

# Down the Pipeline

“As long as it flows, we will treat it!”

## IMPACTS OF NEW AMMONIA CRITERIA FOR FRESH WATER

DEQ's triennial review of surface water quality standards is underway. The proposed, more stringent fresh-water ammonia criteria will be very challenging for municipal treatment plants, as well as for industrial users with discharge permits. Since the Bedford WWTP discharges into a small stream it will be potentially hard hit by these standards.

DEQ has determined that the affected mussels, which ammonia is lethal for, exist in most Virginia surface waters.

There will be associated costs for any treatment plant that currently does not have current ammonia, total nitrogen, or TKN limits. For the Bedford plant where there is an existing am-

monia limit, it probably means a lower limit by about 1/3. This may require additional treatment units, chemicals, or upgrading of existing equipment. The trickle down effect will reach all permitted industrial users within the Bedford WWTP's collection system.

Hopefully this new criteria will remain under internal review in the office of the Secretary of Natural Resources for the coming year as the cumulative expenses of meeting this new criteria are studied more closely.



## Dental Amalgam Effluent Guidelines

On October 22 EPA published its proposed guidelines for regulating dental amalgam. This proposed rule would require pretreatment by dentist offices to reduce mercury contributions to publically owned treatment plants. This rule would directly regulate 120,000

American dentists as Categorical Industrial Users under the Clean Water Act. It will affect the Town of Bedford for it has an approved pretreatment program. This rule will also help regulate the discharge of silver that is found in dental amalgam.

Dentists that already have amalgam separators installed at their practices will most likely be required to document when they clean the filters and dispose of trapped waste. This proposed rule may very well be modified during its public comment period which ends on February 21, 2015

### Special points of interest:

- > New ammonia criteria Impacts
- > Dental amalgam separators
- > Wastewater treatment reclaims water for reuse
- > Get organized for the next Audit!

### Inside this issue:

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## Freshwater Numeric Nutrient Criteria

Here are some updates from Virginia and elsewhere. Numeric nutrient criteria are likely to apply to freshwater streams across the state and usher in a Chesapeake Bay-style upgrade program statewide.

DEQ posed some questions to EPA concerning the Screening Approach concept as a viable acceptable framework for nutrient criteria development. EPA's response was a qualified "yes."

Due to other priorities, further work by the academic advisory committee upon this issue is being put off for another year. DEQ's Nutrient Criteria Work Plan, being seriously outdated, will be substantially revised in coming months.

### MARYLAND:

Currently this state has no impending proposal to adopt freshwater nutrient criteria. Research on the Potomac River Basin did not result in defensible numeric criteria.

Maryland over the years has been busy developing local or regional nitrogen and phosphorus TMDLs to address nutrient impairments on a smaller scale. Without clear criteria individual TMDLs can be developed using whatever approach

appears to be reasonable at the time even if the approach is questionable.

It is also possible that implementation of the TMDL could become burdensome and/or unattainable for impacted point sources.

In 2012 Maryland wrote a number of phosphorus TMDLs for local streams and one reservoir. All were created in the absence of adopted numeric nutrient criteria. Recently EPA approved a significant nutrient TMDL for Assawoman, Newport, Isle of Wight, Sinepuxent, and Chincoteague.

The phosphorus TMDLs on several streams forced total phosphorus reductions that varied from 4-46%. All of these loadings were based upon the use of land use classifications, which came from the Chesapeake Bay Plan. For all of these calculations it was vitally important for the state to properly select reference streams.

In light of what has been going on in Maryland and here in Virginia, the Virginia Association of Municipal Wastewater Agencies' advice to all wastewater treatment plants is to carefully monitor TMDLs that could seriously impact their dis-

charge waterbodies.

What does this mean to the Bedford community? Whatever TMDL that DEQ develops for the Little Otter River, such as PCBs, can have a serious impact upon all industrial users within the Bedford collection system. When DEQ places specific limits in that treatment plant's discharge permit those limits generally force the pretreatment program to create local limits that will protect the plant from becoming overloaded and in violation of its permit.

Examples of this are to be found with lead, zinc, BOD, TSS, and ammonia. The plant's design also causes local limits to be created, such as for COD.

Bedford will be having a phosphorus limit when it receives its next new permit in 2018. Being a nutrient that causes algae to grow, it will be regulated more stringently in the future. It will most likely cause the creation of a new local limit for all industrial users with a discharge permit.



