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DEVELOPMENT OF INDUSTRIAL USER PERMITS UNDER THE PRETREATMENT PROGRAM

U.S. Environmental Protection Agency

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We are pleased to present the following draft guidance materials to the Publicly Owned Treatment Works (POTW) on development of discharge permits for industrial users of the sewer system. Effective implementation of the Pretreatment Program depends heavily on the quality of the control mechanism (i.e., the permit or contract) used to establish the Industrial User's discharge limitations and wastewater management conditions. This document provides an outline of the procedures normally followed in the environmental permitting process.

As the materials contained in this guidance are currently in draft form and subject to Agency wide peer review, we invite and encourage your comments on the manual. Questions and comments on this document should be addressed to:

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Sincerely yours,

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TABLE OF CONTENT

APPENDICES

1. INTRODUCTION

The General Pretreatment Program is a regulatory program for the control of the discharges of pollutants to a Public Owned Treatment Works (POTWs) that might interfere with plant operations, pass through the plant untreated, or impair the quality of the plant's sludge (limiting reuse or disposal options). Under the General Pretreatment Program regulations, the Control Authority must be able to regulate the contribution to the POTW from each industrial user assuring compliance with pretreatment standards and requirements. The issuance of wastewater discharge permits to indirect dischargers (industries discharging to a POTW system) generally provides the most effective control mechanism available for regulating industrial users. In addition, it can effectively accommodate changes in environmental regulations for industrial processes. Since no two industrial users are the same, a permit system provides an efficient means for varying limitations, monitoring and reporting requirements.

Industrial discharge permits serve two essential functions. First, the permit is a vehicle for establishing clear and explicit requirements relevant to each industrial user (IU). Through the permit, an IU will better understand its obligations for compliance with the Pretreatment Program's requirements. Secondly, the POTW's ability to enforce the standards becomes significantly enhanced through use of this strict liability mechanism. In addition, the permit issuance process provides an opportunity for the POTW and the IU to become more familiar with the kinds of waste materials and potential waste materials that may be discharged from the industrial facility.

This manual provides guidance to POTWs in developing wastewater discharge permits. Chapter 2 provides an overview of the permit as the primary enforcement and control mechanism. Chapter 3 details step-by-step permit development procedures.

2. THE PERMIT AS A CONTROL MECHANISM

A POTW's authority to control IU discharges through a permit system must have a sound legal foundation. This authority is usually derrived from the POTW's sewer use ordinance and/or rules and regulations. The permit writer should be familiar with the extent of the POTW's legal authority for issuing and enforcing permits. Once issued, the permit becomes an enforceable document. A violation of any permit condition then constitutes a violation of the POTW's sewer use ordinance (or rules and regulations) and subjects the permittee to enforcement actions and penalties authorized by the POTW's sewer use ordinance.

To ensure its enforceability, wastewater discharge permits must:

- Use specific language
- Contain concise and complete conditions and requirements
- Be clearly and simply written.

The POTW must be concerned that its ability to enforce pretreatment program requirements is not somehow compromised by weak, vague, or obtuse language in the permit. For example, phrases such as:

It is <u>recommended</u> that the permittee....
Results <u>should</u> not exceed....
The permittee <u>may</u> not....
Daily maximum violations <u>may</u> be determined by....
The permittee is <u>expected</u> to....

Each contain a word (underscored) that undermines the enforceability of the permit. These phrases should be written:

The permittee is required....
Results are not to exceed....
The permittee shall not....

Daily maximum violations shall be determined by....

The permittee is required to....

in order to maintain the enforceability of the permit requirements.

It is often necessary to take the complex pretreatment program requirements and present them in a concise simplified manner. The permits must clearly specify such items as:

- Wastewater discharge requirements and limitations
- Dates (issuance date of permit, dates for compliance with discharge limits, expiration date of permit)
- Self-monitoring requirements

  a. The types of samples required (e.g., composite or grab)
  b. The frequency of sampling, and
  c. The location from where the sample is to be taken (e.g., final control manhole prior to entering the POTW sewer main)

- Reporting requirements (e.g., how much data, how often, to whom it is to be sent, etc.)
- Analytical procedures to be followed in testing samples (e.g., all samples must be performed in accordance with approved EPA procedures published at Title 40, Part 136 of the Code of Federal Regulations)
- Special conditions where necessary (e.g., compliance schedules, best management practices)
- General conditions and ordinance requirements
- Violation determination (e.g., any single sample, either grab or composite, in excess of the daily maximum limitation shall be a violation of this permit).

Because the permit will likely be used by the IU as the primary information document explaining its responsibilities for compliance, the permit requirements must be clear. An unclear presentation of the requirements could be a cause for challenge of the permit by the IU.

3. PERMIT DEVELOPMENT PROCEDURES

Formally documented permit issuance procedures will ensure that all aspects of the permit development process are considered in the drafting of and IU's permit. In addition, these procedures will help to establish fair and consistent treatment by the POTW in the permit issuance process.

Usually the POTW's sewer use ordinance or rules and regulations require an IU to complete and file a permit application to obtain a wastewater discharge permit. Much of the permit application information may have already been gathered by the POTW using Industrial Wastewater Surveys during pretreatment program development. The Baseline Monitoring Report (BMR), required to be submitted by industries subject to National Categorical Pretreatment Standards also contains much of the relevant information. Thus the POTW may wish to accept an IU's BMR or Industrial Wastewater Survey as part of the application. Guidance on the development of permit application or survey forms is provided in pretreatment guidance documents. A list of these documents can be found in the bibliography at the end of this manual.

A POTW's sewer use ordinance or rules and regulations normally describe a timeframe for issuance of a permit. Once the permit application has been received, the POTW should complete the application review process, draft a permit, send it to the industrial user for review and comment, then issue the final permit. (There may be a need for the user and POTW staff to meet, discuss and negotiate the conditions in the draft permit). Ideally, the process should take no more than 60 days from review of permit to issuance of the final permit.

There are a number of general procedural steps that the POTW must follow in developing the technical requirements of an IU's pretreatment program permit. These steps are listed in brief form in Table 1. Each of these steps is further discussed in this chapter. Depending on the complexity of the industry being reviewed, various steps might be omitted for specific permits. For instance, if National Categorical Pretreatment Standards are available, the POTW may not need to conduct an extensive toxic pollutant assessment of the IU's process wastestreams. On the other hand, all IU

TABLE 1

OUTLINE OF STEPS FOR THE DEVELOPMENT OF
INDUSTRIAL USER DISCHARGE PERMITS

I. EVALUATION INDUSTRIAL USER DATA

A. Permit Application Review

- Is the application complete?
- Does any supplemental information need to be requested?
- Are additional toxic pollutant information and/or data required?

B. Background Information Review

- Has all available file information been compiled?
- Is reference information available?
- Is the available information adequate?
- Is it necessary to request supplemental information?

C. Facility Inspection

- Will an onsite visit help the permit writer understand the operation?
- Is the facility a complex operation?
- Is the available information inadequate or does it require verification in order to prepare a permit?
- Is there a history of compliance problems?
- Are Best Management Practice (BMP) requirements needed? (If there are significant surface runoff problems, a history of spills and leaks, or onsite storage, treatment or disposal of hazardous wastes, BMPs would appear appropriate).

II. DEVELOPMENT WASTEWATER DISCHARGE EFFLUENT STANDARDS

- Are National Categorical Standards applicable?
- Are toxic substances used, produced, and/or present in the effluent?
- Do any toxic pollutants need to be limited?
- Is the present treatment system adequate to treat toxicants anticipated to be present?
- What is the economic achievability of various technologies available to treat the toxicants of concern?
- Does the POTW need to develop specific limitations based on its application of Best Professional Judgment (BPJ)?
- Do the local limit requirements apply to any pollutants anticipated to be in the effluent?

TABLE 1

OUTLINE OF STEPS FOR THE DEVELOPMENT OF
INDUSTRIAL USER DISCHARGE PERMITS (CONTINUED)

II. DEVELOP WASTEWATER DISCHARGE EFFLUENT STANDARDS, continued

- Does the IU have a known or potential to impact the POTW's operating conditions?
- Are POTW limits more stringent for any parameters?
- Does the POTW have local limits or non-toxic and/or conventional pollutants specified by ordinance or regulation?
- Are any guidelines on the regulation of non-toxic and/or conventional pollutants available?
- Is existing treatment adequate to control non-toxic and/or conventional pollutants?

III. DEVELOP MONITORING/REPORTING REQUIREMENTS

IV. ESTABLISH SPECIAL CONDITIONS/REQUIREMENTS

A. Define Best Management Practices (BMPs)

- Are toxic or hazardous substances handled?
- Is there potential for discharge of toxic or hazardous substances from ancillary activities?
- Is it appropriate to require a BMP plan?
- Is a plant inspection needed?
- Can specific BMP requirements be defined?

V. ESTABLISH GENERAL CONDITIONS

VI. PREPARE A RATIONALE AND FACT SHEET

pretreatment program permits require review of the application to determine any necessary effluent limits and operating conditions.

A sample pretreatment permit is presented in Appendix A as an example of the application of the permit development steps to actual permit cases. THe sample is a hypothetical draft permit with ficticious names, places, and associated data. Appendix B is the Fact Sheet Supporting the permit.

3.1 EVALUATING INDUSTRIAL USER DATA

The initial step in the preparation of an IU's permit includes review of industrial user data contained in the permit application and other pertinent background information, followed by a facility inspection.

3.1.1 Permit Application Review

A completed permit application should provide the following basic information:

1. Name, mailing address, location address, and telephone number of the facility
2. Name of the responsible official at the facility and identification of the facility contact
3. Nature of the facility's operations
4. A schematic diagram indicating the process sequence and flow as well as identification of points of discharge to the POTW
5. Information providing an understanding of the representative quality of the discharge
6. A brief discussion of the pretreatment system used by the facility
7. A brief discussion of the compliance program taken by the facility to comply with applicable pretreatment standards
8. A brief discussion of the manner in which any residual solids are disposed.

The permit writer may find a review checklist to be helpful in evaluating the completeness and adequacy of the completed permit application. Any deficiencies or additional information needed should be noted.

In reviewing the industrial user's information, particular attention should be given to:

- Information on the use, production and discharge of toxic substances, and
- Information on all wastestreams (schematic flow diagram, flows and waste characterization of individual wastestreams).

Information on the use or production of toxic pollutants at a facility and adequate sampling data on toxic pollutants in effluents are essential to the preparation of adequate permit limits for toxic pollutants. Industrial users should provide a comprehensive list of toxic substances used, produced (as product, by-product, or intermediary) stored, known or suspected to be present in the wastestream. Specific organic constituents of trade name products or compounds should be obtained from the manufacturers.

Schematic diagrams of facility operations and internal water and wastewater streams should be reviewed to identify regulated, non-regulated and dilution streams. Waste characterization (through sampling and analysis) of individual wastestreams may be necessary.

EPA experience in the National Pollutant Discharge Elimination System (NPDES) program's regulation of surface water discharges has shown that toxic pollutant data on the final effluent may not always be adequate for complex facilities where internal wastestreams can be diluted by large volumes of cooling water prior to the sampling point. Further, any facility subject to a National Categorical Pretreatment Standard is required to meet the standard prior to mixing with any non-regulated and dilution wastewaters. If sampling at the end of the regulation process or treatment of the regulated process prior to being combined with dilution or non-regulated wastewaters is not feasible, the POTW must utilize the combined wastestream formula to adjust the allowable discharge standard. Further guidance on use of the Combined Wastestream Formula is provided in Appendix C.

In some cases, data on the waste characteristics of internal wastestreams, particularly treatment unit effluents, may be needed to assess the adequacy of existing pollution controls and the feasibility of achieving greater reductions in the discharge of toxic (priority) pollutants. A good example of such a situation is the control of cyanide waste in the metal finishing industry. Cyanides must be monitored directly after cyanide treatment (generally a preliminary stage of treatment for some types of metal finishing wastes) unless the standard is adjusted using the combined wastestream formula.

3.1.2 Background Information Review

In addition to the permit application and/or BMR, several items of information may be needed to adequately prepare a permit. Some items which might already be in the permit file or office include:

a. Water use records (this information can be used to verify flow data)

b. Facility's BMR (this information can assist identifying any changes in production/operation procedures, wastestream characterization or flows, pretreatment facilities)

c. A current permit

d. The fact sheet (rationale) for the current permit

e. Industrial self-monitoring reports

f. POTW compliance inspection/monitoring reports, and

g. Any correspondence concerning compliance problems, changes in plant conditions and communications with other agencies.

