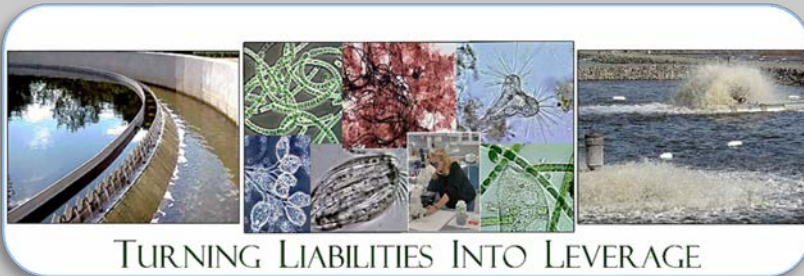


Pharmaceutical Case Histories & Capabilities

Environmental Leverage[®] Inc.





Chemical pharmaceutical plant Midwest



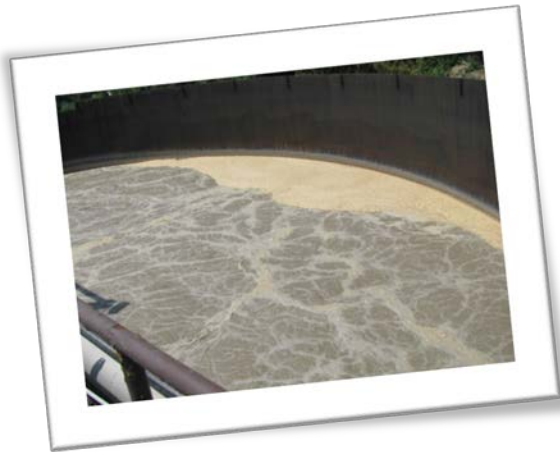
Chemical plant with
high foaming and
zooglea in clarifier



After addition of
Bioaugmentation
MicroSolv 200 and
MicroClear M100
micronutrients and
adjustments to N
and P values.



Chemical Pharmaceutical Plant Iowa



Chemical plant with
high foaming and
zoogloea in clarifier

After onsite audit and
Training, addition of
Bioaugmentation
MicroSolv 200 and
MicroClear M100
micronutrients and
adjustments to N and P
values.



Pharmaceutical Caribbean



Pharmaceutical plant with high foaming and zooglea in anoxic and aeration basin

After addition of Bioaugmentation MicroSolv 200 and MicroClear M100 micronutrients and adjustments to N and P values.



Pharmaceutical Southeast US



Pharmaceutical plant
with high amines and
nitrogen in anoxic and
aeration basin



Started on a program with the addition of Bioaugmentation MicroSolv 200 and MicroClear M100 micronutrients and adjustments to N and P values.

Use of MicroSolv 600L required to break down high levels of ammonia after toxic shock events.

Amine spikes of 155-185 occur 1-2 times per week. Sent to EQ tank for slow bleed into system.

Recommended addition of a small amount of MicroSolv 200 into EQ tank to pretreat amines and break them down in the EQ prior to the aeration basin and lessen the effect of toxicity



Environmental Leverage

The Next Generation of Solutions



- **Chemicals, Laboratory, Training, Consulting, Total Systems Approach**
 - Onsite Audits & Consulting
 - Beneficial Reuse & Biosolids Alternatives
 - Training Programs
 - MicroClear® & MicroSolv™ Bioaugmentation Products
 - Cooling Tower & Wastewater Lab Services
 - Computer Based Dosing Wizards
 - Wastewater Audits
 - Online ELearning Courses





Wastewater Audits

Full onsite audit of Treatment plant, or "Virtual Audits"



Evaluation of Equipment, Process Recommendations, System Optimization, Troubleshooting, Testing, Solids Handling, etc.

Process Flow Diagram

The diagram illustrates the flow of wastewater through various treatment stages, including primary, secondary, and tertiary treatment, leading to effluent discharge or reuse.

Facility Overview

This image shows an aerial view of a large-scale wastewater treatment plant, highlighting the extensive infrastructure and multiple treatment basins.

Microscopic Analysis

This image shows a microscopic view of activated sludge, used to assess the health and composition of the biological treatment process.

Effects of Solids Capture on Waterfaring Costs

This bar chart compares the costs associated with different levels of solids capture, demonstrating the economic benefits of efficient solids handling.

Equipment Inspection

This photograph shows a close-up of a wastewater treatment tank, likely used for inspecting equipment condition and operational status.

