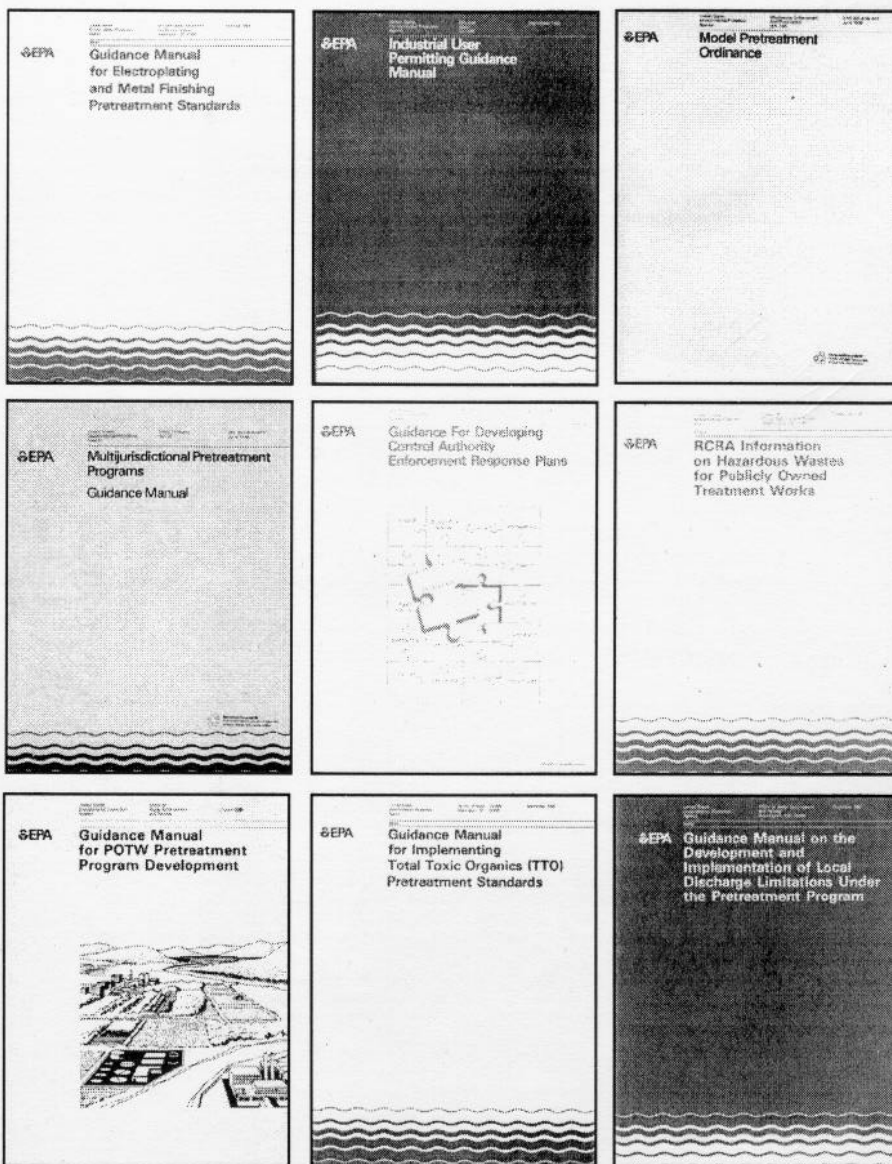




# Introduction to the National Pretreatment Program



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# PREFACE

The industrial boom in the United States during the 1950s and 60s brought with it a level of pollution never before seen in this country. Scenes of dying fish, burning rivers, and thick black smog engulfing major metropolitan areas were images and stories repeated regularly on the evening news. In December of 1970, the President of the United States created the U.S. Environmental Protection Agency (EPA) through an executive order in response to these critical environmental problems.

In 1972, Congress passed the Clean Water Act (CWA) to restore and maintain the integrity of the nation's waters. Although prior legislation had been enacted to address water pollution, those previous efforts were developed with other goals in mind. For example, the 1899 Rivers and Harbors Act protected navigational interests while the 1948 Water Pollution Control Act and the 1956 Federal Water Pollution Control Act merely provided limited funding for State and local governments to address water pollution concerns on their own.

The CWA required the elimination of the discharge of pollutants into the nation's waters and the achievement of fishable and swimmable water quality levels. EPA's National Pollutant Discharge Elimination System (NPDES) Permitting Program represents one of the key components established to accomplish this feat. The NPDES program requires that all point source discharges to waters of the U.S. (i.e., "direct discharges") must be permitted.

To address "indirect discharges" from industries to Publicly Owned Treatment Works (POTWs), EPA, through CWA authorities, established the National Pretreatment Program as a component of the NPDES Permitting Program. The National Pretreatment Program requires industrial and commercial dischargers to treat or control pollutants in their wastewater prior to discharge to POTWs.

In 1986, more than one-third of all toxic pollutants entered the nation's waters from publicly owned treatment works (POTWs) through industrial discharges to public sewers.<sup>1</sup> Certain industrial discharges, such as slug loads, can interfere with the operation of POTWs, leading to the discharge of untreated or inadequately treated wastewater into rivers, lakes, etc. Some pollutants are not compatible with biological wastewater treatment at POTWs and may pass through the treatment plant untreated. This "pass through" of pollutants impacts the surrounding environment, occasionally causing fish kills or other detrimental alterations of the receiving waters. Even when POTWs have the capability to remove toxic pollutants from wastewater, these toxics can end up in the POTW's sewage sludge, which in many places is land applied to food crops, parks, or golf courses as fertilizer or soil conditioner.

The National Pretreatment Program is unique in that the General Pretreatment Regulations require all large POTWs (i.e., those designed to treat flows of more than 5 million gallons per day) and smaller POTWs with significant industrial discharges to establish local pretreatment programs. These local programs must enforce all national pretreatment standards and requirements in addition to any more stringent local requirements necessary to protect site-specific conditions at the POTW. More than 1,500 POTWs have developed and are implementing local pretreatment programs designed to control discharges from approximately 30,000 significant industrial users.

Since 1983, the Pretreatment Program has made great strides in reducing the discharge of toxic pollutants to sewer systems and to waters of the U.S. In the eyes of many, the Pretreatment Program, implemented as a partnership between EPA, States, and POTWs, is a notable success story in reducing impacts to human health and the environment. These strides can be attributed to the efforts of many Federal, State, local, and industrial representatives who have been involved with developing and implementing the various aspects of the Pretreatment Program.

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<sup>1</sup> EPA, *Environmental Regulations and Technology: The National Pretreatment Program*, July 1986, p.4.

EPA has supported the Pretreatment Program through development of numerous guidance manuals. EPA has released more than 30 manuals that provide guidance to EPA, States, POTWs, and industry on various pretreatment program requirements and policy determinations. Through this guidance, the Pretreatment Program has maintained national consistency in interpretation of the regulations.

Nevertheless, turnover in pretreatment program staff has diluted historical knowledge leaving new staff and other interested parties unaware of existing materials. With this in mind, the intent of this guidance manual, ***Introduction to the National Pretreatment Program***, is to:

- (1) provide a reference for anyone interested in understanding the basics of pretreatment program requirements, and
- (2) provide a roadmap to additional and more detailed guidance materials for those trying to implement specific elements of the Pretreatment Program.

While the Pretreatment Program has demonstrated significant reductions in pollutants discharged to POTWs, Congress' goals of zero discharge of toxic pollutants and fishable/swimmable water quality have not been realized. EPA is currently working to establish more cost-effective and common sense approaches to environmental protection (e.g., using watershed, streamlining, and reinvention concepts), creating new responsibilities for all those involved in the National Pretreatment Program. Many current challenges remain, while many new ones likely lie ahead. This guidance manual is intended to provide an understanding of the basic concepts that drive the Program, the current status of the Program and program guidance, and an insight into what the future holds for all those involved with implementing the Pretreatment Program.

As noted above, this guidance manual is organized to provide an overview of program requirements and to refer the reader to more detailed EPA guidance that exists on specific program elements. To accomplish this, the guidance manual incorporates two key features: 1) the first page of each chapter contains a list of EPA references applicable to the topics discussed in that chapter, and 2) abstracts of each reference are provided in Appendix A with document ordering information provided in Appendix B. Addresses of EPA and State pretreatment staff are provided in Appendix C. Additionally, Chapter 8 contains a bibliography of these guidance materials, and other materials that may be useful to the reader and describes how to obtain them.