Other information available to assist the POTW in the permit development include:

a. National Categorical Pretreatment Standards
b. Development documents supporting National standards
c. Reference textbooks on specific industry categories
d. EPA's Treatability Manual
e. RCRA regulations.

As needed, supplemental data may be available from the State Agency, the EPA Regional Office, or a university or local library.

The POTW must assess the impact of the pollutants (particularly toxic pollutants) discharged by the IU on treatment plant operations, receiving stream water quality and sludge disposal practices. The POTW may have already completed this assessment during pretreatment program development. However, if an industrial user discharges a toxic pollutant for which a local analysis has not previously been determined, the POTW must examine that pollutant's potential impact to the POTW as part of the permit development process. In these cases, the POTW may also need information on State Water Quality Standards, receiving water quality data, sludge disposal regulations or criteria to conduct this assessment.

3.1.3 Facility Inspection

A facility inspection is a useful mechanism to verify application information and to gain an understanding of the IU's facilities. It is imperative that a site visit be made to the IU, particularly if:

- Significant pollution control or treatment improvements will be required
- Additional monitoring to characterize the wastewater is needed
- Frequent problems with complying with the present permit have occurred or potential or known problems with spills
- Leaks or contaminated surface runoff have been noted.

For an inspection to be most useful, it must involve more than a general discussion of plant activities and a quick tour of waste treatment facilities and outfalls. A proper inspection encompasses review of the following:

1. Production processes. This will assist the permit writer in an evaluation of:

   a. Applicable categorical pretreatment standards

b. What toxic or hazardous substances may be present in raw materials and associated contaminants, in products and in by-products

c. Water uses and resulting wastewater streams

d. Existing in-process pollution controls

e. Potential for spills and leaks

From this information, the permit writer may wish to either select toxic pollutants to be limited and/or require an evaluation of possible in-process controls.

2. The sewer layout of the plant. If a sewer plan exists, the permit writer needs to thoroughly review the plan to determine the course and destination of each sewer line. The exact source and the point at which each wastestream enters the sewer need also be identified. Existing monitoring or potential location for monitoring should also be located

3. The wastewater treatment facilities, their performance and operation and maintenance practices. This information can be used to evaluate the adequacy of existing treatment in assessing the feasibility of improvements and in evaluating performance data.

4. The kinds of batch dischargers that occur at the facility.

5. The raw material and product storage and loading areas, sludge storage and disposal areas, hazardous waste management facilities including onsite disposal areas and all process areas. This review will help to identify potential or known problems with spills, leaks or contaminated surface runoff and determine the need for additional controls through the establishment of specific Best Management Practices (e.g., spill prevention plans, solvent management programs, etc.).

6. Sampling methods and analytical techniques must be reviewed to define any needed changes and to evaluate the quality of the sampling data, both POTW and self-monitoring.

To conduct an adequate inspection at a facility may require a full day. Complex larger plants with several treatment systems, numerous outfalls and extensive ancillary activities may require even more than one day to inspect.

Time spent on plant inspections during the development of the permit can result in time savings during permit preparation. However, available time/resources may not be adequate to allow as comprehensive an inspection as might be desired. In such cases, the permit writer should identify the specific information needed to complete permit development and conduct an abbreviated inspection to obtain this specific information. Alternatively, additional information could be obtained from the next compliance monitoring inspection. This requires advance planning to review the permit application and background information so that the compliance inspector can be alerted to specific information needs. Guidance on the performance of inspections may be found in the following documents:

- USEPA Region VIII, Industrial Pretreatment Program Inspection Manual - Draft, November 1984
- USEPA Office of Water Enforcement and Permits, NPDES Compliance Inspection Manual, June 1984.

3.2 DEVELOPING DISCHARGE EFFLUENT STANDARDS

The primary purpose of the permit is to convey specific wastewater discharge limitations for each industrial user discharging to the POTW. In determining which specific limits will apply to a particular industrial user the permit writer must consider National Categorical Pretreatment Standards, local limits (prohibited substances and numerical conventional, non-conventional and toxic pollutant limits) and specific limits based on Best Professional Judgment. Each of these three types of wastewater discharge limits is discussed further in this section.

In addition to containing the wastewater discharge limits that apply to a particular IU, the permit should clearly indicate where the limits will apply. Generally, the IU is required to be in compliance with the limits at the point of connection to the sewer system. However, the IU may be required to meet different limits at other points, such as National Categorical Pretreatment Standards at the end of a regulated process or after treatment, and local limits at the sewer connection point. In the case where an IU has several connections the permits should identify each connection and specify the limits which apply to each connection.

The permit must also specify the date by which the IU must be in compliance with all permit conditions. This date may be the same as the issuance date of the permit. Alternatively, the effective dates could be specified as 30 days from the date of the issuance and lasting until a new permit is issued. In some cases, the permit might specify interim milestones which the IU must comply with upon issuance of the permit and final limits which the IU must meet by a specified date.

3.2.1 National Categorical Pretreatment Standards

One of the primary responsibilities the POTW assumes in receiving approval of its Industrial Pretreatment Program is assuring IU compliance with all applicable National Categorical Pretreatment Standards. These Standards are published at 40 CFR 405 et seq. List of industries for which National Standards were to have been developed appear in appendices published with regulations and as notices in the Federal Register. It is important for the POTW to realize that the list of industries that have been or are going to be subjected to National Categorical Pretreatment Standards are likely to change over time. Consequently, the POTW must periodically review various sources of information (e.g., EPA's regulatory agenda published each April and October in the Federal Register, the quarterly and annual Federal Register Index, Code of Federal Regulations) to determine:

1. If the IU has processes which might be subject to National Categorical Pretreatment Standards. Sometimes the POTW will need to refer to several possible categories of industry before it can focus in on whether a specific process is regulated. For example, recovery of silver from photographic chemicals is under Non-Ferrous Metals Manufacturing.

2. If the National Categorical Pretreatment Standards have been either proposed or promulgated for a process of that IU.

3. Where the National Categorical Pretreatment Standards have been promulgated, what is the deadline for submission of the industries Baseline Monitoring Report (BMR) and the deadline for final compliance with the National Categorical Pretreatment Standards.

After making a preliminary determination as to the applicability of any National Categorical Pretreatment Standards, the POTW must have sufficient information (either from the BMR, the permit application, onsite inspection, or other sources) to establish if the IU is currently in compliance with the National Categorical Pretreatment Standards. Subsequently, the POTW will apply the standards to the IU as follows:

a. If the IU's BMR or permit application demonstrates compliance or the compliance deadline for the National Categorical Pretreatment Standards has passed, the permit must be written to require immediate compliance with the National Categorical Pretreatment Standards.

b. Alternatively, if the IU's BMR or permit application demonstrates that compliance has not yet been achieved and the compliance deadline for the National Categorical Pretreatment Standards has not yet passed, the permit must establish interim limitations that will be effective until such time as the National Categorical Pretreatment Standards can be met. (Refer also to the Compliance Schedule discussion section of this manual).

The permit must contain both the daily maximum and long-term average standards specified in the Categorical Pretreatment Standards, (the long-term average is generally a 30-day average, but in some cases may be a 4-day average). In addition, where the regulated process wastewaters are mixed with dilution water, non-regulated wastewaters or with wastewater regulated by a different categorical pretreatment standard prior to treatment, the permit writer must calculate alternative discharge limits using the Combined Wastestream Formula (CWF). These alternatives discharge limits then apply at the mixed effluent. Further guidance on the application of the CWF is found in Appendix C.

National Categorical Pretreatment Standards might be applied on either a concentration and/or a mass basis. Generally, mass-based standards are established relative to a production level of the industry (i.e., so many pounds of pollutant per 1000 units produced). Production-based mass standards provide the IU the opportunity to apply water use conservation techniques (e.g., recycle) to its waste water system without penalizing the IU in terms of the regulated concentration of pollutants. In some cases, it may be desirable to convert concentration-based standards to mass

limitations or visa versa. EPA is developing a guidance manual to specifically describe how to apply Categorical Pretreatment Standards.

The permit writer must also review the IU's discharge data to determine if any toxic pollutants reportedly not used or produced are present in the effluent at levels greater than allowed by the appropriate National Categorical Pretreatment Standard. Such pollutants may originate as contaminants in raw materials and products or from ancillary non-process operations.

3.2.2 Local Limits

Most POTWs have developed general prohibited standards and pollutant specific local limits. These local limits normally apply to every IU of the POTW. Consequently, local limits might be included with the general conditions of the permit.

Local prohibited standards are generally established in a generic or descriptive fashion in a POTW's sewer use ordinance or rules and regulations. These prohibited standards are similar in nature to other National prohibited standards in 40 CFR 403.5(b) of the General Pretreatment Regulations.

Generally, pollutant specific local limits consist of heavy metal limits, cyanide, BOD, TSS, and fats, oil and grease (FOG), and possibly a few toxic organics. They are generally expressed as maximum limitations. However, some POTWs have both average and maximum values. These limits are normally contained in a POTW's sewer use ordinance or rules and regulations. Many cities have had such limits in their ordinance for a number of years and recently, as a requirement of developing its own pretreatment program, have refined existing limits or developed and enacted new limits for the first time. The basic philosophy behind locally derived limits is prevention of:

- Interference
- Pass-through of pollutants that may affect water quality
- Sludge contamination.

In implementing its pretreatment program, a POTW is required to enforce the "applicable pretreatment standard" (i.e., local/State/Federal, whichever is most stringent). Locally, derived numerical limits can, in some cases, be more stringent that National Categorical Pretreatment Standards, since they are based on local site-specific situations. Therefore, a permit may contain a mixture of National Categorical Pretreatment Standards and local limits. However, the determination of which limits are more stringent and therefore which limits must be enforced may be a complicated task. In contrast to the National Categorical Pretreatment Standards which apply at the end of the regulated process, local limits are normally applied at the point just prior to the introduction of the industrial wastewater to the POTW (end-of-pipe). The POTW has a variety of options under which it might address this apparent discrepancy. One way is to require the IU to sample at separate locations for compliance with the different standards. Alternatively, the POTW might be able to impose the more stringent (i.e., local limits v. National Categorical Pretreatment Standards) at every monitoring location. Another alternative would be to impose the more stringent at the end-of-pipe.

The last two alternatives may require the use of the Combined Wastestream Formula. In the situation where a plant sewer connected to the POTW's sewer contains only wastewater from a process regulated under a particular categorical standard, then the end-of-process is the same as the end-of-pipe and the determination of which limits apply, local or Federal, is simply which limit is more stringent.

However, in the situation where a plant discharge to the POTW'S sewer contains other process wastewater (e.g., from a process regulated by another category or not regulated by a categorical standard) or other wastewater (e.g., non-contact cooling water or sanitary wastewater), then the POTW using the combined wastestream formula must adjust the National Categorical pretreatment standards to end-of-pipe. Guidance on use of the Combined Wastestream Formula is contained in Appendix C. Alternatively, locally derived effluent limits may be back-calculated to the regulated process eliminating non-regulated and dilution streams.

Although the industrial pretreatment program emphasizes the control of toxic pollutants, both conventional and non-conventional pollutants can also be controlled. Some facilities may require control of conventional and non-conventional pollutants (e.g., limitations on BOD to protect capacity of the treatment plant). If, for the pollutants to be limited, local limits or Categorical Pretreatment Standards are not available, the BPJ procedures discussed below can be used to develop any necessary effluent limits.

3.2.3 Best Professional Judgment Requirements

In the absence of an applicable National Categorical Pretreatment Standard and an appropriate technology based local limit, or where the POTW feels that significant toxic pollutants are contained in the IU's discharge, establishment of limitations should be based on the application of Best Professional Judgment (PBJ). The concept of BPJ is simply to conduct an analysis of the technology available to treat toxic pollutants of concern. Application of the following factors should result in the POTW establishing appropriate technology-based pretreatment standards for the IU:

a. The age of the equipment and facilities involved

b. The industrial processes used

c. The existing treatment techniques

d. The engineering aspects of available treatment technologies, process changes, non-water quality environmental impacts (e.g., RCRA issues)

e. Process and procedure innovations

f. Operation methods and alternatives for other categories of facilities which might have similar waste characteristics

g. The cost of achieving such effluent reductions and,

h. Other factors which might be deemed appropriate.

An evaluation of the existing treatment system may often assist in the selection of pollutants to be limited. If some pollutants are used in small amounts, it may not be possible to directly limit that particular

pollutant. In such cases, the evaluation might identify an indicator or surrogate pollutant.