Dissolved Oxygen Rate vs. Temperature

This graph shows the relationship between temperature and the rate of dissolved oxygen, which is a critical parameter for biological treatment processes.

Microscopic Analysis

This image shows a microscopic view of a wastewater sample, used to identify and analyze the microorganisms present in the system.

Equipment Inspection

This photograph shows a close-up of a wastewater treatment tank, likely used for inspecting equipment condition and operational status.

Common Design Criteria Used in USA

Parameter	Value	Unit
Flow Rate	1.0	MGD
Temperature	50	F
pH	7.0	-
BOD	200	mg/L
TSS	100	mg/L
Ammonia	1.0	mg/L
Nitrate	10	mg/L
Phosphate	1.0	mg/L
Sulfide	1.0	mg/L
Chlorine	1.0	mg/L
Fluoride	1.0	mg/L
Cadmium	0.1	mg/L
Lead	0.1	mg/L
Copper	1.0	mg/L
Zinc	1.0	mg/L
Iron	1.0	mg/L
Manganese	1.0	mg/L
Nickel	1.0	mg/L
Silver	0.1	mg/L
Mercury	0.1	mg/L
Chromium	1.0	mg/L
Vanadium	1.0	mg/L
Antimony	1.0	mg/L
Barium	1.0	mg/L
Beryllium	1.0	mg/L
Bismuth	1.0	mg/L
Bohrium	1.0	mg/L
Bromine	1.0	mg/L
Cesium	1.0	mg/L
Chlorine	1.0	mg/L
Cobalt	1.0	mg/L
Copper	1.0	mg/L
Francium	1.0	mg/L
Gadolinium	1.0	mg/L
Germanium	1.0	mg/L
Gold	1.0	mg/L
Hafnium	1.0	mg/L
Helium	1.0	mg/L
Hydrogen	1.0	mg/L
Indium	1.0	mg/L
Iodine	1.0	mg/L
Iridium	1.0	mg/L
Iron	1.0	mg/L
Krypton	1.0	mg/L
Lithium	1.0	mg/L
Lutetium	1.0	mg/L
Mercury	1.0	mg/L
Magnesium	1.0	mg/L
Manganese	1.0	mg/L
Meitnerium	1.0	mg/L
Mendelevium	1.0	mg/L
Neodymium	1.0	mg/L
Nickel	1.0	mg/L
Niobium	1.0	mg/L
Oganesson	1.0	mg/L
Osmium	1.0	mg/L
Oxygen	1.0	mg/L
Palladium	1.0	mg/L
Protactinium	1.0	mg/L
Radium	1.0	mg/L
Rhenium	1.0	mg/L
Rhodium	1.0	mg/L
Rubidium	1.0	mg/L
Ruthenium	1.0	mg/L
Samarium	1.0	mg/L
Selenium	1.0	mg/L
Silicon	1.0	mg/L
Silver	1.0	mg/L
Sodium	1.0	mg/L
Strontium	1.0	mg/L
Tantalum	1.0	mg/L
Tellurium	1.0	mg/L
Thallium	1.0	mg/L
Thoron	1.0	mg/L
Tin	1.0	mg/L
Titanium	1.0	mg/L
Tungsten	1.0	mg/L
Uranium	1.0	mg/L
Vanadium	1.0	mg/L
Xenon	1.0	mg/L
Ytterbium	1.0	mg/L
Zinc	1.0	mg/L
Zirconium	1.0	mg/L

Equipment Inspection

This photograph shows a close-up of a wastewater treatment tank, likely used for inspecting equipment condition and operational status.



Wastewater Training Programs



Wastewater Training Materials 4 – CD Set

Higher Life Forms CD

Filamentous Bacteria CD

An Overview of Wastewater Training

Wastewater Microbiology

Filamentous Identification



The Easy Way™ Training CD

Powerful Filamentous Training


Custom Training CD or Manuals

Microbiology Training

“How To Use The Microscope”



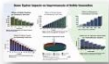
Training & Hands On Workshop
Presented by Tracy Finnegan



Wastewater Training

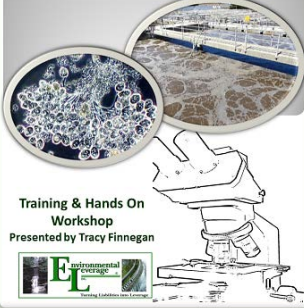
Visual Troubleshooting

Tracy Finnegan






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Microbiology Training In Wastewater




