The Sunshine State

Pretreatment Communicator

Volume 1 Issue 3

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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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.

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Florida Department of Environmental Protection Domestic Wastewater Section

Pretreatment Program

Robert Heilman, P.E. Pretreatment Coordinator

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Control Mechanism Minimum Requirements

by Gary Millington

Pretreatment inspections performed by the Department reveal a need for a better understanding of industrial user control mechanism requirements. Rule 62-625.500(2)(a)2, F.A.C., contains conditions that must be included in control mechanisms

Please see **Permit**, page 3

January 1996

Proposed Revisions to Regulations Could Affect Your Program

by Robert Heilman, P.E.

On December 6, 1995 the Environmental Protection Agency published in the Federal Register (60 FR 62546) proposed revisions to 40 CFR Parts 122, 123, 403, and 501. The proposed revisions are essentially modifications to EPA's NPDES wastewater and sludge permit application and forms. However, part of those proposed revisions include changes to the general pretreatment program requirements found in **40 CFR Part 403**.

State rules must be at least as stringent as the federal requirements. Therefore, any final revisions to federal regulations will need to be evaluated against our existing rules. If necessary, the state rules will need to be modified to include those or similar provisions either through adoption by the Secretary or they may have to go before the Environmental Regulation Commission.

The following is not meant to be an exhaustive discussion regarding proposed changes to the pretreatment program

Please see Proposed, page 2

Technical Tips:

To grab or composite? That is the question?

Rather than ponder this, let's give vou a simple answer. The rule of thumb is that local limits and categorical pretreatment standards are usually expressed in terms of daily maximum values. Thus, compliance sampling should normally be based on composite samples, since this is most representative of daily discharges from the process or facility being monitored. Similarly, monitoring for weekly, monthly, and other average categorical pretreatment standards should also be based on daily **composite** measurements.

But, does that mean that you should always use composite sampling techniques? No. For example, grab samples should be used for certain pollutants such as oil and grease, cyanide, phenols, volatile organic compounds, etc. Grab samples should also be used for characteristic parameters such as pH and temperature. There are also a number of other times where grab samples are appropriate. We've listed a few below; however, the list is certainly not complete:

- short term batch discharges,
- pollutant source investigations,
- and, for compliance screening.

Although grab samples can be used as a screening tool, control authorities should not determine compliance using grab samples, unless the corresponding pretreatment standard reflect limits that must be measured on an instantaneous basis. Additionally, control authorities should generally not use grab samples to satisfy its programmatic requirement to verify compliance by sampling at least once per year. As always, if you have questions regarding program requirements, please contact one of the Department's pretreatment staff at (904) 488-4524.

Proposed Revisions

(continued from page 1)

requirements, but instead is a summary of relevant issues that might affect the majority of the approved pretreatment programs. It is important for anyone affected by the proposed regulations to obtain a copy of the referenced federal register and thoroughly read it and understand how the proposed revisions may impact your pretreatment program. You should also provide any comments, both positive and negative, to EPA regarding its proposal. Comments on the proposed regulations must be received by EPA at the following address, on or before March 5, 1996:

Municipal and Sludge Application Rule Comment Clerk Water Docket MC-4101 United States Environmental Protection Agency 401 M Street S.W. Washington, D.C. 20460

The first proposed change affects the existing requirement for facilities, with approved pretreatment programs, to provide a written technical evaluation of the need to revise local limits as part of the permit application process. The existing provision requires that the local limits evaluation be done prior to permit issuance. However, permit limits could be modified as a result of submitting an updated application, thereby requiring the re-evaluation of those local limits. Therefore, the proposed revision is to eliminate the local limits evaluation from the application process and instead include it as a pretreatment program requirement. This proposed revision would be a new requirement under 40 CFR Part 403.

