Environmental Leverage INC.
"Turning Liabilities into Leverage"
EnvironmentalLeverage.com
1454 Louis Bork Drive
Batavia, IL 60510
P: 630-906-9791

BIOLOGICAL WASTEWATER TREATMENT PRODUCTS


Environmental Leverage® Inc. carries a full line of biological products, made at our own, in house, manufacturing facility in Batavia, IL. Water Soluble Pouches, Powder, Liquid or Solids in various different containers and numerous sizes specifically designed to fit your needs. Each product is specifically formulated for each task. Ask for individual product bulletins for the product that meets your needs. Environmental Leverage helps you with product dosing & program requirements, through your application of our products.

MicroClear® 101…Ponds, Lakes or Rivers…Formulated for lagoons, equipment system tanks, Canals & ornamental ponds that often have problems with excess algae growth. Specifically formulated to reduce the nutrients feeding the algae.

MicroClear® 105…Anaerobic - Formulated to help increase biological activity and gas production in Anaerobic reactors.

MicroClear® 201 Wastewater Treatment - Biological product specifically formulated to be effective in enhancing municipal / general wastewater. Activated Sludge, Lagoons, Aeration basins, Fixed film systems RBC's, oxidation ditch & trickling filters. Reduces BOD & TSS.

MicroClear® 207…Waste Water Treatment & Sewer formulation FOG control…Improved biological product, specifically formulated and packaged for use in treatment plants, lift stations & sewers to help degrade grease build-up and stop blockage. Highly concentrated.

MicroSolv™ 202… Landfill Leachate Biological product specifically formulated to be effective in enhancing Industrial wastewater biology in Activated Sludge, lagoons, Aeration basins as well as numerous industrial treatment systems.

MicroClear® Algae…Ability to breakdown excess waste material in ponds and reduce the amount of available phosphorous causing a reduction in the algal population. Naturally occurring cultures efficiently digest pond bottom materials and reduce the organic matter in the water column leading to cleaner water and higher oxygen levels.

MicroSolv™ 600L…***Fastest acting nitrifying bacteria available!*** Reduces ammonia quickly! This product contains NitroSomonas sp. as well as Nitrobacter sp. Ships overnight, keep cold in refrigerator till use.

MicroBlock™ Solid Slow Release bio block products that are specifically formulated and packaged for use in lift stations, large restaurant grease traps, portable outhouse, collection tanks and upstream areas from wastewater systems.

Steel Mills MicroSolv™ 410…Highly improved biological product, specifically formulated & packaged for use in Steel mills to help with hard to degrade compounds. The bacteria are able to degrade rolling oils & are able to multiply & metabolize in the presence of certain heavy metals.

MicroClear® 205 Food w/High Grease formulation…Powdered product that was developed for use in the biological wastewater treatment of food based greases, fats and oils. This product helps digest the fats, oils & grease that can cause problems with foaming & filamentous bacteria.

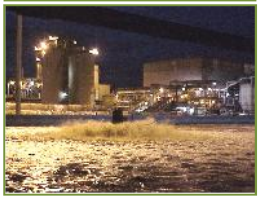
MicroClear® BODeliminator™ - Liquid formulation is specially formulated for direct addition to WWTPs, Lagoons, drains and grease traps to eliminate BOD and TSS complications. Used anywhere liquid distribution systems.

MicroClear® 207 - Lift Station / FOG Control Used for softening and degrading food type fat, oil and grease in lift stations but can also be used in lagoon systems & WWTP's.

MicroSolv™ 200 Industrial - Formulation for use in degrading many types of organics in Industrial Wastewater Applications. Specially formulated blend of microorganisms, micro/macronutrients, and surface tension suppressants/penetrants. These safe, naturally occurring bacteria are designed to handle difficult organics and hard to degrade chemicals found in industrial wastewater facilities.

MicroClear® BioNite™ - Odor & FOG Control - is a proprietary formulation of ingredients containing a nitrate-based Electron Acceptor for Control of Odors. Contains a specially formulated, proprietary blend of microorganisms, micro/macronutrients, alternate oxygen source and surface tension suppressants/penetrants. Because of the diversity of the microorganism systems incorporated into this product it is specifically developed for use *in situations where there is a particular high impact from odors as well as fats, oils and grease.* This product can be used in the treatment of liquid & solid organic waste. Bulk Only, No water soluble pouches on this product.