Training & Hands On Workshop
Presented by Tracy Finnegan




Microbiology Training


Indicator Organisms




Training & Hands On Workshop
Presented by Tracy Finnegan



Troubleshooting Microbiology




Training & Hands On Workshop
Presented by Tracy Finnegan





Microbiology Training

“Filamentous Identification The Easy Way”





Training & Hands On Workshop
Presented by Tracy Finnegan

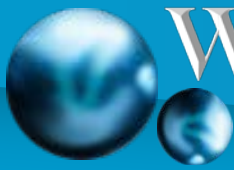



An Overview of Wastewater Treatment

CUSTOM TRAINING MANUAL

Author Tracy Finnegan



Wastewater ELearning Training



Online ELearning: Wastewater Training Courses Overview

Control and Minimization of Total costs of operations is always necessary, but guaranteed reliability and long term sustainability are the keys to transport your wastewater treatment system above and beyond normally targeted measures. These wastewater training programs are based upon years of experience and accumulation of practices on actual performance of thousands of treatment systems. These wastewater training programs have been consistently successful in teaching people how to be proactive and achieve their goals of reducing Total Costs of Operation while also achieving compliance.

You will learn step by step procedures which will enable you or your operators to develop quick, easy to establish system checks to control and monitor your system in order to predict upsets, minimize energy and chemical usage, and avoid costly repairs and unnecessary maintenance procedures.

These courses have been pre-approved for Wastewater CEU's in Alaska, Arkansas, California, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Indiana, Louisiana, Maine, Massachusetts, Minnesota, Nevada, New Jersey, Kentucky, New York, North Carolina, Rhode Island, South Dakota, Tennessee, Vermont, Washington, Wisconsin and West Virginia. Some states do not require pre-approval. If you need these approved for your state, please contact our office.

These courses are eligible for CEU's, Contact Hours or PDH (Professional development hour) in Alabama, Arizona, Maryland, Virginia, South Carolina, Utah and more to come.

Now approved in Canada for Nova Scotia and Saskatchewan.

****Some states give different credits than others. Not all states give credits solely based upon contact hours. Please contact our office if you need to know the approval codes and credit hours for your specific state.**

Just Released ***

Secondary Clarifiers, Secondary Biological Wastewater Treatment systems, Nitrification and Denitrification, Spanish Wastewater Basics, Filamentous Identification Introductory Course Coming Soon :Filamentous ID the Easy Way

- Online computer-based training
- Interactive courses with videos, photos, & quizzes
- Convenience and flexibility at individual pace
- No travel expenses or hassles.

WastewaterElearning.com/elearning

www.EnvironmentalLeverage.com



Environmental Leverage Analytical Services



- Wastewater Biomass Analysis
- Filamentous Identification
- Cooling Tower Microbio Analyses

Environmental Leverage Inc.

Wastewater Microbiology Lab Testing

Standard Wastewater Biomass Analyses :

- Cover letter with comments, recommendations and troubleshooting tips.
- Higher life form sheet
- Floc structure analyses
- Photo Sheets
- A CD with photos and videos included \$250.00

Wastewater Biomass Analyses with Filamentous Identification including Gram and Neisser stains, suggestions on causes and control, troubleshooting tips as well as the standard analyses. \$350.00

Floc Characterization Worksheet

Filamentous Identification Worksheet

Higher Life Forms or Indicator Organisms

Filamentous Identification

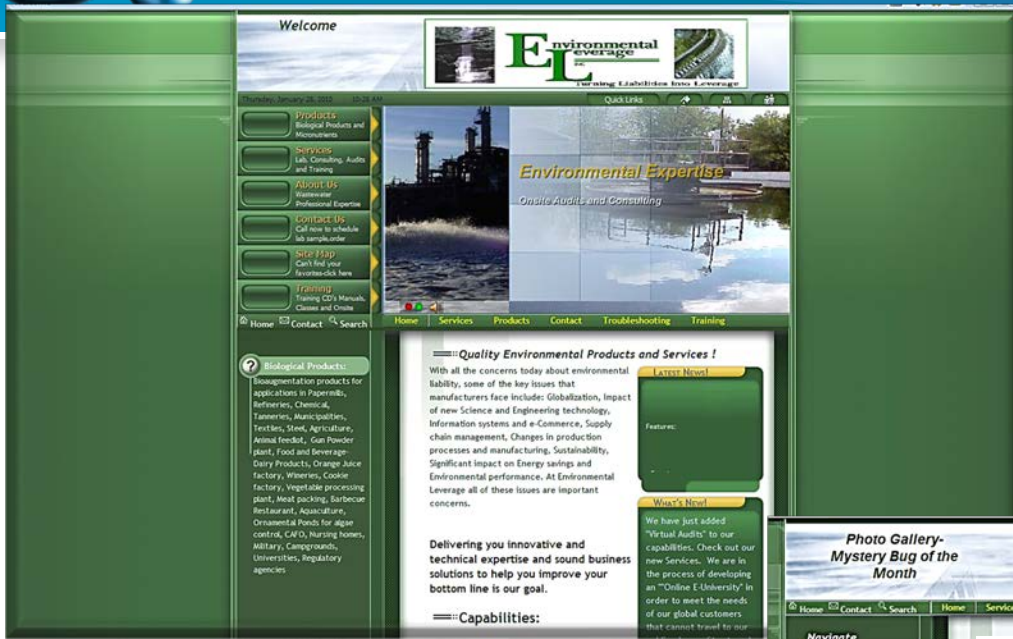
India Ink and LactoPhenol Cotton Blue Stains