In another revision under 40 CFR Part 122.21(j), EPA is proposing to

require all domestic wastewater facilities (WWFs) to report effluent monitoring information for 17 parameters listed at proposed 40 CFR Part 122, Appendix J, Table 1. EPA states that these parameters have a high likelihood of being present in most WWF effluents. EPA is also proposing to require additional reporting of pollutant-specific data for WWFs that have, or are required to have, a pretreatment program. In general, the pollutants for which additional data would be required are those for which there are state water quality standards, other than dioxin, asbestos, and "priority pollutant" pesticides. A revised table (Appendix J, Table 2) in the proposed regulations, lists approximately 100 pollutants for which analyses would be required in addition to any pollutants for which state water quality standards exist. EPA considers results from the toxic release inventory (TRI) as providing one likely basis for information that could cause applicants to initiate additional effluent monitoring analyses during the application process. The proposed regulations contain several options for the frequency and details of the additional monitoring.

Proposed revisions to EPA's application requirements and forms for sewage sludge permits are also included in the same federal register. Be advised that the proposed regulations classify your WWF as a Class I sludge management facility, if your WWF has, or is required to have, a pretreatment program. Under the proposed regulations as part of the revised application form (2S), if your facility is a Class I sludge management facility, you must perform a toxicity characteristic leaching procedure (TCLP) on your facility's sewage sludge. You must submit the results of all TCLP tests (pass or fail) during the past five years, unless you have

already submitted them to the permitting authority.

Section 122.21(j)(5)(ii) would be modified to require WWFs with approved pretreatment programs to describe on the permit application any substantial modifications to the control authority's program that have not yet been approved in accordance with the regulations. However, EPA is considering revising the pretreatment regulations (40 CFR Part 403) to streamline approval of program modifications. Such revisions may make the need for the above information unnecessary.

Pending revisions to Section 122.21(j)(5)(iii) would require information on significant industrial users (SIUs) discharging to WWFs. This is similar to information already required on the current application form. EPA desires to eliminate any duplication of effort; therefore, they propose to allow applicants to reference substantially similar information about SIUs previously submitted to the permitting authority, rather than resubmit the information. Another proposal being considered is to waive, either entirely or on a case-by-case basis, such reporting for any WWF with an approved pretreatment program that submits an annual report which contains information equivalent to that required by the application.

It appears some of the proposed revisions make sense and could provide some relief to approved pretreatment programs. Again, you are encouraged to provide comments to EPA on the proposed revisions to the federal regulations. Following final promulgation of the revisions, the Department will review those changes to determine if state rule revisions will be required.

While all this is taking place at the federal level, the DEP is proposing

some changes of its own to the pretreatment program through a separate initiative. This initiative complements ongoing government reinvention activities which will give regulators the flexibility to develop alternative strategies that could replace or modify existing regulatory requirements, on the condition they will produce better environmental benefits.

The initiative proposes to modify, reduce, or eliminate regulations or procedures that appear to interfere with environmental protection streamlining. The Department's proposal includes suggested regulation and programmatic changes in all areas of environmental protection. From the pretreatment program perspective, a thorough review of pretreatment program requirements focused on those elements that were either burdensome, ineffective, redundant, or that hampered flexibility. The resulting issues are similar to the ones identified at recent AMSA meetings (see article by Suzanne Flores in this issue).

At this point, the Department has submitted its proposal to EPA in Washington. The Department will begin discussing its proposal with EPA Region IV. If approved, the initiative would be conducted on a pilot basis. If successful, the same streamlining could be applied nationally and result in formal regulation revisions.

We view this as a "golden opportunity" to make positive strides in reducing the regulatory burden on approved pretreatment programs, while still maintaining environmental protection. We look forward to EPA's approval of our proposal for needed changes to the pretreatment program. Please "stay tuned" for an update on any efforts to modify the pretreatment program in future issues of "The Communicator."•

(continued from page 1)

issued to significant industrial users (SIUs). Several of these conditions can be located in a General Conditions section of the control mechanism; others are specific for each SIU.

The intent of this article is to help control authorities develop SIU control mechanisms that meet all pretreatment requirements and protect the domestic wastewater facilities (WWFs). Actual conditions are not given here; just a discussion of the information required by Rule 62-625, F.A.C.

Most pretreatment programs use permits as control mechanisms for SIUs. For simplicity, that term will be used during this discussion. Minimum permit requirements that should be included as general conditions are:

Statement of duration.

Permits can be issued for up to five years. The issue and expiration dates must be stated in the permit. Typically, permits contain a statement that allows for an automatic extension of the permit expiration date, as long as the permittee has submitted an application for renewal prior to a specified number of days (e.g., 90 days) before expiration of the permit. It should be noted that a five year permit can <u>not</u> be extended.