The usefulness of both indicator and surrogate pollutant is limited to the individual treatment technology employed. There must be a correlation between indicator or surrogate pollutant and the underlying toxic pollutants so that one can predict with some confidence that a particular treatment technology which results in the discharge of a prescribed amount of the indicator or surrogate pollutant also achieves the appropriate level of removal of the underlying toxic pollutant(s).

The treatment system evaluation includes a determination of the adequacy of present controls. Although the treatment system may be basically adequate for overall control of process wastewater, in some cases additional control of specific toxic substances will be needed. Such control is most often achieved by in-process changes or by treatment units on selected small process wastewater streams. To make such determinations requires a combination of in-depth knowledge of the process, a detailed site inspection, and/or additional sampling data on the small wastestream. Information on appropriate pretreatment controls on toxic pollutants can be found in both the Treatability Manual and various development documents.

3.3 DEVELOPING MONITORING/REPORTING REQUIREMENTS

Monitoring of the discharge to determine compliance with the wastewater discharge limits and periodic reporting of the results of this monitoring are important requirements which must be clearly specified in the permit. Appropriate monitoring and reporting requirements must be determined based on such factors as:

1. Applicability of categorical standards and use of the CWF
2. Effluent and process variability
3. Previous permit requirements, and
4. Local, State, and/or Regional policy and/or regulations.

3.3.1 Monitoring Requirements

In establishing monitoring requirements for the sampling point, frequency of sampling and type of sample are three major items to be specified in the permit. The factors to be considered in establishing each are discussed below.

Sampling Point

The wastewater discharge permit should specify the location of the effluent monitoring points within an IU's facility. Depending on how the effluent conditions are established, the permit may specify that either the total plant discharge flow is to be monitored and/or a specific discharge from a certain operation must be monitored separately. The monitoring point should coincide with the point where the limits apply.

The following factors apply for determining the representative sample point:

1. National Pretreatment Program Categorical Pretreatment Regulations apply to the discharges from each regulated process wastestream. Therefore, samples must be taken at representative sites of the individual wastestreams. If two or more wastestreams are combined prior to treatment, a combined wastestream formula can be used to determine the effluent limitation and the discharge sampled after the combined treatment. (The Combined Wastestream Formula is discussed in Appendix C).

2. Samples must be taken at locations where flow can be measured or estimated.

3. Sampling locations must be convenient, accessable, and practicable.

4. Above all other factors, the location must produce a sample that is representative of the nature and volume of the discharge to the POTW.

Frequency of Sampling

To determine the appropriate frequency of sampling the IU's discharge, the following factors need to be considered:

1. The regulatory requirements (i.e., the existing permit, ordinance, POTW policy statements, or Federal regulation).
2. The frequency necessary to be representative of the discharge.
3. The nature of the waste generated and the reliability of the IU's treatment system. For example, if the waste is highly variable, more sampling is necessary to accurately characterize it. Conversely, the more consistent the waste quantity and quality, the less sampling needed.
4. The type and concentrations or loadings of pollutants. Discharges with high concentrations or which contribute a significant load of pollutant(s) to the POTW should be sampled more frequently because of their greater potential to impact the POTW.
5. Any seasonal operations of the IU.
6. The length of the IU's operating day (e.g., the discharge occurs only over an 8-hour shift).
7. Any special times during the day, week, or month set aside for batch discharges or cleanup of production lines and the batch and/or cleanup wastestream characteristics.
8. The IU's potential for upsets or spills.
9. The compliance history of the IU.

As a general rule, monitoring of IUs must be required during normal working shifts in the season of productive operation. If appropriate, cleanup periods and batch discharges must also be covered.

Type of Sample

The permit must also specify the type of sample (i.e., grab, or composite) for effluent monitoring. Selection of the appropriate type of sample is done after careful analysis of the effluent and process variability and the type of limit imposed. Time and flow proportional composite samples give a better representation of the average amount of pollutant discharged and is

the preferred method to determine compliance with 24-hour or daily average limits and mass loading limits respectively. However, grab samples are appropriate to determine compliance with "instantaneous" limits. In addition, grab samples might be collected if:

1. The IU employs a batch discharge
2. The flow is homogeneous and continuous with relatively constant waste characteristics so a grab sample is representative of the wastewater stream (e.g., there is flow equalization prior to the sewer discharge)
3. It is necessary to characterize the extremes of flow and wastewater quality
4. A sample is needed for a parameter requiring that the entire sample container contents be used for analysis with no interior transfers of containers, (e.g., oil and grease adherence to container walls might impact the representativeness of a sample) or
5. When sampling for parameters which change character rapidly (e.g., dissolved gases) or those which cannot be held for a long length of time before analyses (e.g., bacteria counts, chlorine, dissolved oxygen, and sulfide.

Flow measurement techniques adopted must be in relation to the sampling location, type of flow, and other similar characteristics.

3.3.2 Reporting Requirements

The permit should delineate the reporting requirements for the IU. These should include:

- Content of reports (flow, analytical data, time and place of sampling, analytical methods used, person conducting the monitoring)
- Dates when monitoring reports are to be submitted to the POTW (frequency should be no longer than semi-annually for categorical industries)
- Who is to sign the reports (authorized representative)
- The POTW address (and department or person) where the reports are to be sent

3.4 DEFINING SPECIAL CONDITIONS

Special conditions are developed on a case-by-case basis to address any specific situations or conditions at a particular IU facility. The requirements for Best Management Practices or compliance schedules are two examples that need to be tailored to the individual IU facility.

3.4.1 Define Best Management Practices

Pretreatment permits can include best management practices (BMPs) conditions to control or abate the discharge of pollutants. When numerical effluent limitations are infeasible (such as in some types of hazardous waste/toxic problems), BMPs become a practical means of carrying out the purposes and intent of the Pretreatment Program. Through BMPs, marginally treatable and untreatable materials can be kept out of the POTW. BMPs might also be considered when evaluating the need to control conventional pollutants.

Currently, there are only a few promulgated National Categorical Pretreatment Standards containing BMPs (e.g., Solvent Management Program to control Total Toxic Organics). Therefore, BMP conditions will usually need to be developed by the POTW. Appendix D provides some general guidelines on the development of BMPs. Additional information is contained in the 1980 draft technical support document "NPDES Best Management Practices Guidance Document." Some recent development documents contain information of industry type specific BMPs.

The initial step in determining the applicability of BMPs is to identify if the facility uses, produces (as an intermediate, product or by-product), stores, handles or discharges toxic or hazardous substances. If a potential for significant discharges of toxic or hazardous substances exists, the permit may need to require the facility to develop a general BMP plan for control of such discharges.

In addition to a general BMP plan, it may be desirable for the POTW to prescribe site-specific BMPs. This is especially true when there is:

1. A known or probable surface runoff problem
2. A history of spills or leaks
3. Highly toxic substances used or generated, or
4. Onsite treatment, storage and/or disposal of hazardous wastes.

3.4.2 Develop Compliance Schedules

If treatment improvements, BMPs, or other changes are required, a compliance schedule specifying a timeframe for completion of the change must be established in the IU's permit. These schedules must consider the complexity of the improvements, seasonal factors, and statutory requirements.

The schedule must contain increments of progress in the form of dates (not to exceed nine months per event) for commencement and completion of major actions (such as hiring an engineer, completing design and construction plans, commencing construction, completing construction, etc.). In addition, the permit should specify that the IU is required to submit progress reports to the POTW within 14 days following each date on the schedule. The contents of these reports, which should also be delineated in the permit, should include:

- A statement on the facility's status with respect to the compliance schedule
- A statement on when the industrial user expects to be back on schedule if it is falling behind. The reason for the delay and steps being taken by the industrial user to return to the established schedule must also be reported.

3.5 ESTABLISHING GENERAL CONDITIONS

The general conditions section contains standard conditions for all industrial users discharging to the POTW sewer system. Many conditions incorporate specific regulatory language by reference to the POTW regulations rather than directly stating the requirement.

Some important general or standard conditions are:

Definition of Terms

Terms used in the permit which may be ambiguous should be defined.

Duty to Comply

By discharging to the POTW under this permit the IU has a duty to comply with its provisions

Duty to Mitigate

The IU must undertake all reasonable measures to mitigate the duration and severity of any violation of this permit.

Right of Entry

This condition should firmly establish the POTW's right of access to the permittee's property to inspect, monitor, examine and copy records. Care should be taken so as not to restrict or limit the POTW's ability to determine compliance with all permit conditions.

Permit Modification/Revision

The POTW's authority to modify or revise the permit during the life of the permit should be stated.

Severability

A severability clause will allow the remaining part of the permit to remain in force should a portion of the permit be found invalid and suspended or revoked by a court of law.

Limitations of Permit Transfers

The discharge permit cannot be transferred to another party, and is valid only for the company and facility to which it is issued.

Duty to Reapply

The permittee's responsibility to reapply for a permit at a specified time prior to permit expiration should be expressly stated in the permit.

Permit Opener Clauses

In addition to the generic permit modification/revision clause, specific conditions which would initiate the modification of the permit could be stated.

Notification of Spills, Slugs, Accidental Discharges

This condition should contain very specific procedures or instructions which the IU must follow to notify the POTW of any unusual discharges.

Prior Notification of Changes in Processes, Volume, or Characterization of Wastewater

This is a key mechanism whereby the POTW can keep informed of significant planned changes by the IU which could impact the POTW.

Proper Disposal of Sludges, Hazardous Waste

This requirement can be beneficial in preventing the discharge of pretreatment sludges and hazardous waste into the sewer system.

Proper Operation and Maintenance of Pretreatment and Monitoring Facilities

The IU is required to operate and maintain its facilities and monitoring equipment with proper diligence.

Analytical Methods

The IUs analytical procedures must be in conformance with 40 CFR Part 136.

Signatory Requirements

This condition defines who will be recognized as the authorized representative of the IU and requires this person to sign all reports submitted by the IU.

Record Retention

The IU must maintain all plant records relevant to their discharge to the sewer system for a minimum of three years.

3.6 PREPARE A RATIONALE AND FACT SHEET

The preparation of a permit is complex, and its content may be subject to questions and legal challenges. To fully substantiate the basis for a permit, a detailed rationale must be prepared. When properly done, this will communicate clarifying information to the permittee and to the public and will make defense of the permit conditions much simpler for the permit writer.

A sample rationale is presented in Appendix B. The rationale gives a detailed description of the facility (its operations and wastewater flows and characteristics) the information needed in developing the permit (permit application, BMR, inspection/monitoring reports), the specific steps followed in the development of the permit and the basis for the effluent limits and permit conditions. The rationale presented here may be more detailed than is generally necessary for most POTW issued permits.

BIBLIOGRAPHY

1. Guidance Manual for POTW Pretreatment Program Development, USEPA, October 1983 (Available from EPA, Office of Water Enforcement and Permits).

2. Procedures Manual for Reviewing a POTW Pretreatment Program Submission, USEPA, October 1983 (Available from EPA, Office of Water Enforcement and Permits).

3. Federal Guidelines - State and Local Pretreatment Program, Vols I, II, and III, EPA, 430/9-76-017 a, b, and c. January 1977.

4. Fate of Priority Pollutants in Publicly Owned Treatment Works, Vols I and II, EPA, 440/1-82/303. September 1982.

5. EPA Treatability Manual, Vols I, II, III, IV and V. EPA, 600/8-80-042C, July 1980.

6. Region VIII, Draft Industrial Pretreatment Inspection Manual.

7. PRELIM - The EPA Computer Program/Modul for Developing Local Limits - User's Guide.

8. NPDES Best Management Practices Guidance Document Draft Technical Support Document, 1980.

APPENDIX A

EXAMPLE PERMIT

Permit No.: IPP0000517

AUTHORIZATION TO DISCHARGE UNDER THE

INDUSTRIAL FALLS INDUSTRIAL PRETREATMENT PROGRAM

In compliance with the provisions of the Industrial Falls City Code at Chapter 35, Parts 35.001 et. seq. (hereinafter referred to as "the Code),

the Smith and Jones Corporation,

is authorized by the City of Industrial Falls,

to discharge from its Metal Finishing Operations located at 1111 Industrial Parkway, Industrial Falls,

to the City of Industrial Falls sanitary sewer system,

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III, hereof.

This permit shall become effective thirty (30) days after the date of signature below.

