The Sunshine State

Pretreatment Communicator

Volume 2 Issue 3 January 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:

The Communicator
Domestic Wastewater Section
FDEP, MS 3540
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

The **Pretreatment Communicator** reserves full editorial rights to all submissions. Anyone with questions about this newsletter, wishing to make comments, or wanting to be included on our mailing list, should contact the pretreatment program staff at (904) 488-4524 or write to the above address. The Department of Environmental Protection assumes no responsibility for the statements or opinions expressed in this newsletter. Views and information contained in this newsletter are those of the authors and do not necessarily reflect those of the Department.

Inside This Issue:

Florida Department of Environmental Protection
Domestic Wastewater Section
Pretreatment Program

Robert Heilman, P.E.
Pretreatment Coordinator

Gary Millington
Pretreatment Engineer

John Coates
Pretreatment Engineer

Award Winning Year for Domestic Wastewater

by Elsa Potts, P.E.
Domestic Wastewater Section

Congratulations to all the Florida domestic wastewater treatment facilities and wastewater-related programs which won EPA and DEP awards in 1996. Florida facilities won five awards under the 1996 EPA

(Please see **Awards !, page 2**)

Development of Technically Defensible Local Limits - Just the Basics Please!

by John Coates

Development or evaluation of local limits has become a favorite pastime for 83% Florida's pretreatment coordinators according to a recent survey. (Just Kidding!). Well maybe developing local limits has not become a favorite way to spend the afternoon, but we know that many of the state's pretreatment coordinators have been spending quality time with their local limits.

If local limits are not a favorite pastime, then why are so many of the state's pretreatment programs in the process of revising their local limits. One answer is obvious. Most of the state's approved pretreatment programs have local limits that have not been reevaluated since they were originally adopted, generally more than five years ago. The NPDES regulations [40 CFR 122.21(j)(4)] and Rule 62-620.400, Florida Administrative Code (F.A.C.), say that local limits must at least be reevaluated every five years as part of the renewal process for the domestic wastewater permit.

The importance of local limits has

(Please see **The Basics, page 3**)

Reminders:

- The next Florida Pretreatment Coordinator's Workshop is scheduled for February 27, 1997. The workshop is being hosted by the City of Lakeland. An agenda and map has already been mailed. If you did not get a copy or would like one, please contact one of the pretreatment staff at (904) 488-4524.
- The next Florida Pretreatment Coordinator Certification courses are set for April 28-May 2 in Ft. Myers. Both the Level C and Level B courses will be offered. Registration starts on February 27. For additional information, please contact Suzanne Flores at (904) 630-4231.
- Don't forget to pick up the wash! That's right. EPA still has your Industrial Laundry on their mind. In fact, they just announced plans for a one-day public meeting on March 4, 1997, in Laurel, MD. The meeting is planned to discuss the scope and content of the proposed regulation for this category. For more information you may wish to contact Susan Burris of EPA's Engineering and Analysis Division at (202) 260-5379.

Awards !

(Continued from page 1)

Operation and Maintenance (O&M) Awards Program and nine awards under the 1996 EPA Municipal Water Use Efficiency (MWUE) Awards Program. Overall, Florida facilities and programs received 54% of all the awards given in EPA Region IV. Additionally, the Department gave out eight awards to domestic wastewater facilities under our own program recognizing excellence in operation and maintenance. This was a good year for the domestic wastewater facilities and programs and hopefully 1997 and beyond will be even better as more plants and programs participate.

Each of the awards listed in the inset below were received by Florida domestic wastewater facilities and programs during 1996. Congratulations to all! ☻

EPA O&M Awards

Large Non-Discharging Category

1st Place National Award	Brevard County South Central Regional Wastewater Treatment Plant
1st Place Regional Award	Brevard County South Central Regional Wastewater Treatment Plant
2nd Place Regional Award	Reedy Creek Improvement District Wastewater Treatment Plant
Honorable Mention	Niceville, Valparaiso, Okaloosa County Regional Wastewater Treatment Plant