Statement of nontransferability.

The permit must state that it can not be transferred to another party without properly notifying the control authority.

Notification requirements.

Permits must contain conditions that require SIUs to notify the control authority of any of the following occurrences:

slug discharges

- prohibited discharges
- spills
- by-passes
- hazardous waste discharges
- substantial changes in the volume or character of discharges

These requirements can be put in the permit as a single condition, or separated into individual conditions for increased emphasis on the more important issues.

Record keeping requirements.

Permits must contain a condition requiring SIUs to maintain records of all effluent monitoring activities for a minimum of 3 years. This condition should also include a statement that the record retention period will be extended during the course of any unresolved litigation. You should review the requirements found in Rule 62-625.600(14), F.A.C, for additional information.

<u>Statement of applicable civil and</u> <u>criminal penalties.</u>

Permits must inform the permittee of potential penalties for violating pretreatment standards and requirements. Although the rule does not specifically require that the maximum penalty be stated in the permit, it is recommended that this be included.

Other items that should be included in permits are:

Effluent limits.

Permits must contain effluent limits for pollutants of concern for each SIU. Pollutants that must be monitored for categorical industrial users (CIUs) are listed in the applicable federal regulation [e.g., in 40 CFR Part 413.44(b) and (f), for an existing job shop anodizing facility with less than 10,000 gpd, the pollutant list includes CN(A), Pb, Cd, and TTO]. It should be pointed out here that some federal regulations have monthly, or some other frequency, average limits. These limits are generally more stringent than daily maximum limits and must be included in permits.

For CIUs, the control authority must compare federal limits with local limits in order to apply the more stringent limit for each pollutant. Keep in mind that in order to compare federal and local limits they must be applied at the same point (e.g., end of pipe). Federal limits may have to be adjusted using the combined wastestream formula (CWF) or a flow weighted average (FWA), since federal limits, as found in 40 CFR, apply at the end of process (or at the end of wastewater treatment for a process). It is possible to adjust local limits in order to apply them at the end of process (which may be a good way to deal with certain discharges). For additional discussion on this subject, you may want to review the article "Industrial User Effluent Limits Development: Part I" in the October 1995 Pretreatment

Communicator, as well as Part II of that article in this issue. There are other guidance resources available also for using the CWF and FWA. Regulatory requirements can be found in Rule 62-625.410(4) and (6), F.A.C.

Self-monitoring requirements.

Permits must specify the following information for each pollutant to be monitored:

- sampling location
- sample type
- sampling frequency
- reporting frequency

Generally, the sampling location will be the same for all pollutants, and the location can be given by narrative description or diagram (we recommend both). It is important that the SIU and the control authority are collecting samples at the same location. The sample type is determined by Rules 62-625.600(1)(e)3 and (1)(e)6, F.A.C. Sampling frequency is determined on a case-by-case basis for each pollutant depending on the operating history of the industry. Of course, the <u>minimum</u> sampling is twice per year.

The permit conditions discussed above should help control authorities develop SIU permits that meet the requirements of Rule 62-625, F.A.C., and protect the WWFs. This is not a comprehensive list of conditions that may be needed in any given permit. It is recommended that permits include a General Conditions section that is "standard" for all permits and a Specific Conditions section that contains the conditions that are unique for each SIU.+

by Suzanne E. Flores City of Jacksonville

The 1995 AMSA-EPA Annual Pretreatment Coordinator's Workshop was held November 7-10 in San Francisco, California. As always, the Workshop was well attended by representatives from EPA, State and Local Pretreatment Programs. Tuesday afternoon was dedicated to EPA. I arrived just as the session was over; however, it appeared to be well attended. The State Pretreatment Coordinators met Wednesday morning.

