The Sunshine State

Pretreatment Communicator

Volume 2 Issue 4 April 1997

THE COMMUNICATOR...

"The Communicator" is a quarterly publication of the Pretreatment Program for the Florida Department of Environmental Protection. The Communicator encourages participation from its readership and any other individuals interested in pretreatment in the State of Florida. Individuals wishing to contribute letters, information, or articles should submit them to:

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Effect of Potable Water Corrosion Control on Wastewater Quality

by James Thurrott
City of Daytona Beach

The City of Daytona Beach has had an approved Industrial Pretreatment Program for the past 10 years. During that time, the City has kept a watchful eye on several metal

(Please see **Corrosion, page 2**)

Pretreatment Sampling Inspections Are They Necessary?

by Janet DeBiasio
City of St. Petersburg

Listen carefully. I will tell you a story. Once upon a time, a multi-million dollar outfit known as Mega-Krome Electroplating, Inc., received a pretreatment permit from the Layzeeville POTW instructing the company to analyze its wastewater (it discharged 37,946 liters per day) once every six months for the 40 CFR 413 federal categorical standards for cyanide, lead, cadmium and TTO. The permit also stated that the POTW would sample and inspect the company's wastewater once per year. Was this legal? Look it up if you don't believe me. All goes well until one Christmas day when the POTW received an influent containing 4,000 mg/l hexavalent chromium. Talk about melt down…..at night you could see the glow for miles! A few "early retirements" later, serious policy revision occurred concerning sampling frequency for both SIUs and the pretreatment program. Now, all is happy in Lazeeville. The electroplater sampled once per day for everything under the sun and the POTW sampled once per week.

(Please see **Sampling, page 3**)

Regulatory Updates:

- EPA is still expected to publish a final rule to streamline the proceedures for approving modifications to pretreatment programs. Under the rule proposed on July 30, 1996, only modifications that relax legal authority or local limits will be considered to be substantial modifications. This and other proposed changes would reduce the number of required public notices during the formal approval process. A final rule is expected later this year.
- EPA is also still working to issue a proposed rule to streamline the requirements for implementing a pretreatment program. The proposed rule (scheduled for December 1997) is expected to address a number of streamlining issues including exclusions for smaller facilities with insignificant pollutant contributions, inspection and sampling requirements, reporting flexibility, as well as clarification of existing requirements. The proposed rule is also expected to address the September 30, 1996 WEF-AMSA report. You may contact Jeff Smith at (202) 260-5586 to provide comments or for more information.
- EPA held a public meeting on effluent guidelines for the Landfills Category on April 21. A summary of the material provided at this meeting indicates that EPA plans to propose pretreatment standards for effluent from hazardous landfills (RCRA Subtitle C). However, EPA does NOT plan to propose pretreatment standards for discharges to POTWs from municipal or industrial solid waste landfills (RCRA Subtitle D). EPA's data review did not indicate persistent problems for POTWs from leachate from Subtitle D landfills; therefore, these will likely not become CIUs according to the rule to be proposed later this year.

Corrosion

(Continued from page 1)

processors to ensure that discharges from these facilities would not impact operation of its wastewater treatment plants or the quality of its wastewater effluent. Lab analyses of samples collected from the industrial contributors have shown consistent compliance with discharge limitations; however, copper occasionally has been present in high enough concentrations in the wastewater plant effluents to be of concern. Although the obvious potential source of copper would seem to be the metal processors that discharge to the collection system, in this case a significant contributor was a less obvious source!

When the Federal "Lead/Copper Rule" for drinking water systems became effective in 1992, followed by Florida's version in Chapter 62-551, F.A.C., some Florida utilities found that so-called "first draw" samples taken per this rule exceeded the action levels for lead and copper. Surprisingly, many of these utilities treated their waters with the lime-softening process - a process that was felt to produce a very stable water and one unlikely to cause corrosion problems.

Daytona Beach may have been the first water system in the state to use hydrated lime to soften well water. Records indicate that the City has treated water in this manner since 1908. Final treated water pH has always been adjusted to somewhere slightly above the stability point for this system and the assumption had been made that this was an effective corrosion control method.