# LIST OF ACRONYMS

## Acronym    Full Phrase

AA	Approval Authority
AO	Administrative Order
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BMR	Baseline Monitoring Report
BOD <sub>5</sub>	5-day Biochemical Oxygen Demand
BPJ	Best Professional Judgment
BPT	Best Practicable Control Technology Currently Available
CA	Control Authority
CFR	Code of Federal Regulations
CIU	Categorical Industrial User
CSO	Combined Sewer Overflow
CWA	Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 95-576, Pub. L. 96-483, Pub. L. 97-117, and Pub. L. 100-4, 33 U.S.C. 1251 <u>et seq.</u>
CWF	Combined Wastestream Formula
CWT	Centralized Waste Treater
DMR	Discharge Monitoring Report
DSE	Domestic Sewage Exclusion
DSS	Domestic Sewage Study
ELG	Effluent Limitations Guideline
EPA	Environmental Protection Agency
EPCRA	Emergency Preparedness and Community Right to Know Act
ERP	Enforcement Response Plan
FDF	Fundamentally Different Factors
FR	Federal Register
FWA	Flow Weighted Average
gpd	Gallons per Day
IU	Industrial User
LEL	Lower Explosive Limit
MAHL	Maximum Allowable Headworks Loading
MAIL	Maximum Allowable Industrial Loading
MGD	Million Gallons per Day
MSDS	Material Safety Data Sheet
NAICS	North American Industry Classification System (replaces SIC coding system in 1998)
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
NSPS	New Source Performance Standard
O&G	Oil and Grease

## Acronym    Full Phrase

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O&M	Operations and Maintenance
OCPSF	Organic Chemicals, Plastics, and Synthetic Fibers
P2	Pollution Prevention
PCI	Pretreatment Compliance Inspection
PCS	Permit Compliance System
PIRT	Pretreatment Implementation Review Task Force
POTW	Publicly Owned Treatment Works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SIC	Standard Industrial Classification
SIU	Significant Industrial User
SPCC	Spill Prevention Control and Countermeasures
SNC	Significant Noncompliance
SSO	Sanitary Sewer Overflow
SUO	Sewer Use Ordinance
TCLP	Toxicity Characteristic Leaching Procedure
TIE	Toxicity Identification Evaluation
TOMP	Toxic Organic Management Program
TRE	Toxicity Reduction Evaluation
TRI	Toxic Release Inventory
TSS	Total Suspended Solids
TTO	Total Toxic Organics
USC	United States Code
UST	Underground Storage Tank
WET	Whole Effluent Toxicity
WWTP	Wastewater Treatment Plant

# GLOSSARY OF TERMS

This glossary includes a collection of terms used in this manual and an explanation of each term. To the extent that definitions and explanations provided in this glossary differ from those in EPA regulations or other official documents, the definitions used herein are intended for use in understanding this manual only.

**Act or “the Act”** [40 CFR §403.3(b)]

The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 USC 1251 *et seq.*

**Approval Authority** [40 CFR §403.3(c)]

The Director in an NPDES State with an approved State Pretreatment Program and the appropriate EPA Regional Administrator in a non-NPDES State or State without an approved pretreatment program.

**Approved POTW Pretreatment Program or Program** [40 CFR §403.3(d)]

A program administered by a POTW that meets the criteria established in 40 CFR Part 403 and which has been approved by a Regional Administrator or State Director.

**Approved State Pretreatment Program**

A program administered by a State that meets the criteria established in 40 CFR §403.10 and which has been approved by a Regional Administrator

**Approved/Authorized State**

A State with an NPDES permit program approved pursuant to section 402(b) of the Act and an approved State Pretreatment Program.

**Baseline Monitoring Report (BMR)** [paraphrased from 40 CFR §403.12(b)]

A report submitted by categorical industrial users (CIUs) within 180 days after the effective date of an applicable categorical standard, or at least 90 days prior to commencement of discharge for new sources, which contains specific facility information, including flow and pollutant concentration data. For existing sources, the report must also certify as to the compliance status of the facility with respect to the categorical standards.

**Best Available Technology Economically Achievable (BAT)**

A level of technology based on the best existing control and treatment measures that are economically achievable within the given industrial category or subcategory.

**Best Management Practices (BMPs)**

Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the U.S. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**Best Practicable Control Technology Currently Available (BPT)**

A level of technology represented by the average of the best existing wastewater treatment performance levels within an industrial category or subcategory.

**Best Professional Judgment (BPJ)**

The method used by a permit writer to develop technology-based limitations on a case-by-case basis using all reasonably available and relevant data.

**Blowdown**



The discharge of water with high concentrations of accumulated solids from boilers to prevent plugging of the boiler tubes and/or steam lines. In cooling towers, blowdown is discharged to reduce the concentration of dissolved salts in the recirculating cooling water.

**Bypass** [40 CFR §403.17(a)]

The intentional diversion of wastestreams from any portion of an Industrial User's treatment facility.

**Categorical Industrial User (CIU)**

An industrial user subject to National categorical pretreatment standards.

**Categorical Pretreatment Standards**

Limitations on pollutant discharges to POTWs promulgated by EPA in accordance with Section 307 of the Clean Water Act, that apply to specific process wastewater discharges of particular industrial categories [40 CFR § 403.6 and 40 CFR Parts 405-471].

**Chain of Custody (COC)**

A record of each person involved in the possession of a sample from the person who collects the sample to the person who analyzes the sample in the laboratory.

**Chronic**

A stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.

**Clean Water Act (CWA)**

The common name for the Federal Water Pollution Control Act. Public law 92-500; 33 U.S.C. 1251 et seq.; legislation which provides statutory authority for both NPDES and Pretreatment Programs.

**Code of Federal Regulations (CFR)**

A codification of Federal rules published annually by the Office of the Federal Register National Archives and Records Administration. Title 40 of the CFR contains the regulations for *Protection of the Environment*.

**Combined Sewer Overflow (CSO)**

A discharge of untreated wastewater from a combined sewer system at a point prior to the headworks of a publicly owned treatment works. CSOs generally occur during wet weather (rainfall or snowfall). During periods of wet weather, these systems become overloaded, bypass treatment works, and discharge directly to receiving waters.

**Combined Wastestream Formula (CWF)** [paraphrased from 40 CFR §403.6(e)]

Procedure for calculating alternative discharge limits at industrial facilities where a regulated wastestream from a categorical industrial user is combined with other wastestreams prior to treatment.

**Compliance Schedule**

A schedule of remedial measures included in a permit or an enforcement order, including a sequence of interim requirements (for example, actions, operations, or milestone events) that lead to compliance with the CWA and regulations.

**Composite Sample**

Sample composed of two or more discrete samples. The aggregate sample will reflect the average water quality covering the compositing or sample period.

**Concentration-based Limit**

A limit based upon the relative strength of a pollutant in a wastestream, usually expressed in mg/l.

**Continuous Discharge**

A discharge that occurs without interruption during the operating hours of a facility, except for infrequent shutdowns for maintenance, process changes or similar activities.

**Control Authority** *[paraphrased from 40 CFR § 403.12(a)]*

A POTW with an approved pretreatment program or the approval authority in the absence of a POTW pretreatment program.

**Conventional Pollutants**

BOD, TSS, fecal coliform, oil and grease, and pH

**Daily Maximum Limitations**

The maximum allowable discharge of pollutants during a 24 hour period. Where daily maximum limitations are expressed in units of mass, the daily discharge is the total mass discharged over the course of the day. Where daily maximum limitations are expressed in terms of a concentration, the daily discharge is the arithmetic average measurement of the pollutant concentration derived from all measurements taken that day.

**Detection Limit**

The minimum concentration of an analyte(substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure set forth in 40 CFR Part 136, Appendix B.

**Development Document**

Detailed report of studies conducted by the U.S. EPA for the purpose of establishing effluent guidelines and categorical pretreatment standards.