MicroClear® 206…High potency, bacteria-laden, powdered formulation for use in for Beverage, Fruit, Brewery & Winery applications. BOD removal and TSS reduction for a cleaner effluent / grey water reuse and land application.



MicroSolv™ 400 PetroChemical & Refinery…Improved biological product, specifically formulated and packaged for use in Refineries and Chemical plants to help with hard to degrade compounds. The bacteria are extremely resistant to toxic effects of the chemical pollutant fraction and are able to multiply and metabolize in the presence of certain heavy metals.

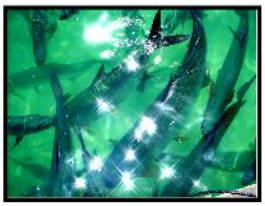
MicroSolv™ 118 Pulp and Paper mill…Improved biological product, specifically formulated & packaged for use in Pulp and Papermills to help with hard to degrade compounds. Because of the diversity of the microorganisms this product is excellent for pulp & paper wastewater applications where there are heavy influxes of cellulosic fibrous organic solids.

MicroClear® 501 Animal Feed Lots…New product specifically formulated and packaged for use in animal feed lots to help with odor control problems, reduce BOD and final effluent quality. Side benefits have been shown to increase animal health, increase weight gain, and reduce vet bills.

Golf Courses… MicroClear® 106 This product is specifically formulated and packaged for use in golf courses to help remove thatch, and help keep the grass greener and healthier.

MicroClear® M100 Micronutrient Supplement. Specifically formulated and packaged for use in biological wastewater treatment systems to obtain healthier biomass. It has been found to shorten the lag growth time and increase activity, as well as floc formation, BOD removal and TSS reduction. Use in equal amount to Bacteria.

MicroSolv™ L100-F…Specially formulated and packaged for direct addition to into wastewater treatment systems, wetwells & commercial buildings. A Special odor eliminator and fragrance is added to help kill odors nearly anywhere.



MicroClear® 108 Shrimp & Fish Farming…Feed additive and water treatment product formulated to promote the production of healthy shrimp and fish

MicroClear® 102…Saltwater Environments…High potency, bacteria-laden, powdered formulation for use in controlling algae through the competition of available nutrients and excess organics present in the water.

MicroClear® 35 S 1X…Liquid formulations for Car Washes Liquid solution of specially selected multi-cultured bacterial strain concentrate. These enzyme catalysts work synergistically for the fastest action available in a liquid digestant using natures' own cleaning agents.

MicroSolv™ L-Marine Liquid containing a synergized blend of biological organisms, all of which has been selectively chosen for accelerated degradation capabilities of organic compounds such as grease, fats, proteins, starch, sugars, and cellulose. MicroSolv L-Marine is specially formulated and packaged for direct addition to drains and small septic tanks. A special odor eliminator and fragrance is added to help kill odors nearly anywhere.

MicroSolv™ 200-T Industry Textiles High potency, bacteria-laden, powdered formulation

MicroSolv™420 Mining High potency, bacteria-laden, powdered formulation used in Mining applications

MicroSolv™ 203 Palm Oil High potency, bacteria-laden, powdered formulation used in Palm Oil plants

Ask us about MicroChill™
Contains a unique & ***newly patented*** proprietary blend of psychrophilic microorganisms that are naturally occurring bacteria with the ability to grow at 4°C, & lower.

MicroClear® FOGgone™ - Liquid product is a high strength formulation developed to degrade fats, oils and grease quickly. It can be used in restaurants, grease traps and drain fields where food based grease is a problem. Liftstation & Wetwell applications. Industry holding tanks to reduce BOD.

Custom formulations can be developed to fit your specific needs. Programs are always developed and customized to your situation.	Excel based Dosing Wizard included for all programs. Nutrient dosing wizard available	Programs include technical support, computer based training. Long term programs include periodic Wastewater Biomass Analyses of your system.

Orders faxed directly to 630-906-9792 or Call us for Pricing, Consultant & Sales 630-906-9791 ***or*** Elfenvironmental@aol.com
Long term programs include Training, Process Recommendations & Periodic Lab Analyses.