Typical indicators of corrosion problems such as high iron, copper, or lead concentrations in routine distribution system samples had not been experienced in this system. It came as a surprise that sampling of the first flush of water from kitchen faucets of homes identified as having the greatest potential for lead and copper corrosion (Tier 1) revealed high lead concentrations.

Further investigation indicated that

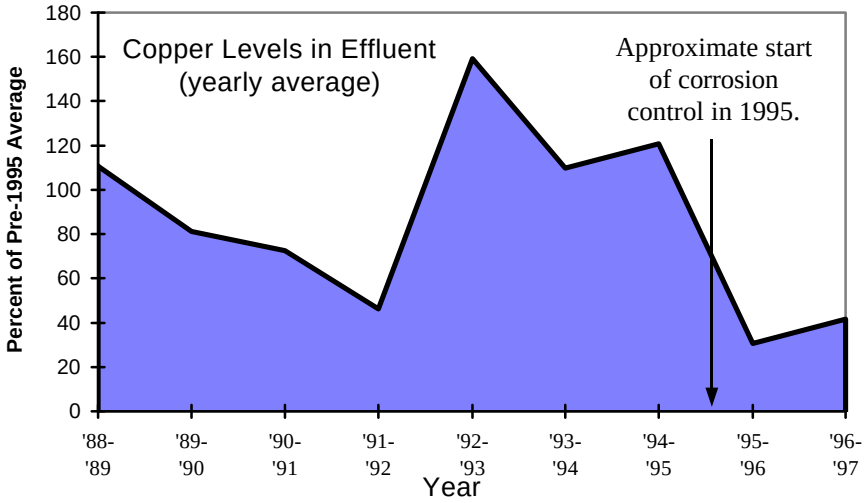

Figure 1. Yearly copper levels in wastewater plant effluent. A corrosion control program for potable water in the City of Daytona Beach was implementated in the first quarter of 1995.

this lead was not present in water entering the distribution system and, in fact, was leaching from brass fixtures within customers' homes. This triggered a series of corrosion-control studies designed to minimize the release of lead in the potable water. Following the conclusion of these tests, corrosion control in the form of a polyphosphate addition to the water supply was implemented in early 1995. Sampling since that time has shown the phosphate to be very effective - consistently keeping first-draw lead levels below "lead/ copper rule" standards.

An unexpected benefit of this corrosion control program was a dramatic (>70%) reduction in first-draw copper levels in the potable water. Copper concentrations in water samples had always been well below action levels set in drinking water regulations, but significant reductions were immediately noted as a result of the phosphate addition. Test results of the City's wastewater effluent suggest that the potable water system was not the only one to benefit from the phosphate feed.

Soon after beginning corrosion control in 1995, copper levels in the wastewater effluent dropped to approximately 40-50% of the pre-1995 values. It is difficult to tell from the first graph (Figure 1) whether this is due to the corrosion control program or simply to a drop in relatively erratic copper levels. However, the second graph (Figure 2), shows a surprising consistency in copper results in effluent samples collected after the program began. We have apparently identified another source of copper to the sanitary sewer system and, to borrow a phrase from Walt Kelly's Pogo - "We have met the enemy and they is us!" ☻

Sampling

(Continued from page 1)

Unfortunately, the day arrived when the Big K, R, (as the company was affectionately known) filed for bankruptcy and 450 more people joined the unemployment line.

Where is the moral here. Surely, both sampling frequency and sample integrity go hand in hand to determine what is "adequate surveillance" for each SIU. Sampling frequencies, in excess of the minimum, must be determined for any SIU, based on the judgment and experience of the pretreatment coordinator. Sample integrity, however, is something that should be required and monitored by the pretreatment program. We all know that POTW sampling methods are above reproach and totally comply with all required regulations…..under all circumstances……but how about the "self monitoring" sampling performed by the industries or their contract laboratories? Hopefully we have already gotten over the problems encountered when the company night watchman collected samples in a conveniently rinsed "baby food" jar which was sent to the "lab" three weeks later. Let's hope none of us are still at this stage in the process.

In most programs, self monitoring reports are received from the SIUs at the frequency required by their individual permits. These reports contain a certification statement, signed by a company representative indicating that they may go to jail if the information is falsified. The analytical data is signed by a quality control officer from a certified laboratory verifying that all procedures were met in collecting the sample and producing quality analytical results.