**Dilute Wastestream** *[paraphrased from 40 CFR §403.6(e)(1)(i)]*

For purposes of the combined wastestream formula, the average daily flow (at least a 30-day average) from : (a) boiler blowdown streams, non-contact cooling streams, storm water streams, and demineralized backwash 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 user's 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 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 more of the following reasons (see Appendix D of 40 CFR Part 403):

- a. the pollutants of concern are not detectable in the effluent from the industrial user (paragraph (8)(a)(iii));
- b. the pollutants of concern are present only in trace amounts and are neither causing nor likely to cause toxic effects (paragraph (8)(a)(iii));
- c. the pollutants of concern are present in amounts too small to be effectively deduced by technologies known to the Administrator (paragraph (8)(a)(iii)); or
- d. the wastestream contains only pollutants which are compatible with the POTW (paragraph (8)(b)(I)).

**Effluent Limitations Guideline**

Any effluent limitations guidelines issued by EPA pursuant to Section 304(b) of the CWA. These regulations are published to adopt or revise a national standard prescribing restrictions on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources, in specific industrial categories (e.g., metal finishing, metal molding and casting, etc).

**Enforcement Response Plan** *[paraphrased from 40 CFR §403.8(f)(5)]*

Step-by-step enforcement procedures followed by Control Authority staff to identify, document, and respond to violations.

**Existing Source**

Any source of discharge, the construction or operation of which commenced prior to the publication by the EPA of proposed categorical pretreatment standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

**Federal Water Pollution Control Act (FWPCA)**

The title of Public law 92-500; 33 U.S.C. 1251 *et seq.*, also known as the Clean Water Act (CWA), enacted October 18, 1972.

**Flow Weighted Average Formula (FWA)** *[paraphrased from 40 CFR §403.6(e)]*

A procedure used to calculate alternative limits where wastestreams regulated by a categorical pretreatment standard and nonregulated wastestreams combine after treatment but prior to the monitoring point.

**Flow Proportional Composite Sample**

Combination of individual samples proportional to the flow of the wastestream at the time of sampling.

**Fundamentally Different Factors** *[paraphrased from 40 CFR §403.13]*

Case-by-case variance from categorical pretreatment standards based on the factors considered by EPA in developing the applicable category/subcategory being fundamentally different than factors relating to a specific industrial user.

**General Prohibitions** *[40 CFR §403.5(a)(1)]*

No user shall introduce into a POTW any pollutant(s) which cause pass through or interference.

**Grab Sample**

A sample which is taken from a wastestream on a one-time basis with no regard to the flow of the wastestream and without consideration of time. A single grab sample should be taken over a period of time not to exceed 15 minutes.

**Indirect Discharge or Discharge** *[40 CFR §403.3(g)]*

The introduction of pollutants into a POTW from any non-domestic source regulated under section 307(b), (c), or (d) of the Act.

**Industrial User (IU) or User** *[40 CFR §403.3(h)]*

A source of indirect discharge.

**Industrial Waste Survey**

The process of identifying and locating industrial users and characterizing their industrial discharge.

**Inhibition Concentration**

Estimate of the toxicant concentration that would cause a given percent reduction (e.g., IC25) in a nonlethal biological measurement of the test organisms, such as reproduction or growth.

**Interference** *[paraphrased from 40 CFR §403.3(i)]*

A discharge which, alone or in conjunction with a discharge or discharges from other sources, both: (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with ... [applicable] statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations) ...

**Local Limits** *[paraphrased 40 CFR § 403.5(c)]*

Specific discharge limits developed and enforced by POTWs upon industrial or commercial facilities to implement the general and specific discharge prohibitions listed in 40 CFR §§403.5(a)(1) and (b).

**Monthly Average**

The arithmetic average value of all samples taken in a calendar month for an individual pollutant parameter. The monthly average may be the average of all grab samples taken in a given calendar month, or the average of all composite samples taken in a given calendar month.

**National Pollutant Discharge Elimination System (NPDES)**

The national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing discharge permits from point sources to waters of the United States, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the CWA.

**National Pretreatment Standard or Pretreatment Standard or Standard [40 CFR §403.3(j)]**

Any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307(b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to §403.5.

**New Source [40 CFR §403.3(k)]**

Any building, structure, facility or installation from which there is or may be a discharge of pollutants, the construction of which commenced after the publication of proposed Pretreatment Standards under section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section *provided that*:

- (a) The building, structure, facility or installation is constructed at a site at which no other discharge source is located; or
- (b) The building, structure, facility or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or
- (c) The production or wastewater generating processes of the building, structure, facility, or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source, should be considered.

Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation meeting the criteria of paragraphs (k)(1)(ii), or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

Construction of a new source, as defined under this paragraph has commenced if the owner or operator has:

- (i) Begun, or caused to begin as part of a continuous onsite construction program:
  - (A) Any placement, assembly, or installation of facilities or equipment; or
  - (B) Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment, or
  - (C) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

**90-Day Final Compliance Report [40 CFR §403.12(d)]**

A report submitted by categorical industrial users within 90 days following the date for final compliance with the standards. This report must contain flow measurement (of regulated process streams and other

streams), measurement of pollutants, and a certification as to whether the categorical standards are being met.

**Nonconventional Pollutants**

Any pollutant that is neither a toxic pollutant nor a conventional pollutant (e.g., manganese, ammonia, etc.)

**Non-Contact Cooling Water**

Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product. The only pollutant contributed from the discharge is heat.

**Non-Regulated Wastestream**

Unregulated and dilute wastestreams (not regulated by categorical standards).

**Pass Through** [40 CFR §403.3(n)]

A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

**Periodic Compliance Report** [paraphrased from 40 CFR §403.12(e) & (h)]

A report on compliance status submitted by categorical industrial users and significant noncategorical industrial users to the control authority at least semiannually (once every six months).

**Point Source** [40 CFR 122.2]

Any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fixture, container, rolling stock concentrated animal feeding operation vessel, or other floating craft from which pollutants are or may be discharged.

**Pollutant** [40 CFR 122.2]

Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal and agricultural waste discharged into water.

**Pretreatment** [paraphrased from 40 CFR §403.3(q)]

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW.

**Pretreatment Requirements** [40 CFR §403.3(r)]

Any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.

**Pretreatment Standards for Existing Sources (PSES)**

Categorical Standards and requirements applicable to industrial sources that began construction prior to the publication of the proposed pretreatment standards for that industrial category. (see individual standards at 40 CFR Parts 405-471.)

**Pretreatment Standards for New Sources (PSNS)**

Categorical Standards and requirements applicable to industrial sources that began construction after the publication of the proposed pretreatment standards for that industrial category. (see individual standards at 40 CFR Parts 405-471.)

**Priority Pollutant**

Pollutant listed by the Administrator of EPA under Clean Water Act section 307(a). The list of the current 126 Priority Pollutants can be found in 40 CFR Part 423 Appendix A.

**Process Wastewater**

Any water which, during manufacturing or processing, comes into contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

**Production-Based Standards**

A discharge standard expressed in terms of pollutant mass allowed in a discharge per unit of product manufactured.

**Publicly Owned Treatment Works (POTW) [40 CFR §403.3(o)]**

A treatment works as defined by section 212 of the Act, which is owned by a State or municipality (as defined by section 502(4) of the Act). This definition includes any devices or systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes or other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in section 502(4) of the Act, which has jurisdiction over the Indirect Discharges to and the discharges from such a treatment works.

**Regulated Wastestream**

For purposes of applying the combined wastestream formula, a wastestream from an industrial process that is regulated by a categorical standard.

**Removal Credit [paraphrased from 40 CFR §403.7]**

Variance from a pollutant limit specified in a categorical pretreatment standard to reflect removal by the POTW of said pollutant.

**Representative Sample**

A sample from a wastestream that is as nearly identical as possible in composition to that in the larger volume of wastewater being discharged and typical of the discharge from the facility on a normal operating day.

**Sanitary Sewer Overflow (SSO)**

Untreated or partially treated sewage overflows from a sanitary sewer collection system.

**Self-Monitoring**

Sampling and analyses performed by a facility to ensure compliance with a permit or other regulatory requirements.

**Sewer Use Ordinance (SUO)**

A legal mechanism implemented by a local government entity which sets out, among others, requirements for the discharge of pollutants into a publicly owned treatment works.

