

Swimming Pool

DESIGN CONSULTATION

Swimming Pool Water Contaminants

■ Swimmers

- Sweat, Nasal & Skin Infections
- Skin, Hair & Costume fibers
- Urine & Fecal matter
- Skin products, Cosmetics & Medications

■ Environment Pollutants

- Atmospheric Dust , Dirt, colloidal & Turbidity
- Bird droppings
- Algae, Leaves & vegetation
- Water-borne germs, insects

■ Chemicals

- TDS, Water Balance & Disinfectant Chemicals

■ Disinfectant By-products

Swimming Pool Water Treatment

Various types of bacteria & viruses can develop in the pool water making it un-safe for swimmers.

The large water volumes involved, do not permit disposal of pool water.

Swimming pool water therefore has to be **Filtered, treated & chemically balanced continually to make it safe for swimmers.**

Scientific Facts, Research & Studies

- An average adult swallows about 100 – 150 ml & children about 200 – 250 ml of pool water per swimming session.
- During swimming session person sweats & urinate around 200 – 250 ml.
- Chlorine by-products are carcinogenic on long run.
- Clear looking water, may not be chemically & biologically safe.
- Use of Chlorine as primary disinfectant is discouraged/ban in most of the European & developed countries .
- Maharashtra Pollution Control Board (MPCB) has recommend not to use chlorine in swimming pool & to use Ozone.
- Only one pool in INDIA is 100 % ozonated as per international standard & guideline

Objective

- ✓ Keep Water Sparkling Clear
- ✓ Keep Water Free From Pathogenic (Harmful) Bacteria & Viruses.
- ✓ Keep Water Chemically Safe & Balances.
- ✓ Keep Water Free From Algae.
- ✓ Ensure Water Is Neither Toxic Nor Irritant To Swimmers.
- ✓ Prevent Undesired Odor Or Taste.
- ✓ Prevent Pool, fixtures & Equipment from Scaling & Corrosion.
- ✓ Safe Disposal Of effluents.
- ✓ Energy & Water Efficiency & Conservation.

Objective - Design Consultant

- ✓ Performance Guarantee.
- ✓ Safety & Hygiene Of Swimmer.
- ✓ Trouble Shooting.
- ✓ Design Scheme & Sizing As Per Standards & Guidelines
- ✓ Provide SOP & Maintenance Manual/Schedule For Pool
- ✓ Provide SOP & Maintenance Manual/Schedule For Equipments
- ✓ Statutory & Regulatory Compliance.

Swimming Pool Water Treatment – Guidelines | Code

❖ **National**

❖ **International / Global**



National Guideline

- National : BIS – IS 3328 : 1993

- Unfortunately

- Does not have Public Swimming Pool Guidelines.
 - Does not specify Swimming Pool Filtration technique, philosophy or methodology.
 - Does not specify about use & methodology of Swimming Pool Water Ozonation.
 - Does not specify Standard Operation Procedure (SOP) & Maintenance program (Corrective & Preventive)
 - Does not specify about Water Chemical Balance SOP & Chemical Dosages.

- Fortunately

- ❖ We have well drafted & time tested International Code , Standards & Guidelines
 - ❖ We have well qualified & experienced agencies to Understand & Implement.

International Guideline & Standards:

- **International : NSW-HEALTH**

- Public Swimming Pool & Spa Pool Guidelines
- Dept. Of Health, New South Wales – AUSTRALIA

NSW HEALTH



- **International : APVMA**

- Australian Pesticides and Veterinary Medicines Authority



- **International : WHO**



World Health Organization

- **European : German DIN:**

19643

DIN

- **FINA | Olympic Games**

**Guidelines for
safe recreational water
environments**

VOLUME 2
SWIMMING POOLS AND
SIMILAR ENVIRONMENTS

Consultant | Implementation | Operation | Maintenance - Qualification

- ❖ Team of Experts & Consultants (15 – 25 yrs Of Experience) -
Design | Water Treatment | RND | Ozonation
- ❖ Engineers (4 – 10 yrs Of Experience) –
Mechanical | Electrical | Civil | Chemical | Environmental
- ❖ Science Graduates & Post Graduates (5 – 15 yrs Of Experience) –
Chemistry | Physics | Environmental | Water Treatment
- ❖ ITI (5 – 10 yrs Of Experience) – Fitter | Electrical | Electronics | Wireman