The AMSA Workshop began with a bang on Wednesday afternoon with a room full of people from all over the United States. The opening remarks, introductions, and a general overview of the plans for the rest of the week took up a portion of the afternoon. The rest of the day was dedicated to a session on Analytical Method Training. Bill Telliard from EPA was the key speaker. And as always, he makes any topic entertaining, especially clean and ultra-clean techniques. In

summary, some of the key notes from this session included: 1) Streamlining 40 CFR 136 - method flexibility, standardizing QA/QC, reducing the need to submit formal approvals for each new analytical technique, harmonizing 304(h) methods with other EPA methods (such as solid waste), and standardizing reporting and record-keeping requirements for data; and 2) Trace Metals and Sampling Guidance - new methods under review for Mercury, Arsenic and Trivalent Chromium. Hampton Roads Sanitation District (Virginia) closed out the day with a presentation on sampling techniques they are experimenting with for Trace Metals.

Thursday began with an overview of the breakout sessions for Effluent Guidelines and Pretreatment Streamlining. The topics up for discussion in these breakout sessions were: 1) Industries for which new or revised standards would be helpful; 2) Use of surrogates for pretreatment standards; 3) Cut-off for pretreatment standards; 4) Certification provisions in lieu of testing; 5) Minimum sampling requirements; and 6) Limitations of Best Management Practices.

The second session was Pretreatment Streamlining and the topics up for discussion were: 1) **Redefining Significant Industrial** User; 2) Requirements for annual publication of IUs in Significant Noncompliance; 3) Redefining sampling requirements for IUs and POTWs; 4) Conversion of concentration-based standards to mass-based standards, etc.; 5) Issuance of permits to all SIUs and duration of terms; 6) POTW acceptance of wastes with pH below 5.0; 7) Requirement to develop and implement enforcement response plans; 8) Changes that require submittal to approval authority as a nonsubstantial program modification;

and 9) Evaluation of requirement for slug control plans.

Thursday ended with the EPA Region/State/POTW meeting. This is always a great opportunity to focus on issues specific to your region. The participants from Region IV stimulated some good discussion on such topics as training. communication, sharing ideas on problem solving, etc. One area that generated a lot of discussion was the need for a Region IV Workshop. And of course, Florida reps. boasted about the Voluntary Certification Training Program that is now in place. We had several interested participants from other states begging for more information.

The final day of the Workshop consisted of the following presentations: Role of Criminal Enforcement in Promoting and Maintaining Pretreatment Permit Compliance; EPA National Pretreatment Awards; and Excellence and Innovation in Pollution Prevention Programs. This last day was very well attended and the presentations stimulated a lot of participation among the attendees.

As for excitement/entertainment during the week of the workshop, I am happy to report that there were no major earthquakes during my visit. One major earthquake in my lifetime is enough for me. However, we did have a small fire in one of the towers which got a few of us a bit nervous. The receptions on Wednesday and Thursday provided an opportunity for all of us to mingle and continue shop talk (like we did not get enough during the day). But that's what the workshop is all about, networking and sharing information with our fellow Coordinators. We had a DJ on Thursday night which a few of us really enjoyed, especially for those with dancing feet. As for San Francisco, one can never say

Regulatory Updates:

- - The Department has revised its Class-III marine water quality standard for silver in Rule 62-302.530, F.A.C. The revision, adopted by the Environmental Regulation Commission on November 30, 1995, replaced the previous standard of 0.05 æg/L. The new standard (2.3 æg/L) was effective January 16, 1996 and does not allow mixing zones.
- The United States Environmental Protection Agency has recently revised two additional pollutant limits found at 40 CFR 503 for the land application of domestic wastewater residuals. These revisions were published as a final rule on October 25, 1995 (60 FR 54764):

<u>chromium</u> - removed all limits from Tables 1,2, 3, and 4. <u>selenium</u> - raised the pollutant concentration limit from 36 to 100 mg/kg in Table 3.

The EPA has published a notice of proposed rule making to replace the currently approved Oil and Grease method (Method 413) with a new method that incorporates both Oil and Grease and Total **Recoverable Petroleum** Hydrocarbons (Method 1664). The new method is needed because of the increasing difficulty that analytical laboratories are having in obtaining freon (which is used to extract oil and grease in Method 413). Chlorofluorocarbons, such as freon, are being phased out in an effort to reduce their potential impact on global atmospheric conditions.

enough about a beautiful city filled with good food and excitement.