Small (1 to 3 mgd) Advanced Category

2nd Place Regional Award	City of Milton Wastewater Treatment Plant

EPA MWUE Awards - EPA Region IV

Most Effective and Innovative Reclamation & Reuse Program

1st Place	City of Cocoa
2nd Place	City of Pompano Beach
3rd Place	City of Ocala

Most Effective and Innovative Public Education Program

1st Place	City of Casselberry
3rd Place	City of Cocoa

Most Effective and Innovative Facility Reuse Program

1st Place	City of Tampa
3rd Place	Hillsborough County Utilities

Most Effective and Innovative Legislative Review and Proposal

1st Place	Florida Department of Environmental Protection
2nd Place	City of Boca Raton

DEP Wastewater Awards for Excellence in Operation and Maintenance

Central District

Type I Facility	Orange County Sand Lake Road (South) WRF
Type II Facility	Poinciana Utilities, Inc. WWTP #1

Northeast District

Type I Facility	St. Johns County State Road 16 WWTF
Type III Facility	Florida Sheriffs Boys Ranch WWTF

Northwest District

Type I Facility	Niceville, Valparaiso, Okaloosa County Reg. WWTF
Type II Facility	Pace Regional WWTP

South District

Type I Facility	Fiesta Village AWWTP

Southeast District

Type I Facility	Hydratech Utilities, Inc.

The Basics

(Continued from page 1)

been discussed previously in the October, 1995 issue of the **Pretreatment Communicator.** Therefore, it is only necessary to say that sound local limits are an essential part of an effective pretreatment program.

The basic steps (i.e., the magic) in calculating local limits are illustrated in Figures 1 through 4. For illustration purposes, the steps assume that pass through is the most protective criteria for the domestic wastewater facility (WWF). The steps follow a logical progression, first calculating how much loading a WWF can handle and then subtracting various amounts to end up with a loading that can be allocated to industrial users. Seems simple, right? Well, the concept is fairly straight forward; however, there are a lot of things to consider before we can even start the calculations.

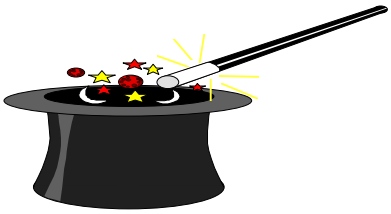
In this first article in a series, we'll focus specifically on general information about the criteria which are commonly used to develop local limits. In subsequent articles we'll look at supporting information and examples of local limit development.

According to rule, local limits should be calculated to implement the general and specific prohibitions, thus, the following three sets of criteria are usually considered:

- Pass Through Criteria
- Interference Criteria, and
- Residuals Quality Criteria.

Pass Through Criteria

The effluent disposal or reuse method generally dictates which standards should be applied as pass



through criteria. In general, pass through criteria will be any effluent limit which applies to the discharge from your WWF. Since many facilities still have access to surface water for effluent disposal, these WWFs are subject to the surface water quality standards (WQS) in Chapter 62-302, F.A.C. For example, a WWF discharging to a Class III fresh water should use the corresponding Class III fresh water standards. In Florida, WQS apply to the effluent at the point of discharge. Therefore, hardness dependent WQS, (e.g., the freshwater standard for copper) is based on the effluent's hardness, and not that of the receiving water.

Florida's WWFs may also discharge to reuse or disposal systems that may impact groundwater quality. Since pass through refers to all Waters of the State, groundwater quality standards (GWQS) in Chapter 62-520, F.A.C., may also have to be considered, if these are applicable to your effluent. For example, land application of wastewater should not result in an exceedance of GWQS outside of the defined zone of discharge. Many WWFs will have one or more groundwater compliance monitoring wells located at their disposal site.

Some reuse projects (e.g., projects with percolation ponds or absorption fields subject to Rule 62-610.525, F.A.C.) must meet GWQS at the point of discharge. Thus, it's important not only to know what standards apply to your discharge, but where these standards apply.

