



Announcing a Powerful - "Must See" Workshop for Lagoon Operators and Wastewater Professionals

Discover new tools you can apply immediately to optimize your lagoon's performance and keep your system in compliance



HOW TO TROUBLESHOOT WASTEWATER LAGOON SYSTEMS

JULY 26th-27th

The Latest Discoveries and Proven Techniques to Optimize and Solve Problems in Wastewater Lagoon Systems

The presenter at this workshop will be author & one of the Wastewater Industries' **TOP CONSULTANTS**, Steve Harris.

AS SEEN IN THE LATEST "CALIFORNIA WATER JOURNAL" FROM CRWA



In this 2-day workshop you will discover new methods, techniques, and strategies you can use to get more BOD reduction, better TSS removal, odor control, **sludge reduction**, nutrient removal, and more years of dependable service out of the lagoon system you already have. In this workshop you'll discover:



- How to remove the greatest deterrent to your pond's treatment performance
- The keys to getting greater control over your lagoon system to remove more BOD TSS, and sludge
- The 11 possible causes of high BOD and their 50 possible solutions
- The 7 possible causes of TSS problems and their 44 possible solutions
- How to troubleshoot nitrogen removal problems
- How to get 12 inches of sludge reduction without dredging...and so much more!

Increase your value as an operator by building effective diagnostic and problem solving skills

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www.cbxproducts.com

Presenter:
Steve Harris with
H&S Environmental, LLC



Attendees of this workshop from across the country agree, this 2 day workshop has been an **invaluable tool** in the upkeep and success of their lagoon system. Environmental Techniques International has hired Author Steve Harris to come and teach his troubleshooting workshop for their customers and is allowing additional lagoon operators to attend. **DON'T MISS THIS OPPORTUNITY!**

LAGOON TROUBLESHOOTING WORKSHOP AGENDA

DAY ONE

8:00 am to 8:30 am Registration

8:30 am to 10:00 am **SECTION 1 - Wastewater Lagoon Microbiology**, the basics of how lagoons work to stabilize waste. Lagoon Food Webs, nutrient cycling, and how water quality changes with changing depth. Variables affecting pond performance. The role of various microbes in a lagoon system. **Diagnosing Wastewater Lagoon Problems.** How to determine the source of lagoon problems. The eleven things an operator must know to troubleshoot or optimize a lagoon. The essential role of monitoring and record keeping in solving problems in a lagoon system. How pond chemistry changes over the day & year. Sampling locations and a discussion of the value of different tests. How to interpret test results.

10:00 am to 10:15 am Break

10:30 am to 12:00 pm **SECTION 2 - Diagnosing and Troubleshooting BOD₅ Problems.** Where and how to sample. The six steps to take to isolate the cause of a BOD₅ problem. Typical loading rates. How to tell if your lagoon can handle additional load from a new subdivision, jail, hotel, handle septage, or industrial waste. Understanding CBOD₅ vs. BOD₅. Diagnostic BOD₅ Case studies from the field on solving BOD₅ issues.

12:00 pm to 1:00 pm Lunch (Provided by sponsors)

1:00 pm to 2:00 pm **SECTION 3- Troubleshooting TSS Problems.** What is TSS? Algae related TSS problems. The benefits of algae. Algae's problematic side and in-pond strategies to remove algae. Methods for controlling algae growth. Lagoon colors and their meaning. Ingenious non-chemical methods for the removal of Duck weed. Case studies on algae suppression and growth from various cities.

2:00 pm to 2:15 pm Break

2:15 pm to 3:30 pm **SECTION 4 - Sludge Accumulation and Removal.** The problems accumulated sludge creates. Ten signs indicating it is time to remove sludge. Fifteen things that affect the rate of sludge accumulation. Typical sludge removal rates. How to determine the volume of sludge, sludge judging and core sampling. Things to consider before sludge judging a lagoon and how to prepare for this test. Formula for determining sludge volume and mass. How to Desludge a pond. Getting free sludge removal. The costs of sludge removal and how to protect yourself. **Troubleshooting Ammonia and Phosphorous Problems.** Nitrogen removal pathways and the eleven key factors that determine the rate of nitrogen removal. The chemistry and biology of nitrogen removal in lagoon systems. How to optimize a lagoon system for nitrogen removal. Case studies from cities that have controlled their ammonia & phos problems.

3:30 pm to 4:30 pm **SECTION 5 - Pond Hydraulics** - How to calculate theoretical retention time and six things that cause shortcircuiting in a lagoon system. How to tell if a pond has a short circuiting problem. Thermocline's role in short-circuiting and how to deal with water density problems. Confirming short-circuiting problems and how to solve them. Case study from city solving a gross short circuiting problem.

DAY TWO

8:00 am to 10:00 am **SECTION 6 - Troubleshooting Aeration and Dissolved Oxygen Problems** - Factors competing for oxygen in a lagoon. How dissolved oxygen concentrations change in a lagoon and why that is important to you. Seventeen possible causes of low dissolved oxygen concentrations. Oxygen demand calculations. How to properly conduct a dissolved oxygen profile. Solutions to low dissolved oxygen concentrations. Troubleshooting low D.O. Case Study on how to solve odor and low dissolved oxygen problems.

