

August 2017

The Wastewater Insight



What is going on? Every day in the afternoon my clarifier burps?

What causes this? I usually wind up with high TSS in my final effluent when this happens.

Solids burping up in a clarifier can be due to numerous things. What is your DO in the clarifier? Check all the way down to the bottom. If you are running out of air, the bacteria will start to find an alternate oxygen source, usually nitrates or sulfates and then you can wind up with gassing. This can get trapped in the floc structures, especially if you have zooglea or filaments and pop up fine particles.

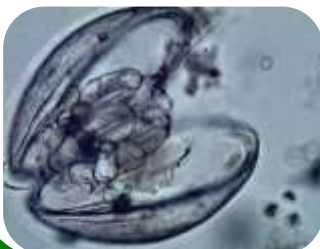
This does not mean you have old sludge. It means that regardless of young, medium or old, you are running out of air in the clarifier. You need to either move solids faster in the clarifier or increase your DO at the end of the aeration zone prior to the clarifier to give your bacteria more time and oxygen. Keep in mind, a clarifier is not a sludge holding tank. It is designed for two things only. A clarifier and a sludge thickener temporarily so that you can return a thick RAS and not hydraulically overload your system. Keep it moving!

Ashing and Gassing



What does your centerwell look like?

You should not be able to walk on your centerwell!



Nope it's not time for clamming on the seashore

We started this month out with a new **Mystery Bug of the month!**

Check out our website for more photos of our new mystery bug!!!!

EnvironmentalLeverage.com

It should not have foam, scum, floating solids. That automatically is a sign of septicity. What caused the foam though? Use your microscope. Go back upstream and fix the problem. If filaments - address the Critical 5 plus grease. If zooglea - check pH, high organic loading or N and P. If septicity - keep things moving.



Are you just holding too many solids?

Here is a clarifier with ten feet of solids vs three feet of solids.

Move it out of the clarifier faster.



Do you have plants growing in your clarifier?

Obviously a sign of solids build-up, minor clean-up maintenance is required.

This can easily cause septicity. Clean out the old solids.



Grease

If you see white chunks of grease floating on the surface of the clarifier, obviously you will have TSS as well as BOD issues. Grease should be broken down upstream in the aeration zone. Grease can have a very high BOD loading. Take .1 grams and test it. We had labs analyze it and the numbers ran from 1-4 million ppm BOD~



Overdosing polymer

Polymers should not have to be used in the clarifier, mainly they are needed for dewatering. If you need polymers in the clarifier, then you are using a band-aid. The real issue is upstream many times. Go see why you have floating solids. It is too young or old? Check the Critical 5 plus grease. Address the root cause



instead of using a band-aid. Organic polymers also add extra loading to the system. We have seen plants add more loading to their system with polymers than the influent BOD loading~

Algae and solids build-up

Algae mattes can cause solids to build up as well and increase TSS. Again, minor maintenance. Clean off all structures. They now make automatic weir washers. Use brushes, or sprayers, but keep things cleaned.



Support Structures Many times, solids will build up on support structures and these can easily be the cause of floating solids or burping. The inner layer turns anaerobic and eventually sloughs off just like a fixed film system. Brush down these support structures, side walls, weirs, etc. anywhere that bacteria can build up. Simple maintenance can help solve this cause of floating solids. Go watch your clarifier for a few minutes. Check where you see gassing or solids burping up. Is it right after the rake moves by? This can be the entire bed has insufficient DO and sooner or later all will burp. Is it just in the centerwell? Or near the sidewalls or support structures?



Some clarifiers have small center wells, some very wide and deep. The larger the centerwell, the more surface area for bacteria to attach to if you have not totally degraded all the BOD prior to entering the clarifier. Remember, it is not a sterile environment. The bacteria are still growing and alive in your clarifier. Keep them in there only long enough to get clear water and thicker sludge!!





Zooglea If you have floating chunks of jello, this is probably zooglea, go check pH, high organic loading or N and P. Clarifiers are not designed to fix these problems. This must be done upstream in the aeration basin or whatever biological system you have.

You should not have foaming in the center well. Foam can thicken and harden and cause septicity as well as the growth of filaments. Duckweed growing in the center well is a sign that there is still too much BOD left.