**Significant Industrial User (SIU) [paraphrased from 40 CFR §403.3(t)]**

(1) All users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and (2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

**Significant Noncompliance (SNC) [40 CFR §403.8(f)(2)(vii)]**

Industrial user violations meeting one or more of the following criteria:

- 1) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent or more of all of the measurements taken during a six month period exceed (by any magnitude) the daily maximum limit or the average limit for the same pollutant parameter;

- 2) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent or more of all of the measurements for each pollutants parameter taken during a six-month period equal or exceed the product of the daily maximum limit or the average limit multiplied by the applicable TRC (TRC=1.4 for BOD, TSS, fats, oil, and grease, and 1.2 for all other pollutants except pH);
- 3) Any other violation of a pretreatment effluent limit (daily maximum or longer-term average) that the Control Authority determines has caused, alone or in combination with other dischargers, interference or pass through (including endangering the health of POTW personnel or the general public);
- 4) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority under paragraph (f)(1)(vi)(B) of this section to halt or prevent such a discharge;
- 5) Failure to meet, within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance;
- 6) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;
- 7) Failure to accurately report noncompliance;
- 8) Any other violation or group of violations which the Control Authority determines will adversely affect the operation or implementation of the local pretreatment program.

**Slug Discharge** [40 CFR §403.8(f)(2)(v)]

Any discharge of a non-routine, episodic nature, including but not limited to, an accidental spill or a noncustomary batch discharge.

**Specific Prohibitions** [40 CFR §403.5(b)]

The following pollutants shall not be introduced into a POTW:

- 1) Pollutants which create a fire or explosion hazard in the POTW, including but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR Part 261.21;
- 2) Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such discharges;
- 3) Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;
- 4) Any pollutant, including oxygen demanding pollutants(BOD, etc.) Released in a discharge at a flow rate and/or concentration which will cause interference with 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 POTW treatment plant exceeds 40°C(104°F) unless the Approval Authority, upon request of the POTW, approves alternative temperature limits;
- 6) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;
- 7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
- 8) Any trucked or hauled pollutants, except at discharge points designated by the POTW.

**Standard Industrial Classification (SIC)**

A system developed by the U.S. Office of Management and Budget that is used to classify various types of business entities. Effective in 1998, the SIC scheme is replaced by the North American Industry Classification System (NAICS), although EPA has not yet implemented this change.

**Storm Water**

Rain water, snow melt, and surface runoff and drainage.

**Time Proportional Composite Sample**

A sample consisting of a series of aliquots collected from a representative point in the discharge stream at equal time intervals over the entire discharge period on the sampling day.

**Toxic Pollutant**

Any pollutant listed as toxic under section 307(a)(1) of the CWA, or in the case of sludge use or disposal practices, any pollutant identified in regulations implementing section 405(d) of the CWA.

**Toxicity Reduction Evaluation**

A site-specific study conducted in a stepwise process designed to identify the causative agent(s) of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

**Toxicity Test**

A procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.

**Toxicity Identification Evaluation**

Set of procedures to identify the specific chemicals responsible for effluent toxicity.

**Unregulated Wastestream**

For purposes of applying the combined wastestream formula, a wastestream not regulated by a categorical standard nor considered a dilute wastestream.

**Upset** *[paraphrased from 40 CFR §403.16(a)]*

An exceptional incident in which there is unintentional and temporary noncompliance with categorical Pretreatment Standards because of factors beyond the reasonable control of the Industrial User. An Upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

**Water Quality Criteria**

Comprised of both numeric and narrative criteria. Numeric criteria are scientifically derived ambient concentrations developed by EPA or States for various pollutants of concern to protect human health and aquatic life. Narrative criteria are statements that describe the desired water quality goal.

**Water Quality Standard**

A statute or regulation that consists of the beneficial designated use or uses of a waterbody, the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular waterbody, and an antidegradation statement.

**Whole Effluent Toxicity**

The total toxic effect of an effluent measured directly with a toxicity test.



# 1. POTWs AND THE NEED FOR THE PRETREATMENT PROGRAM

The average American uses roughly 100 to 200 gallons of water a day, with less than one percent of that water actually being consumed.<sup>2</sup> The rest is used for activities such as washing, preparing food, watering lawns, heating and cooling, transporting wastes, and fire protection. The public is very conscious about the quality of water that comes out of their tap each day, quickly notifying authorities of changes in appearance, odor, and taste. These same Americans, on average, discharge about the same amount of wastewater to local sewage treatment plants daily.<sup>3</sup> This wastewater (commonly referred to as “domestic sewage”) receives much less attention than drinking water, likely the result of an “out of sight, out of mind” attitude.

## Chapter 1. Applicable EPA References

Environmental Regulations and Technology: The National Pretreatment Program  
National Pretreatment Program: Report to Congress  
Report to Congress on the Discharge of Hazardous Wastes to POTWs

Most people take it for granted that once down the drain, wastes will be handled appropriately. In fact, this attitude has carried over to industry as well, as can be seen by reading the labels of many household products. These labels often recommend that waste or excess product be disposed of down the drain. Other toxic or hazardous products are actually designed to be disposed of down the drain (e.g., drain clog remover). Recall the phosphate detergent problems of the late 1960s and early 70s; large doses of phosphate, found in most detergents at the time, were passing through municipal treatment plants and overloading lakes, causing large algal blooms to form and subsequently reducing available light, food and oxygen for fish and other aquatic organisms. While great strides have been taken to address the phosphate problem, it is possible that other problematic pollutants are being dumped down the drain at the expense of human health and the environment.

## SEWAGE TREATMENT

Publicly owned treatment works (POTWs) collect wastewater from homes, commercial buildings, and industrial facilities and transport it via a series of pipes, known as a collection system, to the treatment plant. Collection systems may flow entirely by gravity, or may include lift stations that pump the wastewater via a force main to a higher elevation where the wastewater can then continue on via gravity. Ultimately, the collection system delivers this sewage to the treatment plant facility. Here, the POTW removes harmful organisms and other contaminants from the sewage so it can be discharged safely into the receiving stream. Without treatment, sewage creates bad odors, contaminates water supplies, and spreads disease. Today, more than 16,000 sewage treatment plants exist in the U.S. treating more than 32 billion gallons per day of wastewater.<sup>4</sup>

Generally, POTWs are designed to treat domestic sewage only. Simply defined, the typical POTW treatment process consists of primary and secondary treatment, along with some form of solids handling. Primary treatment is designed to remove large solids (e.g., rags and debris) and smaller inorganic grit. Typical primary treatment operations include screening and settling. Secondary treatment removes organic contaminants using microorganisms to consume biodegradable organics. Activated sludge, trickling filters, and rotating biological contactors are examples of common secondary treatment operations. Depending on effluent discharge requirements, POTWs may perform other “advanced treatment” operations such as nitrification (to convert ammonia and nitrite to the less toxic nitrate), denitrification (to convert nitrate to molecular nitrogen),

<sup>2</sup> **The Nalco Water Handbook**, ed. Frank N. Kemmer (New York: McGraw-Hill Book Company, 1988), pp. 35.1.

<sup>3</sup> **Ibid**, p. 36.1.

<sup>4</sup> **1996 Clean Water Needs Survey Report to Congress: Assessment of Needs for Publicly Owned Wastewater Treatment Facilities, Correction of Combined Sewer Overflows, and Management of Stormwater and Nonpoint Source Pollution in the United States.**

physical-chemical treatment (to remove dissolved metals and organics), and disinfection (to kill any remaining pathogens). After treatment is complete, effluent is discharged to the receiving stream, typically a creek, river, lake, estuary or ocean. Some POTWs may apply treated effluent directly to golf courses, parkland, or croplands.

Both primary and secondary treatment processes generate waste solids, known as sewage sludge or biosolids. Sludges from the treatment process may be either used productively (i.e., as fertilizer or soil conditioner) or disposed of in a landfill or incinerated in a dedicated sewage sludge incinerator with the ash also disposed of in a landfill.

As described above, POTWs are designed to treat typical household wastes and biodegradable commercial and biodegradable industrial wastes. The Clean Water Act (CWA) and EPA define the contaminants from these sources as conventional pollutants. Conventional pollutants are identified in Figure 1 and include those specific pollutants that are expected to be present in domestic discharges to POTWs. Commercial and industrial facilities may, however, discharge toxic pollutants that the treatment plant is neither designed for nor able to remove.

