Public Bathing Place Operator Certification

Oklahoma City County Health Department

Schedule

- Introduction (9:00)
- General Regulations
- Filtration (~10:00)
- Water Chemistry
- Lunch (~11:30-12:30)
- Waterborne Illness
- General Inspection Items
- Open Book Exam (~1:30)

Non-Smoking Campus

- Smoking is not allowed on the premises. Anyone seen smoking will be removed from the property, will not receive certification, and will not be refunded.

Introduction

- The state of Oklahoma adopted one of the first Public Bathing Codes in the nation in the 1940's, a collaboration between health officials, industry and the public.
- Updates to the regulations go through the state's legislative process.

Experience

- This class is designed to teach you the basics of maintaining a public bathing place in a manner that is both legal and safe for the intended patrons.
- Regulatory Requirements
- Experience is key.

What is a Public Bathing Place (PBP)?

A PBP is any pool or spa that is used by a group of people. This includes, but is not limited to:

- Health Clubs
- Hotels/Motels
- Waterparks
- Municipal Pools
- Home Owner Association Pools
- Apartment Pools

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State Licensing

- A state license of $125 is required for each pool/spa. Annual renewal is $75/year per tank.
- This license is non-transferrable.
- The department should be notified in the event of any change of ownership.

Municipal Requirements

- Some municipalities have their own bathing codes, in addition to state requirements.
- Some will require a city license for a PBP (Edmond & Oklahoma City).
- Oklahoma City and Edmond specifically require a certification from the Oklahoma City-County Health Department.
- Municipal codes may be more strict than the state code.
- State code takes precedence.

Certified Operator Required (CPO)

- Each site/address must have a full-time certified operator on staff to oversee maintenance and upkeep of the facility.
- Certified operator can only oversee one property.
- Agents may operate on behalf of the CPO, but the CPO is ultimately responsible for the facility.
- OCCHD Pool Operator Certifications are valid for 3 years.

General Regulations

- OAC 310: 315 (Facility Guidelines) and 320 (Operational Guidelines)
- Copies can be found online at: www.ok.gov/health, under Protective Health

New Pools

- All new PBP's must have plans designed by a licensed engineer, sent to OSDH for approval prior to build.
- May need to submit to city also.

Remodel

- Major alterations must also have engineered plans, submitted for approval prior to build/work being done.
- Major remodel includes:
  - Changes to the structure of the pool
  - Piping alterations
  - Resizing of equipment
  - Other

Remodel

- Minor alterations must still be approved by the department, but do not require the submittal of plans.
- Replacement of equipment.
- When in doubt, contact us first! This will help to avoid costly revisions after the fact.

Equipment Specs

- All equipment, when possible, must be NSF certified.
- Pay attention to the manufacturer specifications.
- Do not change equipment without first notifying your local health department.

Operational Records

- Operational records are required to be kept. A copy of the accepted form is in your packet.
- Records must be filled out daily while the PBP is in operation.
- Records must be kept on file a minimum of 3 years, and must be posted/made available for patrons.
- This is a legal record, which can be used in court, either to condemn or vindicate you, so you need to stay on top of it.
- Having incomplete or missing records will leave you vulnerable in court.

BATHING PLACE OPERATION RECORD

Week of: 2/19-2/25/07

1. Facility Name / Tank Designation: ABC 921 NE 23rd St OKC, OK 73105

2. Gallons in tank: 80000 | Required Flow Minimum: 300 gpm | Maximum Allowed: 56 gpm

3. Bathing Load Maximum: 80

	2/19 Monday	2/20 Tuesday	2/21 Wednesday	2/22 Thursday	2/23 Friday	2/24 Saturday	2/25 Sunday
4. Safety Equipment Checked / Observed	✓	✓	✓	✓	✓	✓	✓
5. Tank Cleaned/Vacuumed/Baskets emptied							0900
6. Decks Disinfeted / Bathouse Cleaned							0830
7. Number of Patrons (daily)	15-20	15-20	15-20	15-20	15-20	15-20	15-20
8. Number of Accidents (daily)	—	—	—	—	—	—	—
9. Number of Lifeguards/Attendants (daily)	1-4	1-4	1-4	1-4	1-4	1-4	1
10. Pool Hours (Open / Closed)	0600/2200	0600/2200	0600/2200	0600 12200	0600/2200	0600/1900	1200/1600
FILTER TYPE: Sand Size: 9.8 sq. ft.							
11. Backwashed (min./gal.)/Cleaned							0930
12. Gauge Readings (influent / effluent)	15 18	15 18	15 18	15 10	15 18	13 18	15 18
13. Gallons Makeup Water Added							600
14. Strainer Gauge Reading							
15. Flowmeter Reading (gpm) / temp (F)	431	431	431	431	431	431	431

CHEMICALS ADDED - Amount (16-22) | Brand of Feeder: RB300-29X | Kind of Sanitizer: Chlorine

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
16. Chlorine ✓ Bromine	48 oz	48 oz	60 oz				
17. Soda Ash (pounds, ounces)							
18. Muriatic Acid (ounces, quarts, gallons)							
19. Sodium Bicarbonate (pounds, ounces)							
20. Calcium Chloride (pounds, ounces)		25 oz			25 oz		
21. Cyanuric Acid Stabilizer (pounds, ounces)							
22. Other - Specify kind and amount							

REQUIRED TESTS - DAILY	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
23. Combined Chlorine (ppm)	0	0	0	0	.1	.1	0
24. Cyanuric Acid Stabilizer (ppm)							

Enter: time/ sanitizer reading/ pH	T S pH	T S pH	T S pH	T S pH	T S pH	T S pH	T S pH
25. First Test Series	0600 2 17.7	0600 3-5 7.5	14 17.6	0600 3-5 17.7	0600 3 17.4	0600 2-5 17.6	/ /
26. Second Test Series	1000 2-5 7.7	13-5 17.3	12 17.5	1000 2 17.6	1000 2 17.6	1000 2-5 17.6	1200 2 17.6
27. Third Test Series	1400 2-5 17.6	13 17.4	11 17.4	1400 2 17.4	1400 2 17.4	1400 2-5 17.6	1600 2 17.6
28. Fourth Test Series	1800 2-5 17.5	12 17.5	12 17.6	1800 3 17.4	1800 3 17.4	1800 2-5 17.4	/ /

Enter:time/ turbidity/ drain cover on	T Tu DC	T Tu DC	T Tu DC	T Tu DC	T Tu DC	T Tu DC	T Tu DC
29. First Observation Series C=Clear	0600 C yes	0600 C yes	0600 C yes	0600 C yes	6am yes	6am C yes	/ /
31. Second Observation Series	1000 C yes	0600 C yes	0600 C yes	10am C yes	10am yes	1000 C yes	1200 C yes
32. Third Observation Series	1400 C yes	0600 C yes	0600 C yes	1000 C yes	2pm yes	2pm C yes	1600 C yes
33. Fourth Observation Series	1800 C yes	0600 C yes	0600 C yes	1400 C yes	6pm yes	5pm C yes	/ /

REQUIRED TESTS - WEEKLY (minimum - recommended daily)				
34. Total Alkalinity	80	37. Copper	—	
35. Calcium Hardness	320	38. Iron	—	
36. Water Blance pH	7.6	39. Total Dissolved Solids		1100

40. Comments

41. Certified Operator In Charge: Mandy Le — Operator Number: 0701

42. Pool Manager/Owner — Operator Number:

Signed: ML — Must be CPO — Date: 2/25/07

RETAIN COPY THREE YEARS — OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT 425-4326

Incident Records

- Incident Records must also be kept for a minimum of 3 years, sometimes longer. These include:
  - Fecal accident response
  - Fatal/Non-Fatal Drowning
  - Other Accidents/Incidents/Injuries

Water Source

- Water source for the pool must be approved.
- If well water, must be tested annually.
- Must have a means of backflow prevention.


1½
1½
9 11:48 AM

Waste Water

- Waste water must be disposed of in a proper way (Sanitary Sewer).
- Illegal/Improper disposal can result in substantial fines (City, DEQ, etc.).
- Must have a means of backflow prevention.

Cross-Connections

- Backflow/Cross-Connections must be prevented.
- Must have either an air gap or RPZ between potable water source and pool/filtration system.
- Must have an air gap between the pool/filtration system and the sanitary sewer.
- Must have backflow prevention devices on all hose bibs/spigots.

Barriers

- Adequate barriers are required
  - 4 foot minimum fence at most pools.
  - 6 foot minimum fence at Pools open to the general public and pools owned by an organization
  - Must have Lockable SC/SL gates (except where lifeguards on duty)
  - No gaps larger than 4 inches
  - Gates must be lockable