Swimming Pool Construction, Operation & Maintenance

There are Three Major Aspects & Activities Involved :

- ❖ **Architectural** – Conceptual Theme, Civil Design
- ❖ **Engineering** – Design Consultant
- ❖ **Contractor** – Civil, Hydraulic, Electromechanical

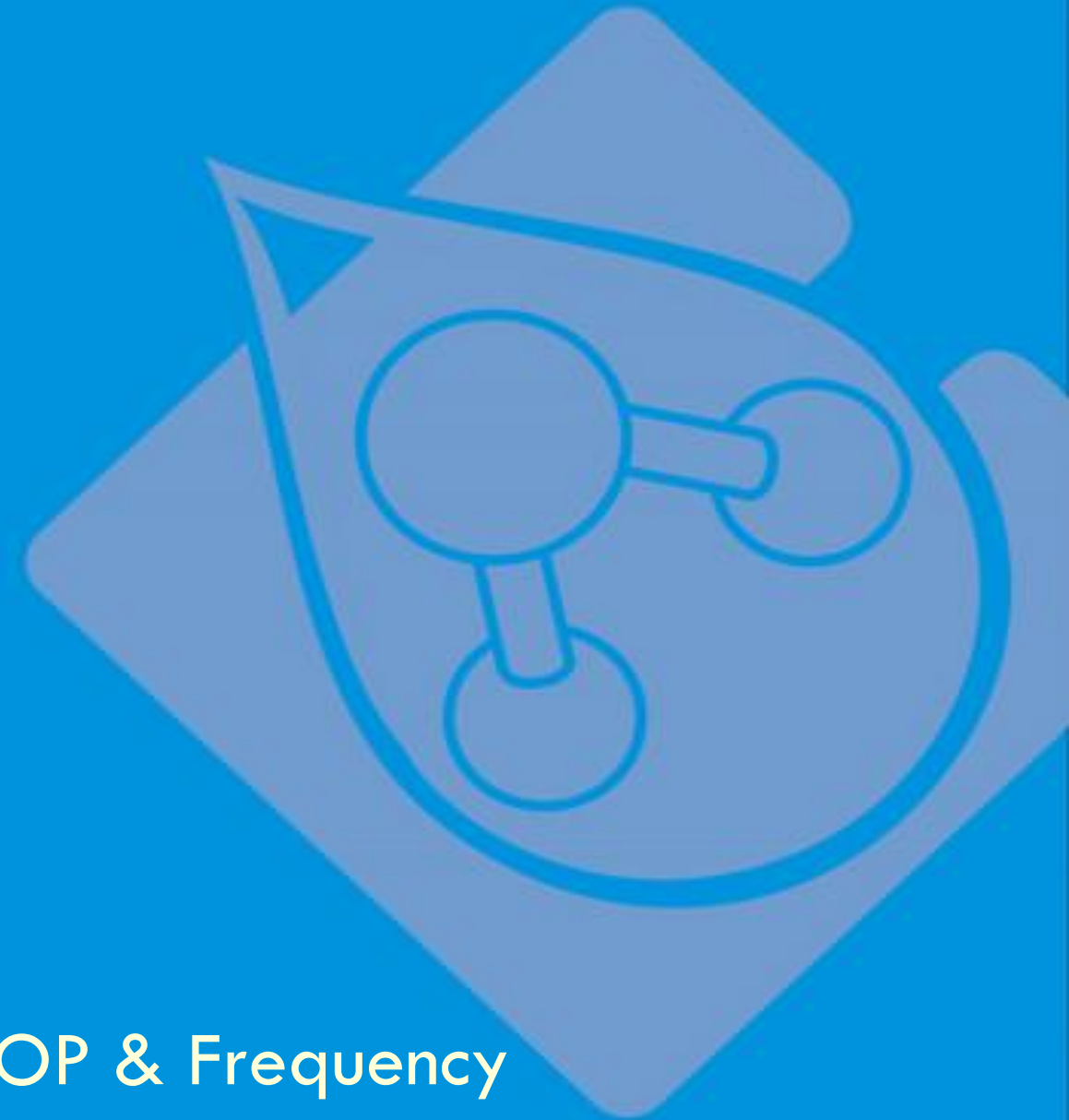
Consultant - Scope Of Responsibility & Work

