

### **10-Hour OSHA General Industry Course - Techtron Engineering Inc.**

Designed by OSHA to provide awareness training on topics such as: Introduction to OSHA, Walking & Working Surfaces, Electrical, Hazard Communication, and Personal Protective Equipment. Exit Routes, Emergency Action Plans, Fire Prevention, Material Handling, Hazardous Material (Flammables and Combustibles), and Permit Required Confined Space Entry. Persons completing both days of training will be mailed an OSHA 10 General Industry Card distributed by the Department of Labor.

***Max attendees: 30***

### **CPO Certification Blended Training – Joel Yankie**

The CPO® certification program includes pool and spa chemistry, testing, treatment, filtration, maintenance, automatic feeding equipment, and government requirements. Participants will achieve a better understanding of the operator's role in pool care, management, and risk reduction. Many state and local health departments accept the CPO® certification program. This two-part course begins with prior completion (before the AALSO Symposium) of an online curriculum that follows the 18 chapters in the NSPF® Pool & Spa Operator™ Handbook, which is also provided. Students must bring a Pool Operator Primer™ Record of Completion to the classroom on Thursday and successfully complete the Pool Operator Fusion™ class to obtain a CPO® Certification. The CPO® certification program requires an in class open book written examination. Upon successful completion of this course and exam, participants will receive CPO® certification from NSPF in the mail and is valid for five years.

***Max Attendees: 20***

### **ASME B31.3 Solvent Cementing Training for PVC & CPVC – IPS**

#### ***Workshop Supplies provided by Harrington Industrial Products***

This training will be in two parts, first will be the classroom theory, where the attendees will be presented the ASTM D 2855 step by step procedure for solvent cementing a PVC or CPVC joint. This includes how to choose the proper tools to use as well as the proper grade and type of cement and primer based on the diameter and type of pipe being bonded.

The next step in the training will be hands on, where each of the attendees will build their own component assembly that will be shipped to a lab to be tested to the ASME B 31.3 required parameters. If the assembly passes the test a training certification card will be issued in that individuals name and will be sent to them. If the assembly fails the test, than that individual will be notified that they did not pass the testing and will need to go through the training again.

***Max Attendees: 10***

### **Butterfly and Ball Valve Workshop – Asahi America and Ipex**

Hands on disassembly and troubleshooting of butterfly valves and ball valves, parts identification, standard features, recommended spare parts, installation and setting of Gear-Operators, and complete tear down and rebuilding valves. How to properly diagnose failure conditions, symptoms of failures. Review of flow direction requirements where applicable along with some light actuation issues and troubleshooting. Workshop attendees will have the opportunity to cycle through a series of valves.

***Max attendees: 12***

### **Laser Alignment of Pump and Motor Coupling – Met-Pro GPS**

This presentation and alignment simulation will provide a brief tutorial of shaft alignment identifying the various types of misalignment, differences between shaft and coupling alignment and descriptions of the various methods of alignment including straight edge, dial indicator, and laser. Utilizing a pump/motor coupling simulator the various methods of shaft alignment will be demonstrated highlighting the issues not identified by straight edge and/or dial indicator measurements. Finally, a laser alignment tool will also be used to check for any soft foot condition.

*Max Attendees: 10*

### **Pump Cavitation & Maintaining Larger Pumps – Met-Pro GPS**

The class will demonstrate pump cavitation and cover the effects it has on the impeller and volute, and will also train and provide the attendees with the opportunity to perform regular maintenance/repairs to larger scale pumps. Subjects covered will be greasing motors, how much and how often, changing pump oil, how much and how often, changing seals and changing an impeller.

*Max Attendees: 10*

### **Plate Heat Exchanger Preventative Maintenance – Delta Hydronics and Aqua Logic**

Hands-on discussion of plate heat exchanger components, basic design and general maintenance practices. Workshop will cover the principles of equipment sizing and aquatic application considerations.

Workshop attendees will break down a small plate and frame heat exchanger, remove the plates, change the gaskets and reassemble the heat exchanger.

*Max Attendees: 10*

### **UV Sterilizer Maintenance – RK2**

Hands-on workshop where participants will remove, clean and replace quartz sleeves. Participants will learn and physically replace O-ring seals, contacts and bulbs on a UV sterilizer and will learn about life expectancy of various bulbs along with recommended frequency of maintenance.