4’ min.
21 11:56 AM

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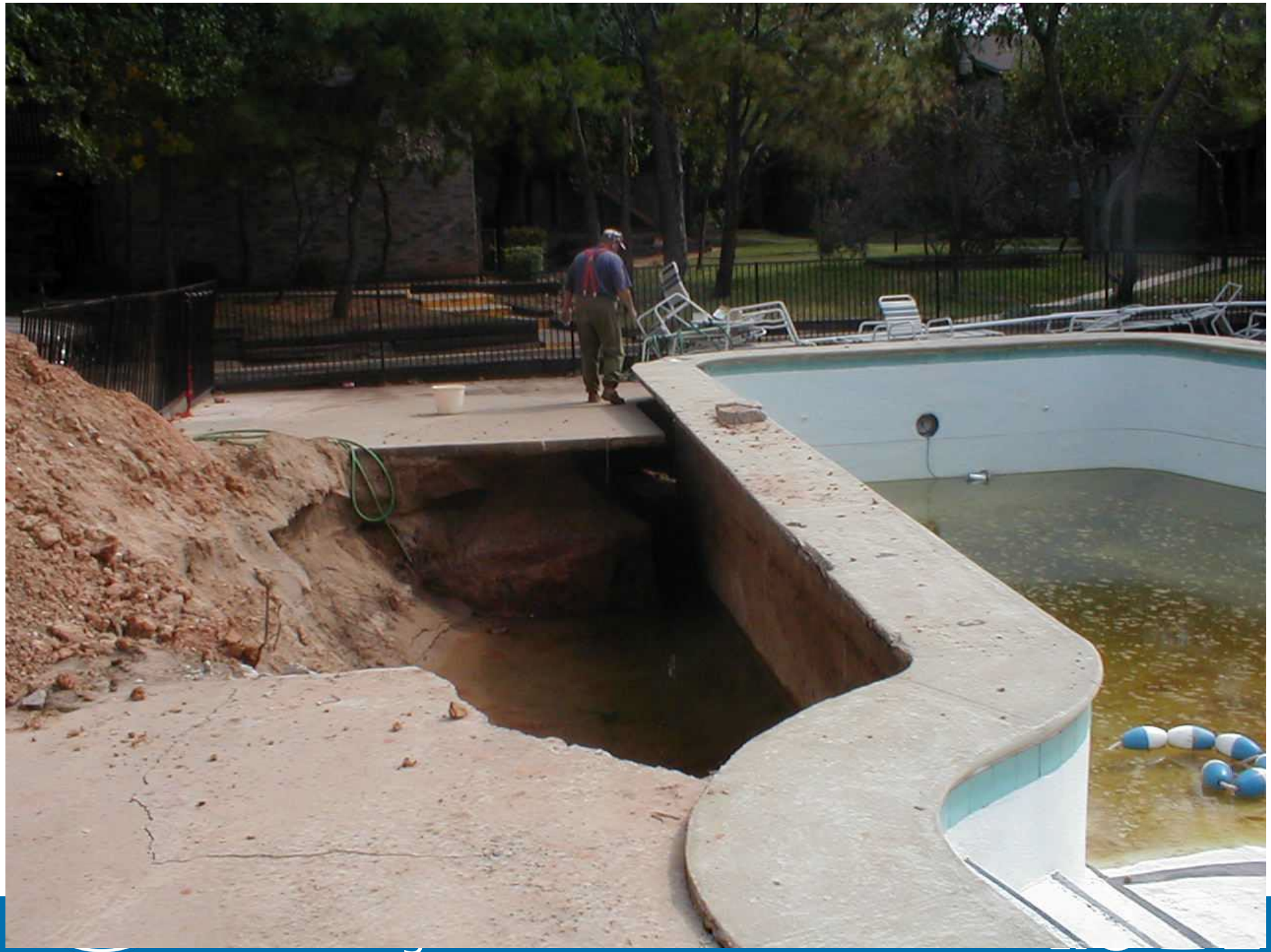
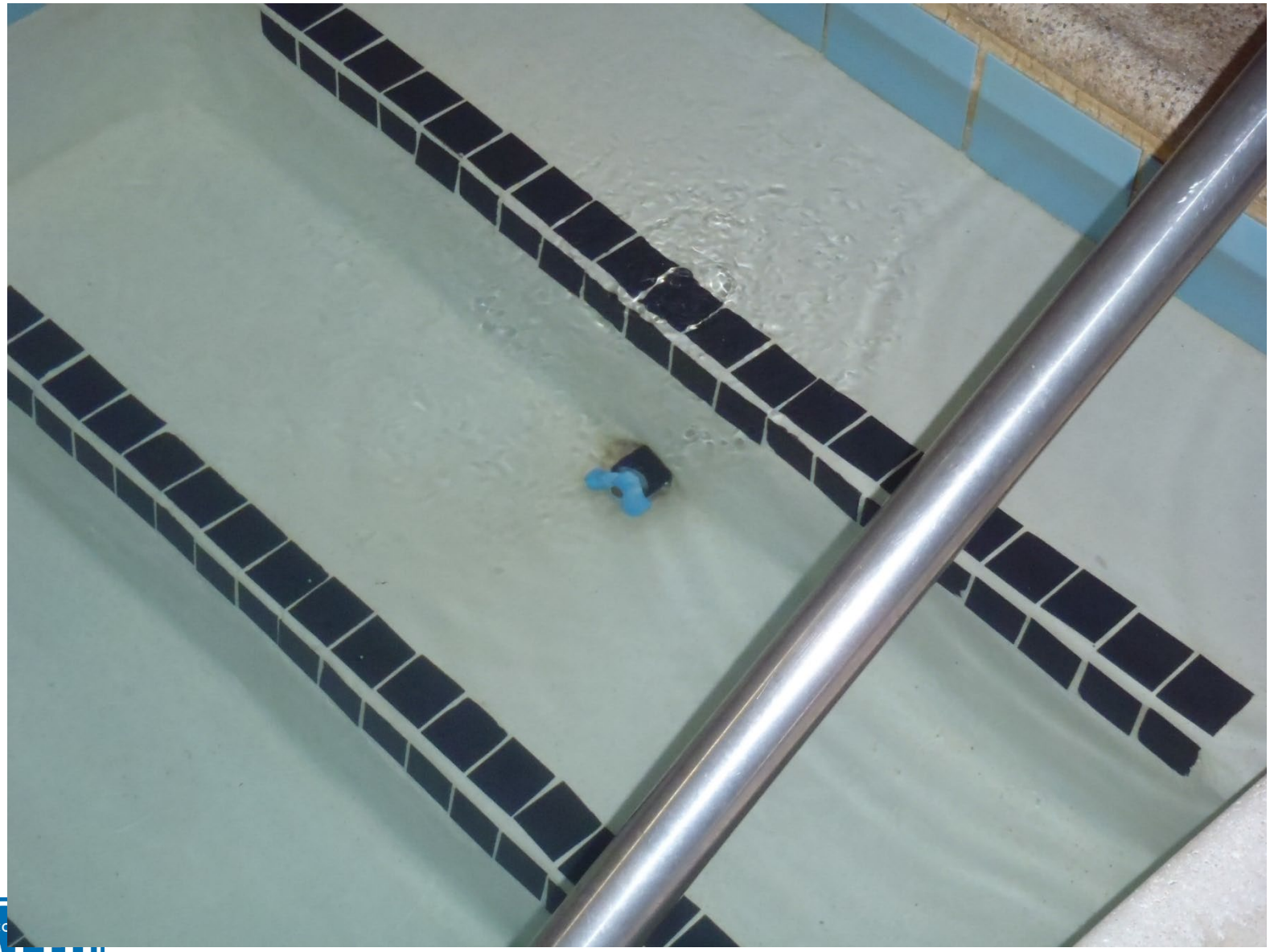
Pool Finish

- Pool and deck finish must be smooth, slip-resistant, and maintained in good condition.
- No protrusions/trip hazards
- Pool finish “Light or Pastel” in color, with the characteristic of reflecting, rather than absorbing light.



Ingress/Egress

- Pools must have at a minimum 2 ladders.
- A set of recessed stairs may be substituted for each ladder, or a zero-depth entry.
- Stairs must have a 2 inch strip of contrasting color on both the tread and riser of each step.
- Ladders must be maintained, and not removed without consent from the department.
- ADA accessible, where required (refer to Justice Department)



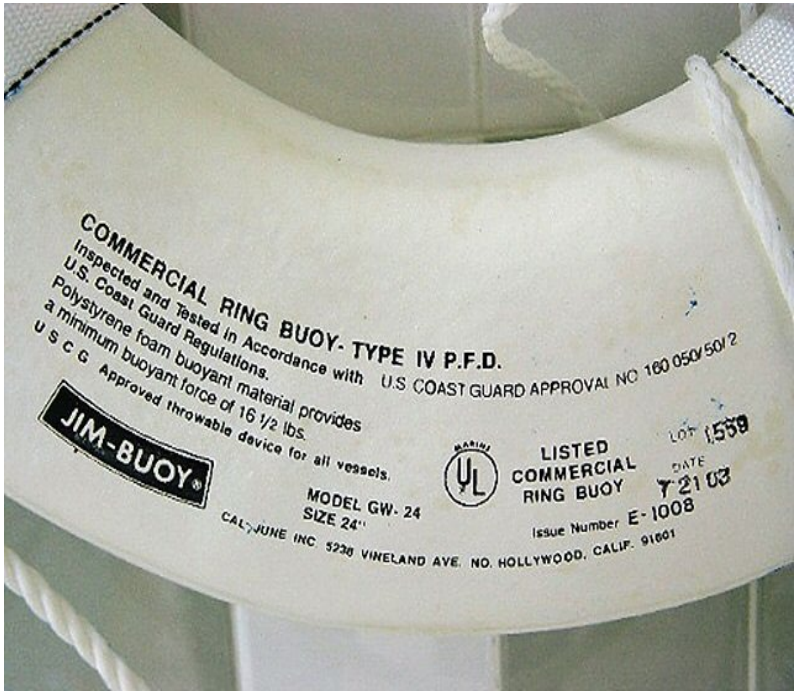
Life Saving Equipment

- Ring Buoy (Line attached)
- Shepherd's Crook (on pole)
- Lifeguard Buoy
- Backboard

- Should be spaced around the pool deck for easy access in the case of an emergency.