Ever wonder how they got all that information and if it was accurate? We did. Besides, our field crew is always looking for a better way to sample so why not see how the experts in private industry do it?

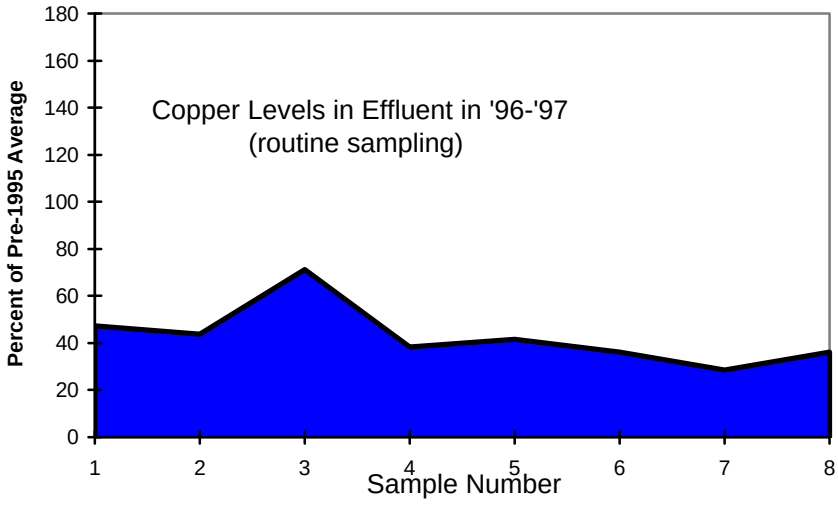

Figure 2. 1996-1997 copper levels in wastewater plant effluent following implementation of a corrosion control program for potable water in the City of Daytona Beach in the first quarter of 1995.

We sent letters to the permittees asking them when their next "self monitoring sampling procedure" was scheduled and informing them that members of the pretreatment staff would be present in purely an observational capacity. We showed up at the scheduled time, much to the consternation of the sampling technician. Here are some of the problem areas we encountered, which can be summarized into the following three categories: permit requirements, sampling protocol, and analytical procedures:

Permit requirements not followed:

- Composite sampler was set for time instead of flow proportional.
- The sampling event was shorter than the "entire work day," e.g., 6 hours instead of 16 or 24 hours.
- The composite was made up of 4 grabs not 12 as specified in permit.
- Sampled for TOC's instead of TTO's.

Sampling protocol not followed:

- The composite sampler base was not filled with ice to preserve the sample.
- The tubing and sample jug in the automatic sampler were stained and dirty.
- The sample jug was an old milk jug made out of HDPE, not polypropylene.
- Composite grab samples were not measured to provide equal volumes at regular intervals.
- Composite sample was not mixed before pouring into sample containers.

Analytical procedures not followed:

- The technician topped the sample bottles off with DI water to eliminate head space.
- pH was collected as a composite instead of a grab.
- pH was analyzed in the lab and not in the field, exceeding the holding time.
- Oil & grease was collected in an intermediate container.
- Organic samples were not prescreened for chlorine and/or dechlorinated with sodium thio sulfate.
- Trip blanks for VOC samples were not used.
- Collecting VOC's with tygon tubing instead of Teflon tubing.
- Split samples with the City laboratory revealed that the test for silver was analyzed incorrectly resulting in below detectable results and missed violations.

During the observation procedure, there were lots of questions from the field technicians such as, "Is this right? No one ever told us how. How am I supposed to do it? I've only been doing this job for a week. I have forty more samples to collect today!" My reply was, "Hey! I'm the inspector, I'm just here to observe and take notes. You're the one who is supposed to know what to do."

The reality is, we want a representative sample that best reflects the waste stream of the industrial user and consistency in sample preparation. We gave them guidance and ideas. We walked them through DEP's "Standard Operating Procedures for Laboratory Operations and Sample Collection Activities," (SOP). We went back for a second inspection to see if they learned from their mistakes. The more serious offenses were remedied with a requirement for a sampling plan pending approval by the Industrial Pretreatment Coordinator.