This permit shall expire _____

_____ _____

Authorized Permitting Official Date

Alfred A. Adams
Director
Department of Utilities SEAL

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Description of Outfalls

Outfall	Description
001	Discharge of the domestic wastewater from all sources at the facility. Point is prior to any mixing with the discharge from the cooling tower system.
002	Discharge from the cooling tower system prior to mixing with the discharge of domestic wastewater.
003	The discharge of all process generated wastewaters from the nickel-chrome plating operations.

2. General Requirements Applicable to All Discharges

The permittee must comply with the City's Prohibitive discharge standards at each of the specified outfall points. The City's Prohibitive Discharge standards are specified at Chapter 35.101 of the Code and appear in Part III of this permit.

3. Specific Effluent Limitations for Outfall 001, 002, and 003

Outfall 001

The discharge shall consist only of sanitary wastewater from domestic sources.

Outfall 002

The discharge shall consist only of blowdown from the cooling tower system.

No chemicals other than chlorine and inorganic acids and bases (e.g., sulfuric acid, sodium hydroxide, etc.) shall be used in the cooling tower system unless prior written approval has been granted by the permit issuing authority. If approval is granted, the use of the chemical shall be in accordance with the conditions of approval. See Part III for information to be provided with request for permission to use chemicals in the cooling tower system.

3. Specific Effluent Limitations (continued)

Outfall 003

A. Effective immediately and lasting through February 14, 1986, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below:

	Effluent Concentration		
Parameter	Daily Maximum a/	Maximum 4-Day Average b/	30-Day Average c/
Total Cadmium (mg/L)	0.40	N/A	N/A
Total Chromium (mg/L)	5.0	4.0	2.5
Total Copper (mg/L)	4.5	2.7	1.8
Total Lead (mg/L)	0.6	0.4	0.3
Total Nickel (mg/L)	4.1	2.6	1.8
Total Zinc (mg/L)	4.2	2.6	1.8
Total Metals (mg/L) d/	10.5	6.8	5.0
Total Cyanide (mg/L)	1.9	1.0	.55
TTO (mg/L) e/	4.57	N/A	N/A
pH, units	Shall remain between 6.5 and 10.0. a/		

B. Effective no later than February 15, 1986, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below:

Outfall 003 (continued)

	Effluent Concentration	
Parameter	Daily Maximum a/	30-Day Average b/
Total Cadmium (mg/L)	0.40	0.26
Total Chromium (mg/L)	2.77	1.71
Total Copper (mg/L)	3.38	1.8
Total Lead (mg/L)	0.69	0.3
Total Nickel (mg/L)	3.98	1.8
Total Zinc (mg/L)	2.61	1.48
Total Silver (mg/L)	0.43	0.24
Total Cyanide (mg/L)	1.20	0.55
TTO (mg/L)e/	2.13	N/A
pH, units	Shall remain between 6.5 and 10.0. a/	

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - (Continued)

3. Specific Effluent Limitations (continued)

a/ Any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

b/ This limitation shall be determined by the arithmetic mean of a the results of four (4) consecutive samples taken on separate days. There is no minimum period over which the samples must be taken.

c/ This limitation shall be determined by the arithmetic mean of a minimum of three (3) consecutive samples taken on separate weeks in a 30-day period (minimum total of three (3) samples)

d/ Total metals shall be calculated by taking the summation of the concentration of the total chrome, total copper, total nickel, and total zinc.

e/ TTO's are defined at Title 40, Part 433 of the Code of Federal Regulations.

4. Best Management Practices Plan

Within ninety (90) days of the effective date of this permit, the permittee shall develop and implement a Best Management Practices (BMP) plan to minimize any potential for spills and/or slug discharges to the POTW. Part III of the permit outlines the items to be addressed by the BMP plan.

The BMP plan shall be submitted to the Department within thirty (30) days of its completion. Failure of the plan to prevent violations of any other provisions of the permit and in no way relieves the permittee from its legal liability for noncompliance with the permit conditions.

5. Schedule of Compliance

1. The permittee shall achieve compliance with the effluent limitations specified at paragraph B. for Outfall 003 in accordance with the following schedule:

	MILESTONE	DEADLINE FOR COMPLETION
a.	Prepare an Engineering Evaluation of treatment alternatives.	February 19, 1985
b.	Award contracts for construction.	April 17, 1985
c.	Commence Construction.	June 30, 1985
d.	Complete Construction.	November 1, 1985
e.	Attain Full Operational Status.	February 1, 1986

2. No later than fourteen (14) calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

B. MONITORING AND REPORTING

1. Self-Monitoring Requirements

As a minimum, the following parameters shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge.

Outfall and Parameter	Frequency	Sample Type
Outfall 001		
Flow, mgd	Monthly	Instantaneous
Outfall 002		
Flow, gpd	Weekly	Instantaneous
Temperature °C	Daily	Instantaneous
Outfall 003		
Flow, mgd	Continuous	Recorder
Total Chromium (mg/L)	Monthly	Composite
Total Nickel (mg/L)	Monthly	Composite
Total Lead (mg/L)	1 per 3 months	Composite
Total Copper (mg/L)	1 per 3 months	Composite
Methyl Ethyl Ketone (mg/L)	1 per 3 months	Composite
Tetrachloroethylene (mg/L)	1 per 3 months	Composite
pH, units	Daily	Recorder
Oil and Grease, visual	Weekly	Visual Observation **

** The discharge from Outfall 003 shall be visually examined for the presence of a visible sheen and/or floating oil and the results recorded. If a visible sheen and/or floating oil is observed, the appropriate corrective action shall be taken as soon as practical.

2. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and approval by, the permit issuing authority.

3. Reporting

Monitoring results obtained during the previous 3 months shall be summarized and reported on the IPP Discharge Report Form, postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on January 28, 1986. If no discharge occurs during the reporting period, "no discharge" shall be reported. Signed copies of these, and all other reports required herein, shall be submitted to the permit issuing authority at the following address:

Industrial Pretreatment Program Unit
Department of Wastewater
City of Industrial Falls
19 POTW Plaza
Industrial Falls, New Colorado 80000

4 Definitions

a. A "composite" sample, for monitoring requirements, is defined as a minimum of four (4) grab samples collected at equally spaced two (2) hour intervals and proportioned according to flow.

b. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

c. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

5. Test Procedures

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Federal Clean Water Act, under which such procedures may be required.

GENERAL CONDITIONS

1. Duty to Comply

   The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the City Code and is grounds for possible enforcement action.

2. Duty to Mitigate - Prevention of Adverse Impact

   The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health, the POTW, the waters receiving the POTW's discharge, or the environment.

3. Facilities Operation

   The permittee shall at all times maintain in good working order and operate as efficiently as possible, all control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Bypass of treatment facilities is prohibited except as provided for and in accordance with the requirements set forth by this permit.

4. Removed Substances

   Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of waste waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering the sewer system. The permittee is responsible to assure its compliance with any requirements regarding the generation, treatment, storage, and/or disposal of "Hazardous waste" as defined under the Federal Resource Conservation and Recovery Act.

GENERAL CONDITIONS (Continued):

5. Upset Conditions

An "upset" means an exceptional incident in which there is an unintentional and temporary noncompliance with the effluent limitations of the permit because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed or inadequate treatment facilities, lack of preventative maintenance, or careless or improper operations.

An upset may constitute an affirmative defense for action brought for the noncompliance. The permittee has the burden of proof to provide evidence and demonstrate that none of the factors specifically listed above were responsible for the noncompliance.

6. Right of Entry

The permittee shall allow the head of the State of New Colorado Department of Water and Natural Resources, the Regional Administrator of the Environmental Protection Agency, the City of Industrial Falls, and/or their authorized representatives, upon the presentation of credentials:

a. To enter upon the permittee's premises where a real or potential discharge is located or in which records are required to be kept under the terms and conditions of this permit; and,
b. At reasonable times to have access to and copy records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

7. Availability of Reports

Except for data determined to be confidential under the Code, all reports prepared in accordance with terms of this permit shall be available for public inspection at the City of Industrial Falls. As required by the Code, effluent data shall not be considered confidential.

8. Duty to Provide Information

The permittee shall furnish to the Director of Wastewater or his designee, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying, revoking and reissuing, terminating this permit or to determine compliance with this permit. The permittee shall also furnish, upon request, copies of records required to be kept by this permit.

GENERAL CONDITIONS (Continued):

9. Signatory Requirements

All reports or information submitted pursuant to the requirements of this permit must be signed and certified by a ranking official or duly authorized agent of the permittee.

10. Toxic Pollutants

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Federal Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit may be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

11. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

12. Federal and/or State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable Federal and/or State law or regulations.

13. Penalties for Violations of Permit Conditions

The Code provides that any person who violates a permit condition implementing is subject to a civil penalty not to exceed $1,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine of up to $5,000 per day of violation, or by imprisonment for up to one (1) year, or both.

GENERAL CONDITIONS (Continued):

14. Need to Halt or Reduce not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of the permit.

15. Penalties for Falsification of Reports

The Code provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of up to $5,000 per violation, or by imprisonment for not more than one (1) year, or by both.

16. Property Rights

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

17. Severability

The provisions of this permit are severable and, if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

18. Permit Modification, Revocation, Termination

This Permit may be modified, revoked and reissued, or terminated with cause in accordance with the requirements of the City Code or the implementing regulations.

19. Reapplication for Permit Renewal

The permittee is responsible for filing an application for reissuance of the permit within 180 days of the expiration date of the permit.

OTHER REQUIREMENTS

The City of Industrial Falls' Prohibitive Discharge Standards

Prohibitive Standards at Chapter 35.101 of the Code require that under no circumstances shall the permittee introduce any of the following pollutants into the waste treatment system:

(1) Pollutants which could create a fire or explosion hazard in the publicly owned treatment works (POTW).

(2) Pollutants which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0, or greater than 10.0.

(3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in sewers, or other interference with the operation of the POTW.

(4) Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge of such volume or strength as to cause interference in the POTW.

(5) Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case, heat in such quantities that the temperature at the treatment works influent exceeds 40° C. (104° F.) unless the POTW is designed to accommodate such heat.

(6) Wastewaters that exceed the maximum allowable concentrations for the following specific pollutant parameters:

Parameter	Maximum Concentration (in any sample)
Total Cadmium	0.40 mg/L
Total Chromium	5.0 mg/L
Total Copper	5.0 mg/L
Total Lead	5.0 mg/L
Total Nickel	5.0 mg/L
Total Zinc	10.0 mg/L

OTHER REQUIREMENTS

Requesting Permission to Use Chemicals in the Cooling Tower System

No chemicals other than chlorine and inorganic acids and inorganic bases (e.g., sulfuric acid, sodium hydroxide, etc.) are to be used in the cooling tower system without prior written approval from the permit issuing authority. In requesting permission to use chemicals in the cooling tower system, the permittee must provide as much of the information listed below as is practical:

1. Name of chemical compound (trade name and/or brand name);
2. Name and address of manufacturer;
3. Name and telephone number of any local manufacturers representative;
4. Chemical Abstract Registry Number;
5. EPA Registration Number (if applicable);
6. Copy of the Material Data Safety Sheet;
7. Chemical composition of the chemical compound and the percent of each active ingredient to the total compound;
8. Proposed application rates of the chemical, resulting concentrations (mg/L) in the cooling water, and frequency of application;
9. Summary of data on toxicity of chemical compounds (or active ingredients) to aquatic organisms;

Best Management Practices (BMP) Plan

As required in Part I of this permit, the permittee must develop and implement a Best Management Practices (BMP) program. The BMP plan must address the following:

1. Chemical Storage Areas
2. Chemical Loading and Unloading Areas
3. Process Tanks
4. Removing Process Tanks From Service

For each of the above categories, the BMP program must examine:

1. Proximity to the Sanitary Sewer system
2. Material Compatability (e.g., container v. solution, possible reactivity with adjacent chemicals, etc.)
3. Transfer of Chemicals
4. Housekeeping/Inspections
5. Secondary Containment
6. Spill Contingency
7. Batch Treatment
8. Notification to the sewer authority.

APPENDIX B

PERMIT FACT SHEET

STATEMENT OF BASIS

INDUSTRIAL PRETREATMENT PERMIT

FACILITY: Smith and Jones Company, Inc.