Minimum Safety Equipment at NOGP, No Lifeguard, Non-Diving

- Small (under 1600 sf)
  - 2 Ring Buoys
  - 1 Shepherd's Crook
- Large (over 1600 sf)
  - 4 Ring Buoys
  - 2 Shepherd's Crooks
  - 1 Backboard

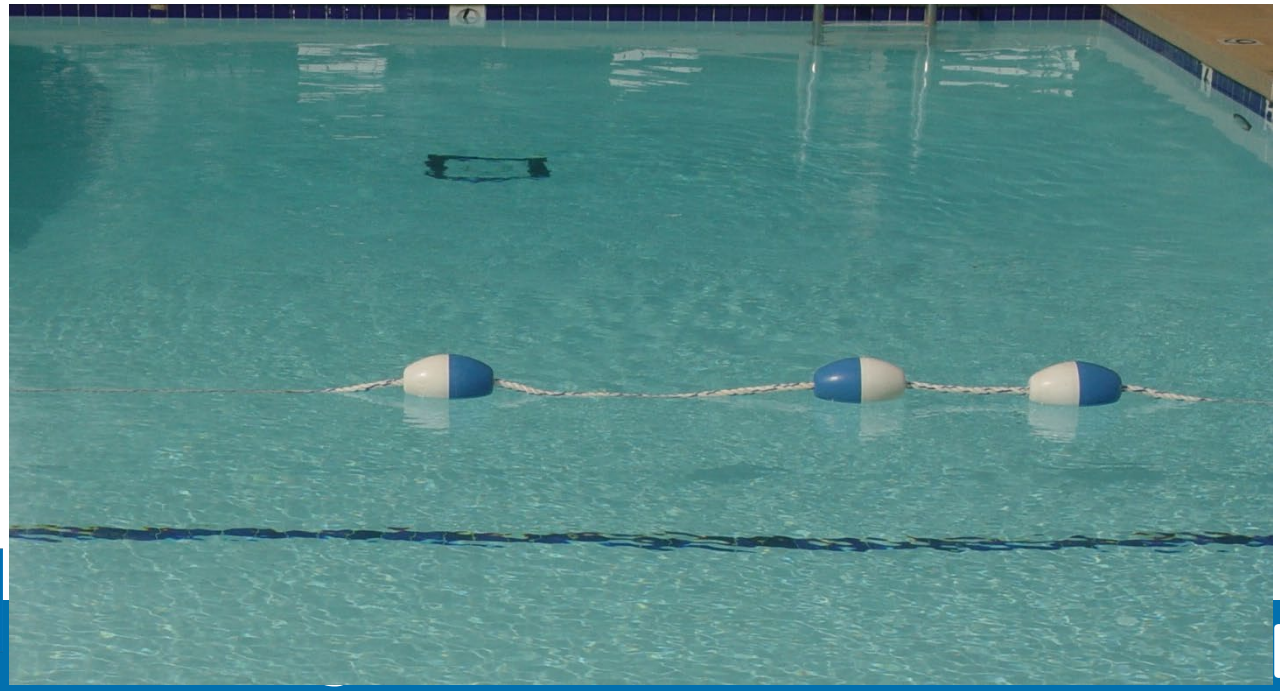


Minimum Safety Equipment, OGP, Lifeguard, and Diving Pools

- 2 Ring Buoys and 1 Shepherd's Hook at each Guard Station
- 1 Backboard
- Lifeguard tubes can substitute for up to half of the Ring Buoys required

Lifeline

- A lifeline must be provided at the breakpoint. Should also have contrasting slope along the bottom at the breakpoint.

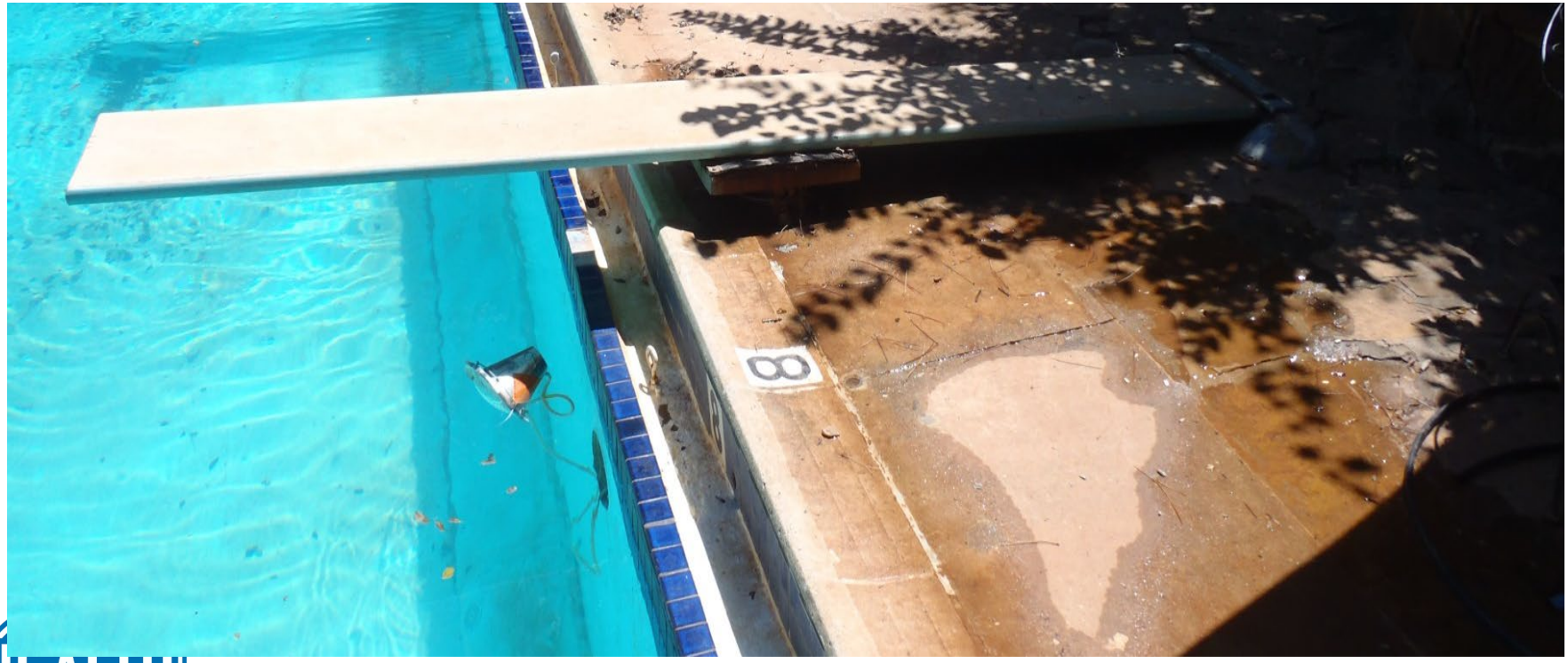


Emergency Phone

- Each facility must have an emergency phone, provided by management.
- It must be conspicuous, accessible and active at all times the pool is open.
- Should be hardwired.
- Must have facility name and address, along with directions to the facility posted.

First AID Kit

- Must have a First AID kit on site for First AID purposes.

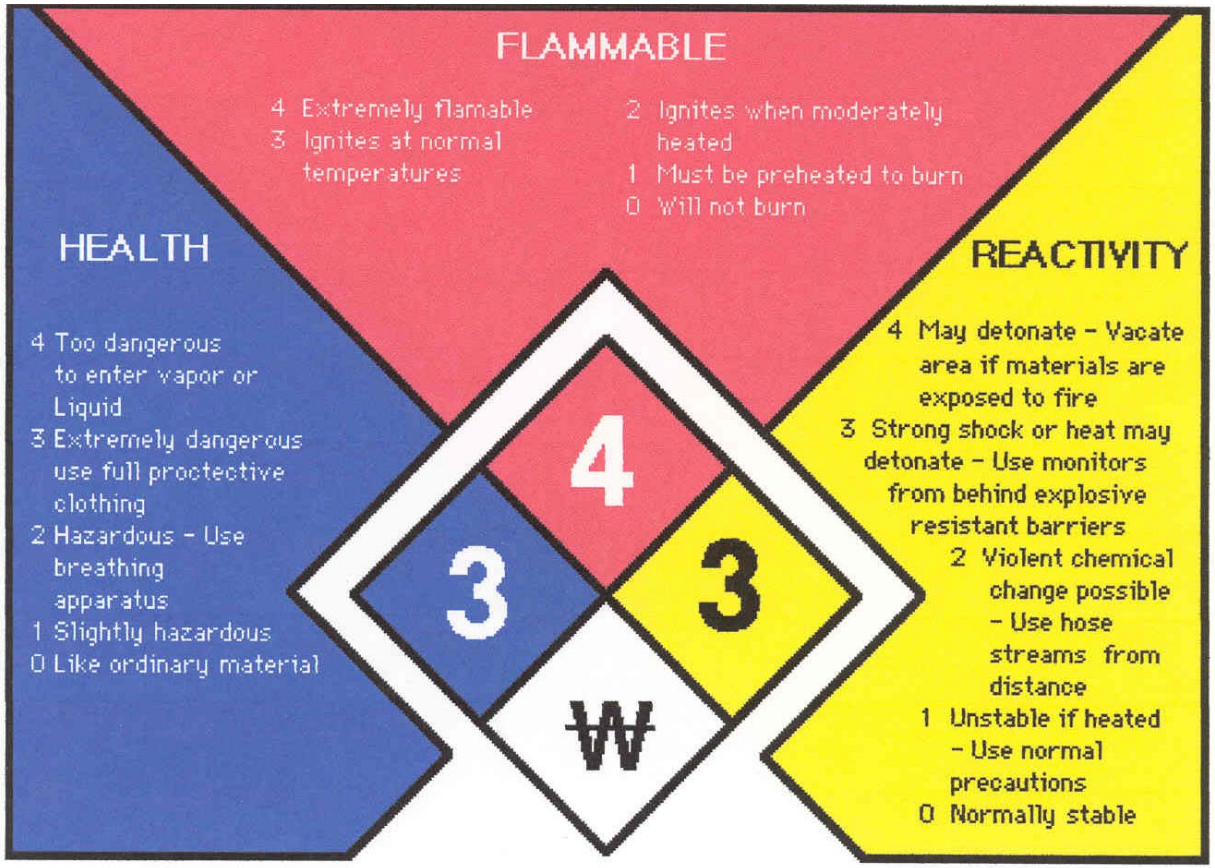


Prohibited Persons

- Those with open wounds
- Those wearing bandages
- Anyone with symptoms of Communicable Disease
- Diarrhea (2 weeks after last episode)
- All must shower before entering pool
- Non-potty trained children must wear swim diapers
- Dogs and other animals

Required Signage

- "No Guard On Duty" or Lifeguard Credentials Posted
- Bathing Load (generally one bather per 15 sf of surface area)
- Pool Rules (minimum listed in code, can be more strict if desired)
- "No Diving" where diving not allowed (most pools)
- Chemical warnings on door to chemical storage area



OX —Oxidizer – can increase the rate of combustion/fire.