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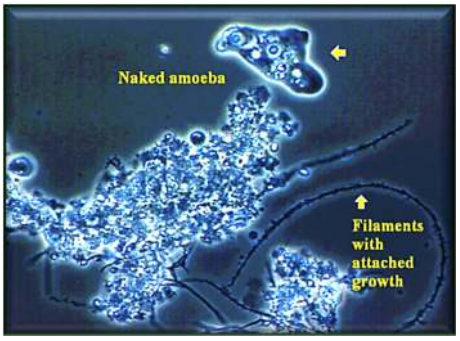
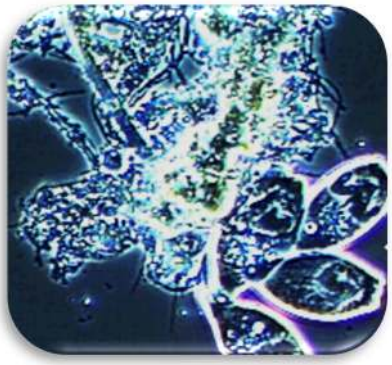
What exactly is going on in my system? How do I know what I am looking at?

Microscopic analyses of any biological system should be a critical component of any ongoing daily monitor and control programs. Lab sheets to correlate health of the system, any changes in floc structures, higher life forms, filamentous identification, polysaccharide coating of the bacteria and suspended solids can be determined by using a microscope and examining the biomass. This is a tool that can help not only show exactly what the health of the system is at a given time, but can also help predict which direction the plant is headed if used daily. It is a tool that can also help prevent critical upsets, or be used as an early warning. In the cases of filamentous problems, staining and identification of the filamentous can help with troubleshooting and help avoid costly chemical consumption.



Well, I do not know how to do that myself, what can I do? . . You can always send in a sample to our lab for an analysis.

Environmental Leverage Inc.
PLEASE CALL OR EMAIL FOR ADDRESS TO MAIL SAMPLE TO.
P: 630-906-9791
Elfenvironmental@aol.com

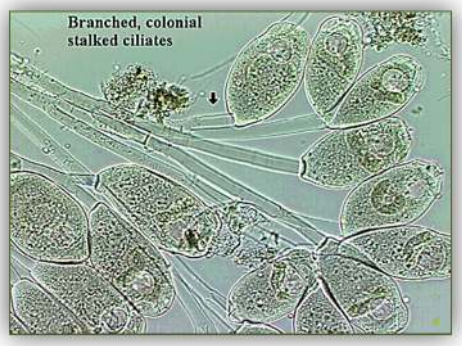


What would that wastewater biomass analysis consist of?
A wastewater biomass analyses would consist of a number of different things. A brief cover letter explaining the overall health of your system as observed through the sample. Any suggestions for troubleshooting that might be indicated by the observations noted. The report includes an analysis of the floc, the higher life forms and possible filamentous identifications if requested.

What is a wastewater biomass analysis? The Wastewater Biomass Analyses consists of two sheets, a Higher Life Form sheet and the Floc Characterization Sheet.

What is the Higher Life Form or "Indicator Organism" Sheet?
The Higher Life Forms Sheet shows the number and types of higher life forms found in the wastewater sample. It is usually performed under the microscope at 100x. An average of 10 fields is used to determine the number and types of life forms. The purpose of recording the number of higher life forms is to determine the health and age of the system. Typically the organisms represent only 5% of the biomass. These organisms are exactly what they are called-Indicator organisms. They are usually the last to come and the first to go in a system if it is not running properly. They usually correlate to the plant performance. They can indicate if the sludge is young, old or medium aged. They can sometimes indicate if there had been a recent slug of high BOD loading.

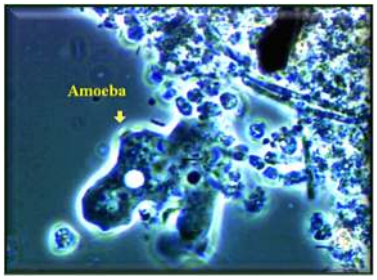
Some things that may be noted on your sheet:
1. Loss of all higher life forms can indicate a recent high BOD loading or toxic shock.
2. Many rotifers and nematodes usually indicate an older sludge age unless the system is a fixed film type.
3. Increase in amoeba and flagellates from normal numbers of higher life forms can indicate a change to a younger sludge (lower MLSS), high F/M ratios or BOD loading.
4. Suctorians are usually excellent indicators of good BOD removal.
5. Many stalked ciliates can be an indication of middle aged sludge.