And what did we learn? We discovered a better pH paper to use for checking the preservatives in the samples for metals and COD's are less than 2 or greater than 12 for cyanides. Stainless steel beakers used for collecting VOC's are easier to clean and don't break like the glass ones we have been using. Oil & Grease samples can be preserved with hydrochloric acid or sulfuric acid.

So, what can regulators do to ensure samples are collected properly, short of observing every sampling event? First, if a certified lab is collecting the sample, read their QA/QC manual on what their approved procedures require. If the written procedure is not followed then require resampling. If the permittee is sampling, require a sampling plan to be written and submitted for your approval. If permit requirements are not met, require resampling and show them the permit. If that doesn't change their method, then send a warning letter detailing the deficiencies in the sampling procedure and reject the self monitoring report.

This article was based on "real world observations" and is not intended to decry or defame private laboratories in any way. We often contract work out to private laboratories who operate with extremely high standards. Based on the above, however, it is a very good idea to periodically plan on visiting every permittee during a sampling event. Not all labs or permittes had problems but there were enough discrepancies to warrant this policy. Whenever a permittee changes laboratories, revisit the sample site with the new field tech. This not only establishes a rapport but also ensures the

control authority that the sampling is conducted in a manor consistent with DEP's SOP and the permit. We found the field technicians to be very cooperative and interested in learning to sample correctly. Mostly the problems could be corrected with education and open communication. Let's not have another case of the Big K, R, in Florida. ☻

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Development of Technically Defensible Local Limits - The Meat!

by John Coates

In the previous issue of the **Communicator**, we discussed "the basics" and focused on the rules and information sources which are used for pass through, interference, and residuals criteria when calculating local limits. Understanding these criteria are essential because they form the foundation of most local limit calculations.

Now that we have identified the criteria, can we jump in and start the calculations? Well, not yet. First, we need to gather all of the necessary information about our pollutants and domestic wastewater facility (WWF). This information will form an integral part of our local limit developent and is essentially the "meat" that will feed the "local limit beast!"

The information we need, collectively referred to as "supporting information," includes all the things necessary to describe pollutant loadings and limitations that will apply to our WWF. Obviously, the types of supporting information varies depending on the assumptions and the nature of your WWF. However, there is a minimum amount of "supporting information" that should be part of your local limit calculations. (And since we are what we eat... Your local limits will only be as good as the meat you feed into the process!)

Supporting information for local limit calculations can be organized into the following two major groups as follows:

General WWF Information

- Identify the average headworks flow and the total industrial user contribution to each WWF.
- Clearly identify the biological treatment processes and corresponding flow for each WWF.
- Identify the disposal mechanisms for effluent and sludge.
- Determine the amount of residuals being generated in terms of flow and a corresponding percent solids.

Pollutant Specific Information

- List the pollutants of concern.
- Identify specific removal rates for each pollutant.
- Obtain a representative headworks and nonindustrial (domestic) concentration for each pollutant.
- Select a justifiable safety factor for each pollutant.

Overall, EPA's local limit guidance document provides some very good discussions on the types of information and means that should be used to gather supporting information. A copy of this document (G*uidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program, EPA 833/B-202-87*) should be reviewed by individuals who are developing local limits.

While there are a number of approaches to gathering the above information during your local limit evaluation, there are some general considerations that may help each of us obtain more useful information. Of course, no matter how or where you obtain your information, careful documentation should be part of the local limit

(Please see **The Meat, page 7**)

Joey gets a few phone calls...
After the spell checker accidentally replaced "monthly" with "hourly" monitoring in the last thirty permits!

The Coordinator's Desk:

Growing Pains

by Robert Heilman, P.E.

As this issue of the *Communicator* is being printed, we are preparing the schedule for our third round of pretreatment compliance inspections and audits. It's hard to believe that we are already going into our third year of program delegation.

We have seen many significant changes to the pretreatment programs in Florida since the Department took delegation. I am sure that, for some, the transition from EPA to DEP oversight was not painless. Our inspections and audits identified deficiencies in a number of programs. Fortunately, most of the deficiencies were minor. Many resulted in sewer use ordinance and local limit revisions. A few involved enforcement response plan modifications. Overall, we believe program implementation improved and legal authority was strengthened.