Acid — has a pH lower than 7

ALK — has a pH higher than 7

W – Reacts with water

COR – corrosive - which can be either an acid or a base

Denote radioactive hazards


Pool Closed


WARNING
NO LIFEGUARD
ON DUTY
Children under the age of 14 should not use
spa or pool without an adult in attendance.


DANGER
NO DIVING
SHALLOW WATER
DIVING MAY CAUSE DEATH OR PERMANENT INJURY
496021
DO NOT DEFACE, COVER, OR PAINT OVER THIS SIGN


POOL CAPACITY
NUMBER
OF
PERSONS 80 MAXIMUM

Required Signage Cont'd

- Pool volume and required flow rate posted in filter room
- Pump Shutoff
- Closed sign

Lifeguard/Attendant Requirements

- OGP
- Pools with diving boards over 1 meter above pool surface
- Wading Pools
- Pools where hazards deem lifeguards/attendants necessary

Major Contributing Factors in Drowning Deaths

- Turbidity
- Lack of Barrier
- Lack of Supervision
- Use of Alcohol

Depth Markers

- Depth markers must be present on both the deck and wall at required intervals
- At OGP pools, must be raised/3-dimensional
- At least 4 inches tall, in feet/inches
- Max and min depths, and breakpoint
- Every 1 foot change in shallow, 2 foot change in deep
- Not more than 25 feet apart

Bathhouses

- Bathhouses required at some facilities
- Bathers must thoroughly wash with soap and warm water before entering the pool/spa
- Restroom facilities are vital to keeping the pool clean and the chemicals balanced, as well as preventing the spread of waterborne illness
- Must have hot and cold running water for showers and hand sink

Indoor Pool Air Quality

- Humidity maintained 40-60%
- Air no more than 2 degrees below, 8 above water temperature
- No excessive dampness
- Decks should be regularly scrubbed with bleach water

Pools Not in Use/Winterized

Pools Not in Use/Winterized

- Drained, and kept drained and free of trash/debris.
- Completely covered with an NSF approved cover capable of supporting >1000 lbs., securely anchored to deck.
- Maintained- kept clear, chlorinated, and circulating.


WARNING
NO LIFEGUARD
ON DUTY
SWIM AT YOUR
OWN RISK
6FT
4½
4'

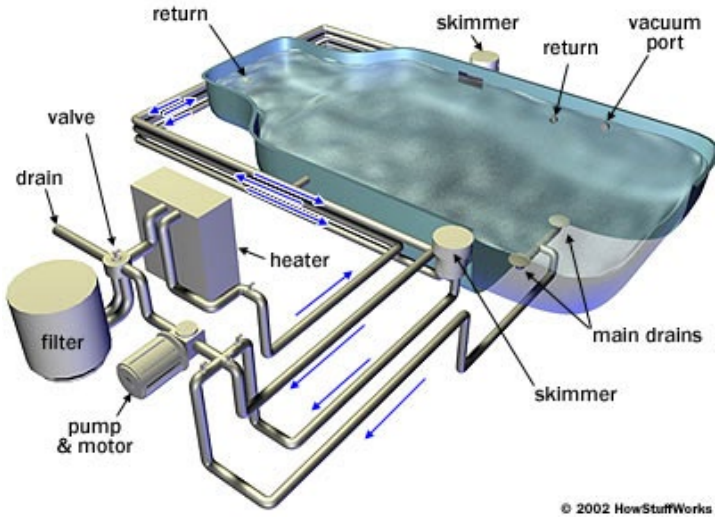

NO DIVING
ALLOWED


3
3
3
5


22 12:01PM


27 10:52 AM

Filtration


return
skimmer
return
vacuum port
valve
drain
heater
filter
main drains
skimmer
pump & motor
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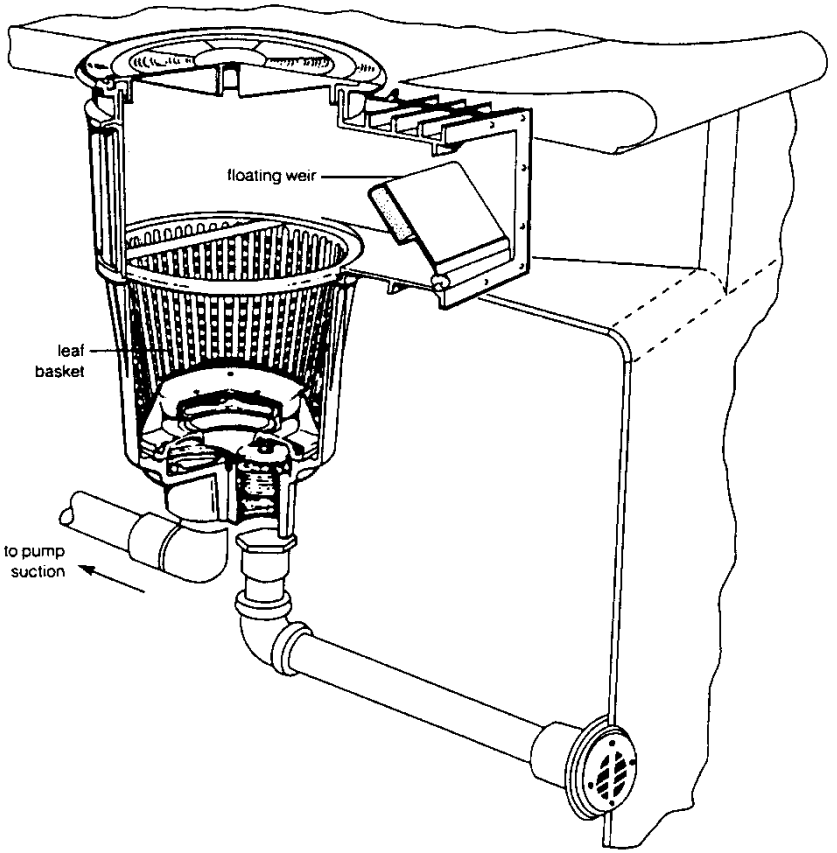
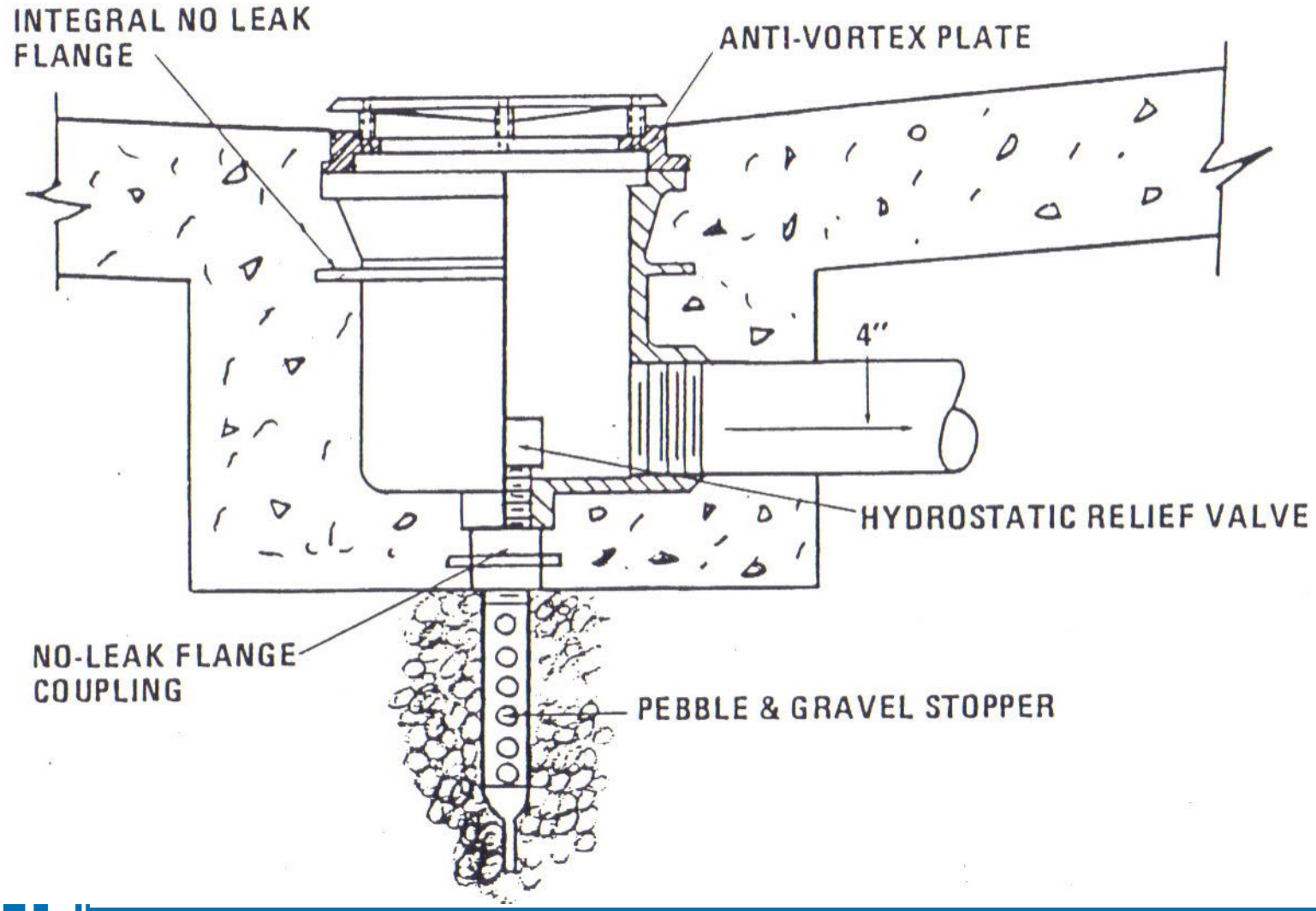
Outlets



- Skimmer
  - Weir
  - Equalizer
  - Strainer basket
  - Float valve
- Gutter System
  - Surge Tank
  - Continuous Overflow
- Main Drain
  - Sump
  - Hydrostat