In cases where GWQS apply at a location other than the point of discharge, the local limit evaluation may consider the fate and transport of the pollutants between the discharge location and the compliance point (e.g., monitoring well) using calculations or other modeling techniques. However, a public utility may not be able to justify expenditure of the additional resources necessary to model the chemical and physical transport of the pollutants or develop a mathematical relationship between the discharge point and the compliance point. In such cases, the WWF may wish to consider the feasibility of conservative assumptions for applying the groundwater standards directly, or through a simplified relationship, to the effluent at the point of discharge.

Interference Criteria

Interference criteria are conceptually the most difficult to implement for the protection of a WWF. One reason is that there is no singular list of criteria that must be used.

To promote a better understanding of interference criteria, it is important to recognize some of the inherent limitations in using chemical-specific criteria to predict biological impacts. First, chemical-specific interference concentrations can not predict antagonistic or synergistic effects of a mixture of different chemicals. Therefore, a chemical mixture may or may not have an impact, even when the concentrations of individual pollutants are at or above a threshold concentration. Consequently, the occurrence of upset in a WWF biological process is often not easily related to a single causative agent or interference criteria.

In contrast, the development of local limits, based on interference criteria, relies on the reverse

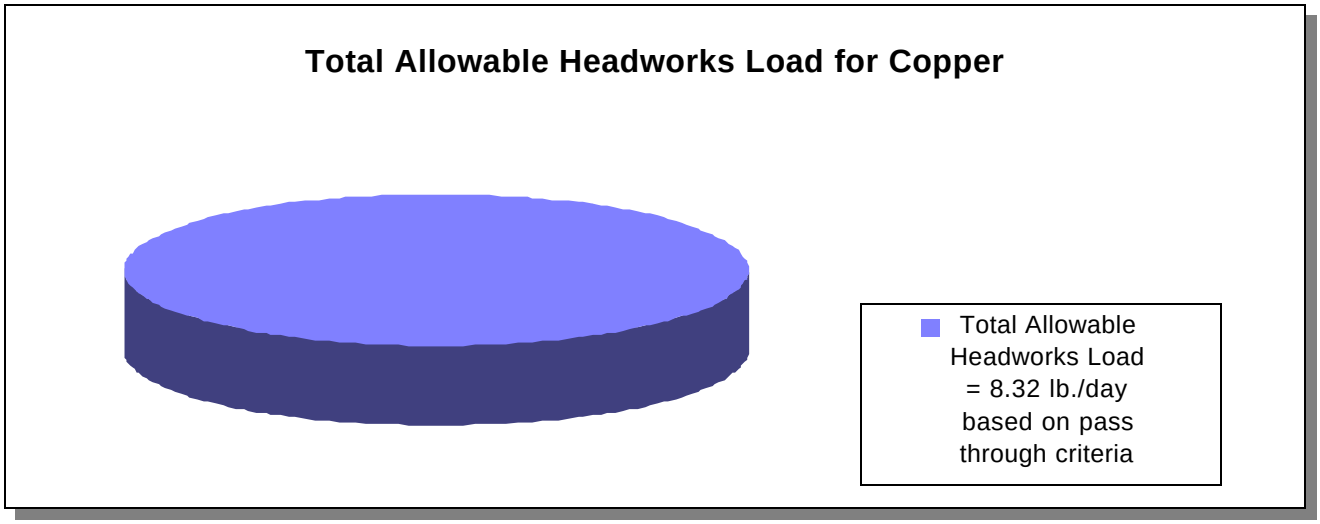


Figure 1. Step 1 - Determine the total allowable headworks loading which is necessary to protect the WWF.