10:00 am to 10:15 am Break

10:15 am to 12:00 pm **SECTION 7 - Pathogen Control.** Factors effecting bacteria, virus, and parasite die-off rates in lagoons. How to maximize a lagoon's natural disinfection process. Chlorine residual. **Maintenance.** What EPA inspectors look for when examining your pond system. Dike maintenance, erosion control, vegetation control, leaky ponds and the importance of record keeping. When lagoons go bad and what to do about it.

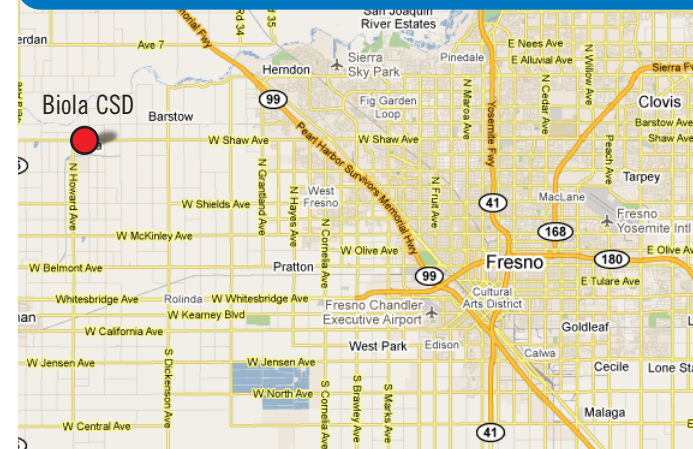
12:00 pm to 1:00 pm Lunch (Provided by sponsors)

1:00 pm to 3:00 pm **SECTION 8 - Industrial Lagoon Troubleshooting** - The difference between industrial and municipal lagoon systems. Optimizing anaerobic ponds used to treat industrial wastewater. Nutrient deficiencies — feeding an industrial lagoon system for optimum performance.

3:00 pm to 3:15 pm Break

3:15 pm to 4:30 pm **SECTION 9 - Cold Weather Operations** - How water temperature affects the chemistry and biology of a lagoon system. How temperature affects pond mixing. Cold weather operations. Predicting water quality based on changes in temperature. **Wrap up.** Case study on actual lagoons meeting very high effluent quality standards, and the costs of one city's painful lagoon decommissioning. Evaluations and Certificates

Location Details for The Wastewater Lagoon Workshop



Where/When:

Biola CSD - just Northwest of Fresno California
4925 N. 7th Ave. - Biola, CA 93723
Tuesday & Wednesday July 26th-27th, 2011

Location details available at:

www.cbxproducts.com/workshops.html

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Presenter:

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*** SIGN UP TODAY! TIME IS SHORT & SPACE IS LIMITED ***

Wastewater Lagoon Optimization & Troubleshooting, comprehensive 2-day workshop
Only **\$150** (normally **\$299**). Environmental Techniques customers attend **FREE**.

Sign up online at: www.cbxproducts.com/workshops.html or call 877-275-4229

WHAT DID OTHER WASTEWATER PROFESSIONALS SAY ABOUT THE WORKSHOP?

*"Your recent workshop in Stockton [California] was **fantastic**. I am still receiving many requests for your workshops in our state... Your training sessions are **"top drawer"** and extremely helpful to lagoon operators. The feedback I have received from attendees of your classes have been **most excellent!** Thank you very much"
...Pat Conway, Wastewater Trainer, California Rural Water Association*

*"I felt the class provided a **tremendous amount of information** for anyone associated with running a lagoon system no matter what your experience level might be"*

...Dan Wilson, Operator, Unionville, Missouri

*"This was without a doubt the **most informative training on lagoons** I have had to date. The instructor spoke on a level of understanding and the topics discussed were picture clear. **The best training I have ever attended.**"*

...James Groth, Wastewater Supervisor, City of Ririe, Ririe, Idaho

*"**One of the best classes I've attended.** What could have been a very boring 2 days turned into a very informative 2 days with many cost effective solutions presented. **If you operate a lagoon, you need to attend this class"***

...David E. Goebel, Operator, O'Fallon, Missouri

*"I felt the class was very informative. There was a multitude of valuable information that I have been incorporating into my system. **I would like to attend more of these types of classes"***

...Jeff Caffey, City of Conway, Missouri

*"**This is without a doubt the best class on lagoons I have ever attended.** I got some great ideas on sludge removal options and D.O. testing. It was money well spent. **Anyone with lagoons should attend this class.**"*

...Randy Severns, Village of Mendon, Ohio

Class attendees can also get **BIG DISCOUNTS** on this manual!

This manual was written by your presenter Steve Harris specifically for this 2-day workshop. It is available for just **\$70** (normally \$79.95 plus \$9 shipping through USA BlueBook). The manual closely follows the 2 day workshop — it's like taking the 2-day workshop home with you to your plant.

If you would like to buy a manual, go to the online workshop registration link above and add it to your registration or order at www.lagoonops.com/order_registration.html. Books will be handed out the day of the class.



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