria are beneficial yet many others are capable of causing disease. Only Chlorine Dioxide POOLTAB can eliminate all bacteria.

BREAKPOINT The process of adding chlorine to pool water in large doses to oxidize organic material and destroy chloramines.

BROMAMINES Hypobromous Acid (HOBr) combined with ammonia products. Bromamines have no noticeable odour, do not cause eye irritation and have equal disinfecting power as HOBr.

BUFFER A chemical when dissolved in swimming pool water will resist pH change. Sodium bicarbonate (NaHCO3) is this type of chemical.

CALCIUM HYPOCHLORITE A compound of chlorine and calcium used in white granular form as a disinfectant in pools. In water solution it releases 65% to 70% of its weight as available chlorine. Calcium hypochlorite must be handled with care.

CHLORAMINES Compounds that are produced when ammonia compounds react with FAC. Chloramines produce the obnoxious chlorine odours associated with pools and greatly reduces

the disinfecting power of chlorine. Chloramines may also cause skin, eye and respiratory irritations.

CHLORINE Used in swimming pools as a disinfectant and algicide. Extreme caution must be used when handling. Available in the inorganic form as gas, liquid, and hypochlorite and in the organic form of chlorinated cyanurates. May cause skin irritations, eyes irritations, asthma, green color effect in the hairs…

CLARITY The state of clearness of pool water which can be demonstrated by how easily and clearly an object can be seen in a given depth of water. A good test for clarity is the ability to see the main drain cover from anywhere on the pool deck.

COLIFORM ORGANISMS Bacteria found in the intestines of warm-blooded animals. Their presence in pool water indicate the possibility of the presence of disease-causing bacteria.

COMBINED AVAILABLE CHLORINE (CAC) See definition of chloramines.

CONTAMINATED Impure. Can refer to the presence of harmful infectious agents in water, or to the presence of any unwanted substance.

CYANURIC ACID A chemical that combines with available chlorine in pool water to prevent rapid loss of chlorine due to ultraviolet radiation from sunlight.

CYST An infectious parasitic stage, which has a thick outer wall making disinfection of pool water difficult.

DIATOMACEOUS EARTH (DE) A white porous powder used as a filter media composed of fossilized skeletons of one-celled organisms called diatoms.

DIATOMACEOUS EARTH FILTER A vacuum or pressure filter designed to use DE as a filter media.

DIATOMITE Common name for diatomaceous earth.

DISINFECTANT A chemical which will destroy infectious agents.

DOWNWASH The process of removing debris from pipes after backwashing filters. This backwash effluent is drained to waste before beginning a new filter run.

EFFLUENT The outflow of water from a filter, a pump or a pool.

FILTER ELEMENT The part of a diatomite filter, usually made of cloth, wire screen or other fine mesh material, which collects diatomaceous earth for filtration purposes.

FOLLICULITIS An infection of hair follicles of the body which can be caused by *Pseudomonas* bacteria.

FILTER RATE The volume of water which passes over a filter surface area during a given period of time. The filter rate is commonly expressed in litres per minute per metre squared (Litres/minute/m2).

FILTER RUN The operational time of a filter between backwashes.

FILTER SAND A filter medium found in sand filters composed of hard, sharp silica, quartz, or similar particle with proper grading for size and uniformity.

FLOCCULENT A compound used with sand filters to form a thin gelatinous layer called floc on the top of the sand. The floc produces aids in trapping fine suspended particles which might normally pass through the sand medium.

FLOW RATE The volume of water which flows past any point in the recirculation system during a given period of time. Flow rate is usually expressed in liters per minute (LPM).

FREE AVAILABLE CHLORINE (FAC) The concentration (ppm) of chlorine in swimming pool/whirlpool water that is ready and available for disinfection.

GUTTER Overflow trough located at the edge of a pool. Designed for continuous removal of surface water and floating debris from a pool.

HARDNESS Refers to calcium and other dissolved minerals including magnesium which may cause scale build-up in the recirculation equipment.

HYDROCHLORIC ACID Also called MURIATIC ACID when diluted. A strong acid used to lower pH, lower total alkalinity and occasionally used for cleaning purposes.
Caution: Use extreme care and protective equipment when handling.

HYDROGEN ION (H+) The positively charged nucleus of a hydrogen atom. Its' presence in water solution is used as a measure of acidity of the solution.

HYPOBROMOUS ACID (HOBr) A disinfectant that is formed when bromine products are added to water.

HYPOCHLORINATOR An adjustable chemical feeder which feeds liquid chlorine solutions into the pool water at a given rate.

HYPOCHLOROUS ACID (HOCl) A very effective disinfectant, oxidant and algicide.

IMPELLER The rotating vanes of a centrifugal pump.