Copies of the joint AMSA-Silver Coalition photo processor's BMP Guidance Manual were distributed at the workshop. For those interested in the results of the various Breakout Sessions, a

presentation will be given at our next Coordinators Workshop. And good news for us in Florida; the 1996 AMSA/EPA Coordinators Workshop will be held in Miami later this year. If you need more information on this workshop, please call Suzanne Flores at (904) 630-4231.

Hope to see you in Miami! • (We appreciate Suzanne providing the update above, especially since we were not able to attend the AMSA/EPA meeting. Ed.)

- Part II -

by John Coates

This, the second article in our series of articles, is intended to offer assistance to pretreatment coordinators as they prepare industrial user discharge permits. As is evident by the correction noted in the inset that follows, calculating limits for your discharge permits can be tricky! In Part I, our examples were obviously contrived. While we hope that the numbers were realistic, there is no substitute for the real thing!

Hillsborough County has a number of interesting industries and they were kind enough to share some "real" numbers for our examples in Part II. We really appreciate them taking the time to provide the information. Thanks!

The examples in Part II have an added level of complexity, since the applicable categorical pretreatment standards are expressed in terms of the facility's production rate. In the Part I examples, all of the categorical pretreatment standards were expressed as concentrations and production rates were not needed. For **Example One**, let's assume that the parent company for Shiny Happy Metal was so pleased (You didn't expect me to say "happy", did you?) with the level of regulatory expertise in Concreteopolis, they decided to relocate a second business from the frozen north to sunny Florida. Apparently, they've already signed a ten-year lease with Hernandez Park. It seems they've bought a facility that was constructed in 1978.

The new owners have requested a meeting with you to discuss renewal of the facility's discharge permit. These guys know the score and have provided you with enough information to calculate their discharge limits.

Thus, your new industrial user is a coil coating facility (Happy Coils, Inc.) which is subject to the Coil Coating Point Source Category. Since they purchased a facility that was an existing source for that category, they will still be considered as an existing source provided they don't replace the existing process equipment.

The facility will perform cleaning, conversion coating, and painting on aluminum alloys. The owners have provided eight months of average daily production and flow rate information from their northern facility. The information also indicates that they have a new contract, under which full production has only been ongoing for the previous eight months. After reviewing the information, you feel that the figures for the northern facility should also be representative of conditions at their newly purchased location. The representative daily production rate was 359,614 ft² and their representative daily process flow rate was 30,287 gpd. A considerable number of senior managers have also decided to relocate to Florida, so the estimated average domestic flow

Correction:

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Actually, the 250 gpd material testing discharge was <u>not</u> subject to dilution prior to treatment. The 250 gpd should have been used in conjunction with the unadjusted pretreatment standards. Therefore, Step 2, Example One in last October's article should have been:

For copper at point C:

$$C_{AD} = \frac{\begin{pmatrix} 0.845 \cdot 20,000 + \\ 3.38 \cdot 250 \end{pmatrix} + (0 \cdot 4,000)}{24,250}$$

$$C_{AD} = 0.73 \ mg \ / \ L$$

Similarly, for silver at point C:

$$C_{AD} = \frac{\begin{pmatrix} 0.1075 \cdot 20,000 + \\ 0.43 \cdot 250 \end{pmatrix} + (0 \cdot 4,000)}{24,250}$$

$$C_{AD} = 0.093 mg / L$$

We've reprinted the combined wastestream (CWF) and flow weighted average (FWA) formula (see inset). Please notice that we've expanded the FWA formula to account for multiple "alternative" discharge limits. Our thanks to Al Herndon, Region IV U.S.EPA, for his watchful eye and for kindly pointing out this oversight. How's that saying go... To err is human?

rate is approximately 2,300 gpd (that's five times their old domestic usage). Luckily, this facility does not have any other wastewater discharges combined with the regulated process <u>prior to</u> treatment; therefore, you gladly ignore the combined wastestream formula, for now.

Please see Discharge, page 8

by Robert Heilman, P.E.

Happy New Year from the pretreatment program staff at DEP! I trust everyone enjoyed the holidays and you are looking forward with great expectations to 1996. I hope so, because this looks like the year of change for many environmental programs, but particularly for the pretreatment program. Now before anyone gets too concerned, let me assure you the proposed changes will be for the better and should even reduce some of your program's workload, while maintaining environmental and public health protection.