**"It was vitally important for the state to properly select reference streams."**



## BIOSOLIDS AND LAND MANAGEMENT DEVELOPMENTS

During the 2015 General Assembly session biosolids will be a hot topic. The session convenes on January 14, 2015. Here is a brief overview of the bills that have already been pre-filed for consideration this year:

- Biosolids Study Resolution (HJ 506, HJ 516).** This will call for a one-year DEQ-led study of the biosolids and industrial sludge as a follow up to the 2008 Expert Panel Study. It directs DEQ "to study the long-term effects of the storage and land application of industrial wastes and sewage sludge on public health, residential wells, and surface and ground water." Virginia Department of Health, Virginia Tech's Department of Crop and Soil Environmental Sciences, and VIMS are directed to assist DEQ.
- Industrial Sludge Bills (HB 1363, HB 1364, HB 1381).** This is tied in with all of the media coverage of Synagro's recent application for paper and food industry wastes. Various, these bills would ban land application of industrial sludge in the counties of Hanover, King William, and New Kent. Consideration will be given any locality to adopt an ordinance to require testing and monitoring of industrial waste applied within its borders. HB 1363 is troubling in that it would erode uniform statewide regulation in favor of local bans, which have historically been a problem.
- In addition, it is expected that the Governor's Budget Bill will propose an Enhanced Quality fee (cake only) of \$3.75/dry ton, effective October 1, 2015. This is to cover the anticipated shortfall in revenues as more municipalities move away from Class B biosolids to Enhanced Quality. Currently there is a fee for only Class B biosolids.
- The state water control board approved Synagro's VPA permit application to continue to land apply industrial sludge from Tysons Foods poultry plant, RockTenn paper mill, and Smithfield Foods pork processing plant. Industrial sludge and biosolids are not the same material, but the public perception frequently is that they are the same material.
- DEQ has explained that land application of industrial residuals must be performed pursuant to the VPA regulations, which cover animal manures, biosolids, industrial wastewater and industrial residuals. DEQ also adds specific requirements to each permit depending on the underlying material.
- The State Board is interested in potentially monitoring and regulating endocrine disruptors. DEQ pointed out that since EPA has not yet promulgated federal rules or regulations for endocrine disruptors the state has opted to not regulate them at this time. DEQ staff pointed out that whole effluent toxicity monitoring requirements give them a general view of overall toxicity, which includes emerging contaminants like endocrine disruptors. The State Board did approve of Synagro's new permit in the end.



Biosolids are not as scary as depicted in some of our pop culture movies!



## What is Wastewater Treatment? Part One

Many people ask this question. Many people have differing concepts of what it is. The vast majority of people simply do not know what goes on inside of a sewage plant. It must stink to high heaven! It must be gross working there!



solved air, we keep the dirty water continually mixing so that all of it comes into contact with oxygen and nothing

picture, we use bacteria (bugs) to eat up all of the pollution in the water. They live happily in the aeration basins (activated sludge) and later on in the secondary clarification tanks. They must be kept happy by providing them sufficient food and oxygen for them to grow and reproduce.



Water goes from dirty to clean!



The fact is, water enters a plant being very polluted and leaves it being very clean. It is a reclamation plant in truth, for it reclaims the polluted water so that it can be reused by someone else downstream from the plant.

The fact is that wastewater in a treatment plant has a musty odor (like garden loam after a rain) when operations are running in a normal fashion. Operators can tell by their sense of smell when there is a problem with process equipment by the change in odor.

The Bedford WWTP uses a process known as activated sludge to remove the vast majority of pollutants from the water that enters its process tanks. Using dis-



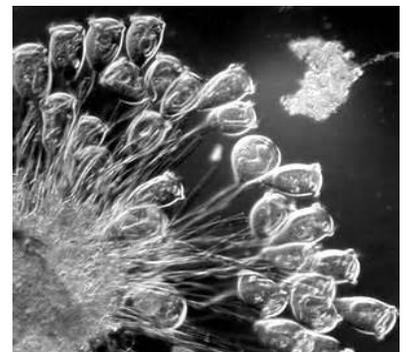
can settle out to the bottom of the tanks. The air is blown through pipes that have many, many discs attached to them on the bottom of each tank. This configuration imparts a rolling motion to the water, forcing it up and then out towards the edges of the tank where it plunges down to the bottom again.



This process keeps the dirty water from becoming septic and causing a horrid smell. As you can see in the above

The types of microorganisms that we want eating up the pollutants in the water can be seen at the right. These are three of the so-called "indicator organisms" that when seen in a water sample under a microscope inform us that the treatment process is proceeding quite well. We cater to the needs of these organisms, optimizing their living conditions so that they will eat, eat, eat!

Over time we do end up with more and more biosolids in the plant. To handle this inherent problem, we remove a calculated amount of pounds of organisms each day and send them to our aerated sludge digester for further reduction in volume.





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## Industrial Pretreatment Records Audits

As we have arrived at the very end of the pretreatment year, I just wanted to take a little space, and time, to help those permittees



who are required to have records audits. By beginning

in January each year to remember to properly file away all reports and correspondence concerning your wastewater discharge you will avoid your desk looking like at left. This includes all



parts of any lab analysis

resulting from sample activity. Remember to include chain of custody forms.

Establishing clear filing methods simplifies your work, as well as mine. Always remember to keep a folder in the current year's filing section for key items. These are your current permit, original permit application, renewal application, and authorization statement. If required, include calibration documentation..



**Avoid scenes like this! Start now! Become better organized.**