- |   |
|---|
| Biochemical Oxygen Demand (BOD)<br>Total Suspended Solids<br>Fecal Coliform<br>pH<br>Oil and Grease (O&G) |
|---|

**Figure 1. Conventional Pollutants**

### NEED FOR THE PRETREATMENT PROGRAM

As noted above, POTWs are not designed to treat toxics in industrial waste. As such, these discharges, from both industrial and commercial sources, can cause serious problems. The undesirable outcome of these discharges can be prevented using treatment techniques or management practices to reduce or eliminate the discharge of these contaminants. The act of treating wastewater prior to discharge to a POTW is commonly referred to as “pretreatment.” The National Pretreatment Program, published in **Title 40 Code of Federal Regulations (CFR) Part 403**, provides the regulatory basis to require non-domestic dischargers to comply with pretreatment standards (effluent limitations) to ensure that the goals of the CWA are attained. As noted in 40 CFR §403.2, the objectives of the National Pretreatment Program are to:

- a. Prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge;
- b. Prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works; and
- c. Improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

The two key terms used in EPA’s objectives for the National Pretreatment Program, “interference” and “pass through,” are defined in Figure 2.

As outlined in EPA’s objectives, toxic pollutants may pass through the treatment plant into the receiving stream, posing serious threats to aquatic life, to human recreation, and to consumption of fish and shellfish from these waters. Pass through can make waters unswimmable or unfishable in direct contrast to the goals of the CWA. Or, these discharges can interfere with the biological activity of the treatment plant causing sewage to pass through the treatment plant untreated or inadequately treated.

- |  |
|--|
| <p><u>Interference</u> - a discharge which, alone or in conjunction with a discharge or discharges from other sources, both:</p> <ul style="list-style-type: none"> <li>- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal, and</li> <li>- therefore is a cause of a violation of any NPDES permit requirement or of the prevention of sewage sludge use or disposal in compliance with any applicable requirements.</li> </ul> <p><u>Pass Through</u> - a discharge which exits the POTW into waters of the U.S. in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any NPDES permit requirement.</p> |
|--|

**Figure 2. Interference and Pass Through**

Even where the POTW has the capability to remove these toxics, the pollutants may end up in the sewage sludge, thereby limiting sludge disposal options or escalating the cost of disposal. Incinerated contaminated sludge may release toxic emissions into the atmosphere. Toxic metals removed in primary treatment, while itself not an inhibitory process, can impact sludge digestion, a process that does utilize bacteria to stabilize sludge solids. For example, chromium can inhibit reproduction of aerobic digestion microorganisms, thereby disrupting sludge treatment and producing sludges that must be disposed of with special treatment. Uncontaminated sludge, on the other hand, can be used as fertilizer or soil conditioner, thereby improving the productivity of our land. Many municipalities apply sewage sludge to pastureland or parkland, that they could not do if the sludge were contaminated.

Volatile organics discharged to sewers can accumulate in the head space of sewers, increasing the likelihood of explosions that can cause significant damage. Probably the most well known impact from industrial discharges to POTWs in the U.S. is the explosion in Louisville, KY that occurred in 1981 as the result of excessive discharges of hexane into the collection system, eventually igniting and destroying more than 3 miles of sewers and causing \$20 million in damage. Discharge limitations and management practices to control slug discharges have significantly reduced the likelihood of future catastrophes such as the explosion in Louisville.

Discharges of toxic organics can also result in the release of poisonous gas. This occurs most often when acidic wastes react with other wastes in the discharge. For example, cyanide and acid, both present in many electroplating operations, react to form highly toxic hydrogen cyanide gas. Similarly, sulfides from leather tanning can combine with acid to form hydrogen sulfide, another toxic gas. These can be highly dangerous to POTW collection system operators exposed to such conditions in the performance of their duties. Other problems associated with toxic discharges are summarized in Figure 3 and further document the urgency of keeping toxics out of collection systems and POTWs.

The National Pretreatment Program is charged with controlling the 126 Priority Pollutants from industries that discharge into sewer systems as described in the CWA (see Figure 4). These pollutants fall into two categories; metals and organics:

- ▶ Metals, including lead, mercury, chromium, and cadmium cannot be destroyed or broken down through treatment or environmental degradation. Toxic metals can cause different human health problems such as lead poisoning and cancer. Additionally, consumption of contaminated seafood and agricultural food crops has resulted in exposures exceeding recommended safe levels.
- ▶ Toxic organics, including solvents, pesticides, dioxins, and polychlorinated biphenyls (PCBs) can be cancer-causing and lead to other serious ailments, such as kidney and liver damage, anemia, and heart failure. In 1996, EPA's Office of Science and Technology (OST) identified 2,193 waterbodies with fish and wildlife advisories, up more than 25 percent from 1995.<sup>5</sup>

- air pollution can occur from volatilization of toxic chemicals in the POTW collection system or treatment plant, or through incineration of sewage sludge
- corrosion of collection system and treatment plant from acidic discharges or discharges containing elevated levels of sulfate (forming toxic and corrosive hydrogen sulfide)
- groundwater pollution can occur from leaks in the collection system or pollutants from contaminated sewage sludge.

**Figure 3. Problems Associated With Toxic Discharges**

Reductions in pollutants can ensure that industrial development vital to the economic well-being of a community is compatible with a healthy environment. As will be noted in Chapter 2, many POTWs are responsible for ensuring that industrial and commercial facilities do not cause problems resulting from their discharges. In 1991, EPA estimated that 190 to 204 million pounds of metals and 30 to 108 million pounds of organics were removed each year as a result of pretreatment program requirements.<sup>6</sup> This is substantiated by

<sup>5</sup> EPA Office of Science and Technology, Listing of Fish and Wildlife Advisories (LFWA) database, 1998.

<sup>6</sup> U.S. Environmental Protection Agency, National Pretreatment Program: Report to Congress, 1991.

many POTWs that report significant reductions in the loadings of toxics to their treatment plants that is directly attributable to implementation of the National Pretreatment Program.

**Figure 4. Priority Pollutants**

001 Acenaphthene	044 Methylene chloride	088 Vinyl chloride
002 Acrolein	045 Methyl chloride	089 Aldrin
003 Acrylonitrile	046 Methyl bromide	090 Dieldrin
004 Benzene	047 Bromoform	091 Chlordane
005 Benzidine	048 Dichlorobromomethane	092 4,4-DDT
006 Carbon tetrachloride	051 Chlorodibromomethane	093 4,4-DDE
007 Chlorobenzene	052 Hexachlorobutadiene	094 4,4-DDD
008 1,2,4-trichlorobenzene	053 Hexachlorocyclopentadiene	095 Alpha-endosulfan
009 Hexachlorobenzene	054 Isophorone	096 Beta-endosulfan
010 1,2-dichloroethane	055 Naphthalene	097 Endosulfan sulfate
011 1,1,1-trichloroethane	056 Nitrobenzene	098 Endrin
012 Hexachloroethane	057 2-nitrophenol	099 Endrin aldehyde
013 1,1-dichloroethane	058 4-nitrophenol	100 Heptachlor
014 1,1,2-trichloroethane	059 2,4-dinitrophenol	101 Heptachlor epoxide
015 1,1,2,2-tetrachloroethane	060 4,6-dinitro-o-cresol	102 Alpha-BHC
016 Chloroethane	061 N-nitrosodimethylamine	103 Beta-BHC
018 Bis(2-chloroethyl) ether	062 N-nitrosodiphenylamine	104 Gamma-BHC
019 2-chloroethyl vinyl ethers	063 N-nitrosodi-n-propylamine	105 Delta-BHC
020 2-chloronaphthalene	064 Pentachlorophenol	106 PCB-1242
021 2,4,6-trichlorophenol	065 Phenol	107 PCB-1254
022 Parachlorometacresol	066 Bis(2-ethylhexyl) phthalate	108 PCB-1221
023 Chloroform	067 Butyl benzyl phthalate	109 PCB-1232
024 2-chlorophenol	068 Di-N-Butyl Phthalate	110 PCB-1248
025 1,2-dichlorobenzene	069 Di-n-octyl phthalate	111 PCB-1260
026 1,3-dichlorobenzene	070 Diethyl Phthalate	112 PCB-1016
027 1,4-dichlorobenzene	071 Dimethyl phthalate	113 Toxaphene
028 3,3-dichlorobenzidine	072 benzo(a) anthracene	114 Antimony
029 1,1-dichloroethylene	073 Benzo(a)pyrene	115 Arsenic
030 1,2-trans-dichloroethylene	074 Benzo(b) fluoranthene	116 Asbestos
031 2,4-dichlorophenol	075 Benzo(b) fluoranthene	117 Beryllium
032 1,2-dichloropropane	076 Chrysene	118 Cadmium
033 1,2-dichloropropylene	077 Acenaphthylene	119 Chromium
034 2,4-dimethylphenol	078 Anthracene	120 Copper
035 2,4-dinitrotoluene	079 Benzo(ghi) perylene	121 Cyanide, Total
036 2,6-dinitrotoluene	080 Fluorene	122 Lead
037 1,2-diphenylhydrazine	081 Phenanthrene	123 Mercury
038 Ethylbenzene	082 Dibenzo(h) anthracene	124 Nickel
039 Fluoranthene	083 Indeno (1,2,3-cd) pyrene	125 Selenium
040 4-chlorophenyl phenyl ether	084 Pyrene	126 Silver
041 4-bromophenyl phenyl ether	085 Tetrachloroethylene	127 Thallium
042 Bis(2-chloroisopropyl) ether	086 Toluene	128 Zinc
043 Bis(2-chloroethoxy) methane	087 Trichloroethylene	129 2,3,7,8-TCDD