Swimming Pool Conceptual Design Involves :

- Pool
- Filtration Plant
- Balancing Tank
- Recirculation Pump
- Pool Water Disinfection
- Hydraulic Distribution
- Pool Water Chemical Balance
- Electricals, Instrumentation & Automation
- SOP & Maintenance Manual Of Pool & Equipment
- Drawings, Specifications, Data Logs & Documentation
- Warranty

Conceptual Design - Pool

- Pool Volume
- Pool Size, Dimension & Depth
- Inflow System
- Over Flow & Discharge System
- Drain – Size & Location
- Climatic Effects & Compensation
- No. Of Swimmers
- SOP
- Routine Cleaning & Maintenance – SOP & Frequency



Conceptual Design – Filtration Plant

- Plant Room Design & Layout
- Turn Around Time
- Filter Type
- Filter MOC
- Filtration Area
- Filtration Velocity
- Filter Dia & HOS
- Filter Media



Conceptual Design – Balancing Tank

- Need, Size, Capacity
- Location
- Elevation
- Design
- MOC
- Water Proofing
- Bar Screen Size & Design



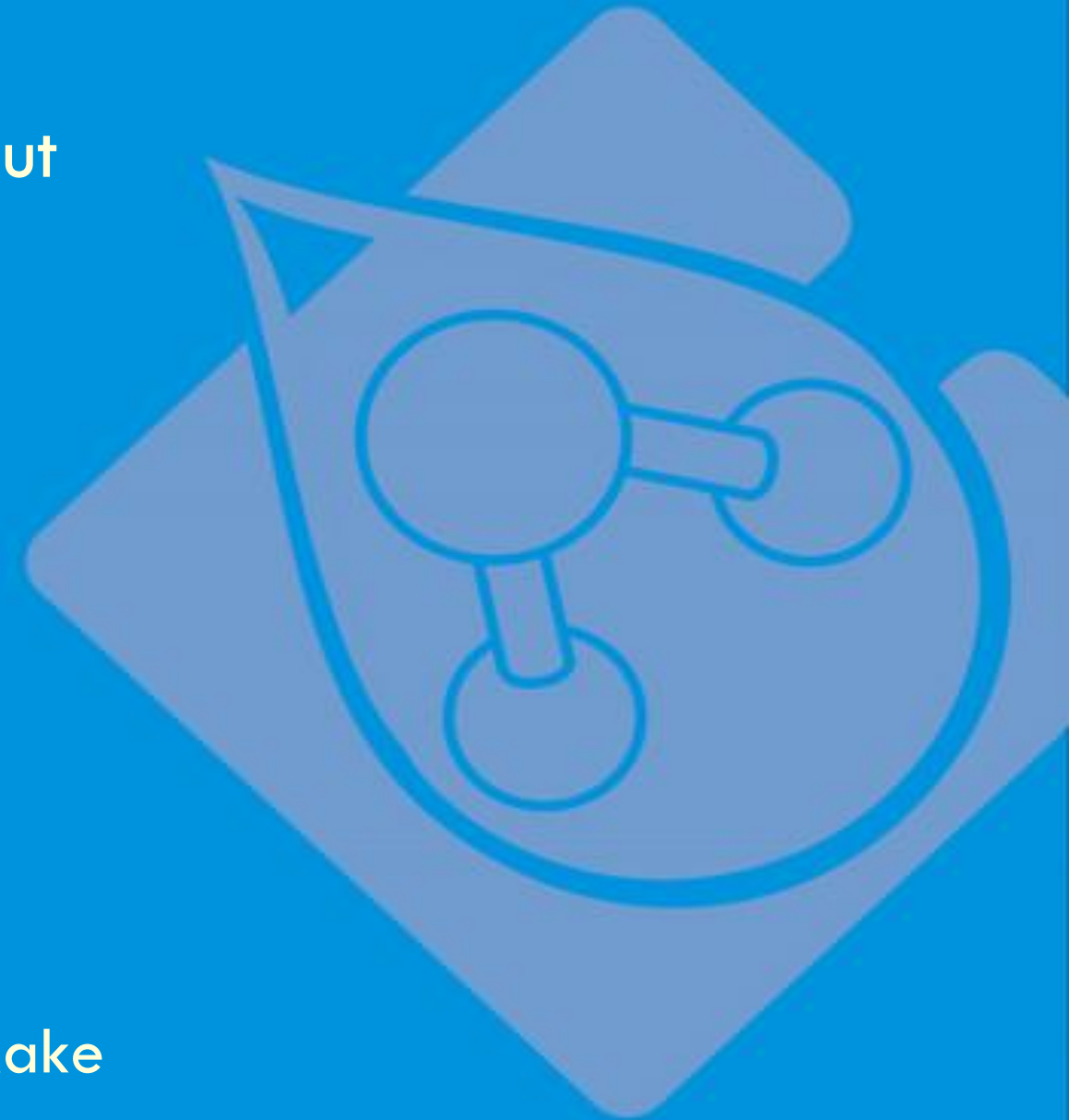
Conceptual Design – Recirculation Pump

- Pump Type & Integration
- Pump Strainer – Specs, Sizing & Design
- Specification
 - Scheme
 - MOC
 - Flow Rate
 - RPM
 - Head (Pressure) & Suction
 - Sizing



Conceptual Design – Piping & Hydraulic Distribution

- Suction, Supply & Drain Piping
- Pipe Size, elevation, network & Layout
- Supply Stream nozzles
 - No. of supply nozzles
 - Location of supply nozzles
 - MOC, Type, Size, Make
- Suction /Discharge Stream
 - Skimmer, Grating, Overflow
 - Size, Capacity, Nos. Location, MOC, Make