INDUSTRIAL CATEGORY: Captive Electroplater and Metal Finisher

CONTACTS:

Mr. John J. Jones
President
Smith and Jones Company, Inc.
999 Corporate Circle
Corporateville, New Colorado 81000
Telephone: (304) 666-1234

Mr. Sam S. Smith
General Manager
Smith and Jones Company, Inc.
1111 Industrial Parkway
Industrial Falls, New Colorado 80000
Telephone: (304) 555-1234

BACKGROUND INFORMATION:

The Smith and Jones Company, Inc. is the largest manufacturer of sewing thimbles in New Colorado producing approximately 10,000,000 thimble units a year. The manufacturing process consists of stamping the metal pieces from coiled steel, vapor degreasing the fabricated pieces, and then processing the thimbles though a nickel chrome plating line. The company employs 21 persons. Attachment A is a schematic diagram of the plating operation.

On August 1, 1981, Smith and Jones Company filed a Baseline Monitoring Report with the Environmental Protection Agency's Region XIII. At that time, Region XIII was the Pretreatment Control Authority as defined by the Federal General Pretreatment Program Regulations at 40 CFR 403. The BMR report contained information supporting the company's certification that it was in full compliance with the National Categorical Pretreatment Standards at 40 CFR 413 for Electroplaters.

On July 7, 1984, the Company submitted another Baseline Monitoring Report to the City of Industrial Falls, the Federal Pretreatment Control Authority since it had officially been delegated the program on March 10, 1984. This BMR addressed the revised TTO requirements for Electroplating at 40 CFR 413 and the Metal Finishing requirements at 40 CFR 433 for Metal Finishing activities. The company certified that it currently did not meet the final effluent requirements set forth by either the TTO regulations for Electroplation or the heavy metals concentrations of the Metal Finishing regulations. A compliance schedule, attachment B, was included with the company's BMR.

On September 23, 1984, pursuant to the requirements of the City Code, Smith and Jones filed an application with the Department of Wastewater for a Industrial Pretreatment Program Permit. The permit application contained some additional information, but essentially cross-referenced the previously submitted BMRs as being still accurate.

On October 16, 1984, the permit writer visited the Smith and Jones facility to gain more familiarity with the operations at the site as well as verify the accuracy of the information contained in the BMRs and permit application.

The company has three basic types of wastewaters which it is generating:

a. Sanitary:
   100 % domestic from a small kitchen and toilets
   Average Flow = 800 gpd
   Typical Domestic strength

b. Cooling Tower Bleed-off Water:
   Minimum Flow (winter) = 11,200 gpd
   Maximum Flow (summer) = 17,800 gpd
   Temperature: 95° F. to 75° F.
   pH: 6 - 9
   TSS: 24 mg/L

The blowdown (bleed-off) from the cooling tower system goes by pipe to the outfall line directly into the city sewer. There currently is no device to monitor the flow rate of the cooling tower blowdown. The flows given are estimates. Their is no treatment of the cooling tower blowdown. However, the company is contemplating chemical addition to the cooling tower to prevent scaling and corrosion.

c. Process Generated Wastewaters

Smith and Jones' normal process generated wastewaters consist principally of rinse tank overflows to the sewer system. In the past, the Company has periodically batch discharged plating line tanks (both rinse tanks and spent plating solutions) directly to the sewer without any treatment.

After their submission of their first BMR in 1981, Smith and Jones installed a treatment unit to neutralize and filter the process generated wastewaters from the rinse tank overflows. The company, however, did not sample its treatment units until the submission of the Metal Finishing BMR in 1984. The results of the BMR sampling of the treatment system were as follows:

PARAMETER	RESULTS
Total Cadmium (mg/L)	0.093 ave of 3 samples *
Total Chromium (mg/L)	2.41 ave of 3 samples
Total Copper (mg/L)	0.165 ave of 3 samples
Total Lead (mg/L)	0.049 ave of 3 samples
Total Nickel (mg/L)	1.82 ave of 3 samples
Total Zinc (mg/L)	0.502 ave of 3 samples
Total Cyanide (mg/L)	0.02 ave of 3 samples
MEK (mg/L)	0.94 single sample
TCE (mg/L)	1.16 single sample
TTO (mg/L)	2.10 single sample

* Information taken from BMR submitted July 7, 1984 for the 40 CFR 433 requirements.

EFFLUENT LIMITATIONS:

Three different outfall numbers will be used in this permit. Outfall 001 is the discharge of sanitary wastewater. Outfall 002 is the discharge from the cooling tower system. Outfall 003 is the process wastewater. Because of the plumbing, there is no mixing of the waters from the outfalls prior to entry to the POTW.

The effluent limitations for the three outfalls and the basis for the limitations are given below:

Outfall 001

The discharge shall consist only of domestic sanitary wastewaters

The City of Industrial Falls Prohibitive Standards are applicable to assure protection of the POTW.

Outfall 002

The discharge shall consist only of blowdown from the cooling tower system.

No chemicals other than chlorine and inorganic acids and bases (e.g., sulfuric acid, sodium hydroxide, etc.) shall be used in the cooling tower system unless prior written approval has been granted by the City Department of Wastewater. The use of the chemical shall be in accordance with any conditions of approval.

The City of Industrial Falls Prohibitive Standards are applicable to assure protection of the POTW.

Outfall 003

Because Smith and Jones is a captive shop electroplater, the company's process generated wastewaters are required to meet both the National Categorical Pretreatment Standards for Electroplating and for Metal Finishing at 40 CFR 413 and 40 CFR 433 respectively. A Captive Shop owns more than 50% (on an area basis) of the materials undergoing metal finishing. The Electroplating Standards must be met immediately and the Metal Finishing Standards by no later than February 15, 1986.

In addition to the National Categorical Standards, the Company must also meet the City's prohibitive requirements at each of the outfalls. The Company's requirements are thus affected as follows:

1. Requirements prior to February 15, 1986

   Smith and Jones discharges approximately 18,000 gallons per day of regulated process wastewater. Consequently, the company must meet the requirements for all regulated metals under the Electroplating standards for common metal plating and the interim TTO requirements for Metal Finishing.

   The City's Prohibitive Standards result in more restrictive requirements for total cadmium and total chromium than would be required under the National Categorical Pretreatment Standards for Electroplating (40 CFR 413).

2. Requirements after February 15, 1986

   The City's Prohibitive Standards result in a more restrictive requirements for total cadmium than would be required under the National Categorical Pretreatment Standards for Metal Finishing at 40 CFR 433.

The Company has had a history of batch discharges and spills, including spills of solvents. Nonetheless, the company currently is classified only as a Small Quanity Generator under the Resource Conservation and Recovery Act and has not been given much attention regarding its solid waste handling.

To assure that the POTW is not adversely impacted by any spills from the company and that batch discharges are adequately treated, the Permit requires the Company to develop and implement a Best Management Practices Program. This program will encompass the requirements for a Toxic Organics Management Plan under the Electroplating and Metal Finishing Regulations.

SELF-MONITORING REQUIREMENTS:

The three outfalls are to be monitored, at a minimum, as specified below:

Outfall and Parameter	Frequency	Sample Type	Comments
Outfall 001			
Flow	Monthly	Instant.	Flow to be monitored for spill prevention
Outfall 002			
Flow,	Weekly	Instant.	
Temperature	Daily	Instant.	
Outfall 003			
Flow	Daily	Recorder	
Total Chromium	Monthly	Comp.	
Total Nickel	Monthly	Comp.	
Total Zinc	1@ 3 months	Comp.	Incidental presence
Total Copper	1@ 3 months	Comp.	Incidental presence
Methyl Ethyl Ketone	1@ 3 months	Comp.	BMP plan should reduce
Tetrachloroethylene	1@ 3 months	Comp.	presence of these TTOs
pH, units	Daily	Recorder	Assure process control
Oil and Grease	Weekly	Visual Observe**	Spill prevention

** The discharge from Outfall 003 shall be visually examined for the presence of a visible sheen and/or floating oil and the results recorded. If a visible sheen and/or floating oil is observed, the appropriate corrective action shall be taken as soon as practical.

The reporting frequency will be quarterly. The first report will be due January 28, 1986.

Oscar Oliver, P.E.
Pretreatment Program Administrator

ATTACHMENT B.

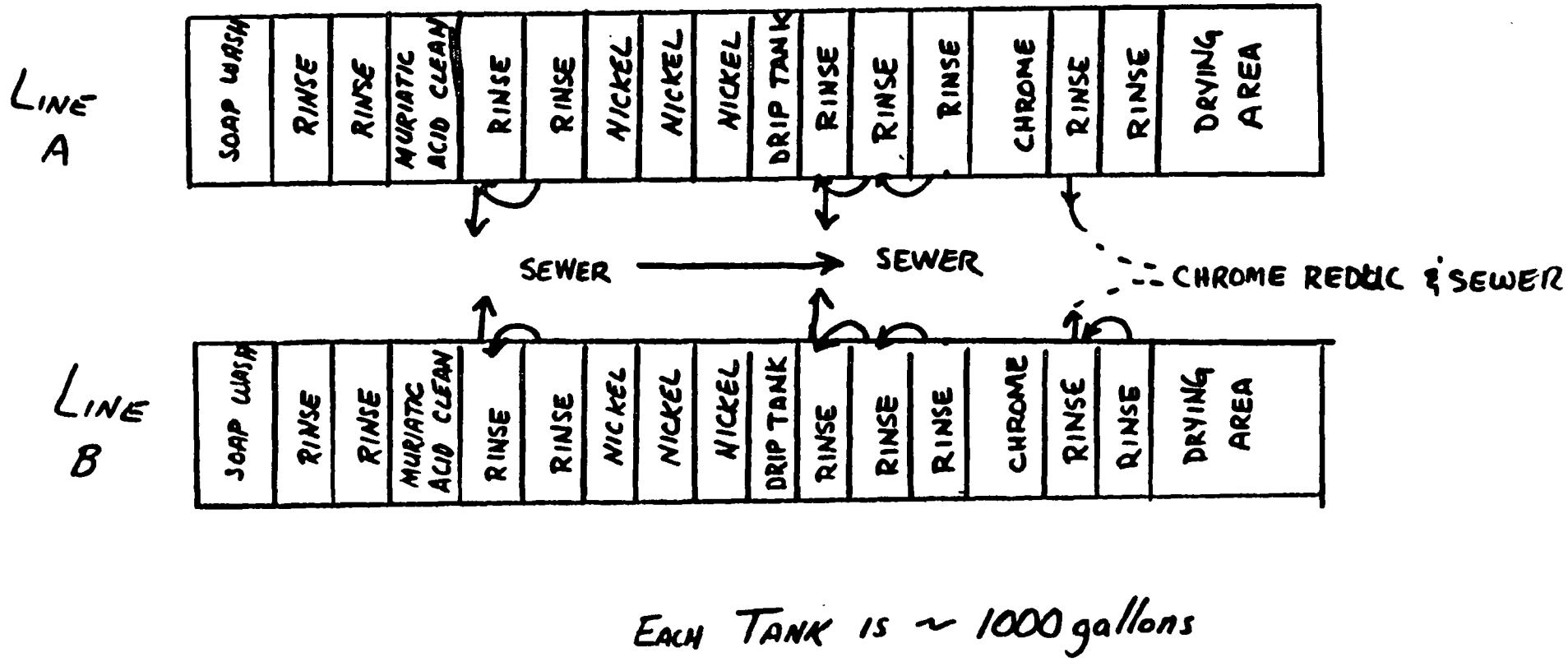
Schedule of Compliance

Following is the schedule of compliance by which the Smith and Jones Company, Incorporated will achieve compliance with all applicable Metal Finishing Category and local pretreatment standards which become effective no later than February 16, 1986:

	MILESTONE	DATE FOR COMPLETION
1.	Prepare an Engineering Evaluation of treatment alternatives.	February 19, 1985
2.	Award contracts for construction.	April 17, 1985
3.	Commence Construction.	June 30, 1985
4.	Complete Construction.	November 1, 1985
5.	Attain Full Operational Status.	February 1, 1986