*Max Attendees: 10*

### **Ozone System Maintenance – Satchell and Associates, Ozone Water Systems**

Participants in this class will be given a presentation on the key components that make up an ozone system, engineering factors that are considered when selecting various components, different ways of contacting ozone with water and various air prep systems. At the conclusion of the presentation, the larger group will break out into smaller groups and cycle through hand on workshops covering ozone generator PM, safety components PM (ambient monitors etc.), ozone destruct PM, contactor PM and air prep service. **Please note that by registering for the Ozone Presentation workshop (held in Whitney); you will automatically be enrolled in the hands-on sessions located in Foyer 13 on the B.A.W.L from 3:15 – 5:00.**

*Max Attendees: 20*

### **Ozone Exposed - ToroSoleil LLC**

Will take you through the often mysterious world of ozone production systems from the beginning to end. Attendees will be provided with simplified formulas to easily calculate: Applied ozone dosage, ozone dosage required for specific applications, existing ozone system production, and how to validate ozone system output. Also covered our "Ozone System Laws" which outline the minimum required, non-negotiable features an ozone system must have in order to function reliably. We will also cover important questions you should ask your ozone system supplier. Discussion on upgrading older ozone systems to newer types of ozone technology and existing infrastructure concerns. This will be a revealing eye opener for most people and will hopefully reduce some of the anxiety that comes with such a complex system.

*Max Attendees: 30*

### **Plasma Block Ozone Generator Maintenance - International Ozone**

This workshop will cover disassembly and cleaning of plasma block cell, troubleshooting of plasma block, routine service of self-contained oxygen concentrators, and troubleshooting of self-contained oxygen concentrators.

*Max Attendees: 30*

### **Mechanical Seal School with Interactive Installation – ASI, Flex-A-Seal**

The purpose of this workshop is to conduct a short ‘Seal School’, explaining the engineering principles behind mechanical seals and the features and benefits of several different designs as they apply to the aquatic industry. We aim to outline the best installation procedures through a practical interactive presentation that will promote professional development, and give operators knowledge applicable to their daily duties. During this workshop, a few operators will be given the opportunity to demonstrate the installation of a mechanical cartridge seal on an actual pump for the rest of the group.

*Max Attendees: 10*

### **Proper Calibration & Maintenance of DO, pH & Conductivity Sensors - YSI**

This workshop will go over the proper way to calibrate the parameter DO, pH, ORP and Conductivity. It will include hands on calibration with the proper worksheet and information needed for calibration records. This will also go over when it is recommended to calibrate and what standards to use for your application.

*Max Attendees: 10*

### **Valve Actuator Adjustments – Hayward Flow Control and IPEX**

Workshop attendees will have the ability to witness a series of actuators that are out of adjustment and subsequently make the necessary adjustments to the actuator to bring it back to within normal operating parameters.

*Max Attendees: 10*

### **Acrylic Scratch Removal – American Sealants, Inc. (ASI)**

Workshop attendees will be instructed on proper techniques for performing preventative maintenance tasks on acrylic surfaces, assessing and properly identifying damage to acrylic surfaces such as crazing, minor scratch identification and major scratch identification. Workshop attendees will be taught the techniques of minor scratch removal and have the opportunity to remove minor scratches from an acrylic tank.

*Max Attendees: 10*

### **Automated Control Systems Workshop – RCK Controls**

This workshop will run throughout the day as in informal discussion/observation and will not be a slot in which an attendee can register. The intention is to provide an opportunity for an attendee to interact with the controls end of the BAWL as you finish a workshop or are between activities. The automation supports many of the actual workshops so there is usually something going on. Folks from RCK and ABB will be on hand to provide an overview of how an Automated Controls System (ACS) can help save time, energy consumption, reduce mechanical stress and provide different types of alarms for times when the LSS is not functioning within parameters. B.A.W.L 2018 will be run through a control system and attendees can witness live feedback from various points throughout the system including ORP, flow, pressure and level. The loop pumps will all be run off VFD and the folks from ABB will be on hand to discuss soft starting pumps, control through a VFD and maintenance items on a VFD.

*Max Attendees: 0*

### **Ozone, ORP and Probe Calibration – GF Signet**

This hands-on class will build a better understanding of the relationship between these topics. Equipment will be on hand that offers participants the opportunity to properly operate a Signet wet tap assembly and perform the procedures necessary to verify and ORP reading.