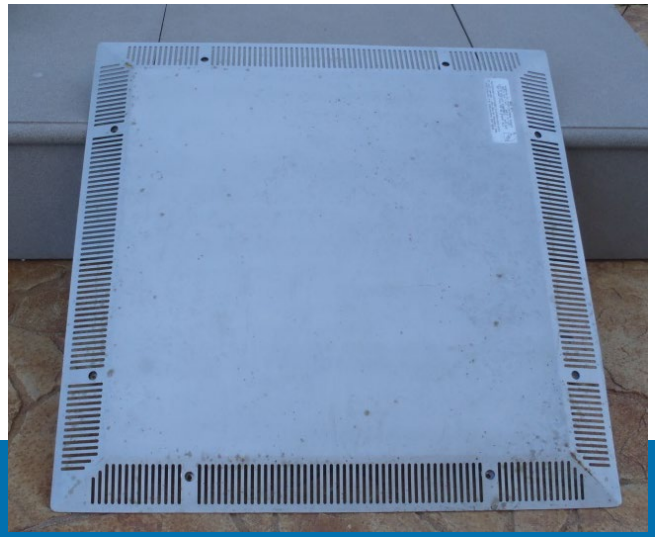
27 12:14PM

Main Drain Sump & Hydrostatic Relief Valves



Virginia Graeme Baker Act

- Mechanical Entrapment
- Body Entrapment
- Evisceration
- Hair Entrapment
- Limb Entrapment



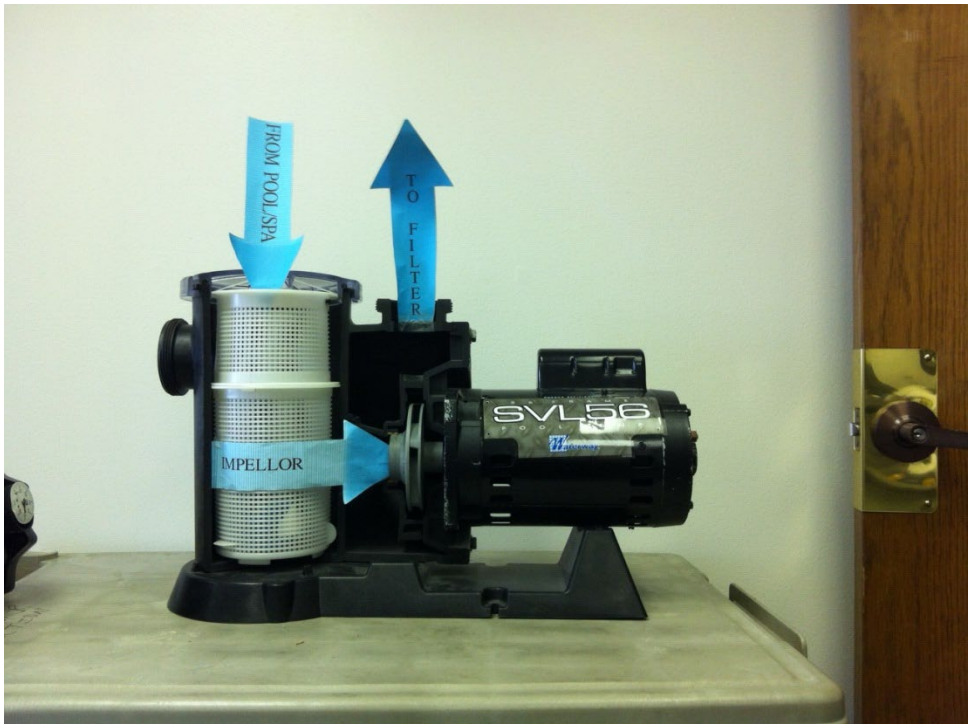
Plumbing Toward Pump

- Main drain and skimmer lines come up separately into pump room with separate valves
- Combine just before entering pump

Pipe Labeling

- Piping must be labeled with all important features
- Directional arrows should show the direction of flow near labels
- Pool volume and min/max flow rates should be posted in pump room

Pump



- Strainer
- Vacuum Gauge
- Impeller
- Engineer spec'd hp pump, with correct impeller

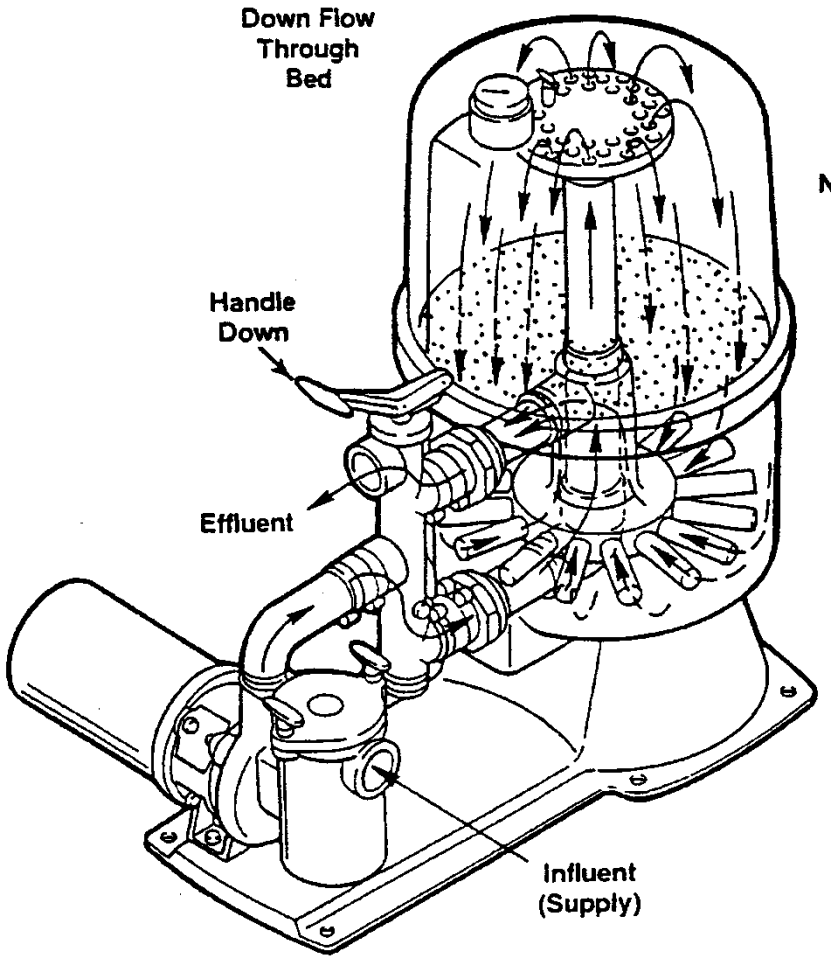
Filter

- Filters out dirt and suspended particles
- Must have inlet and outlet pressure gauges
- Types:
  - High Rate Sand
  - Cartridge
  - DE

High Rate Sand Filter

- Graded sand bed
- Cross section is filtration area
- 15 gpm maximum per sf
- Scum layer
- Backwash
- Channeling
- Elements

High Rate Sand Filter



Cartridge Filter

- Filter folds make up filtration surface area
- Must be removed and cleaned/degreased periodically
- Can be acid washed if necessary, but degrease first
- Max flow of 0.375 gpm
- May tear easily if cleaned roughly