## 2. OVERVIEW OF THE NATIONAL PRETREATMENT PROGRAM

### THE CLEAN WATER ACT

On October 18, 1972, the 92nd Congress of the United States passed the Federal Water Pollution Control Act Amendments of 1972, declaring the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's water as a National objective (see Figure 5). While

procedures for implementing this act (more commonly referred to as the Clean Water Act (CWA)) have been re-evaluated and modified over time, the 1972 objective has remained unchanged in its 25 year history.

The 1972 Amendments to the CWA established a water quality regulatory approach along with EPA-promulgated industry-specific technology-based effluent limitations. The National Pollutant Discharge Elimination System (NPDES) permit program was established under the CWA to control the discharge of pollutants from point sources and served as a vehicle to implement the industrial technology-based standards. To implement pretreatment requirements, EPA promulgated 40 CFR Part 128 in late 1973, establishing general prohibitions against treatment plant interference and pass through and pretreatment standards for the discharge of incompatible pollutants from specific industrial categories.

In 1975, several environmental groups filed suit against EPA challenging EPA's criteria for identifying toxic pollutants, EPA's failure to promulgate effluent standards, and EPA's failure to promulgate pretreatment standards for numerous industrial categories. As a result of this litigation, EPA promulgated the General Pretreatment Regulations at 40 CFR Part 403 on June 26, 1978, replacing the 40 CFR Part 128 requirements. Additionally, as a result of the suit, EPA agreed to regulate the discharge of 65 categories of pollutants (making up the 126 priority pollutants presented in Figure 4) from 21 industrial categories. The list of priority pollutants is still in effect today (the original list actually had 129 pollutants, three of which have since been removed from that list) while the list of regulated industrial categories has grown to more than 51 distinct industries. A discussion of industry specific requirements are provided in Chapter 3.

#### Chapter 2. Applicable EPA Guidance

Control Authority Pretreatment Audit Checklist and Instructions  
 Guidance for Conducting a Pretreatment Compliance Inspection  
 Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements  
 Guidance Manual for POTW Pretreatment Program Development  
 Pretreatment Compliance Inspection and Audit Manual For Approval Authorities  
 Procedures Manual for Reviewing a POTW Pretreatment Program Submission

To restore and maintain the chemical, physical, and biological integrity of the Nation's waters:

- (1) it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;
- (2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;
- (3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;
- (4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;
- (5) it is the national policy that Area wide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State;
- (6) it is the national policy that a major research and demonstration effort be made to develop technology necessary to eliminate the discharge of pollutants into the navigable waters, waters of the contiguous zone, and the oceans; and
- (7) it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Chapter to be met through the control of both point and nonpoint sources of pollution.

**Figure 5. Section 101 of the Clean Water Act (CWA)**

## THE GENERAL PRETREATMENT REGULATIONS

The General Pretreatment Regulations establish responsibilities of Federal, State, and local government, industry and the public to implement Pretreatment Standards to control pollutants which pass through or interfere with POTW treatment processes or which may contaminate sewage sludge. The regulations, which have been revised numerous times since originally published in 1978, consist of 18 sections and several appendices. A copy of the overall framework for the General Pretreatment Regulations is provided in Figure 6.

The General Pretreatment Regulations apply to all nondomestic sources which introduce pollutants into a POTW. These sources of “indirect discharge” are more commonly referred to as industrial users (IUs). Since IUs can be as simple as an unmanned coin operated car wash to as complex as an automobile manufacturing plant or a synthetic organic chemical producer, EPA developed four criteria that define a Significant Industrial User (SIU). Many of the General Pretreatment Regulations apply to SIUs as opposed to IUs, based on the fact that control of SIUs should provide adequate protection of the POTW.

These four criteria are as follows:

- ▶ an IU that discharges an average of 25,000 gallons per day or more of process wastewater to the POTW;
- ▶ an IU that contributes a process wastestream making up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant;
- ▶ an IU designated by the Control Authority as such because of its reasonable potential to adversely affect the POTW's operation or violate any pretreatment standard or requirement; or
- ▶ an IU subject to Federal categorical pretreatment standards.

§ 403.1	Purpose and applicability
§ 403.2	Objectives of general pretreatment regulations
§ 403.3	Definitions
§ 403.4	State or local law
§ 403.5	National pretreatment standards: Prohibited discharges
§ 403.6	National pretreatment standards: Categorical pretreatment standards
§ 403.7	Removal credits
§ 403.8	Pretreatment program requirements: Development and implementation by POTW
§ 403.9	POTW pretreatment programs and/or authorization to revise pretreatment standards: Submission for approval
§ 403.10	Development and submission of NPDES State pretreatment programs
§ 403.11	Approval procedures for POTW pretreatment programs and POTW granting of removal credits
§ 403.12	Reporting requirements for POTW's and industrial users
§ 403.13	Variances from categorical pretreatment standards for fundamentally different factors
§ 403.14	Confidentiality
§ 403.15	Net/Gross calculation
§ 403.16	Upset provision
§ 403.17	Bypass
§ 403.18	Modification of POTW pretreatment programs
Appendix A: Program Guidance Memorandum	
Appendix B: [Reserved]	
Appendix C: [Reserved]	
Appendix D: Selected Industrial Subcategories Considered Dilute for Purposes of the Combined Wastestream Formula	
Appendix E: Sampling Procedures	
Appendix F: [Reserved]	
Appendix G: Pollutants Eligible for a Removal Credit	

**Figure 6. The General Pretreatment Regulations**

Unlike other environmental programs that rely on Federal or State governments to implement and enforce specific requirements, the Pretreatment Program places the majority of the responsibility on local municipalities. Specifically, section 403.8(a) of the General Pretreatment Regulations states that any POTW (or combination of treatment plants operated by the same authority) with a total design flow greater than 5 million gallons per day (MGD) and smaller POTWs with SIUs must establish a local pretreatment program. As of early 1998, 1,578 POTWs are required to have local programs. While this represents only about 15 percent of the total treatment plants nationwide, these POTWs account for more than 80 percent (i.e., approximately 30 billion gallons a day) of the national wastewater flow.

The General Pretreatment Regulations define the term “Control Authority” as a POTW that administers an approved pretreatment program since it is the entity authorized to control discharges to its system. Section 403.10(e) provides States authority to implement POTW pretreatment programs in lieu of POTWs. Five States have elected to assume this responsibility (Vermont, Connecticut, Alabama, Mississippi, and Nebraska). In these instances, the State is defined as the Control Authority.

As described above, all Control Authorities must establish a local pretreatment program to control discharges from non-domestic sources. These programs must be approved by the “Approval Authority” who is also responsible for overseeing implementation and enforcement of these programs. As noted in Figure 7, a total of 44 States/Territories are authorized to implement State NPDES Permit Programs, but only 27 are authorized to be the Pretreatment Program Approval Authority (i.e., those with approved State pretreatment programs excluding the five §403.10(e) States). In all other States and Territories (including the 403.10(e) States), EPA is considered to be the Approval Authority.

## POTW PRETREATMENT PROGRAMS

The actual requirement for a POTW to develop and implement a local pretreatment program is a condition of its NPDES permit. Once the Approval Authority determines that a POTW needs a pretreatment program, the POTW’s NPDES permit is modified to require development of a local program and submission of the program to the Approval Authority for review and approval. Consistent with §403.8(f), POTW pretreatment programs must contain the six minimum elements presented in Figure 8.