*Max Attendees: 9*

### **Turbidity, Chlorine and D.O. Calibration – GF Signet**

This hands-on class will build a better understanding of the application, operation and maintenance of these instruments. Equipment will be on hand that offers participants the opportunity to get familiar with and learn how to calibrate these sensors and analyzers.

*Max Attendees: 9*

### **Small Pump Rebuild – Hayward Flow Control**

Many people are unaware that small pumps can be rebuilt much in the same respects as their larger “cousins”. Workshop attendees will have the opportunity to cycle through each of the above manufacturers and completely rebuild these pumps from impellers and shafts, to seals and even changing motor’s.

*Max Attendees: 10*

### **Pump Sizing – MDM Inc**

A focus on all moving parts from mechanical seals and impellers to motor bearings and shafts, you’ll gain the knowledge and skill set required to add value by keeping your pump systems functional while reducing downtime. Additional discussions on proper installation, VFD interface, duty point sizing, and optimal curve placement to duty-point via motor rpm control (turn-down or ramp-up) will be provided.

*Max Attendees: 20*

### **Pump Rebuild Bearings and Motors – MDM Inc**

This workshop will cover pump rebuild techniques and attendees will have the opportunity to change out pump mechanical seals and test on the BAWL. Hands on training of removing pump bearings and pressing in new bearings on to the motor shaft.

*Max Attendees: 10*

### **Alternative LSS Piping for Faster System Startup – Asahi America**

We are all familiar with PVC piping used in most of our LSS Systems. We will discuss the benefits of other materials, such as HDPE and Polypropylene and how they can benefit LSS Systems. These piping systems are installed with thermal fusion, with no dangerous solvent cements and primers. This method of installation requires only a very short cool-down period, not the long curing process that we all have skipped to get the system up and running. The pipe and process will not introduce dangerous chemicals into your delicate LSS system. Each attendee will conduct a thermal socket or butt fusion weld.

*Max Attendees: 10*

### **Protein Fractionator Technologies, Installation, Maintenance and Ozone Integration – RK2 Systems, Inc.**

Workshop designed to provide overview of protein fractionator technologies, highlighting the various benefits and limitations associated with each process. In addition to having participants learn assembly and cleaning protocols, we will cover how ozone works in conjunction with protein fractionation and close out the session with the group working through various troubleshooting scenarios in real time.

*Max Attendees: 10*

### **Basic Drum Filter Maintenance - Integrated Aqua Systems, Inc.**

Integrated Aqua Systems, Inc. is offering a hands-on workshop on the operation and maintenance of gear wheel driven drum filters using a HEX drum filter installed and operational on the BAWL. Attendees will receive basic instruction on the theory of operation, key parts identification, backwash sequence and proper start-up of a drum filter. Practical section will include basic maintenance tasks required to operate and maintain drum filters to their design specifications including panel maintenance, lubrication, basic controls set up, troubleshooting.

***Max Attendees: 10***

### **Advanced Drum Filter Design Considerations & Maintenance - Integrated Aqua Systems, Inc.**

Integrated Aqua Systems, Inc. is offering a class with instruction on design considerations, proper selection, application and maintenance of gear wheel driven drum filters using a HEX filter installed and operational on the BAWL as a working example. In addition to a brief overview of basic drum filter operation and maintenance, attendees will receive an overview of different drum filter types, control systems, options and design applications. Practical section will include basic controller setup and programming required to operate and maintain drum filters to their design specifications.

***Max Attendees: 10***

### **Acrylic Scratch Removal – EisenShine**

Learn how to remove scratches and restore clarity to acrylic enclosures. Hands-on experience removing scratches from acrylic on wet or dry surfaces by hand sanding, and polishing. Discussion of acrylic properties, the aging process, and tips for how to extend the useful life of all acrylic enclosures.

***Max Attendees: 10***

### **Mechanical Filters – Neptune Benson and Dryden Aqua**

Hands on demonstration and tour of a filter and its functional components. Students will learn the in's & outs of mechanical filtration, with focus on key installation criteria, maintenance, media options, best performance practices, velocities as well as performance improvements.

***Max Attendees: 10***

### **Troubleshooting Aquatic System Issues "A Brainstorming Session" – Juan Sabalones (The Virginia Zoo)**

A moderated panel discussion with seasoned veterans where attendees will have an opportunity to give a brief synopsis of their current issue that will then be thrown open for discussion amongst the panel and other attendees.