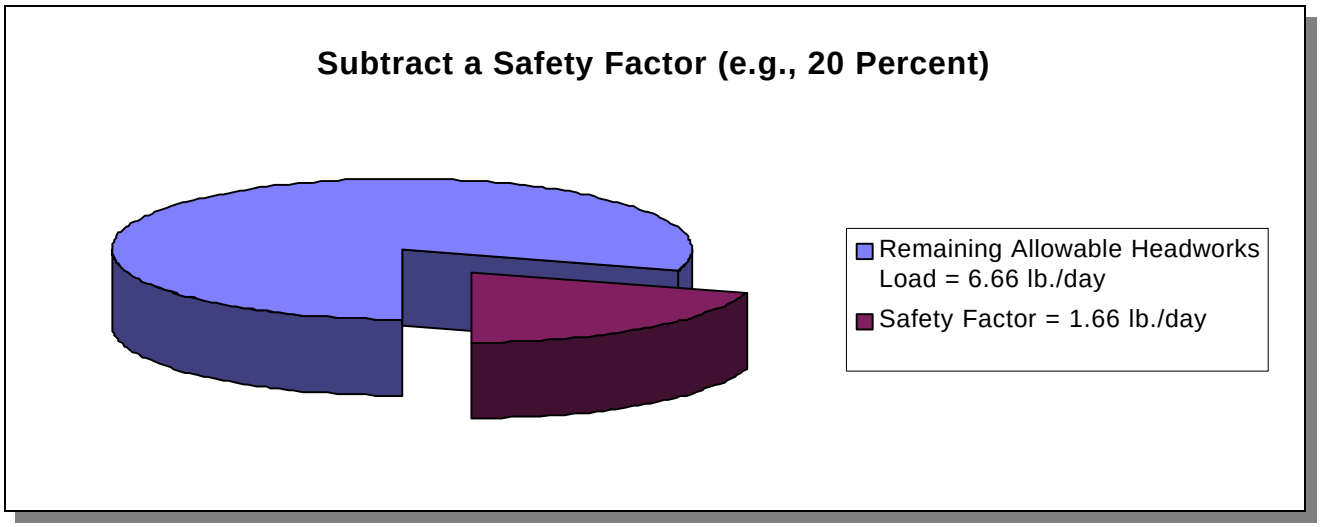


Figure 2. Step 2 - Subtract a portion of the allowable load to provide a safety factor for uncertainty and growth.

concept that a particular pollutant will have a threshold concentration above which there will be a predictable impact. For example, a biological process should be able to withstand certain concentrations of a given metal before some of the microorganisms begin to be adversely impacted. While this is a widely accepted concept, it is subject to limitations that should also be realized.

One limitation of an interference criteria is that it can not account for acclimation of a population of microorganisms to exposure to the pollutant of concern. For example, EPA references indicate the "average" population of activated sludge microorganisms will be affected by concentrations of cadmium above 1 mg/L. While this may be true in general, your WWF's activated sludge process may have acclimated to higher concentrations of cadmium. Conversely, in Florida where industrial contributions tend to makeup a smaller portion of a wastewater plant's flow, a Florida activated sludge process may not be able to handle as great a concentration of cadmium as those in the literature reviews upon which EPA's cadmium interference criteria was based.

A final and important consideration is that rapid "episodic" increases in pollutant loading may be the most likely event which contributes to an upset in a WWF biological process. Consider that the biological process at a given WWF should be acclimated to the normal conditions at that WWF. Therefore, any noticeable impact at the plant is