6. Fungi or yeast can indicate low pH, fermentative conditions or severe phosphorous deficiency. Sometimes if present with high numbers of Thiothrix, it can indicate septic conditions in midstream clarifiers or process units that feed into the aeration section of the wastewater treatment plant.

7. Tetrads can indicate a nutrient deficiency, usually nitrogen. These cause high levels of TSS and require lots of polymer in final clarifier.

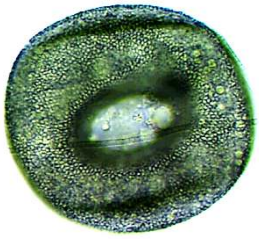
8. The presence of spirillum or spirochaetes usually indicates septicity. The presence of high organic acids or low DO is usually associated with septicity. Again, check your clarifier for holding solids too long.



9. Hyphomicrobium looks like "beans on a stalk". They are an indication that denitrification is going on or septicity is present.

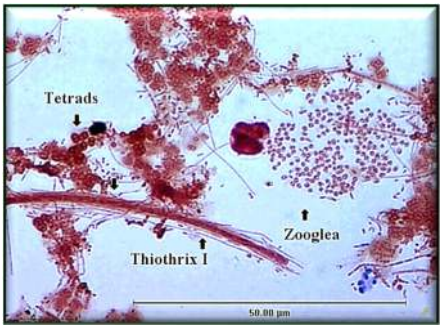
10. The presence of heavy metals can result in dispersed growth of floc structures. Check to see if Arcella are present.

11. Zooglea is extremely large, non-motile bacteria. The bacteria staining are usually Gram negative and Neisser negative. No sulfur granules are present. They can be "fingered or amorphous". Zooglea has the presence of excessive amounts of polysaccharide coating. Zooglea grows usually as "amorphous" clumps or "fingered" like a tree. They can indicate low pH. This bacteria is usually found in environments where there is a high F/M ratio where the soluble organic compounds are readily bio-degradable. Often present in selector systems in activated sludge. Also an indication of nutrient deficiency (N or P).



The Floc Characterization Sheet

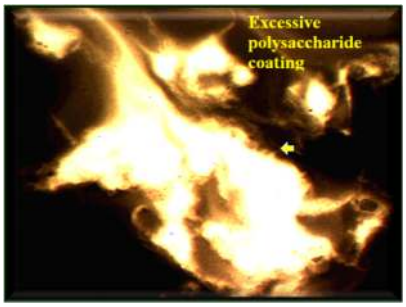
The Floc Characterization Sheet is used to identify outstanding characteristics of the floc structures found in the biomass, including size, morphology, filament abundance, etc.



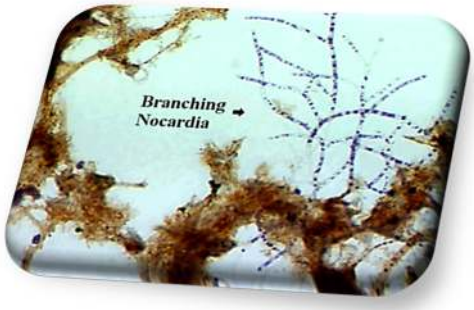
Floc Structures and Filaments

Because every wastewater has a different bacterial population as its biomass, every wastewater has a different floc structure. What is good floc structure in one wastewater may be poor floc structure in another wastewater. It can be difficult to tell good or poor structure by looking at a specimen through the microscope one time. Generally, the more that is known about a particular wastewater, the more comments can be made about its structure.

Nonetheless, some characteristics can be examined to determine relative floc condition. Generally, the more firm and compact a floc is, the better it will settle. The more lacy and dispersed a floc is, the less likely it will be to settle. The presence or absence of pin or straggler floc, which can be responsible for high suspended solids (TSS) in wastewater, is also an important observation when examining floc structure. The presence of many filamentous bacteria is also examined to determine if filamentous bulking is responsible for poor settling.



A microscopic evaluation is carried out by our Bioengineering Laboratory Specialists and is documented by photomicrographs. Depending on the type of sample, various staining techniques may be utilized to determine biopolymer levels and filament types. Microscopic examination is critical for filamentous identification, since filamentous organisms typically cannot be grown on agar media plates.