Short circuiting or hydraulic overload can also cause TSS issues.



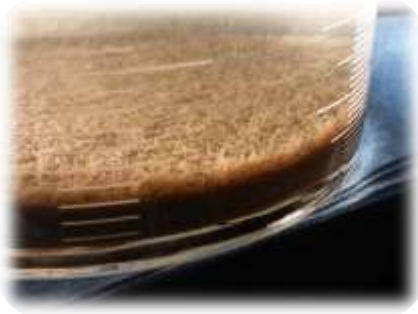
Do you have red moving waves of TSS in your clarifier? This is usually a sign of Daphnia. Again though, they usually need somewhere that solids have built up. Check centerwells, sidewalls, even sand filters. Minor maintenance will make these disappear.



Run a settleometer, not just for 30 minutes to determine the amount of MLSS, but for the same amount of time as your clarifier design. If you have a 2 or 3 hour holding time in your clarifier run the settleometer for the same amount of time.

Check to see how long it takes for gas bubbles to occur. How long for slight ashing and how long for the entire bed to pop. If it does it too soon in the settleometer, it will easily do it in the clarifier. If instead you are fine in the settleometer, but not in the clarifier, then either you are holding solids too long, or may even have some mechanical issues.





Are there moving worms that you can visually see in the settleometer? Again, this usually means solids build-up somewhere. Go do some detective work and minor cleaning and maintenance.



Solids, debris, rags, garbage and leaves can all impact a clarifier. Check your screening upstream.



Automation can save time, money and improve TSS removal. Make sure to optimize this critical piece of your wastewater treatment system. You are holding a large amount of your biomass here. Holding them too long can impact not only your BOD and TSS efficiency, but nitrification as well if you stress the bacteria out. Contact Environmental Leverage if you need help troubleshooting your system.

2017 Class Schedule

We still have some spots open in our upcoming hands-on Training classes

New locations to make it easier to travel to. If you cannot travel, we also now have more courses on our ELearning. These courses have been pre-approved for CEU credits.

Some of these courses have limited sizes, so reserve your spot now.

Please check our website or email us for a registration form. Please let us know if you would like to host a class in your area.

August

Alaska- Anchorage

August 9th & 10th, Wed. & Thurs., 2017

8am - 4:30pm both days

2 Day Biological Wastewater Treatment Seminar

AWWU Eagle River Wastewater Plant

15524 Artillery Road

Eagle River, AK 99577 USA

September

Iowa- Quad Cities

Sept. 13th & 14th, Wed. & Thurs., 2017

8am - 4:30pm both days

2 Day Biological Wastewater Treatment Seminar

QC Analytical Services Training Center

1798 Iowa Drive

LeClaire, Iowa 52753 USA

New Training development- Check out our new wastewater ELearning classroom.

Now you can take classes from the comfort of your own office. Online classes save money, travel time and expenses as well as the fact that you can learn at your own pace. You can go ahead and set up a free account and take the few virtual demo. Then you are ready to choose your classes from our list currently or as the new ones come up and go online. We already rolled out the first set of training classes. Stay tuned for more information on upcoming classes. . . .

We will continually be adding new courses to the ELearning. Let us know if you have a special topic you would like to see covered.



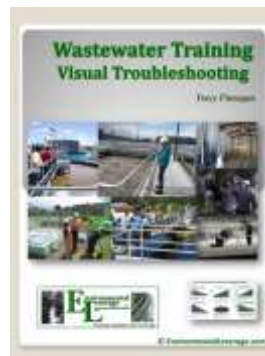
<https://www.wastewaterelearning.com/elearning/index.php>

These courses have been pre-approved for Wastewater CEU's in Alaska, California, Connecticut, Idaho, Indiana, Maine, Massachusetts, Nevada, New York, North Carolina, Tennessee, Vermont, Washington 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 and more to come. Now approved in Canada for Nova Scotia and Saskatchewan.

Coming soon, Nitrification/Denitrification and Clarifier

Filamentous ID the Easy Way in the Fall



Did you guess what this was? This is a rotifer. Rotifers usually mean an older sludge.

[July 2017- Rotifer](#)

Check out our website for more photos of our new mystery bug!!!!

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