Since delegation we have been tracking the development of 20 pending pretreatment programs. I am happy to say that we have our first approved new pretreatment program since DEP took oversight in May, 1995. Congratulations to **Palm Beach County** for receiving DEP approval of its pretreatment program. We also have several other programs very close to approval. Soon, I expect we will have 50 approved and active pretreatment programs in Florida.

In that same regard, we are in the process of working with EPA on what's known as a Performance Partnership Agreement (PPA). Yes, that's right, we will have a PPA with EPA! (love those acronyms). Anyway, as part of the PPA we are proposing ways to streamline our obligations to EPA under the existing Memorandum of Agreement and other operating agreements. We are proposing to reduce our reporting requirements and even requested a reduction in our inspection coverage. If this is approved by EPA, we would not necessarily be "visiting" every approved pretreatment program each year. The plan is to develop criteria that would establish which programs would need to inspected on an annual basis. Obviously, we would be targeting those programs with compliance issues first. Under the PPA, it is possible that a well implemented pretreatment program, with no SIUs in SNC or other major deficiencies, may not be inspected for several years. The downside of this is that the approved pretreatment programs may have to increase reporting to the Department to ensure that there is no reduction in environmental protection. The details of all this have a long way to go. I plan to keep you apprised as this proposal progresses.

Shifting gears a little, I would like to comment on the February Pretreatment Coordinator's Workshop held in Lakeland. First, a big "thank you" to our host, Rick Ruede. The facility was great and the food was excellent. Secondly, the attendance at this first-of-kind workshop was fantastic! I appreciate the support you all showed for Gary, John, and me by being present in Lakeland. We were not sure how the "DEP workshop" idea would work out. From the feedback I received, it appears that all those who attended got something out the workshop (besides a couple of donuts or bagels). Thanks again for having us and we look forward to doing it again next year.

On a final note, I wanted to let you know I attended a State Pretreatment Coordinator's Workshop, for Region IV states, in Kentucky in April. The workshop provided an excellent time to exchange information and ideas about how the states should oversee the local pretreatment programs. Some interesting aspects I noted about other states are, some states require quarterly or semi-annual pretreatment program reports, a few states review every SIU permit the approved program writes, and some states handle pretreatment compliance activities out of their district or regional offices. All-in-all, I think the State of Florida is about in the middle when it comes to oversight. I did learn at least one concept I plan to implement. It appears better to have one state contact for each approved program. In other words, a certain pretreatment inspector would deal with the same approved program year-after-year. This establishes some rapport and continuity between the program and the inspector. In future years plan to see either Gary or John on a regular basis. This should also make it easier for you to get questions answered and problems resolved. This policy will go into effect starting July 1. I would appreciate any feedback on this prior to that date.

In closing, keep up the good work and watch for changes in the way we do business! ☻

Technical Tips:

Classification of CIUs

Proper classification of a categorical industrial user (CIU) is a topic that every pretreatment person faces. While it often appears to be an obvious choice, selecting the appropriate point source category can also lead one on a Wild Goose Chase (WGC).

While impossible to do the topic justice in the limited space allowed here, we would like to present the following basic ideas to layout the framework:

- The point source categories are found in The Effluent Guidelines and Standards, at 40 CFR 405-471. Copies of the Code of Federal Regulations (CFR) may be purchased through the Government Printing Office in Jacksonville, FL at (904) 353-0569.
- The applicability section of each point source category should be used when determining if the regulations apply to a particular industry.
- Only point source categories with either Pretreatment Standards for Existing Sources (PSES) or Pretreatment standards for New Sources (PSNS) are considered to be categorical for the purposes of pretreatment.
- In general, the proposed new source rule date is the date used to determine whether PSES or PSNS apply to a facility. We have a useful table that lists the proposed new source rule date for each of the pretreatment categories.

Sometimes, it is necessary to refer to the rule's preamble or development document to properly classify an industrial user (This is when the WGC begins!). If you would like to discuss any of the point source categories, please contact one of the pretreatment staff in Tallahassee at (904) 488-4524.

The Meat

(Continued from page 5)

development process. (After all, if our local limits aren't looking too good, we may need to know whether the meat we fed it was spoiled!)