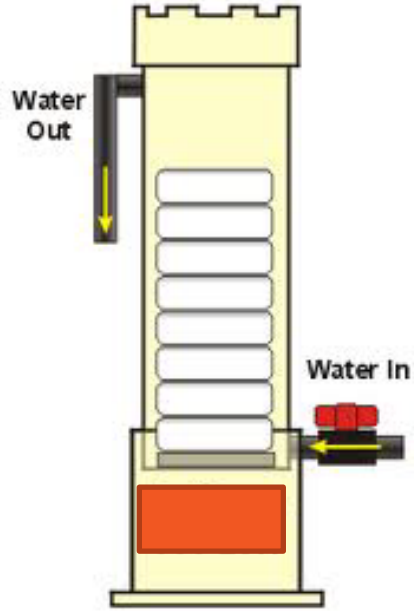
Cartridge Filter

DE Filter

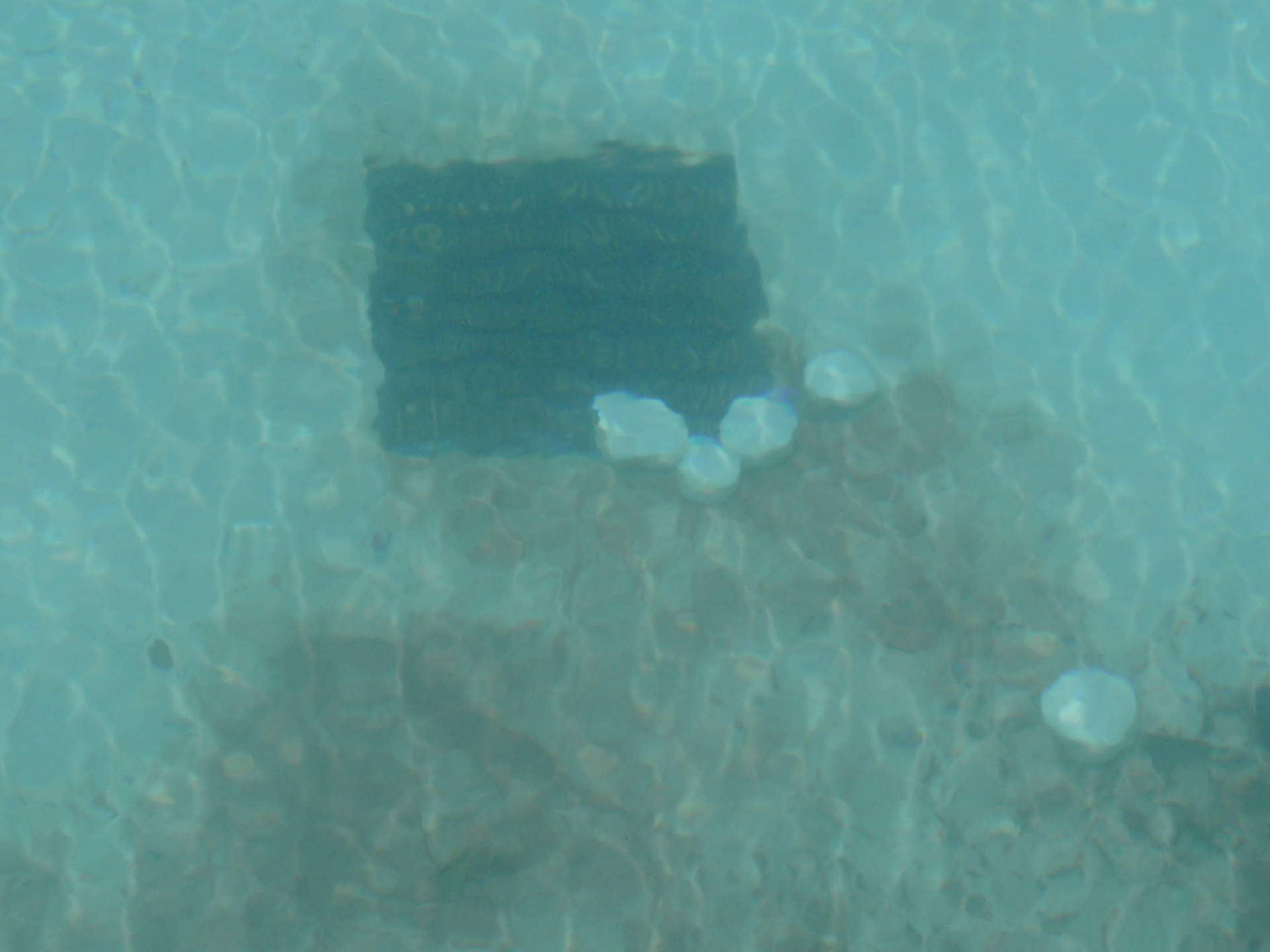
- Cartridge filter with very fine DE powder coating (or similar substrate)
- Can filter out some larger pathogens
- Coating can be slurry fed or precoated
- 2.5 gpm max flow
- Must be backwashed similar to sand filter
- Must have separation tank, as DE cannot be discharged into the sanitary sewer
- May include a regenerative media system

DE Filter

Chemical Feeders

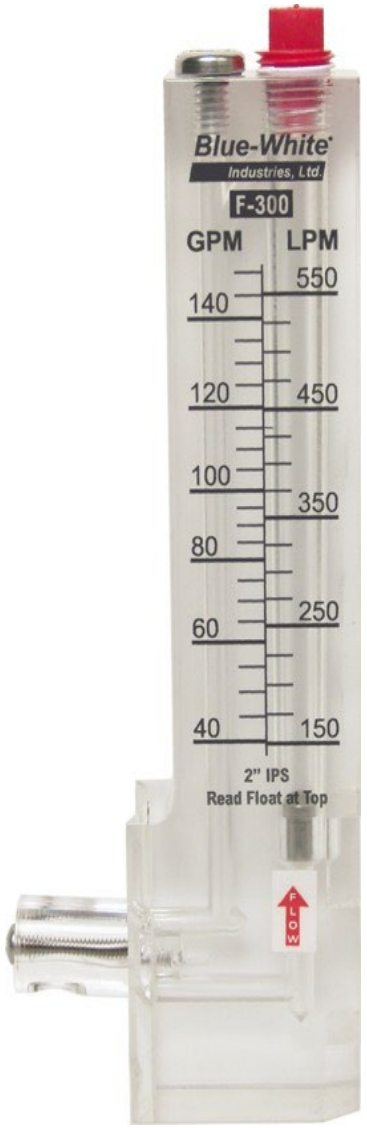


- Erosion Chlorine/Bromine Feeders
- Gas chlorine feeders (non-mechanical venturi)
- Liquid Chlorine feeders
- In-Line Salt Chlorine Generator
- Other chemical feeders



Flow Meter

- Sized to pipe diameter
- Read in gpm
- Installed according to Manufacturer's directions
- NSF approved
- Must be maintained in working condition



Minimum Flow

- Minimum flow is determined by the design engineer by two methods. The method with the higher resultant minimum flow is used.
  - Minimum turnover
    - Pool- 8hrs
    - Wading Pool- 4hrs
    - Spa- 0.5hrs
  - # of skimmers required
    - 1 skimmer required for each 600 sf surface area
    - 43 gpm required per skimmer

Water Heater

- Spec'd by engineer
- Must have thermometer on both inlet and outlet
    - Differential should not above 2 degrees
- Must be upstream of chemical feeds
- If gas, must have fresh air source (mechanical), as well as proper venting of combusted air (refer to mechanical codes and manufacturer's installation specifications)

Inlets

- Pool inlets must have directional fittings
- Inlets should be pointed down and counter-clockwise in order to flush suspended particles toward the main drain to be filtered out.
- Proper inlet directional flow can also aid in more efficient turnover

Total Dynamic Head

- Flow is ultimately limited by pipe diameter, length, and straightness
- Pipe sizes must be kept according to original engineering report, unless changes approved by the department

Water Chemistry

- To Learn the impact of PH, sanitation, total alkalinity, calcium hardness, and cyanuric acid on water chemistry

Needed Reactions for Control of Contaminants

- Sanitation- process of destroying harmful organisms
- Oxidation- process of chemically removing organic debris from water
- Algaecide- controls the growth of algae in the water

- Chlorine and Bromine do all 3

Types of Sanitizer

- Calcium Hypochlorite (40-78%, pH 11)
- Gas Chlorine (100%, pH<1)
- Lithium Hypochlorite (35%, pH 10.7) (Granular)
- Sodium Hypochlorite (10-15%, pH 13) (Liquid)
- Trichlor (90%, pH 3)
- Dichlor (55%, pH 7)
- Salt
- Bromine (pH 4)
- Ozone/UV

Combined Chlorine/Chloramines

- Chlorine combined with organic molecules
- Irritant, smells foul
- Weak sanitizer
- Must be removed
  - Superchlorination (>5ppm)
  - Shock (>20ppm)
  - Breakpoint Chlorination (Just enough to remove chloramines)
    - TAC-FAC=CC, CCx10= needed change in ppm

pH

- Logarithmic scale used to measure concentration of protons (acidity)
- Changes in pH are much more than the scale implies
- Chlorine and Bromine are much more active at the lower range of allowed pH levels
- pH control vital to maintain water balance

Alkalinity

- Buffers pH
- Affects water balance

Calcium Hardness

- Affects water balance
- Can decrease effectiveness of other chemicals when high
- Must drain to lower

Cyanuric Acid

- Chlorine Stabilizer
- Not for use in indoor pools or spas
- Can greatly increase sanitizer kill times
- Lowers pH
- Must drain to lower

TDS

- Total Dissolved Solids in the water
- High TDS can decrease the effectiveness of your sanitizer and upset water balance
- Can cause cloudy water
- Can affect chemistry tests

Chemical Contaminants

- Copper
- Iron
- Phosphate
- Nitrate

Test Kit

- Must be able to test for
  - Free and Combined Chlorine
  - pH
  - Total Alkalinity
  - Calcium Hardness
  - Water Temperature
  - Cyanuric Acid (Outdoor Pools)

Problems with Testing

- Some chemicals can affect your readings
  - High/low pH
  - High chlorine
  - Metal ions

Water Balance

- Langelier Saturation Index
- Corrosive, Scaling, or Neutral
- Product of
  - pH
  - Total Alkalinity
  - Calcium Hardness
  - TDS
  - Water Temperature

Adjusting Chemicals

- Wear safety equipment when appropriate
- Always add the chemical to water, not the opposite
- Never add chemicals to skimmer
- Never mix different chemicals together
- Use clean scoops for different chemicals
- Be careful of environmental conditions when adding chemicals

10K FORMULA

$$Chem\ Amount\ x \frac{Pool\ Volume}{10{,}000\ gal}\ x \frac{Needed\ Change}{Increments} = Amount\ to\ Add$$

Chem Amount- Chemical amount from the 3rd column in the table

Pool Volume- volume of your pool in gallons

Needed Change- difference of your chemical reading, and where you want it to be

Increments- 2nd column in the table

Example #1

- You have a 112,000 gallon pool with a free chlorine level of 0 ppm, and want to raise it to 3 ppm, using sodium hypochlorite.

Example #1

$$Chem\ Amount\ \text{X}\ \frac{Pool\ Volume}{10{,}000\ gal}\ \text{X}\ \frac{Needed\ Change}{Increments}$$

$$13\text{floz}\ \text{X}\ \frac{112{,}000\ gal}{10{,}000\ gal}\ \text{X}\ \frac{3ppm}{1ppm}$$

13floz X 11.2 X 3

$$436.8\text{floz}\ \text{X}\ \frac{1gal}{128floz}$$

3.4gal

Example #1

- 3.4gal Sodium Hypochlorite, to raise the free chlorine residual 3ppm in a 112,000gal pool.

Example #2

- You need to lower the Total Alkalinity in your 38,000gal pool from 250ppm to 120ppm, using muriatic acid.

Example #2

$$Chem\ Amount\ \text{X}\ \frac{Pool\ Volume}{10{,}000\ gal}\ \text{X}\ \frac{Needed\ Change}{Increments}$$

$$24\text{floz X}\ \frac{38{,}000gal}{10{,}000\ gal}\ \text{X}\ \frac{130ppm}{10ppm}$$

$$24\text{floz X } 3.8 \text{ X } 13$$

$$1{,}186\text{floz X}\ \frac{1gal}{128floz}$$

$$=9.3\text{gal}$$

Example #2

- 9.3gal muriatic acid will lower the total alkalinity in your 38,000 gallon pool from 250ppm to 120ppm.

Example #3

- You want to raise the pH of your spa from 6.6 to 7.2, using soda ash. Your spa is 3,200gal.