INFECTIOUS AGENTS Harmful microorganisms that are capable of causing disease. They include bacteria, viruses, fungi and protozoa.

INFLUENT Water flowing into a pool, a pump, a filter, a chemical feeder, or other equipment.

LIFELINE A rope line across a pool to designate a change in slope in the pool bottom, or the beginning of deep water. It is usually supported by regularly spaced floats.

LINT STRAINER A basket located at the pump influent line used to screen out lint and other debris which might cause damage to the pump.

LIQUID CHLORINE In swimming pool terminology, sodium hypochlorite (NaOCl) solutions are known as liquid chlorine.

MACROCONIDIA A network of microscopic plant life fibres that contain fungal spores.

MURIATIC ACID A dilute solution of hydrochloric acid.

ODOURS Usually the result of chloramines or sulphur in water.

OOCYST An infectious parasitic stage of *Cryptosporidium* protozoa. malaria parasite. An oocyst has a thick andenvironmentally resistant outer wall that makes disinfection very difficult. Can be eliminated only by Chlorine Dioxide POOLTAB.

OPEN SORES Non-intact skin associated with drainage, i.e. a wet sore.

ORGANIC BROMINE A disinfectant in the form of small, white, slow-dissolving pucks.

OVERSTABILIZED POOL WATER A condition resulting from adding too much cyanuric acid to pool/whirlpool water. Over stabilized pool water reduces the disinfecting power of chlorine and is usually greenish in color.

OZONE (O3) Used in swimming pools/whirlpools to ***OXIDIZE*** organic contaminants.

pH The logarithm of the reciprocal of the hydrogen ion concentration of water solution. A measure of the balance between acidity and basicity (alkaline qualities) of a solution. A pH below 7.0 is considered acidic. A pH of 7.0 is considered neutral. A pH above 7.0 is considered alkaline.

PHENOL RED An organic dye which is yellow at a pH of 6.8 and turns progressively deeper red in colour as the pH increases to 8.4. The most commonly used test reagent for pH in pools.

POOLTAB CLO^2 producer (20gr tablet = 1 ppm into 2 m^3 // 0.8 gr tablet= 1 ppm 80 liters water)

Ppm Parts per million or milligrams per litre.

PRECIPITATE Any compound which comes out of solution as a chemical reaction and remains insoluble (i.e. calcium carbonate).

PRECOAT The layer of diatomaceous earth deposited on filter septums at the start of a filter run.

SAND FILTER A pool filter using sand, or sand and gravel as a filter medium.

SCALE The mineral deposits or precipitant, usually calcium carbonate, caused by hard water, on the floors, walls, metal piping, filter system, etc., which can become unsightly and may interfere with the proper operation of the pool.

SKIMMER A part of the recirculation system which continuously removes surface water and floating debris from a pool.

SKIMMER WEIR The part of a skimmer which assures a continuous flow of water to the skimmer and which prevents oils and debris from returning back to the pool.

SODIUM BICARBONATE (NaHCO3) Baking soda. Very effective in alkalinity control. Sodium bicarbonate increases the alkalinity rapidly and the pH less rapidly.

SODIUM CARBONATE (Na2 CO3) Soda ash, used to raise pH and slightly increase total alkalinity in pool water.

SODIUM HYPOCHLORITE (NaOCl) A liquid chlorine solution containing 12% to 15% available chlorine.

SODIUM THIOSULPHATE A chemical solution used to neutralize chlorine from a test sample to avoid false pH test readings, or false bacteria test results. If used correctly, sodium thiosulphate can also lower chlorine concentrations in swimming pool/whirlpool water.

SPORES Single-celled resistant bodies produced by fungi.

TITRATION A method of testing for total alkalinity, hardness, etc. Also for making determinations as to the amount of acid which may be safely added to lower pH.

TOTAL ALKALINITY See Alkalinity.

TOTAL AVAILABLE CHLORINE (T.A.C.) Is equal to the free available chlorine plus combined available chlorine.

TOTAL BROMINE RESIDUAL Hypobromous Acid (HOBr) + Bromamines

TURBIDITY The quantity of suspended particles in pool water that leads to cloudiness.

TURNOVER RATE The number of times a quantity of water equal to the total capacity of the pool passes through the filters in a stated time. Usually referred to as turnovers per day.

UNDERDRAIN (COLLECTION MANIFOLD) The piping system located at the bottom of a sand filter which collects the filtered water during a filter run, and distributes the backwash water during backwashing.

VACUUM FILTER Diatomite filter located before the pump in a recirculation system. Water is drawn through the filter rather than being pushed causing a vacuum.

VOIDS Areas between particles or fibers of a filtering medium which determines the permeability and the dirt holding capacity of the filter.