***Please note: There will be a sign-up sheet available on the website as well as at the symposium for attendees to give a brief description of the nature of their issue.***

***Max Attendees: 30***

### **Modern Day Approach to Aquarium Water Quality- Timothy A. Hovanec**

Modern aquarium systems can generally be divided into three parts: chemical, physical and biological. The chemical part would be the water chemistry measurements such as pH, ammonia, nitrate and so forth that are made and recorded. The physical part would encompass devices such as protein skimmers, biological filters, and ozonation systems that are installed and maintained. And the biological part is the living bacteria such as the nitrifying bacteria, denitrifying bacteria and nutrient consuming bacteria. These three parts work together to provide an optimal water quality environment for the health of the collection. Historically, the three parts were considered almost independently of each other. This talk will present ways to consider the three parts in a more holistic manner with the biological (bacterial) as the center of the system. A modern day approach to water quality is to understand that bacteria will adapt to the prevailing physical and chemical environments of the culture system with results that are not

always favorable to the collection. Understanding how bacteria will react to changing conditions in the physical parts of the system that can effect the water chemistry is a positive or negative manner will allow operators to adjust and control the environment rather than react to deteriorating conditions.

***Max Attendees: 50***

**Water Quality Lab 101: Testing Techniques - YSI and the Water Quality Certification Committee**

This workshop will provide basic information, tips, and tricks on performing the common water quality tests that are crucial to the operation of a zoo or aquarium system. This 45 minute workshop will demonstrate and provide hands on training for common testing like Nitrogen Cycle (Ammonia, Nitrite, and Nitrate), Chlorine, Bromine, Phosphate, Copper, pH, Temperature and Salinity by use of a variety of testing methods. The focus of this workshop is to compare testing method with cost and accuracy.

***Max Attendees: 20***

**Water Quality 102 Lecture - Lab Safety - Karen Tuttle Stearns (Aquarium of the Pacific)**

This lecture will provide an overview of Laboratory Safety. This 45-minute lecture will cover basic laboratory best practices in safety standards like laboratory hazards, personal protective equipment, storage of chemicals, chemical spills and laboratory green practices. The focus of this lecture is laboratory best practices.

***Max Attendees: 50***

**Water Quality 103 Lecture - Equipment Options - Jeff Gibula (Newport Aquarium)**

This lecture will provide an overview of the equipment needed in a water quality laboratory that supports the operation of a zoo or aquarium system. This 45-minute lecture will cover chemicals, glassware, laboratory supplies, electronics, spectrometers, meters, and burets. The focus of this lecture is from set up to expansion, and will highlight what equipment is needed at a variety of budget levels.

***Max Attendees: 50***

**Life Support Levels 1 and 2 Certification Exam Prep - LSS Certification Committee**

This workshop will cover the format of the certification exams, and focus on the math and calculations in found in the AALSO Field Guide. The workshop will be 50% structured review and 50% open discussion/question and answer session.

***Max Attendees: 50***

**Life Support Level 3 Certification Exam Prep - LSS Certification Committee**

This workshop will cover material for the Life Support Level 3 exam through example problems. The workshop will be 50% structured review and 50% open discussion/question and answer session.

***Max Attendees: 50***

**Water Quality Levels 1 and 2 Certification Exam Prep - Water Quality Certification Committee**

This workshop will cover the format of the certification exams, and focus on the math and calculations in found in the AALSO Field Guide.

***Max Attendees: 50***

**Water Quality Level 3 Certification Exam Prep – Water Quality Certification Committee**

This workshop will cover material for the Water Quality Level 3 exam through example problems.

***Max Attendees: 50***

**Blueprint Reading – Satchell Engineering and Associates**

Learning to read blueprints is an essential skill for designers, contractors, engineers, operators and building owners. In this lecture and hands-on class, you will learn the vocabulary and language of blueprints. Topics covered include drawing scales, P&ID's, plan, elevation and section drawings, architectural symbols and legends. This course will help you understand how a set of blueprint drawings are put together and how to read them.

*Max Attendees: 20*

**BAWL Startup & Commissioning – Workshop Committee**

This is a unique opportunity in which the attendees will get a hands-on experience with all the exciting facets of the initial setup, startup, and commissioning of the Big Automated Water Loop. This workshop will provide a comprehensive system startup experience including, but not limited to: Flange assembly, solvent cement welding techniques, pipe fusion practices, protein skimmer assembly and tuning, introduction to automation, problem solving and troubleshooting.

*Max Attendees: 8*