Example #3

$$Chem\ Amount\ \text{X}\ \frac{Pool\ Volume}{10{,}000\ gal}\ \text{X}\ \frac{Needed\ Change}{Increments}$$

$$6\text{oz X}\ \frac{3{,}200gal}{10{,}000\ gal}\ \text{X}\ \frac{0.6}{0.2}$$

$$6\text{oz X } 0.32\text{ X } 3$$

$$5.76\text{oz X}\ \frac{1lb}{16oz}$$

0.36lbs

Example #3

- 0.36lbs of soda ash will raise the pH of your 3,200gal spa from 6.6 to 7.2.

Example #4

- You are checking the chlorine levels in your 20,000gal pool. You first find a Free Available Chlorine (FAC) level of 3ppm. You then find that your Total Chlorine level (TC) is 5ppm.
- Combined Chlorine (CC)=TC-FAC
- CC=5-3
- CC=2ppm

Example #4

- (CC X 10) –FAC = Needed Change
- (2 X 10) - 3= Needed Change
- 20 - 3= Needed Change
- 17 = Needed Change
- So in our 20,000gal pool, to eliminate the combined chlorine,we must raise the free chlorine by 17ppm, using Calcium Hypochlorite.

Example #4

$$Chem\ Amount\ \text{X}\ \frac{Pool\ Volume}{10{,}000\ gal}\ \text{X}\ \frac{Needed\ Change}{Increments}$$

$$2\text{oz X}\ \frac{20{,}000gal}{10{,}000\ gal}\ \text{X}\ \frac{17ppm}{1ppm}$$

$$2\text{oz X 2 X 17}$$

$$68\text{oz X}\ \frac{1lb}{16oz}$$

4.25lbs

Example #4

- 4.25lbs calcium hypochlorite will eliminate the combined chlorine in your 20,000gal pool, after which the Free Available Chlorine should still be at approximately 3ppm.

Waterborne Pathogens

- Parasites (Cryptosporidium, Giardia)
- Bacteria (Pseudomonas Dermatitis/Hot Tub Rash)
- Virus (Norovirus, Hepatitis A)
- Algae (toxins)

Free Available Chlorine Germ-Killing Timetable

E. coli 0157:H7 (Bacterium)	less than 1 minute
Hepatitis A (Virus)	approximately 16 minutes
Giardia (Parasite)	approximately 45 minutes
Cryptosporidium (Parasite)	approximately 15,300 minutes (10.6 days)

Waterborne Pathogens

Ranking*	Germ/Cause	Predominant Illness†
1	*Cryptosporidium*	AGI (*acute gastrointestinal illness*)
2	*Legionella*	ARI (*acute respiratory illness*)
3	Norovirus	AGI
4	Shiga toxin–producing *Escherichia coli (E. coli)*	AGI
5 (tied)	*Giardia*	AGI
5 (tied)	Nontuberculous mycobacteria	ARI

General Health & Safety Considerations

- Sunburn
- Heat Exhaustion
- Sunstroke
- Refer to CDC guidelines
- Adding chemicals safely

Showering

- Bathers must shower to prevent not only increasing the chlorine demand, but also to prevent the introduction of waterborne pathogens to the water
- Diapers should be changed in the restroom and not on the pool deck
- Frequent potty breaks
- Exclude bathers who have had diarrhea within last two weeks

Biofilm

- Algae and bacteria that are allowed to build up on a surface cover themselves in a protective slime layer of sugar chains
- Chlorine and Bromine cannot easily penetrate the biofilm
- Dry it out and scrub it off
- Prevent its formation
- Can lead to foaming

Algae

- Black- black spots on walls and floor of pool; can penetrate and damage plaster
- Green- free floating, common
- Yellow- in shade, resistant to chlorine and algicides

- Brush algae, superchlorinate/shock, clean filter, brush area again, filter, or drain and refill

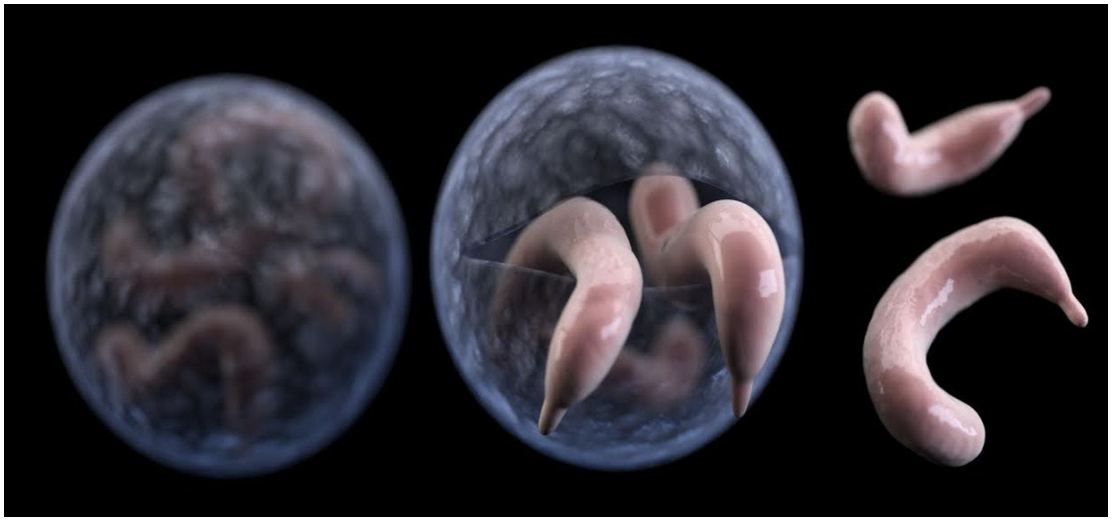
Bacteria

- Pseudomonas
- Severe rash (hot tub rash)

Pseudomonas Hot-Foot Syndrome

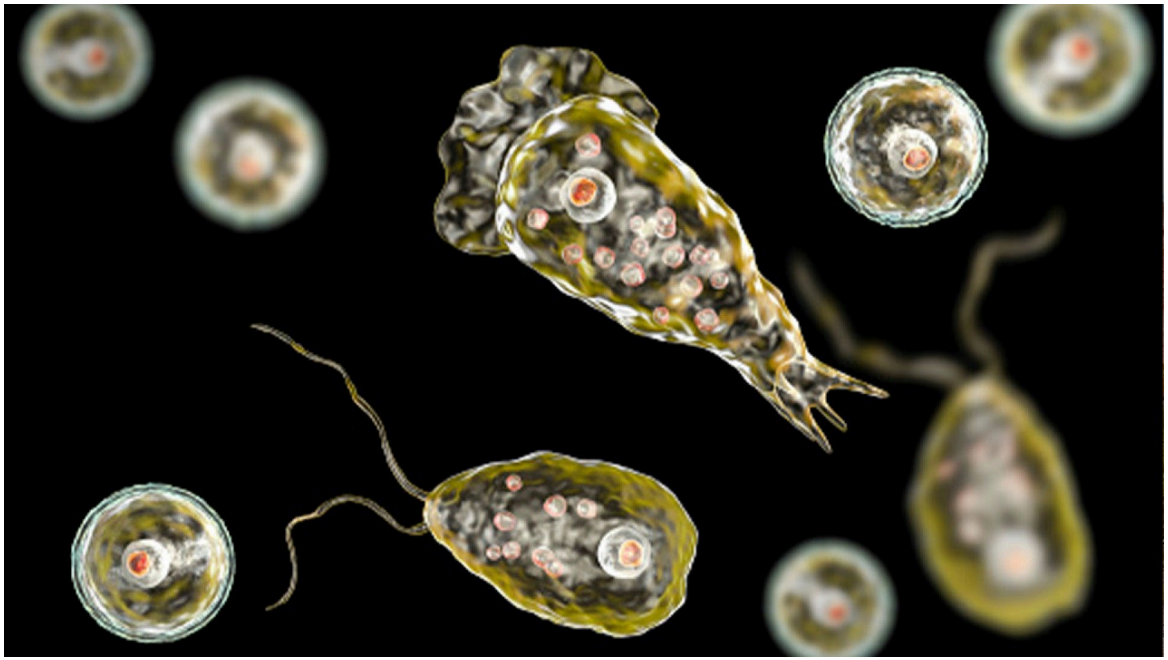
Parasites/Protozoa

- Cryptosporidium, Giardia
  - Very resistant to chlorine
  - Can be shed long after symptoms have subsided



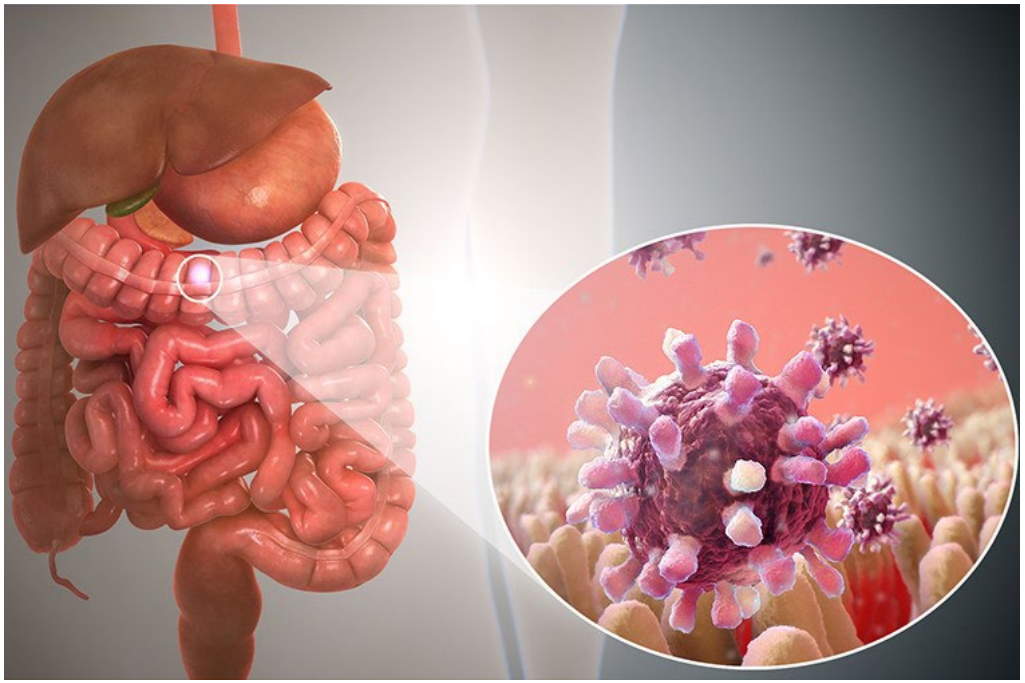
Parasites/Protozoa

- Amoeba
  - Deadly, but rare; easily killed by chlorine



Viruses

- Norovirus – Up to an hour to kill in chlorinated water
- Hepatitis A



Fecal Incident Response

- If solid
  - Clear/close the pool
  - Remove particles
  - Shock affected area for at least 30 minutes
  - Once chlorine has been lowered to acceptable level, can resume bathing