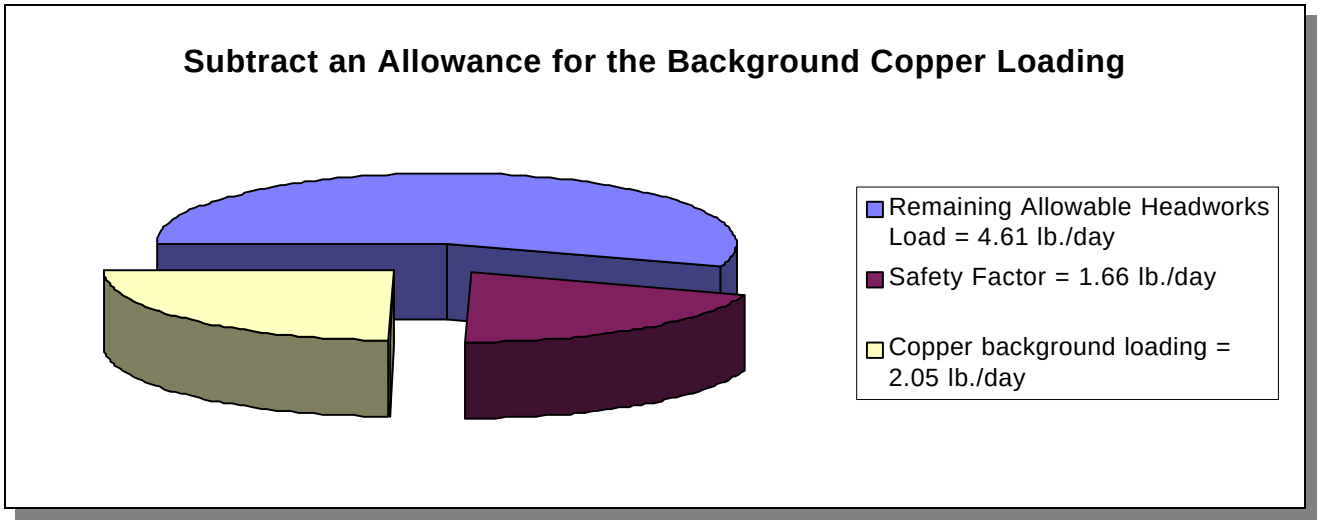


Figure 3. Step 3 - Subtract an allowance for the calculated background or uncontrollable load for copper.

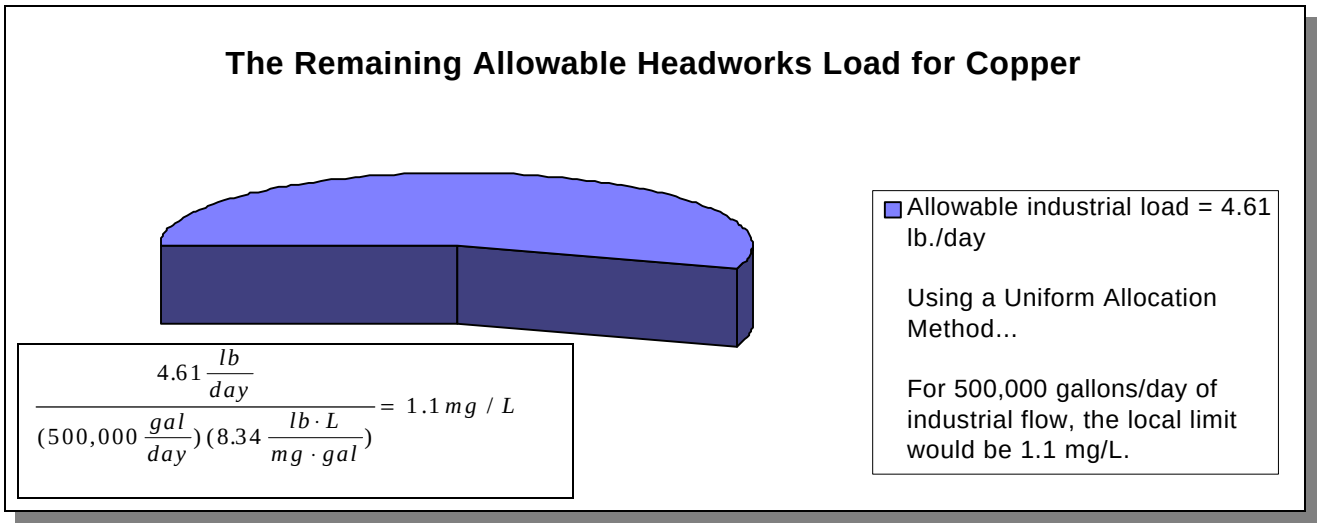


Figure 4. Step 4 - The remaining allowable headworks loading can be allocated to industrial users using one of several methods.

more likely related to an increased concentration or slug of a pollutant, rather than the absolute magnitude of the exposure. If your WWF experiences a process upset, you may not be able to identify the causative agent by comparing chemical data during the upset with published interference criteria. You will likely be more successful in your search for a causative agent by knowing the "normal" pollutant concentrations in each of your biological processes. A comparison of the "normal" pollutant concentrations with those gathered during an upset is more likely to indicate causes for the inhibition.

Well, enough rambling about interference concentrations... The following are basic considerations when calculating local limits based on interference criteria:

(1) Review published data for each of your biological processes to see if the interference criteria appear reasonable for your conditions and the pollutant concentrations in your processes under normal operating conditions. If the published data appear reasonable based on your operating conditions, then use of such published interference concentrations should be technically defensible.