Filamentous Identification

Filaments can be internal or external and they can be free of the floc structures or found intertwined in the floc. Filaments present in the system do not always have to mean a problem. Some filaments are good if they form a strong backbone and add a rigid network to the floc. They help give the floc more structure and settle faster. Filaments are good BOD degraders also. They are only a problem when they become dominant. If filament abundance is in the abundant or excessive range, having a Filamentous Identification performed is recommended.

One reason to identify filaments is to determine the filaments characteristics and then determine the type present. If the type is found out, a root cause can usually be associated with a particular filament. If the cause is known, then a correction can be made to alleviate problems. Chlorination is only a quick fix. Without process changes, filaments will grow back after chlorination.

A Filamentous Worksheet may be included if necessary. When Gram and Neisser stains are performed for filamentous Identification, the types of filaments found present will be noted on the Floc Characterization sheet to the right of the filament section and will be noted on the Cover Sheet. A Filament Causes sheet, Filamentous Predominance sheet and corrective actions will be given and included also with the report. Individual sheets on the actual filaments present in the sample will be included with more information on that particular filament.

Start your way now to a cleaner, brighter effluent with fewer hassles in your waste treatment plant.

Ok, you convinced me. How do I go about sending in a sample?

Contact: Environmental Leverage Inc. Phone: 630-906-9791

PLEASE CALL OR EMAIL for ADDRESS TO MAIL SAMPLE TO.

Elfenvironmental@aol.com

What will I need to send in?

Send in 100 mls of MLSS in a small, plastic bottle with at least 2-3 inches of headspace in the bottle so that the bacteria have sufficient oxygen during transit and do not turn septic. Seal the bottle carefully. Send overnight by UPS, Fed ex- etc. If possible, pack with blue ice to keep refrigerated during warm weather. Do Not pack with ice cubes.
See our website or call for a Chain Of Command form to fill out, if necessary.
For Trickling filters or RBC's please collect supernatant with biomass that sloughs off.
For foam or scum samples, collect foam or scum off surface, place in plastic container, again leave air space in container.

~~What will the analyses contain~~?

The Standard Wastewater biomass Analyses will contain a cover letter with comments, recommendations and troubleshooting tips. Additional training materials may be included if conditions at the plant require it. A Higher life form sheet will be included as well as a floc structure analyses. A CD with photos and videos of your biomass is included. This analyses costs $275.00

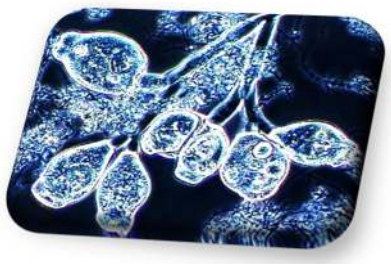
A Wastewater Biomass Analyses with Filamentous Identification including Gram and Neisser stains, as well as the above standard analyses costs $375.00

Custom formulations can be developed to fit your specific needs. Programs are always developed and customized to your situation.	Excel based dosing Wizard included for all programs. Nutrient dosing wizard available	Programs include technical support, computer based training. Long term programs include periodic Wastewater Biomass Analyses of your system.

Orders can be faxed directly to 630-906-9792 Ask for Pricing, Consultant & Sales 630-906-9791
Long term programs include training, process recommendations and periodic lab analyses.

Environmental Leverage® INC.

Turning Liabilities Into Leverage!™



At Environmental Leverage, our goal is to bring the latest technology to you in order to make your biological systems plant more efficient and successful. ***Teaching our customers to look for the right choice of treatment starts with knowing the basics.*** *Doing research is necessary, but you have to know what to look for. Developing a sound, successful program is very important.*

System Optimization

BOD Removal Optimization
TSS reduction
Solids Handling, Polymers
Beneficial Reuse
Biosolids Optimization
Bioaugmentation, Odor Control

Professional Guidance

Onsite system audits, training, consulting, lab analyses, microscopic and filamentous identification, product program development are just a few ways we can provide service to your company.

Environmental Liability

Permit violations can get costly & can require forced shutdowns.
We can help with Optimizing your treatment system & Achieving Total Compliance while still developing a sound economic program is our goal.

Defining Your Goal

Whether your goal is BOD removal, TSS reduction, Solids Handling, Environmental Compliance, Beneficial Reuse or Total Cost Optimization, we can help you set and achieve your goal.