In addition to the six specific elements, pretreatment program submissions must include:

- a statement from the City Solicitor (or the like) declaring the POTW has adequate authority to carry out program requirements;
- copies of statutes, ordinances, regulations, agreements, or other authorities the POTW relies upon to administer the pretreatment program including a statement reflecting the endorsement or approval of the bodies responsible for supervising and/or funding the program;
- a brief description and organizational chart of the organization administering the program; and
- a description of funding levels and manpower available to implement the program.

Pretreatment program submissions found to be complete proceed to the public notice process, as described in Chapter 4, Public Participation and POTW Reporting. Upon program approval, the Approval Authority is responsible for modifying the POTW’s NPDES permit to require implementation of the approved pretreatment program. Once approved, the Approval Authority oversees POTW pretreatment program implementation via receiving annual reports and conducting periodic audits and inspections. As of early 1998, of the 1,578 POTWs required to develop pretreatment programs, 97 percent (1,535) have been approved.

The National Pretreatment Program regulates IUs through three types of regulatory entities: EPA, Approval Authorities, and Control Authorities. As noted above, Approval Authorities oversee Control Authorities while Control Authorities regulate IUs. General responsibilities of each of these three regulatory entities are presented in Figure 9.

<b>State</b>	<b>Approved State NPDES Permit Program</b>	<b>Approved State Pretreatment Program</b>
Alabama	10/19/79	10/19/79*
Arkansas	11/01/86	11/01/86
California	05/14/73	09/22/89
Colorado	03/27/75	--
Connecticut	09/26/73	06/03/81*
Delaware	04/01/74	--
Florida	05/01/95	05/01/95
Georgia	06/28/74	03/12/81
Hawaii	11/28/74	08/12/83
Illinois	10/23/77	--
Indiana	01/01/75	--
Iowa	08/10/78	06/03/81
Kansas	06/28/74	--
Kentucky	09/30/83	09/30/83
Louisiana	08/27/96	08/27/96
Maryland	09/05/74	09/30/85
Michigan	10/17/73	04/16/85
Minnesota	06/30/74	07/16/79
Mississippi	05/01/74	05/13/82*
Missouri	10/30/74	06/03/81
Montana	06/10/74	--
Nebraska	06/12/74	09/07/84*
Nevada	09/19/75	--
New Jersey	04/13/82	04/13/82
New York	10/28/75	--
North Carolina	10/19/75	06/14/82
North Dakota	06/13/75	--
Ohio	03/11/74	07/27/83
Oklahoma	11/19/96	11/19/96
Oregon	09/26/73	03/12/81
Pennsylvania	06/30/78	--
Rhode Island	09/17/84	09/17/84
South Carolina	06/10/75	04/09/82
South Dakota	12/30/93	12/30/93
Tennessee	12/28/77	08/10/83
Texas	09/14/98	09/14/98
Utah	07/07/87	07/07/87
Vermont	03/11/74	03/16/82*
Virgin Islands	06/30/76	--
Virginia	03/31/75	04/14/89
Washington	11/14/73	09/30/86
West Virginia	05/10/82	05/10/82
Wisconsin	02/04/74	12/24/80
Wyoming	01/30/75	--

\* - Denotes 403.10(e) State Approval

Figure 7. State Program Approval Status



**1. Legal Authority**

The POTW must operate pursuant to legal authority enforceable in Federal, State or local courts, which authorizes or enables the POTW to apply and enforce any pretreatment regulations developed pursuant to the CWA. At a minimum, the legal authority must enable the POTW to:

- I. deny or condition discharges to the POTW;
- ii. require compliance with pretreatment standards and requirements;
- iii. control IU discharges through permits, orders, or similar means;
- iv. require IU compliance schedules when necessary to meet applicable pretreatment standards and/or requirements and the submission of reports to demonstrate compliance;
- v. inspect and monitor IUs;
- vi. Obtain remedies for IU noncompliance; and
- vii. comply with confidentiality requirements.

**2. Procedures**

The POTW must develop and implement procedures to ensure compliance with pretreatment requirements, including:

- I. identify and locate all IUs subject to the pretreatment program;
- ii. identify the character and volume of pollutants contributed by such users;
- iii. notify users of applicable pretreatment standards and requirements;
- iv. receive and analyze reports from IUs;
- v. sample and analyze IU discharges and evaluate the need for IU slug control plans;
- vi. investigate instances of noncompliance; and
- vii. comply with public participation requirements.

**3. Funding**

The POTW must have sufficient resources and qualified personnel to carry out the authorities and procedures specified in its approved pretreatment program.

**4. Local limits**

The POTW must develop local limits or demonstrate why these limits are not necessary.

**5. Enforcement Response Plan (ERP)**

The POTW must develop and implement an ERP that contains detailed procedures indicating how the POTW will investigate and respond to instances of IU noncompliance.

**6. List of SIUs**

The POTW must prepare, update, and submit to the Approval Authority a list of all Significant Industrial Users (SIUs).

**Figure 8. Six Minimum Pretreatment Program Elements**

<p><u>EPA</u></p> <p><i>Headquarters</i></p> <ul style="list-style-type: none"><li>▶ Oversees program implementation at all levels</li><li>▶ Develops and modifies regulations for the program</li><li>▶ Develops policies to clarify and further define the program</li><li>▶ Develops technical guidance for program implementation</li><li>▶ Initiates enforcement actions as appropriate</li></ul> <p><i>Regions</i></p> <ul style="list-style-type: none"><li>▶ Fulfill Approval Authority responsibilities for States without a State pretreatment program</li><li>▶ Oversee State program implementation</li><li>▶ Initiate enforcement actions as appropriate.</li></ul> <p><u>Approval Authorities</u> (EPA Regions and delegated States)</p> <ul style="list-style-type: none"><li>▶ Notify POTWs of their responsibilities</li><li>▶ Review and approve requests for POTW pretreatment program approval or modification</li><li>▶ Review requests for site-specific modifications to categorical pretreatment standards</li><li>▶ Oversee POTW program implementation</li><li>▶ Provide technical guidance to POTWs</li><li>▶ Initiate enforcement actions, against noncompliant POTWs or industries.</li></ul> <p><u>Control Authorities</u> (POTWs, States, or EPA Regions)</p> <ul style="list-style-type: none"><li>▶ Develop, implement, and maintain approved pretreatment program</li><li>▶ Evaluate compliance of regulated IUs</li><li>▶ Initiate enforcement action against industries as appropriate</li><li>▶ Submit reports to Approval Authorities</li><li>▶ Develop local limits (or demonstrate why they are not needed)</li><li>▶ Develop and implement enforcement response plan.</li></ul> <p><u>Industrial Users</u></p> <ul style="list-style-type: none"><li>▶ Comply with applicable pretreatment standards and reporting requirements.</li></ul>
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**Figure 9. Roles and Responsibilities**

# 3. PRETREATMENT STANDARDS

As described in Chapters 3 and 4, the National Pretreatment Program identifies specific requirements that apply to all IUs, additional requirements that apply to all SIUs, and certain requirements that only apply to CIUs. The objectives of the National Pretreatment Program are achieved by applying and enforcing three types of discharge standards:

- ▶ prohibited discharge standards
- ▶ categorical standards
- ▶ local limits.