(2) When published data appear to be inadequate, you may find it necessary to conduct bench top exposure tests to measure the sensitivity of your microorganisms to the pollutant of concern. Respiratometry offers one test method; however, there are a number of methods which may be appropriate for different pollutants

(Please see **More Basics, page 7**)

The Coordinator's Desk:

The Multimedia Approach

by Robert Heilman, P.E.

A very interesting concept is on the horizon. There has been significant Department interest in applying the "multimedia approach" to both permitting, and compliance monitoring. Recently, I have been involved in several meetings dealing with how to implement this process.

For those of you who are not familiar with the concept of multimedia permitting and compliance, let me briefly explain. On the permitting side, many industrial facilities have several environmental permits. Usually, there is a state air permit(s), and sometimes a solid waste and/or a wastewater permit. An industrial facility could also have several local permits, including an industrial user wastewater discharge permit issued by an approved pretreatment program. In accordance with the Department's ecosystem management implementation strategy, which I discussed in a previous newsletter (January, 1996), we are looking at pollutant discharges from a holistic view. One goal is to reduce the transfer of pollution from one medium to another (e.g., water to air). The Department's plan is to integrate the various permits into a single, comprehensive permit which takes into account the effects from all pollutants discharged from a facility.

From the compliance perspective, the multimedia approach could be very beneficial to all affected parties. Too often, regulatory inspectors from a particular program do not coordinate with inspectors from other programs. Consequently, to solve one programmatic violation, a facility may be requested to do something that effects another program or rule requirement. Unknowingly, the inspector could recommend that a permittee do something that is in conflict with another part of the agency. Understandably, this tends to "upset" a facility owner. With the multimedia compliance approach, inspectors will be cross-trained in other program areas or joint inspections will be conducted. This should minimize conflicts with agency programs and rules. Another benefit to the multimedia compliance approach is that the number of inspectors and frequency of visits to a facility could be reduced.

I bring the multimedia approach to permitting and compliance to your attention because the approved pretreatment programs may play an integral part in this process. I have explained to the individuals involved on the development of this approach how the approved programs permit their industrial users and the requirements for compliance monitoring and inspection.

To implement a true multimedia permitting and compliance approach, it will be necessary to coordinate those activities with the approved pretreatment programs and other local environmental programs. Currently, Department inspection checklists are being developed for certain industrial categories that include some of this coordination. At a minimum, a notation is being made on the forms to be sure inspectors check to see if local permits have been issued for various activities, or that the facility knows they must contact the local utility for permission to discharge. At this point, there has not been any decision on how to integrate local permits, or if local discharge permits will be integrated, into the Department's multimedia permit. There has also not been any recommendations on how to coordinate compliance activities, due to rule requirements and control authority inspection/ monitoring schedules.

According to the Department's Ecosystem Management Implementation Strategy Work Plan, "By the year 1997, the DEP will develop and implement a process to establish a network of partnerships with our citizens and local, regional, state and federal agencies to encourage the cultural change necessary to implement ecosystem management at the local (ecosystem) level." To meet this goal, it will be necessary to work closely with the approved programs this year to establish procedures to coordinate permitting and compliance activities. The multimedia concept is one that will take a great deal of cooperation. I believe the Department's goal presents a formidable task. I encourage you to share your thoughts and ideas with me on how you see your participation in implementing the multimedia approach. ☻

Technical Tips:

Local Limits for Organics

Many individuals have inquired about ways to develop local limits for organics such as BTEX constituents (benzene, toluene, ethyl benzene, and xylenes) or tetrachloroethylene. Probably one of the most efficient ways to develop organic local limits is to develop them based on the specific prohibitions against the discharge of pollutants which result in the presence of toxic gasses and vapors or explosive conditions (see Rule 62-625.400(2), F.A.C.).

EPA has published a guidance manual that proposes methods for calculating organic chemical specific "screening levels" to protect the collection system and WWF workers from toxic or explosive hazards. The reference is, "Guidance To Protect POTW Workers from Toxic and Reactive Gases And Vapors," (EPA 812-B-92-001).