Flow Data Considerations

Flow data is an essential component of the mass balance equations which form the basis for the local limit calculations. The equations are generally based on steadystate concentration and flow values. While flow values vary throughout the day as well as seasonally, representative long-term flow values should be obtained for each of the flows identified under General WWF Information. For example, the average headworks flow should be based on the annual average daily flow or a similar measurement for your WWF.

The selection of a value for the industrial user contribution is sometimes a more difficult task. Often, flow data may be available for some of your permitted significant industrial users, but not for all of your industrial users. Total industrial user flow contributions may be based on the sum of individual flow values for industrial sources when these are known. Often, water usage records are used to approximate wastewater discharges. Another approach is to use your knowledge of the relative flows which are derived from nondomestic and domestic sources. For example, most wastewater plants in Florida appear to receive from 5-20% of their annual average daily flow from industrial sources. Frequently, the two approaches will be used in conjunction with each other to determine an industrial users flow value.

Reminders:

- The next Florida Pretreatment Coordinator's Workshop is scheduled for June 19, 1997. The workshop is being hosted by the City of Orlando. An agenda and map will be mailed shortly. If you have any questions, please contact Jim Lockwood at (407) 246-2664.
- The next Florida Pretreatment Coordinator Certification courses (Level C and Level B) are set for August 11-15 in Titusville. Registration starts on August 10. For additional information, please contact Suzanne Flores at (904) 630-4231.

Pollutant Data Considerations

Similarly to flow data, we want pollutant concentration data to be representative of long-term average conditions. Pollutant data is generally used in at least the following different ways during local limit calculations:

- to quantify the nonindustrial (background) concentrations,
- to estimate the headworks concentration, and
- to determine process and WWF removal rates.

One of the most important considerations when gathering monitoring data is to collect representative samples and have them analyzed using "sensitive" analytical techniques. Often, this does not mean going to the extreme and cost of collecting "clean" samples; rather, the goal is to use

Geez! More rules.

good standard sampling techniques and sufficiently low detection limits so that even below detection limit data provides useful information.

One example is in the calculation of nonindustrial headworks loading. Consider a 5 MGD WWF with 10% industrial contribution and no detectable nickel in the residential collection system (Ni ó 0.1 mg/L). Using one-half the detection limit, we would estimate the nonindustrial load for Ni as 1.9 lb./day (i.e., 4.5*0.05*8.34). If this WWF removed 85% of the Ni and discharged to a marine surface water (with a water quality standard of 0.0083 mg/L), the total allowable headworks loading for Ni pass through would be only 2.3 lb./day. (i.e., [5*0.0083*8.34]/[1-0.85]). Therefore, the calculated nonindustrial loading of Ni (i.e., 1.9 lb./day) consumes almost all of Ni's total allowable headworks load (i.e., 2.3 lb./day). Alternatively, we could have used a more sensitive method from 40 CFR 136 or requested that the lab report using as low a detection limit as they can (e.g., ó 0.001 mg/L). Then the nonindustrial load would have been more accurately calculated to be 0.019 lb./day, which is much less than the allowable headworks load for Ni (2.3 lb./day).

Another example of the importance of good detection limits is in the calculation of removal rates. Let us assume that the same WWF has a uniform Ni influent concentration of 0.004 mg/L. With a Ni effluent detection limit of ó 0.001, the WWF removal would be calculated as ò 75% (i.e., [4-1]/4). However, if the lab had been able to report with a method detection limit of ó 0.0005 mg/L, then the WWF removal rate would have been calculated as ò 88% (i.e., [4-0.5]/4). Often, the slightly increased accuracy obtained using lower detection limits is essential when calculating local limits.

As mentioned before, good documentation of the sources and assumptions used for the "supporting information" is important. Especially, since the documentation is an essential component for the local limit calculations to be defensible.

Well, we have not even begun to scorch the surface of the meat, but, perhaps we have exposed you to its flavor. Remember, the "local limit beast" needs good information to be strong and survive the rough and tough regulatory jungle.

In the next issue, we should eat! So before we have a serving of "Example Extraordinaire," we'll visit the store and pick up a slab of good meaty information. ☻

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