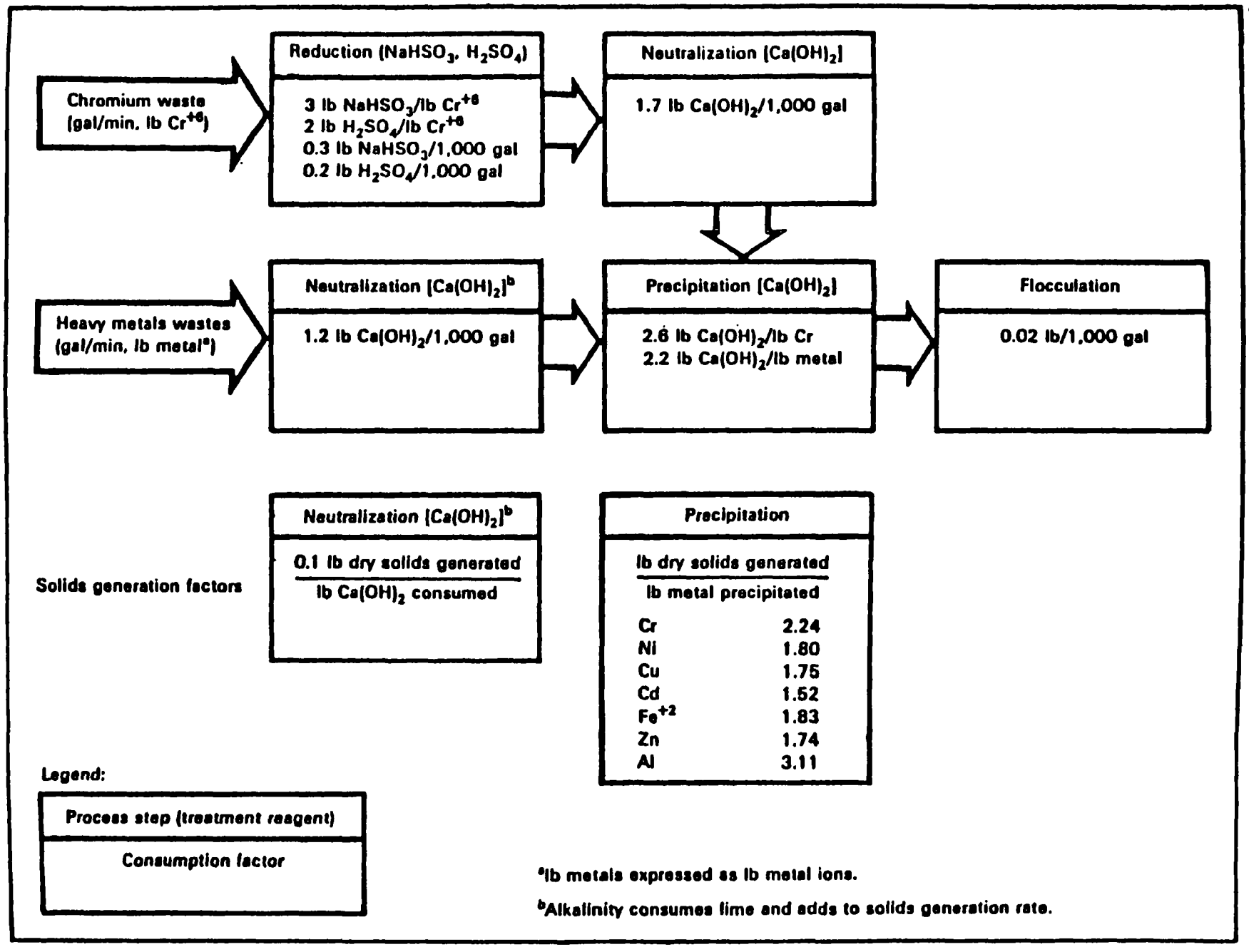
Smith & Jones
Plating Area

VAPOR DEGREASER



Each Tank is ~ 1000 gallons

PRETREATMENT SYSTEM



APPENDIX C

USE OF THE COMBINED WASTESTREAM FORMULA

USE OF THE COMBINED WASTESTREAM FORMULA

PURPOSE OF THE COMBINED WASTESTREAM FORMULA

Federal categorical pretreatment standards regulate the indirect discharge of certain pollutants from a particular industry or industrial process. An important consideration for Control Authorities as well as industrial users (IUs), when applying or complying with categorical standards, is that the pollutant limitations specified in the standards apply to the discharge of wastewater from the regulated process only, prior to mixing with any other wastestreams. As such, determination of an IU's compliance status should be performed by collecting and analyzing a sample of wastewater representing only the discharge from the regulated process.

However, it is often difficult or impossible to collect and analyze a sample of only the wastewater from the regulated process. The IU may combine some or all of their wastestreams and treat them in a single wastewater treatment facility. Some of the wastestreams may be regulated by one categorical pretreatment standard, while others are regulated by a different categorical standard or not regulated at all.

The combined wastestream formula (CWF), as described in Section 403.6(e) of the General Pretreatment Regulations, is a mechanism for adjusting categorical pretreatment standards (either concentration or production-based) when a regulated process wastestream is combined with another wastestream (either regulated by categorical standards or not) resulting in a mixed discharge to the POTW system. The CWF is applied to the mixed discharge to account for the presence of those flows from other wastestreams combined with the regulated process discharge.

A regulated process wastestream is an industrial process wastestream regulated by Federal categorical standards (i.e., metal finishing and electroplating). An unregulated process wastestream is an industrial wastestream that is not regulated by Federal categorical standards and not considered a dilution stream as defined below. A dilute wastestream is defined in 40 CFR Part 403 to include:

- Boiler blowdown (except in certain cases as described below)
- Non-contact cooling water (except in certain cases as described below)
- Sanitary wastewater
- Process wastestreams shown in Appendix D of 40 CFR, Part 403 that EPA has exempted from regulation by categorical standards due to several conditions related to insignificant or untreatable pollutant levels as described below.

To further assist the Control Authority and industrial user in determining whether a boiler blowdown or a non-contact cooling water discharge is an unregulated or dilute wastestream, the EPA has proposed and

promulgated amendments to the General Pretreatment Regulations (40 CFR Part 403). In the May 17, 1984 Federal Register, Sections 403.6(e)(1)(i) and (ii) were amended to revise the definition of a dilute wastestream (referred to as the variable F_D in the CWF). This amendment states that:

> "F_D = the average daily flow (at least a 30-day average) from (a) boiler blowdown streams and non-contact cooling streams; provided, however, that where such streams contain a significant amount of a pollutant, and the combination of such streams, prior to treatment, with an Industrial Users regulated process wastestream(s) will result in a substantial reduction of that pollutant, the Control Authority, upon application of the Industrial User, may exercise its discretion to determine whether such stream(s) should be classified as diluted or unregulated. In its application to the Control Authority, the Industrial User must provide engineering, production, sampling and analysis and such other information so that the Control Authority can make its determination, or (b) sanitary wastestreams where such streams are not regulated by a categorical Pretreatment Standard, or (c) from any process wastestreams which were or could have been entirely exempted from categorical Pretreatment Standards pursuant to paragraph 8 of the NRDC v. Costle Consent Decree (12 ERC 1833) for one or more of the following reasons (see Appendix D):
>
> (1) the pollutants of concern are not detectable in the effluent from the Industrial User (paragraph (8)(a)(iii);
>
> (2) the pollutants of concern are present only in trace amounts and are neither causing nor likely to cause toxic effects (paragraph (8)(a)(iii);
>
> (3) the pollutants of concern are present in amounts too small to be effectively reduced by technologies known to the Administrator (paragraph (8)(a)(iii); or
>
> (4) the wastestream contains only pollutants which are compatible with the POTW (paragraph (8)(b)(i)."

Consequently, if the IU combines boiler blowdown and/or non-contact cooling process water with a regulated wastestream, the Control Authority must determine (supported by required engineering, production, sampling and analysis data, etc., from the IU) whether the boiler blowdown and/or non-contact cooling process waters should be classified as diluted or unregulated for each pollutant for which an alternative limit is calculated.

The definition of regulated and unregulated, and in some cases dilute wastestreams (boiler blowdown and non-contact cooling waters) are pollutant specific. For example, the Aluminum Forming category limits the discharge of chromium (Cr), cyanide (CN), zinc (Zn), and total toxic organics (TTO) from Aluminum Forming process discharges. If the Aluminum Forming process discharges were combined with other wastewaters, the aluminum forming wastestreams would be considered regulated for Cr, CN, Zn and TTO pollutant parameters. However the Aluminum Forming process wastestreams would be

considered unregulated for copper if the aluminum forming wastestream were to be combined with an Electroplating process wastestream.

APPLICATION AND IMPLEMENTATION OF THE CWF

Combined Wastestream Formulas

Section 403.6(e) of the General Pretreatment Regulations provides two formulas to develop alternative categorical limits. One formula is used to develop an alternative concentration limit for standards that are concentration based. The other formula is used to develop an alternative mass limit for those categorical standards that are production based.

Alternative Concentration Limit Formula

$$C_T = \left(\frac{\sum_{i=1}^{N} C_i F_i}{\sum_{i=1}^{N} F_i} \right) \times \left(\frac{F_T - F_D}{F_T} \right)$$

C_T = Alternative concentration limit for the pollutant in the combined wastestream

C_i = Concentration-based categorical pretreatment standard for the pollutant in regulated stream i

F_i = Average daily flow (at least 30 day average) of regulated stream i

F_D = Average daily flow (at least 30 day average) of dilute wastestream(s) (see previous complete definition, page 3-2)

F_T = Average daily flow (at least 30 day average) through the combined treatment facility (including regulated, unregulated and dilute wastestreams)

N = Total number of regulated streams.

The CWF develops an alternative concentration limit for each pollutant by multiplying the categorical standard for each pollutant of each regulated stream (C_i) by the flow of the regulated stream (F_i) and then adding the resultant product for all the regulated wastestreams that are combined. This amount is then divided by the sum of the flows (F_i) of all the wastestreams in which that pollutant is regulated. If no dilution

wastestreams for a pollutant are being combined, only the first part of the formula would be needed to compute an alternative concentration limit. If dilute wastestreams are combined with the regulated and unregulated process wastestreams, the number resulting from the first part of the formula is multiplied by a fraction. This fraction is derived by taking the total flow through the wastewater treatment system (F_T) minus the total flow from all dilute wastestreams (F_D) combined with the regulated process wastewater treatment system (F_T).

It should be noted that when the formula is applied properly, it has the effect of allowing the unregulated streams that are combined with the regulated streams to be discharged at the same pollutant concentrations as the standards for the regulated streams.

Alternative Mass Limit Formula

$$M_T = \left(\sum_{i=1}^{N} M_i \right) \times \left(\frac{F_T - F_D}{\sum_{i=1}^{N} F_i} \right)$$

M_T = Alternative mass limit for the pollutant in the combined wastestream (mass per day)

M_i = Production-based categorical pretreatment standard for the pollutant in regulated stream i (or the standard multiplied by the appropriate measure of production if the standards being combined contain different units of measurement)

F_i = Average daily flow (at least 30 day average) of regulated stream i

F_D = Average daily flow (at least 30 day average) of dilute wastestream(s)

F_T = Average daily flow (at least 30 day average) through the combined treatment facility (including regulated, unregulated and dilute wastestreams)

N = Total number of regulated streams.

Alternative mass limits are developed by adding together the calculated mass values from production-based categorical a standard for a pollutant (M_i) in each regulated process wastestream that is combined. If the units of mass in the production-based standards being combined were different, then each of the production-based standards would have to be multiplied by the appropriate daily production basis for each regulated process, before the standards are added together. If only regulated process wastestreams were combined, only this sum of the production-based categorical standards is needed to establish an alternative mass limit (M_T). In the case of the

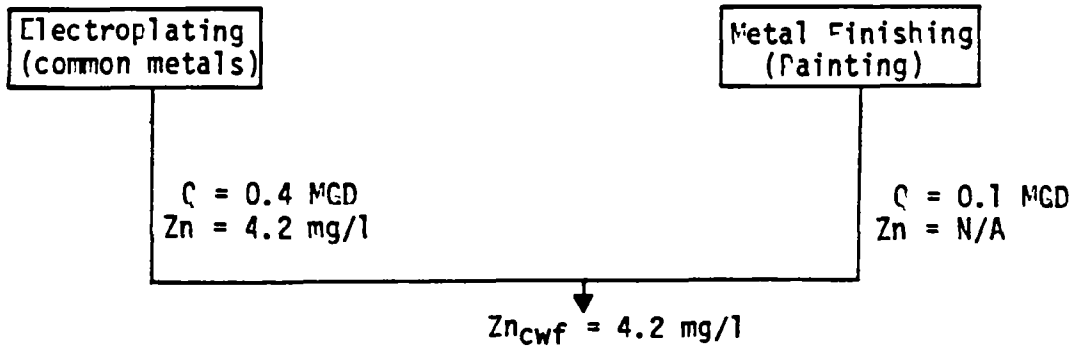
addition of dilute or unregulated wastewaters, the sum of production-based categorical standards mass values would need to be multiplied by a fraction. This fraction is calculated by taking the total flow through the wastewater treatment system (F_T) minus the total of dilute wastestreams (F_D) combined with the regulated process wastestreams and dividing by the total flow of regulated process wastestreams (F_i).