Filament Causes and Controls

Send 50-100 ml sample in plastic container overnight. No ice cubes, blue ice only. Call to set up sample testing 630-906-9791. Results same day as sample received

Quality • Service

Always striving to bring the latest technology available to you!



Welcome

Environmental Leverage
Turning Liabilities Into Leverage

Quick Links

- Products: Biological Products and Microarrays
- Services: Lab Consulting, Audits and Training
- About Us: Professional Expertise
- Contact Us: Call now to schedule lab sample order
- Site Map: Can't find your bioresources here
- Training: Training CD's Manuals, Classes and Online

Home | Contact | Search

Environmental Expertise

Onsite Audits and Consulting

Quality Environmental Products and Services!

With all the concerns today about environmental liability, some of the key issues that manufacturers face include: Globalization, impact of new Science and Engineering technology, Information systems and e-Commerce, Supply chain management, Changes in production processes and manufacturing, Sustainability, Significant impact on Energy savings and Environmental performance. At Environmental Leverage all of these issues are important concerns.

Capabilities:

Delivering you innovative and technical expertise and sound business solutions to help you improve your bottom line is our goal.

What's New!

We have just added "Virtual Audits" to our capabilities. Check out our new Services. We are in the process of developing an "Online E-University" in order to meet the needs of our global customers that cannot travel to our



TURNING LIABILITIES INTO LEVERAGE

- Training & Treatment Systems Audits
- Newsletters (*digital monthly troubleshooting*)
- Troubleshooting
- Filamentous ID.
- Higher Life Forms
- Bug of the Month
- Microscopic Biomass Analyses



Photo Gallery - Mystery Bug of the Month

Home | Contact | Search | Home | Services | Products | Contact | Troubleshooting | Training

Mystery Bug of The Month - From 2004 - 2017

What's New!

We now have a brand new "Higher Life Form videos" in our Training CD list. Check out our new Training Materials. We are also in the process of developing an "Online University" in order to meet the needs of our global customers that cannot travel to our public classes. Stay tuned for details and updates.

Free swimming ciliates

These photomicrographs were taken from a wastewater sample. Most of the objectives used were 100x, 400x and 1000x. You can see this free swimmer open what looks like a flap to capture food. Notice how when you go from low power to a higher magnification, more details jump out. Do not be afraid to go up to a higher magnification, even 1000x!

Biological Products:

Bioprecipitation products for applications in Papermills, Textiles, Chemical, Tanneries, Mastic Qualifiers, Animal Feedlot, Gas Powder Plant, Food and Beverage Dairy Products, Orange Juice factory, Wineries, Cookie factory, Vegetable processing plant, Meat packing, Surfactant, Restaurant, Aquaculture, Ornamental Ponds for algae control, C&D, Nursing homes, Military, Campgrounds, Universities, Regulatory agencies



Join Environmental Leverage® on a Journey into the Future with our next generation of Water & Wastewater Treatment solutions

The future begins now. . . .

Environmental Leverage® Inc. bringing you Tomorrow's Water Today !!!!

**Environmental Leverage® Inc.
1454 Louis Bork Drive
Batavia, IL 60510 USA**

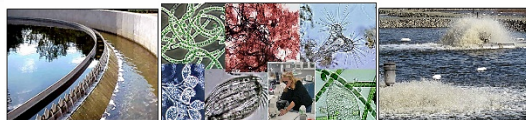
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www.WastewaterELearning.com



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