As discussed in my article in this issue of the "The Communicator," EPA is proposing several revisions to the pretreatment program. If and when the EPA proposed revisions get final promulgation, our state rules may need to be revised accordingly. I also mentioned that DEP is proposing some changes of its own to the pretreatment program through a separate federal initiative. These efforts are being conducted to achieve one of the many goals of both the federal government and the State of Florida.

By now you probably have heard the term...Ecosystem Management. Both the federal and the state governments are pursuing similar versions of this concept of protecting the biological and physical environments. I'm not going to elaborate on the entire concept here, but I would like to focus on one of the four cornerstones of ecosystem management; i.e., Common-Sense Regulation.

Common-sense regulation is results-oriented. The goals of

common-sense regulation are improved efficiency, better stewardship of resources, and more equitable treatment of the regulated public. Without going outside the law, the idea is to find solutions to problems that are based on consensus, rather than protracted adversarial relationships. Strong emphasis is placed on the idea of pollution prevention, rather than traditional end-of-pipe control. Regulations and regulatory personnel should be flexible instead of rigid. The commonsense approach should also provide economic incentives, where appropriate.

One specific example of commonsense regulation the Department is actively implementing has to do with alternative approaches to enforcement. Rather than focusing our efforts on immediate and tough enforcement actions, we are attempting to increase compliance through education, technical assistance, and the development of cooperative relationships with regulated interests. These actions are designed to supplement our existing program activities; however, we have not abandoned our traditional enforcement efforts

for noncompliant facilities that choose not to take advantage of available alternatives.

As you can see from the direction of current and proposed activities, 1996 will be a year that offers a new way to do the things many of us have been doing for years. The changes proposed at the federal and state levels, I believe, will lead to simpler pretreatment program implementation and improved compliance rates.

Change can be scary, unless we know what to expect. That is one of the reasons this newsletter was developed. We want to improve communication, further education and provide technical assistance on issues of program-wide concern. To meet these goals, we intend to provide information and technical discussions that help improve your program or keep you out of trouble. We want you to know what to expect from us. If we fail to provide the kind of information you feel is valuable to your pretreatment programs, please let me know. Only with feedback will we know if our goals have been met and if we are on our way to common-sense regulation.*



Now, that's what I call one effective Inspection Vehicle !

Reminders:

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- A number of approved pretreatment programs have annual reports that are due on February 1. Those reports should be submitted to Tallahassee. Pretreatment Programs whose annual reports are not submitted to the Department within 30 days of their due date are automatically placed in reportable noncompliance (RNC). If there will be any delays in submitting your annual report, please contact Bob Heilman to discuss your particular situation as soon as possible.
- Minor revisions to the Department's annual report guidelines were mailed out on January 2. If you did not get your copy, please contact Gary Millington for a replacement.
- The next semi-annual State • Coordinators Workshop will be held in Ft. Myers in conjunction with the 1996 Florida Water Resources Conference. Tentatively, the workshop is planned for May 8. Mark your calendars and plan to attend.

Discharge Limitations

(continued from page 6)

This facility is subject to chromium, zinc, and cyanide pretreatment standards for existing sources at 40 CFR 465.34. For simplicity, we will only consider the daily maximum categorical standards in this example. The applicable daily maximum categorical pretreatment standards are:

- 0.42 mg/m^2 for chromium ù
- 1.32 mg/m^2 for zinc, and ù
- 0.29 mg/m^2 for cyanide. ù

Great! The new owners just called and want to meet with you much earlier than expected (later this afternoon) because their travel

plans have changed. Gosh, where did I put that information, anyway!

Now that your lunch has been reduced to a calculator banging session, where do you start?

STEP 1.

Because there is only one wastestream prior to treatment, you can simply apply the categorical standard at the end of process. Of course, the categorical pretreatment standard is expressed in mg/m^2 . So, first, you must determine the equivalent concentration based on the representative production and flow rate data. The equivalent concentration pretreatment standard can be calculated using the following formula to convert from a production-based to a concentration-based standard, C_{EO}:

$$C_{EQ} = \frac{C_P \cdot PR}{F_P}$$

where;

 $C_{EO} = equivalent$ concentration-based pretreatment standard,

- C_P = the production-based categorical pretreatment standard,
- PR = the representative long-term production rate (note - the value of PR can be expressed differently in various point source categories), and
- F_P = the representative long-term process flow rate.