Look to Environmental Leverage in the future for these services.
"Let Us Simplify Your Solution"


1-lb. Water Soluble Bio-Pouch

- ***Onsite Training***
- ***Consulting***
- ***Audits of WWTP***
- ***Lab Services***
- ***Training Materials***
- ***Bioaugmentation Products***
- ***Contract Labor***
- ***Beneficial Reuse***
- ***Remediation: Soil, Lagoons, rivers, etc.***


MicroBlock™
10 pound size

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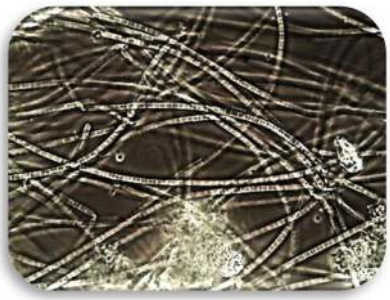
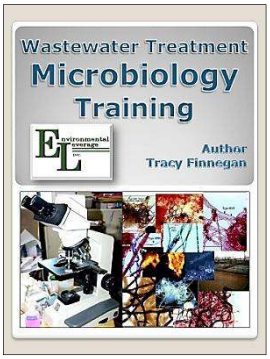
Waste Water Training Materials – *Author Tracy Finnegan*

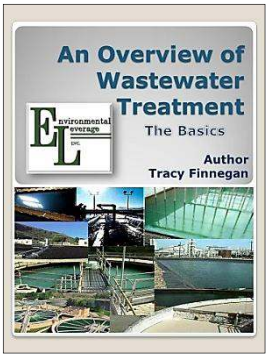
Higher Life forms CD - This CD has over 150 high resolution videos of the microorganisms observed under the microscope. It is one thing to read about it in a book, another to see examples and videos of actual organisms using different magnifications. 100x, 200x, 400x and 1000x illuminations are used. Bright field, dark, phase contrast, and inverted field give you a look at these organisms from all sizes and lighting. **1-CD $75.95**

Filamentous Bacteria Identification CD -This CD has over 1500 photos of floc structures, filaments and foaming observed under the microscope. Plant pictures with these conditions are also included. Again reading about it in a textbook is not the same as seeing examples and videos of actual filaments at different magnifications. 100x, 400x and 1000x illuminations are used. Bright field, dark, phase contrast, and inverted images give you a look at these organisms from all sizes and lighting. Gram, Neisser and India Ink stains as well as some Lactophenol Cotton Blue stains may be used on some photos. Tip sheet on how to take the best photos of your own sample is also included. Staining procedures, Filamentous Identification information, & individual filament sheets with information on the filaments, control and troubleshooting are also included in this valuable CD. **1-CD $75.95**





Wastewater Microbiology CD - for all intermediate engineers, operators or consultants and beginners. What is going on under the microscope, as well as how to take great photomicrographs is described. What are the reasons to take photomicrographs, what stains to use, what you are looking at, how to interpret what you see.
These are some of the topics covered in this in depth training course: Hundreds of photos and information on filaments & higher life forms are included. How they correlate to what is happening in the biological system is detailed. . . .It is amazing what one or two drops of water can tell you by looking under the microscope. Learn how to use this valuable information to run the plant more efficiently, be proactive and be effective! **1-CD $125.95**

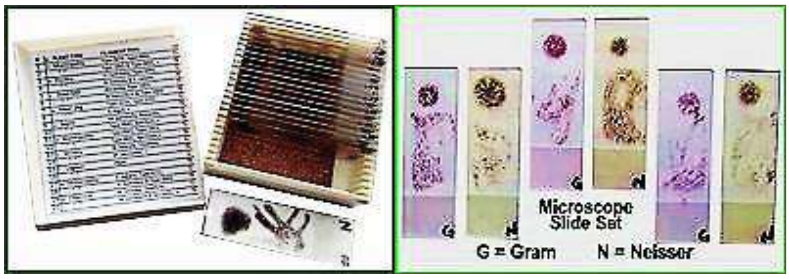


Wastewater Training CD – Invaluable Training materials on Secondary Biological Wastewater Treatment. Basic process operations, troubleshooting, microbiological basics, training, auditing, tips and hands on testing. This includes operator training that can help you study for your operator's license. A must for anyone dealing with wastewater
1-CD $125.95

The Best Deal
All 4 CD's above or Flash Drive
& all the Information.
Full Set of 4 only $275.00

Custom Training Material and Microscope Pre-Slides

Hands on / On-site Wastewater Training Classes available: Contact Us at Admin@EnvironmentalLeverage.com or www.WastewaterELearning.com



See page 3 for our MicroOrganisms Poster

These are slide samples from wastewater plants in many environments. You may find a sample from Municipalities, food plants or Industrial settings & occasionally a pond or lagoon. **All this in one set of slides.** Custom made allowing you to learn **identification of filaments**. Learn the filaments first hand with these samples.