As with the concentration limit formula, when applied properly the mass limit formula has the effect of allowing the unregulated streams that are combined with the regulated streams to be discharging to the same pollutant concentrations as allowed by the standards for the regulated streams.

EXAMPLE I

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT
FOR AN INTEGRATED ELECTROPLATER PRIOR
TO THE METAL FINISHING COMPLIANCE DATE

Industrial Category (Subcategory)	Wastestream type	Flow MGD	Daily Max. Zn Limit (mg/l)
Electroplating (common metals)	Regulated	0.4	4.2
Metal Finishing (painting)	Unregulated	0.1	N/A



This limit applies to integrated electroplaters from June 30, 1984 to Feb. 15, 1986. After Feb. 15, 1986, integrated electroplaters are covered by the single industrial category - Metal Finishing. The daily maximum zinc limit for Metal Finishing is 2.61 mg/l. Therefore, this example facility must meet a zinc limit of 4.2 mg/l until Feb. 15, 1986 and 2.61 mg/l after Feb. 15, 1986.

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT
FOR AN INTEGRATED ELECTROPLATER AFTER THE METAL
FINISHING COMPLIANCE DATE (EXAMPLES 2-5)

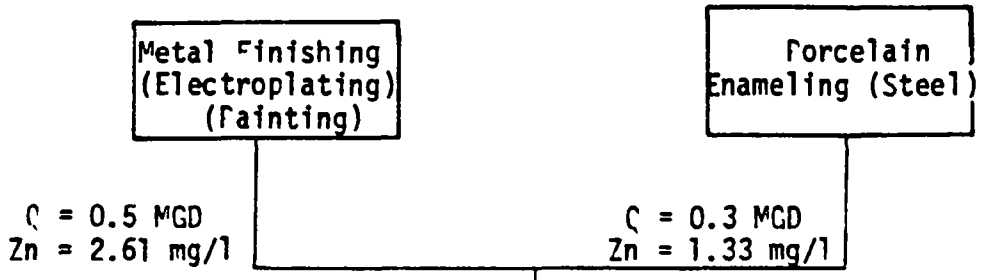
Industrial Category Subcategory)	Wastestream Type	Flow MGD	Daily Max. Zn Limit (mg/l)
Metal Finishing (Electroplating)[1] (Painting)[1]	Regulated	0.5	2.6
Porcelain Enameling (Steel - coating only)	Regulated	0.3	1.33[2]
Photographic processing	Unregulated	0.2	N/A
Sanitary Waste	Dilution	0.05	N/A

[1]These are not subcategories; they are metal finishing processes.

[2]Alternate production based limit = 0.05 mg/m^2 coated.

EXAMPLE 2A

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN TWO REGULATED WASTESTREAMS ARE COMBINED (NO DILUTE WASTESTREAMS)

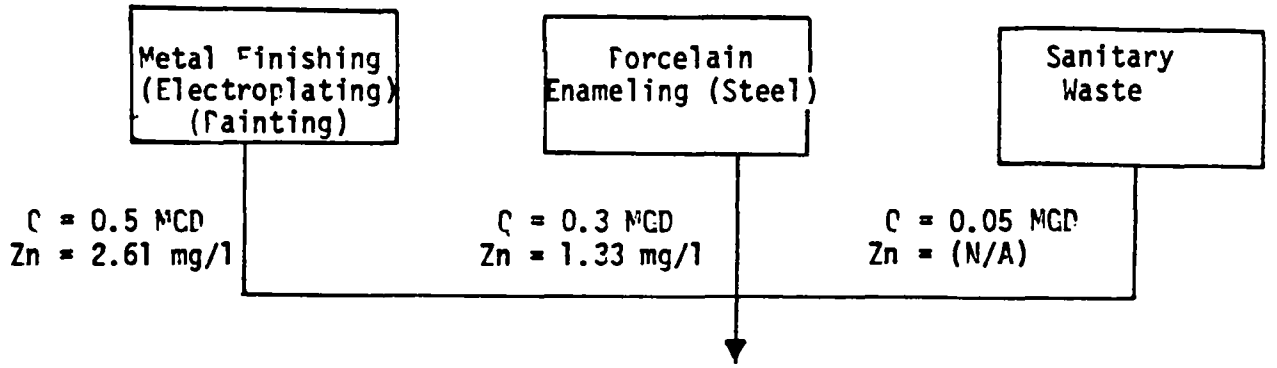


$$Zn_{cwf} = \frac{2.61 \text{ mg/l} \quad (0.5 \text{ MGD}) + 1.33 \text{ mg/l} \quad (0.3 \text{ MGD})}{(0.5 \text{ MGD} + 0.3 \text{ MGD})} = 2.13 \text{ mg/l}$$

[Alternate limit is proportioned by flow to regulated wastestream]

EXAMPLE 2B

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN TWO REGULATED WASTESTREAMS ARE COMBINED WITH A DILUTE WASTESTREAM

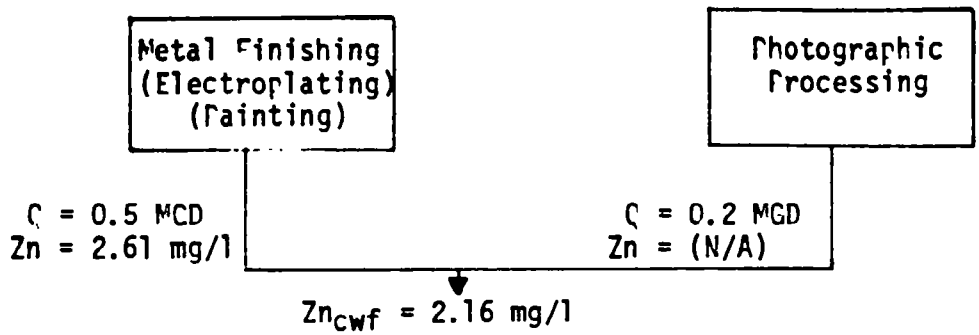


$$Zn_{cwf} = 2.13 \text{ mg/l} \quad \frac{(0.5 \text{ MGD} + 0.3 \text{ MGD} + 0.05 \text{ MGD} - 0.05 \text{ MGD})}{0.05 \text{ MGD}} = 2.0 \text{ mg/l}$$

[Alternate limit of 2.13 mg/l derived in Example 2A is further reduced because of dilution]

EXAMPLE 3A

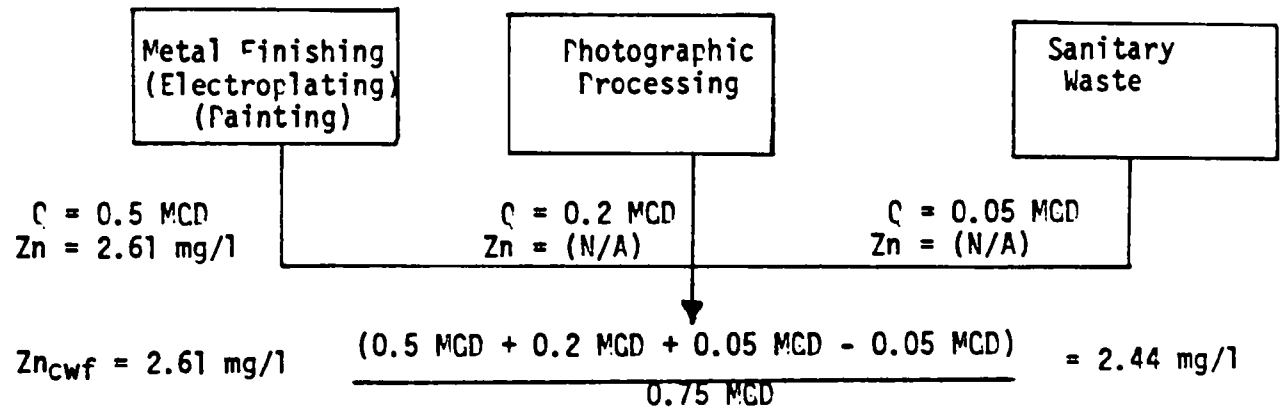
CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN ONE REGULATED WASTESTREAM AND ONE UNREGULATED WASTESTREAM ARE COMBINED (NO DILUTE WASTESTREAM)



[Alternate limit is not changed by addition of unregulated wastestream]

EXAMPLE 3B

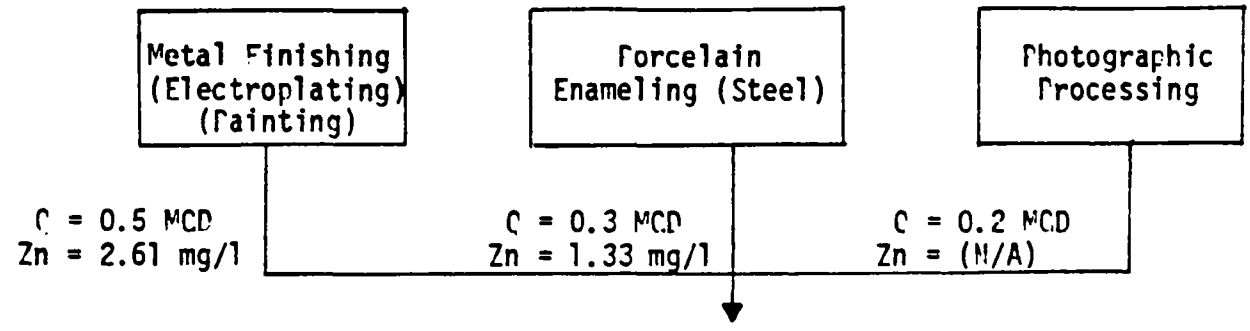
CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN ONE REGULATED WASTESTREAM AND ONE UNREGULATED WASTESTREAM ARE COMBINED WITH A DILUTE WASTESTREAM



[Alternate limit of 2.61 mg/l derived in Example 3A is reduced because of dilution]

EXAMPLE 4A

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN TWO REGULATED WASTESTREAMS AND ONE UNREGULATED WASTESTREAM ARE COMBINED (NO DILUTE WASTESTREAM)

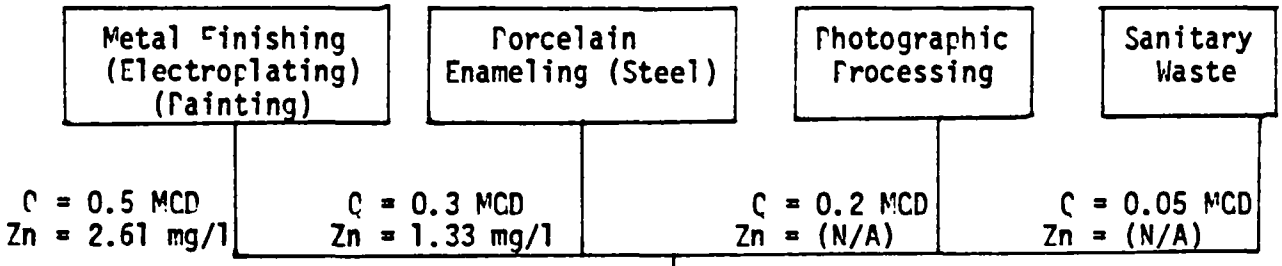


$$Zn_{cwf} = \frac{(2.61\ mg/l + (0.5\ MGD) + 1.33\ mg/l\ (0.3\ MGD)}{(0.5\ MGD + 0.3\ MGD)} = 2.13\ mg/l$$

[Alternate limit is proportioned by flow to regulated wastestream and not changed by addition of unregulated wastestream]

EXAMPLE 4B

CALCULATION OF ALTERNATIVE DISCHARGE LIMIT (Zn_{cwf}) WHEN TWO REGULATED WASTESTREAMS AND ONE UNREGULATED WASTESTREAM ARE COMBINED WITH A DILUTE WASTESTREAM



$$Zn_{cwf} = \frac{2.13\ mg/l\ (0.5\ MGD + 0.3\ MGD + 0.2\ MGD + 0.05\ MGD - 0.05\ MGD)}{1.05\ MGD} = 2.03\ mg/l$$

[Alternate limit of 2.13 mg/l derived in Example 4A is reduced because of dilution]

EXAMPLE 5

CONVERSION OF PRODUCTION BASED CATEGORICAL STANDARDS TO CONCENTRATION-BASED: TWO REGULATED WASTESTREAMS WITHOUT DILUTION WATER

The Porcelain Enameling categorical standards can be implemented as concentration limits or production-based limitations. The example below converts production-based limits to concentration limits. These equivalent concentration limits can be used as the standard for porcelain enameling in the previous examples. The same wastestreams used in Example 2A are given below.