Thus, for chromium, $C_{EO} =$

 $(0.42mg/m^2)(359,614ft^2/d)(0.3048m/ft)^2$ (30,287 gal / d)(3.7854L / gal)

 $C_{EO} = 0.1224 \ mg \ / \ L$

Similarly, for zinc and cyanide at the end-of-process:

 $C_{EQ} = 0.3847 mg / L$ for zinc, and

 $C_{EQ} = 0.08451 mg / L$ for cyanide.

By paying close attention to our units, we were able to quickly calculate the categorical

CWF & FWA Formula:

General forms for applying the combined wastestream (CWF) or the flow weighted average (FWA) formula when developing effluent limitations for industrial users. Because these formulas are general. modifications may be necessary for specific applications.

Combined Wastestream Formula:

$$C_{AL} = \frac{\sum_{i=1}^{N} C_i F_i}{\sum_{i=1}^{N} F_i} \left(\frac{F_{AL} - F_D}{F_{AL}} \right)$$

Flow Weighted Average Formula:

$$C_{AD} = \frac{\displaystyle\sum_{i=1}^{NA} C_{AL_i} F_{AL_i} + \displaystyle\sum_{i=1}^{NC} Cu_i Fu_i}{F_{AD}}$$

where:

- C_{AL} = alternative discharge limit
- $C_{AD} =$ adjusted discharge limit
- C_i = categorical pretreatment standard for pollutant in wastewater stream i
- Cu_i = representative concentration for pollutant in unregulated stream i The number of categorical
- N =wastewater streams
- NA = The number of "alternative" wastewater streams
- NC = The number of noncategorical wastewater streams
- $F_i =$ The longterm average daily flow in wastewater stream i
- F_{AL} = The total flow where the alternative limit applies
- F_{AD} = The total flow where the adjusted limit applies

 $Fu_i = the flow from unregulated$ wastestream i

 F_D = the total flow from dilution wastestreams such as: 1. sanitary wastestreams; 2. process wastestreams exempted from categorical pretreatment standards; or 3. boiler blowdown, noncontact cooling water, stormwater, and deminerilizer backwash, if these do not contain significant amounts of the pollutant of concern (otherwise, they are "unregulated" since they contain pollutants of concern from an unregulated source)

pretreatment standards in mg/L for the end-of-process.

STEP 2.

Now, what about your local limits. The Concreteopolis pretreatment program has corresponding local limits of:

- **ù** 1.5 mg/L for chromium
- **ù** 3.0 mg/L for zinc, and
- $\hat{\mathbf{u}}$ 0.15 mg/L for cyanide.

So, these must be compared to the categorical limits. However, the local limits don't apply at the end-of-process; rather, these apply at the end-of-pipe, where the industrial user connects to your publicly owned collection system. Having read the last Pretreatment **Communicator**, you quickly recall the flow weighted average (FWA) formula, which must be used to account for dilution wastewater or nonregulated sources of pollutants combined after treatment. In this case, you decide to adjust the local discharge limits so that they can be compared to the categorical limits at the end-of-process.

For the chromium local limit at the end-of-process:

 $C_{AD} = \frac{1.5 \cdot (30,287 + 2,300) + (0 \cdot 0)}{30,287}$

 $C_{AD} = 1.\ 6\ mg\ /\ L$

Similarly, for zinc and cyanide local limits at the end-of-process:

 $C_{AD} = 3.2 mg / L$ for zinc, and

 $C_{AD} = 0.16 mg / L$ for cyanide.

That was easy enough, now you have two sets of pretreatment standards that apply at the end-of-process. Upon comparison, you find that the categorical pretreatment standards are more stringent than your local limits. That was easy! Now, to enjoy the rest of that peanut butter and jelly sandwich before company arrives.