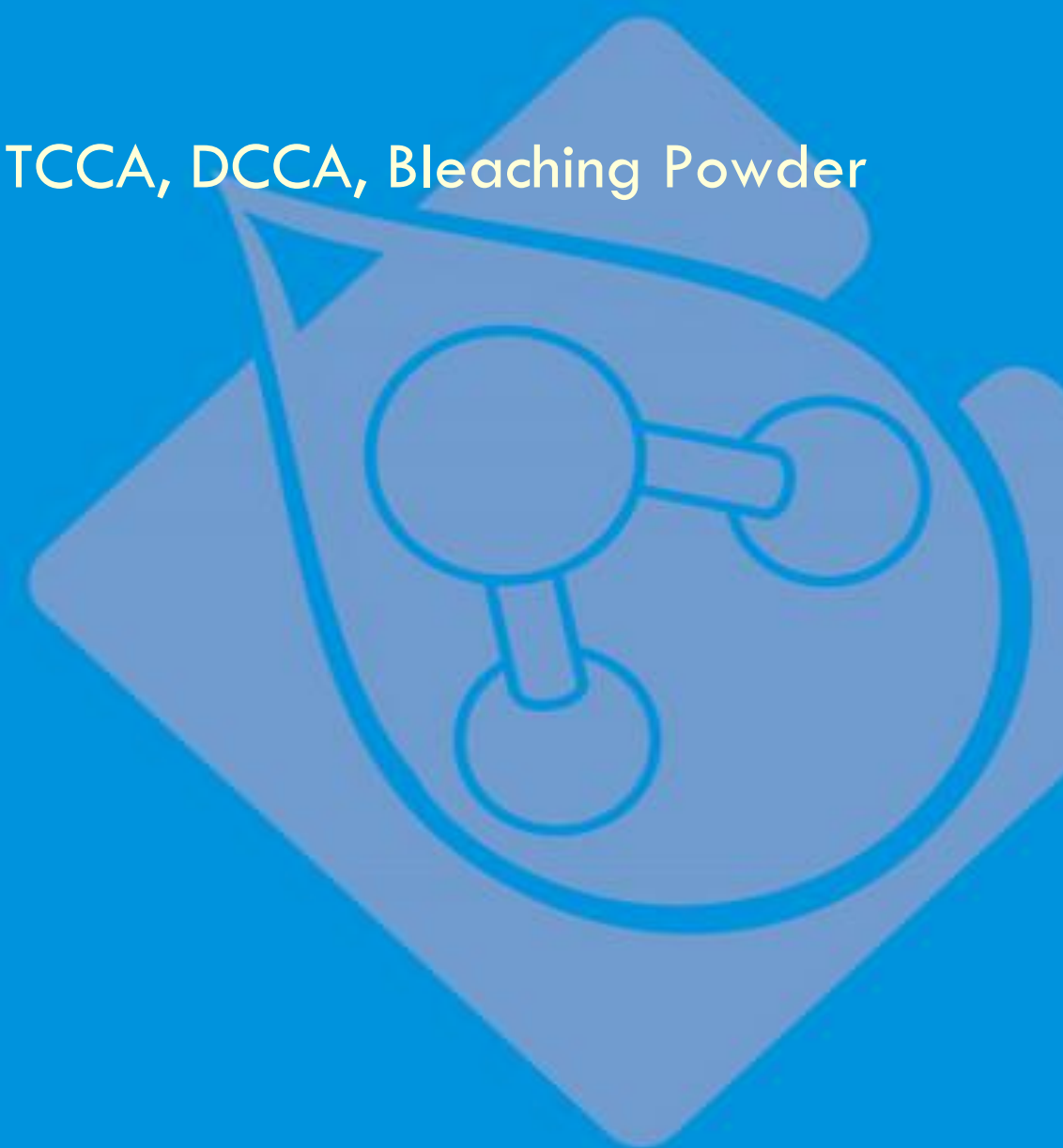


Conceptual Design – Pool Water Chemical Balance

- pH Correction Chemical
 - pH Correction Dosing Calculations, dosing point, Quantity, Frequency
- Coagulant Chemicals
 - Coagulant Dosing Calculation, Dosing point, quantity, frequency
- Disinfectant Chemicals
 - Different Options, Advantages & Disadvantages, Techniques, Calculation, Quantity, Frequency,

Conceptual Design – Disinfectant

- Chlorine base Options
 - Liquid, Gas, Powder, Granules, Tablets, TCCA, DCCA, Bleaching Powder
- Ozone & Ozone Hybrid System
 - Size & Capacity
 - Integration Options
 - Operation & Maintenance



Conceptual Design – Electrical Panel, Instrumentation & Automation

- Electrical Panel
 - Design, Load Calculation, Cable specs & Layout
- Instrumentation, Interlock , Monitor, Alarm & Automation
 - Sensors, Monitors & display Scheme, Specification, Integration

Conceptual Design – SOP & Manuals

- SOP – Standard Operating Procedure
 - Swimming Pool Operation, Cleaning & Maintenance
 - Plant Start up, Shut Down & Chemical Dosing
 - Backwash & General Maintenance
- Manuals
 - Operation & Maintenance – Pool & Equipment

Conceptual Design – Documentation

- **Logs & Documents**
 - Design Philosophy, Spares List, Testing Procedures, Safety Instructions
 - Chemical Logs, Operation Logs, Maintenance & Breakdown Logs, Testing Logs, Electrical & Hydraulic Logs
- **Specification & Drawings**
 - Pool Specification & Equipment Specifications
 - General Arrangement Drawing (GAD)
 - Process Flow Diagram (PFD)
 - Process & Instrumentation Drawing (P & ID)

Reference & Testimony

- Brightland Village – Mahabaleshwar
Design, Supply & Erection
- Great Eastern Shipping Co. – Lonavala
Troubleshooting Consultation
- Poonam Weekend Bungalows – Virar
Design, Supply & Erection
- Rani Mukerji – Juhu
Design, Supply & Installation
- Global Energy Services – Belgaum
Design, Supply, Installation
- Sohum Builders – Thane
Design Consultation
- Bhoomi Infra – Belgaum
Design Consultation, Supply & Erection
- Wilnomon Society – Bandra
Design Consultation, Supply & Erection
- Municipal Corporation – Mumbai
Design, Supply & Erection

End Of Slide Show

**Thank You,
For Your Precious Time**

For more information visit :
www.swimmingpoolwatertreatment.com