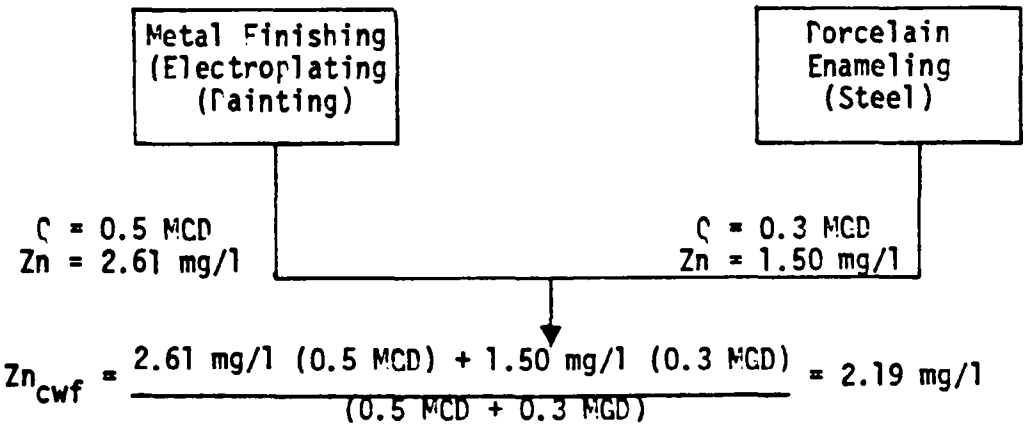
Porcelain Enameling (Steel) Daily Maximum Limit (Zinc) = 0.85 mg/m^2 coated

Average Daily Production During Last 12 months = 2 x 10^6 m^2 coated/day

Average Daily Water Usage in Porcelain Enameling Coating During Last 12 months = 300,000 gpd

$$Zn_{(equivalent)} = \frac{0.85 \text{ mg/m}^2 \ (2 \times 10^6 \text{ m}^2 \text{ coated/day})}{300{,}000 \text{ gpd } (3.785 \text{ liters/gallon})} = 1.50 \text{ mg/l}$$

Once the concentration-based equivalent is determined, then the alternate limit can be calculated as in Example 2A.



$$Zn_{cwf} = \frac{2.61 \text{ mg/l } (0.5 \text{ MGD}) + 1.50 \text{ mg/l } (0.3 \text{ MGD})}{(0.5 \text{ MGD} + 0.3 \text{ MGD})} = 2.19 \text{ mg/l}$$

APPENDIX D

BEST MANAGEMENT PRACTICES

BEST MANAGEMENT PRACTICES

Introduction

Traditionally, discharge requirements for Industrial Users (IUs) of Publicly Owned Treatment Works (POTWs) have been based on numeric standards for specific chemical compounds. Unfortunately, for many chemicals, it is difficult to quantify the input level the POTW can tolerate safely, or to determine that level which can consistently and economically be achieved by an IU's wastewater pretreatment facilities.

As an alternative to end-of-pipe pretreatment facilities, establishing wastewater management practices (e.g., improved housekeeping, reduced water usage, etc.) can often result in substantial reductions in the quantity of waste discharged by an IU. In addition, implementation of proper management practices will minimize the potential for catastrophic discharge incidents or spills into the POTW. These management practices are referred to as Best Management Practices (BMPs).

Section 304(e) of the Federal Clean Water Act provides EPA with the authority to establish BMPs:

> (e) The Administrator, after consultation with appropriate Federal and State agencies and other interested persons, may publish regulations, supplemental to any effluent limitations specified under subsections (b) and (c) of this section for a class or category of point sources, for any specific pollutant which the administrator is charged with a duty to regulate as a toxic or hazardous pollutant under Section 307(a)(1) or 311 of this Act, to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage which the Administrator determines are associated with or ancillary to the industrial manufacturing or treatment process....

Under this authority, EPA has specifically established BMP requirements in some of its National Categorical Pretreatment Standards,. For example, the standards at 40 CFR 413 and 40 CFR 433 for Electoplaters and Metal Finishers, respectively, currently may require certain installations to develop and implement a written "Solvent Management Program" to control the introduction of solvents to the wastewater discharged to the POTW.

Together, POTWs and IUs can often identify plant specific BMPs which would improve the IU's performance and the overall quality of wastewater discharge to the POTW. This paper outlines the steps involved in identifying the need for BMPs and some of the criteria used to establish specific BMPs. These items include:

- Risk Identification and Assessment
- Good Housekeeping
- Preventative Maintenance
- Material Compatability

Inspections and Records
Security
Employee Training
Reporting of BMP Incidents

Risk Identification and Assessment

Risk identification and assessment begins with a review of the facility layout with focus on the areas with a potential for discharge into the POTW. These areas should be clearly indicated on a plant plot plan or drawing. A simplified materials flowsheet showing major process operations can be used to indicate the direction and quantity of flow of materials from one area to another. Dry chemicals which are on the toxic or hazardous lists need to be evaluated if they have the potential to reach the POTW.

The following are examples of areas with the potential for discharges to the POTW:

Storage facilities
Transfer pipelines
Loading and unloading areas
Pipes, pumps, valves, tank drain valves, and fittings
Tank corrosion (internal and external)
Windblowing of dry chemicals
Deterioration of chemical storage primary or secondary containment
Housekeeping
Damaged shipping containers
conveying systems for dry chemicals
Stormwater collection system cross connections
Leaks, seepage, and overflows from sludge and various waste disposal sites

A hazardous substance and toxic chemical (material) inventory is essential to conduct an adequate risk identification and assessment. The inventory will provide information on the quantity of hazardous substances used and/or stored on site and the potential for these substances to reach the POTW. Determining the potential for incidents reaching a POTW as well as the detail needed for the materials inventory requires sound engineering judgment.

Examples of material inventories include:

(1) Materials stored in bulk quantities at a facility's tank farm have a direct access to a POTW drain in the event of structural failure or overfill of any tanks. Therefore, the materials inventory for the tank farm must be detailed, and should provide the identity, quantities, and locations of each material.

(2) Only small quantities of materials are stored in the research laboratory at an IU facility. The proximity of the storage area is away from any sewer drain and, consequently, there is a low potential that any spilled materials would reach the POTW drain.

Therefore, the materials inventory for the laboratory requires very minimal detail, (e.g., only an estimate of the total quantity of toxic and hazardous materials stored).

(3) An IU manufacturing process involves operations with a high potential that any spill will reach the POTW drain. The plant supplies a variety of products through the batch operation process to accommodate fluctuations in public demand. Consequently, the materials used for the batch process vary from week to week, oftentimes unexpectedly. Therefore, the inventory should include the identification of each material expected for use, and the maximum quantity of material that the batch process can handle. The materials inventory needs to be updated frequently to include any material substitutions unanticipated at the time of the original inventory.

The materials inventory and other useful technical information must be available to the POTW but can require separate filing from any permit application so as to protect confidentiality or trade secrets specifically claimed by an IU. This data may include physical, chemical, toxicological and health information (e.g., technical bulletins or safety data sheets on the toxic and hazardous substances handled, the quantities involved in various operations or ancillary sources, etc.)

Materials planned for future use in the plant should be evaluated for their potential to be discharge to the POTW. Where the potential is high, the same type of technical data described above should be obtained.

In summary, the steps involved with Risk Identification and Assessment are:

- Identification of areas of the facility which appear to require BMP conditions.
- Examination of identified areas for potential risks for discharge of uncontrolled materials into the POTW.
- Identification of any existing site-specific or pollutant-specific containment measures or need for such measures.
- Plant plot plans or drawings that clearly label the identified areas.
- Simplified flowsheet(s) of the major process operations.
- Estimation of the direction of flow of potential discharges towards various POTW and storm sewer drains.
- Evaluation of the potential for materials planned for future use to be discharged to the POTW in significant amounts.
- Materials inventory system of the facility.

- Physical, chemical, toxicological, and health information of the toxic and hazardous chemicals on-site.

Best Management Practices

1. Material Compatibility

Incompatibility of materials can cause equipment failure resulting from corrosion, fire or explosion. Equipment failure can be prevented by ensuring that the materials of construction for containers handling hazardous substances and toxic pollutants are compatible with containers' contents and surrounding environment (e.g., wet or dry).

The fundamental concepts in BMPs for Materials Compatibility include:

- Evaluation of process changes/ revisions for materials compatibility.

- Incorporation of existing engineering practices with regard to materials of construction, corrosion, and other aspects of materials compatibility.

- Evaluation of procedures for mixing of chemicals and of possible incompatibility with other chemicals present.

- Cleansing of vessels and transfer lines before they are used for another chemical.

2. Good Housekeeping

Good housekeeping is essentially the maintenance of a clean, orderly work environment and contributes to the overall facility pollution control effort. Periodic training of employees on housekeeping techniques for those plant areas where the potential exists for spills reduces the possibility of accidental incidents caused by mishandling of chemicals or equipment. Good Housekeeping BMPs address:

- Neat and orderly storage of chemicals.

- Prompt removal of spillage (e.g., dry vs. wet washdown).

- Maintenance of dry and clean floors by use of brooms, vacuum cleaners, etc.

- Proper pathways and walkways and no containers and drums that protrude onto walkways.

- Minimum accumulation of liquid or solid chemicals on the ground or floor.

- Stimulation of employee interest in good housekeeping.

3. Preventive Maintenance

An effective preventive maintenance program is important to prevent equipment breakdowns and/or failures with resultant significant discharges of chemicals to the POTW. The program includes inspection and testing of plant equipment and systems to uncover conditions requiring corrective action. To a large the degree, the program will be designed to assure proper equipment adjustment, repair or replacement occurs before such breakdowns and/or failures occur. Steps in a preventative maintenance program are:

- Identification of equipment and systems to which the Preventive Maintenance program should apply.
- Periodic inspections of identified equipment and systems.
- Periodic testing of such equipment and systems.
- Appropriate adjustment, repair, or replacement of parts.
- Maintenance of complete preventive maintenance records on the applicable equipment and systems.

4. Inspections and Records

The inspection and records system must include those equipment and plant areas identified in the risk identification process as having the potential for significant discharges. To determine the inspection frequency and inspection procedures, competent environmental personnel should evaluate the causes of previous incidents, and assess the probable risks for incident occurrence. Furthermore, the nature of chemicals handled, materials of construction, and site-specific factors including age, inspection techniques and cost effectiveness should be considered.

IU inspections of plant areas and equipment must be recorded. In addition, an IU should develop and formally document procedures to assure adequate response and corrective action have been taken when inspections reveal deficiencies.

5. Security

Plant security is sometimes necessary to prevent discharge incidents resulting from malicious mischief and/or unauthorized personnel working around critical areas. Examples of security measures include:

- Routine patrols of plant by security personnel
- Fencing
- Good lighting
- Controlled access at guardhouse or main entrance gate
- Locks on certain drain valves and pump starters

6. Employee Training

Employee training programs should instill in personnel, at all levels of responsibility, a complete understanding of the POTW discharge requirements. Training should include instruction on the processes and materials with which they are working, the safety hazards, the practices for preventing discharges, and the procedures for responding properly and rapidly to toxic and hazardous material incidents.

Employee Training must, as a minimum, entail:

- Meetings held at least annually to assure adequate understanding of program goals and objectives.
- Environmental Incident (Spill) drills used at least semiannually.
- Periodic input from management.
- Adequate training in particular job and process operation and the effect on other operations.
- Transmission of knowledge of past incidents and causes.
- Making employees aware of BMP plan and incident reporting procedures.
- Training in the use of sorbents, gelling agents, foams, and neutralizing agents for cleanup or mitigation of incidents.
- Maintaining operating manuals and standard operating procedures.
- Making employees aware of health risks of the chemicals handled and promoting safety.
- Motivating employees concerning incident prevention and control.
- Records of the personnel who were trained, and of the dates, instructors, subject matter, and lesson plans of the training sessions.
- Training and supervisions of contractors and temporary personnel.

7. Reporting of Spill/Upset Incidents

A spill/upset incident reporting system is necessary to minimize recurrence of future incidents, expedite any mitigation and/or cleanup activities, and to assure compliance with applicable legal requirements. Reporting procedures include:

- Maintenance of records of incidents and provide for formal internal review of each reported incident.

- Notification of the appropriate plant personnel, and taking preventive or mitigating actions.

- Notification to the appropriate governmental and environmental agencies.

- A communications system for reporting incidents in-plant (i.e., telephone, alarms, radio, etc.)