Wow, that sandwich sure was good! But, now you're in the

meeting with the Happy Coils folks and they are telling you that plans changed. First, their in-house environmental audit team recommended that they discontinue a 500 gpd boiler blowdown discharge that used to be disposed to an onsite percolation pond. Analyses on their boiler blowdown wastewater do not indicate the presence of any regulated pollutants using approved methods (40 CFR 136). Therefore, it looks like the facility will have a 500 gpd dilution wastestream combined with the regulated process prior to pretreatment. (Looks like a job for the CWF after all!)

The second piece of big news was that, a sister subsidiary coil coating company (Sad Steel Coaters, Inc.) heard that all of the other companies were moving to Florida. (And, of course, they weren't going to be left to shovel snow all by themselves.) As their name appears to indicate, this company's process discharge is subject to pretreatment standards for the steel basis material subcategory.

So instead of a second example, let's continue with the first scenario, but with a few added twists. Apparently, Sad Steel Coaters, Inc. has agreed to become a division of the Happy Coils Company when they relocate to the facility in beautiful Hernandez Park in Concreteopolis, Florida. The owners tell you that the facility should have a separate process line for coating operations on steel basis material. You check your files, and sure enough, you agree that this discharge source is also an existing source since both process lines were originally installed during construction in 1978.

Now, things have gotten a little more complicated, but no problem. You refer to your carefully prepared "example" schematic! Of course, it would help if everybody in the meeting weren't staring at you while you're doing the new calculations.

<u>STEP 3</u>.

As you go through the new information, you determine that the representative production and process flow rate for the steel process line is 103,000 ft² and 20,200 gpd, respectively. This process is subject to 40 CFR 465.14; thus, the applicable daily maximum categorical pretreatment standards are:

- $\hat{\mathbf{u}}$ 0.50 mg/m² for chromium
- $\hat{\mathbf{u}}$ 1.56 mg/m² for zinc, and
- $\hat{\mathbf{u}}$ 0.34 mg/m² for cyanide.

As before, the equivalent concentration-based pretreatment standard (C_{EQ}) is calculated from



the production and flow rate data for the steel process line.

For chromium at point C, $C_{EO} =$

 $\frac{(0.\ 50\,mg\ /\ m^2)(103,000\ ft^2\ /\ d)(0.\ 3048m\ /\ ft)^2}{(20,200\,gal\ /\ d)(3.7854L\ /\ gal)}$

 $C_{EQ} = 0.0626 mg / L$

Similarly, for zinc and cyanide at point C:

 $C_{EQ} = 0.195 mg / L$ for zinc, and

 $C_{EQ} = 0.0425 mg / L$ for cyanide.

STEP 4.

You've now calculated both sets of categorical pretreatment standards which are expressed in concentration units and apply at the end of the respective processes. The next step is to apply the CWF, to calculate a fixed alternative discharge limit (C_{AL}), since there are several wastewater discharges that combine prior to pretreatment.

For chromium at point D:

 $C_{AL} = \frac{\begin{pmatrix} 0.1224 \cdot 30,287 + \\ 0.0626 \cdot 20,200 \end{pmatrix}}{(30,287 + 20,200)} \left(\frac{50,987 - 500}{50,987} \right)$

 $C_{AL} = 0.097 \ mg / L$

Similarly, for zinc and cyanide at point D:

 $C_{AL} = 0.31 mg / L$ for zinc, and

 $C_{AL} = 0.067 mg / L$ for cyanide.

Since you're familiar with the facility, you decide that point D should be the monitoring location. You also note that these categorical pretreatment standards at point D, are more stringent than your local limits, adjusted for the same location. (Of course, if you wanted to monitor at point A, you would use the FWA to adjust the limits from point D to their equivalent values at point A!) As you look up from your calculator, you carefully review your results with the folks from the Happy Coils Company. They smile and tell you that those are exactly the same numbers they calculated!

Well... You did it again! And even under the intense pressure of having to think on the spot! Very impressive! Now, go wipe that peanut butter off your lip.

As we noted last time, every permit issued to a significant industrial user must include effluent limits based on applicable pretreatment standards, and should specify the monitoring location. By carefully developing an industrial user's discharge limits and by documenting those limits in the permit and file, you will have successfully completed one of the major tasks for your pretreatment program. Next time, watch for the last installment in our Concreteopolis permitting adventure series! Once again, we encourage you to provide related examples or questions that you would like to see addressed. •

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