Fecal Incident Response Can't

- Loose Stool (assume crypto)
  - Clear/close pool
  - Remove particles if possible
  - Shock pool for specified time according to chlorination level from CDC recommendations
  - Be sure pH is near 7.2
  - After specified time, resume bathing once chlorine is at acceptable level

Fecal Incident Response in a Wading Pool or Spa

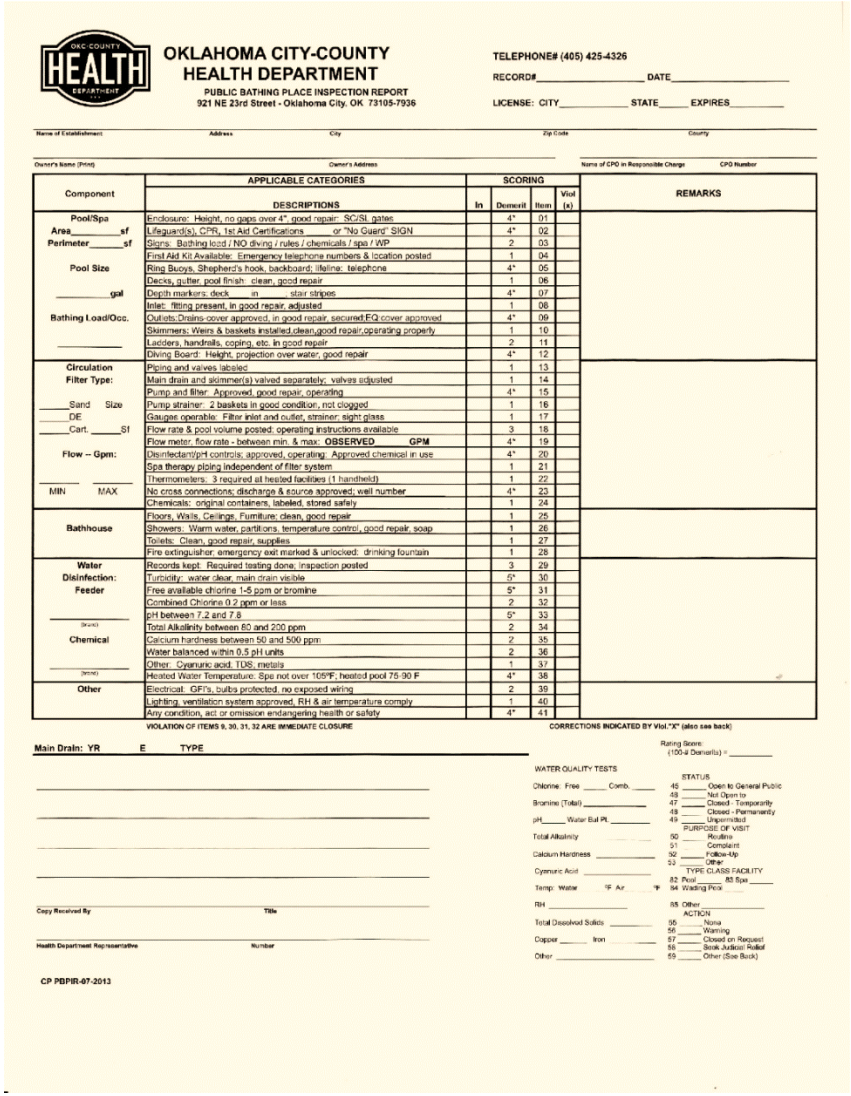
- Drain
- Remove Particles
- Scrub surfaces with 100ppm chlorine water
- Refill and balance chemicals
- Resume bathing

Other Contaminant Responses

- Vomit
  - Same as for loose stool incident response
- Blood spill in pool
  - No response necessary, provided chlorine and pH are correct
- Body fluid spills on Pool Surfaces
  - Clean thoroughly with strong bleach solution according to CDC guidelines

Inspection Items

- Immediate Closure
  - pH
  - Chlorine
  - Turbidity
  - Drain Cover



OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

PUBLIC BATHING PLACE INSPECTION REPORT
921 NE 23rd Street - Oklahoma City, OK 73105-7936

TELEPHONE# (405) 425-4326
RECORD#_____ DATE_____
LICENSE: CITY_____ STATE_____ EXPIRES_____

Name of Establishment | Address | City | Zip Code | County

Owner's Name (Print) | Owner's Address | Name of CPO in Responsible Charge | CPO Number

Component	APPLICABLE CATEGORIES / DESCRIPTIONS	In	SCORING Demerit	Item	Viol (s)	REMARKS
Pool/Spa Area_____sf Perimeter_____sf	Enclosure: Height, no gaps over 4", good repair; SC/SL gates		4*	01		
	Lifeguard(s), CPR, 1st Aid Certifications _____ or "No Guard" SIGN		4*	02		
	Signs: Bathing load / NO diving / rules / chemicals / spa / WP		2	03		
	First Aid Kit Available; Emergency telephone numbers & location posted		1	04		
Pool Size	Ring Buoys, Shepherd's hook, backboard; lifeline; telephone		4*	05		
	Decks, gutter; pool finish: clean, good repair		1	06		
_____gal	Depth markers: deck ____ in ____; stair stripes		4*	07		
	Inlet: fitting present, in good repair, adjusted		1	08		
Bathing Load/Occ.	Outlets;Drains-cover approved, in good repair, secured;EQ cover approved		4*	09		
	Skimmers: Weirs & baskets installed,clean,good repair,operating properly		1	10		
_____	Ladders, handrails, coping, etc. in good repair		2	11		
	Diving Board: Height, projection over water; good repair		4*	12		
Circulation Filter Type:	Piping and valves labeled		1	13		
	Main drain and skimmer(s) valved separately; valves adjusted		1	14		
	Pump and filter: Approved, good repair, operating		4*	15		
_____Sand Size	Pump strainer: 2 baskets in good condition, not clogged		1	16		
_____DE	Gauges operable: Filter inlet and outlet, strainer; sight glass		1	17		
_____Cart. _____Sf	Flow rate & pool volume posted; operating instructions available		3	18		
Flow – Gpm:	Flow meter, flow rate - between min. & max: OBSERVED _____ GPM		4*	19		
	Disinfectant/pH controls; approved, operating; Approved chemical in use		4*	20		
	Spa therapy piping independent of filter system		1	21		
_____ _____	Thermometers: 3 required at heated facilities (1 handheld)		1	22		
MIN MAX	No cross connections; discharge & source approved; well number		4*	23		
	Chemicals: original containers, labeled, stored safely		1	24		
Bathhouse	Floors, Walls, Ceilings, Furniture; clean, good repair		1	25		
	Showers: Warm water, partitions, temperature control, good repair, soap		1	26		
	Toilets: Clean, good repair, supplies		1	27		
	Fire extinguisher; emergency exit marked & unlocked; drinking fountain		1	28		
Water Disinfection: Feeder	Records kept: Required testing done; Inspection posted		3	29		
	Turbidity: water clear, main drain visible		5*	30		
	Free available chlorine 1-5 ppm or bromine		5*	31		
_____ (Brand)	Combined Chlorine 0.2 ppm or less		2	32		
	pH between 7.2 and 7.8		5*	33		
Chemical	Total Alkalinity between 60 and 200 ppm		2	34		
	Calcium hardness between 50 and 500 ppm		2	35		
	Water balanced within 0.5 pH units		2	36		
_____ (Brand)	Other: Cyanuric acid, TDS, metals		1	37		
	Heated Water Temperature: Spa not over 105°F; heated pool 75-90 F		4*	38		
Other	Electrical: GFI's, bulbs protected, no exposed wiring		2	39		
	Lighting, ventilation system approved, RH & air temperature comply		1	40		
	Any condition, act or omission endangering health or safety		4*	41		

VIOLATION OF ITEMS 9, 30, 31, 32 ARE IMMEDIATE CLOSURE

CORRECTIONS INDICATED BY Viol."C" (also see back)

Main Drain: YR E TYPE

Rating Score: (100-9 Demerits) = _____

WATER QUALITY TESTS

Chlorine: Free _____ Comb. _____
Bromine (Total) _____
pH_____ Water Bal Pt _____
Total Alkalinity _____
Calcium Hardness _____
Cyanuric Acid _____
Temp: Water °F Air °F
RH _____
Total Dissolved Solids _____
Copper _____ Iron _____
Other _____

STATUS
46 _____ Open to General Public
48 _____ Not Open to
47 _____ Closed - Temporarily
49 _____ Closed - Permanently
49 _____ Unpermitted

PURPOSE OF VISIT
50 _____ Routine
51 _____ Complaint
52 _____ Follow-Up
53 _____ Other

TYPE CLASS FACILITY
82 Pool _____ 83 Spa _____
84 Wading Pool _____
85 Other _____

ACTION
55 _____ None
56 _____ Warning
57 _____ Closed on Request
58 _____ Seek Judicial Relief
59 _____ Other (See Back)

Copy Received By | Title

Health Department Representative | Number

CP PBPIR-07-2013

Enforcement

- Repeated violations and non-compliance can result in substantial fines, revocation of license
- State License not paid