20 slides = 10 sets. Gram and Neisser stain of each sample.

Each of the 10 sets is a sample from different WWTP's & FILAMENTS. --$99.95 … plus S&H

Learn The Filaments With This Slide Set.

MICROSCOPIC BACTERIAL SLIDE SET

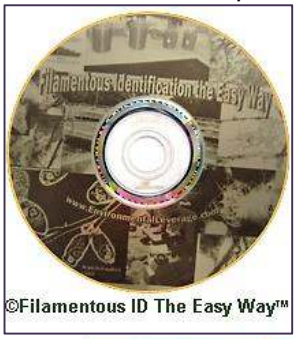
"Filamentous Identification The Easy Way"™

Advanced Filamentous Training / Learn the Filaments

When there are excessive levels of filaments, chlorination or peroxide are typically used to burn off these filaments. But these are costly bandaids. It is actually better to find out the cause and make the correct process change, slowly waste out the filaments, reseed with a commercial product if necessary. Otherwise, it could take 2-3 sludge ages or more for the filaments go away. A process change is always necessary, even if heavy chlorination is used. If the condition that caused the filaments to grow does not change, the filaments will always come back. Some filaments are good BOD degraders, they just cause too many solids handling costs, dewatering problems and/or bulking in the clarifier.
This training will assist you in identifying the Filaments in order to make the correct process change. Learn the filaments.

This Amazing training makes Identification of Filaments Easy & Simple. While combining plant processes & troubleshooting procedures.

$395.00

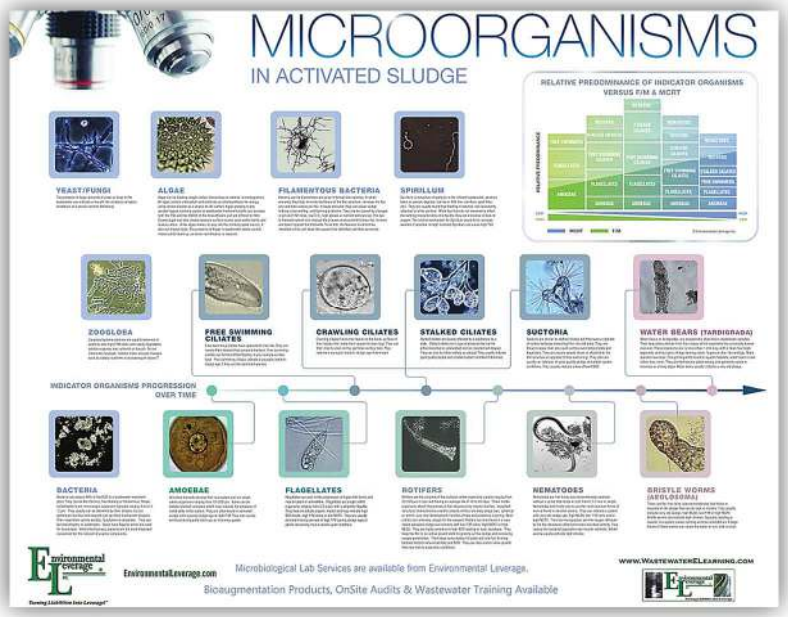


Filamentous Identification: New & Easy Methods. Using the Microscope - Tips & Procedures. Foaming problems, Bulking vs. Bridging, Filament & Floc characteristics with Troubleshooting & Process Optimization. This Training Material will give you the power to Improve your Treatment System.

MicroOrganisms Poster - 24 w x 20 high in inches.
Thick glossy photographic paper.

This poster has Microorganism photographs, taken through Environmental Leverage's MicroScope. On the poster below, each image has a paragraph that provides suggested troubleshooting advice for your system when you see these types of microorganisms.

$49.95 plus S&H



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