EPA's guidance provides background discussion and assumptions applicable to the method. The manual also provides example calculations and tabulated screening level concentrations for a number of volatile organic compounds.

One point to note! If you have a copy of the manual, compare the Gas/Vapor Toxicity screening level for vinyl chloride in Table 4-2 with that in Table B-1. We noticed that there is almost an order of magnitude difference between the two numbers.

We have not recalculated all the remaining values in these tables. Therefore, please check the calculations yourself, if you plan to use EPA's screening levels for organics. If you have any questions about local limits for organics, please contact one of the pretreatment staff in Tallahassee at (904) 488-4524.

More Basics

(Continued from page 5)

and situations. The important point here is that testing of the microorganisms at your WWF may be necessary to determine a defensible interference concentration.

(3) Remember that thoroughly documenting the basis for your interference concentrations is essential. Without adequate documentation, no one will have the necessary information to evaluate the technical or scientific merit of your local limits for protection against interference.

Residuals Criteria

Residuals criteria should promote or allow the beneficial use of domestic wastewater residuals. State or federal residuals standards for land application are appropriate for most WWFs when developing local limits. However, the state is currently in the process of revising its residuals standards to be consistent with those developed by EPA and published at 40 CFR 503.

In this article we will focus on the requirements at 40 CFR 503 which provide two basic options for developing local limits. One option is to use the ceiling concentrations in Table 1. However, facilities that distribute and market need to use the monthly average concentrations in Table 3 of 40 CFR 503.13.

The monthly average concentrations in Table 3 should be applied so that the daily loading of pollutants will not cause an exceedance of these residuals criteria. Please note, the pollutant concentration for molybdenum in Table 3 is currently remanded by EPA; therefore, the concentration in Table 1 should be used during local limit calculations.

Regulatory Updates:

- A number of Department rules related to wastewater have recently been revised. The revisions were undertaken as a part of Governor Chiles' initiative to achieve a 50% reduction in the number of rules in the state. The revised rules listed below became effective during December 1996:
  - 62-600, F.A.C., Domestic Wastewater Facilities,
  - 62-601, F.A.C., Domestic Wastewater Treatment,
  - 62-603, F.A.C., Detergents,
  - 62-604, F.A.C., Collection Systems and Transmission Facilities,
  - 62-611, F.A.C., Wetlands Application,
  - 62-620, F.A.C., Wastewater Facility Permitting,
  - 62-621, F.A.C., Generic Permit,
  - 62-650, F.A.C., Water Quality Based Effluent Limitations,
  - 62-660, F.A.C., Industrial Wastewater Facilities,.

  Some of the wastewater permitting procedures from Chapter 62-620, F.A.C. have been reorganized into a new document, "Guide to Wastewater Permitting." If you would like copies of any of the Department's rules or this guide, please contact the DEP Library at (904) 488-0890.

- The State's pretreatment rule has also recently been revised. The revisions to Chapter 62-625, F.A.C., became effective January 8, 1997. Please see the July 1996 **Pretreatment Communicator** for an article discussing these minor revisions. We will be sending courtesy copies of the revised rule to our list of pretreatment program coordinators. If you have any questions about these revisions, please contact one of the pretreatment program staff at (904) 488-4524.

Next Time

In addition to understanding how the above criteria apply to your WWF, another aspect of developing technically defensible local limits is the task of obtaining useful supporting information. As promised, these considerations will be discussed in the next issue of the **Pretreatment Communicator**.

In the meantime, how about a challenge. I know at least a few pretreatment programs that need to reevaluate their local limits. Want some help?... Well, we would rather use real examples for the next article, if you know what I mean. Depending on the amount of information you have available, maybe your local limits could be used anonymously. If you would like to discuss your local limits, please call John Coates at (904) 488-4524. ☻

Joey just LOVES this Pretreatment stuff !!

The Pretreatment Communicator
Domestic Wastewater Section
Florida Department of Environmental
Protection, Mail Station 3540
2600 Blair Stone Road
Tallahassee, Florida 32399-2400