## PROHIBITED DISCHARGE STANDARDS

All IUs, whether or not subject to any other National, State, or local pretreatment requirements, are subject to the general and specific prohibitions identified in 40 CFR §§403.5(a) and (b), respectively. General prohibitions forbid the discharge of any pollutant(s) to a POTW that cause pass through or interference (Figure 10). Specific prohibitions forbid eight categories of pollutant discharges as follows:

- (1) discharges containing pollutants which create a fire or explosion hazard in the POTW, including but not limited to, wastestreams with a closed cup flashpoint of less than 140°F (60°C) using the test methods specified in 40 CFR §261.21;
- (2) discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges;
- (3) discharges containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference;
- (4) discharges of any pollutants released at a flow rate and/or concentration which will cause interference with the POTW;
- (5) discharges of 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 POTW treatment plant exceeds 40°C(104°F) unless the Approval Authority, upon request of the POTW, approves alternative temperature limits;
- (6) discharges of petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

### Chapter 3. Applicable EPA Guidance

Guidance Manual For Implementing Total Toxic Organics (TTO) Pretreatment Standards  
 Guidance Manual for Preparation and Review of Removal Credit Applications  
 Guidance Manual for Preventing Interference at POTWs  
 Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe  
 Guidance Manual for the Use of Production-Based Pretreatment Standards and the Combined Wastestream Formula  
 Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program  
 Guidance to Protect POTW Workers From Toxic And Reactive Gases And Vapors  
 Prelim User's Guide, Documentation for the EPA Computer Program/Model for Developing Local Limits for Industrial Pretreatment Programs at Publicly Owned Treatment Works  
 Supplemental Manual On the Development And Implementation of Local Discharge Limitations Under The Pretreatment Program: Residential and Commercial Toxic Pollutant Loadings And POTW Removal Efficiency Estimation

### Industry-Specific Guides

Aluminum, Copper, And Nonferrous Metals Forming And Metal Powders Pretreatment Standards: A Guidance Manual  
 Guidance Manual For Battery Manufacturing Pretreatment Standards  
 Guidance Manual for Electroplating and Metal Finishing Pretreatment Standard  
 Guidance Manual For Iron And Steel Manufacturing Pretreatment Standards  
 Guidance Manual for Leather Tanning and Finishing Pretreatment Standards  
 Guidance Manual for Pulp, Paper, and Paperboard and Builders' Paper and Board Mills Pretreatment Standards

- (7) discharges which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems; and
- (8) discharges of trucked or hauled pollutants, except at discharge points designated by the POTW.

Compliance with the general and specific prohibitions is mandatory for all IUs, although a facility may have an affirmative defense in any action brought against it alleging a violation of the general prohibitions or of certain specific prohibitions [(3), (4), (5), (6) and (7) above] where the IU can demonstrate

it did not have reason to know that its discharge, alone or in conjunction with a discharge or discharges from other sources, would cause pass through or interference, and the IU was in compliance with a technically-based local limit developed to prevent pass through or interference.

These prohibited discharge standards are intended to provide general protection for POTWs. However, their lack of specific pollutant limitations creates the need for additional controls, namely categorical pretreatment standards and local limits.

## CATEGORICAL STANDARDS

Categorical pretreatment standards (i.e., categorical standards) are national, uniform, technology-based standards that apply to discharges to POTWs from specific industrial categories (i.e., **indirect dischargers**) and limit the discharge of specific pollutants. Categorical pretreatment standards for both existing and new sources (PSES and PSNS, respectively) are promulgated by EPA pursuant to Section 307(b) and (c) of the CWA. Limitations developed for indirect discharges are designed to prevent the discharge of pollutants that could pass through, interfere with, or otherwise be incompatible with POTW operations. Effluent limitations guidelines (ELGs), developed in conjunction with categorical standards, limit the discharge from facilities directly to waters of the U.S. (i.e., **direct dischargers**) and do not apply to indirect dischargers. ELGs include Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Technology Economically Achievable (BAT) limitations and New Source Performance Standards (NSPS). **ELGs (i.e., BPT, BCT, BAT, and NSPS) do not apply to indirect dischargers.** The significant difference between categorical standards and effluent limitations guidelines is that categorical standards account for any pollutant removal that may be afforded through treatment at the POTW while effluent limitations guidelines do not.

Industries identified as major sources of toxic pollutants are typically targeted for effluent guideline and categorical standard development. If limits are deemed necessary, EPA investigates affected IUs and gathers information regarding process operations and treatment and management practices, accounting for differences in facility size and age, equipment age, and wastewater characteristics. Subcategorization within an industrial category is evaluated based on variability in processes employed, raw materials used, types of items produced, and characteristics of wastes generated. Availability and cost of control technologies, non-water quality environmental impacts, available pollution prevention measures<sup>7</sup>, and economic impacts are then identified prior to EPA's presentation of findings in proposed development documents and publishing a notice of the proposed regulations in the *Federal Register*. Based on public comments on the proposed rule, EPA promulgates (i.e., publishes) the standards (Figure 11).

**Pass through** - A discharge which exits the POTW into waters of the US in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

**Interference** - A discharge which, alone or in conjunction with a discharge or discharges from other sources, both (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit or of the prevention of sewage sludge use or disposal.

**Figure 10. Interference and Pass Through**

<sup>7</sup>

**EPA's Considerations of Pollution Prevention in EPA's Effluent Guideline Development Process may be consulted for more information on this topic.**

As noted above, categorical pretreatment standards are developed both for existing (PSES) and new sources (PSNS). Facilities are classified as either PSES or PSNS based on the definition of "new source" set out in 40 CFR §403.3(k) of the General Pretreatment Regulations (see Figure 12). Dischargers subject to PSES are required to comply with those standards by a specified date, typically no more than three years after the effective date of the categorical standard. Users subject to PSNS, however, are required to achieve compliance within the shortest feasible time, not to exceed 90 days from commencement of discharge. PSNS are often more stringent than PSES based on the opportunity for new sources to install the best available demonstrated technology and operate the most efficient production processes.

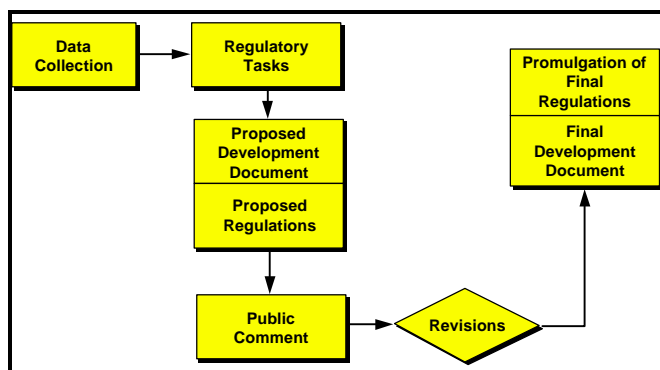


Figure 11. Development Process of Effluent Guidelines

Congress established an initial list of 21 categorical industries under Section 306 of the CWA of 1972. As a result of various court decrees and settlement agreements resulting from litigation, and from EPA's internal work plan development process, EPA has developed effluent guidelines (for direct dischargers) and/or categorical pretreatment standards (for indirect dischargers) for 51 industrial categories. Of these industrial categories, EPA implements pretreatment standards for 32 categories, and either requires compliance solely with 40 CFR Part 403 General Pretreatment Regulations or does not address pretreatment standards for the remaining categories. Plans for EPA's expansion and modification of the list is detailed in the *Effluent Guidelines Plan*, published in the *Federal Register* biennially as required in section 304(m) of the CWA. A list of the industrial categories that have categorical standards is provided as Figure 13.

Categorical pretreatment standards developed can be concentration-based or mass-based. Concentration-based standards are expressed as milligrams of pollutant allowed per liter (mg/l) of wastewater discharged and are issued where production rates for the particular industrial category do not necessarily correlate with pollutant discharges. Mass-based standards are generally expressed on a mass per unit of production (e.g., milligrams of pollutant per kilogram of product produced, pounds of pollutant per million cubic feet of air scrubbed, etc.) and are issued where water conservation is an important component in the limitation development process. For a few categories where reducing a facility's flow volume does not provide a significant difference in the pollutant load discharged, EPA has established both mass- and concentration-based standards. Generally, both a daily maximum limitation and a long-term average limitation (e.g., average daily values in a calendar month) are established for every regulated pollutant.

**New Source** is defined at 40 CFR §403.3 (k)(1) to mean any building, structure, facility or installation from which there is or may be a discharge of pollutants, the construction of which commenced after publication of proposed Pretreatment Standards under Section 307(c) of the Act which will be applicable to such source if Standards are thereafter promulgated in accordance with that section, *provided that*:

- (i) the building, structure, facility, or installation is constructed at a site at which no other source is located; or
- (ii) the building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or
- (iii) the production or wastewater generating processes of the building, structure, facility or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source should be considered.

(2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation meeting the criteria of paragraphs (k)(1)(ii), or (k)(1)(iii) of this section but otherwise alters, replaces, or adds to existing process or production equipment.

(3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:

- (i) begun, or caused to begin as part of a continuous onsite construction program:
- (ii) any placement, assembly or installation of facilities or equipment, or
- (B) significant site preparation work, including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or
- (ii) entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.

Figure 12. Definition of New Source (40 CFR 403.3(k))

**Figure 13. Summary of Categorical Pretreatment Standards**

Category	40 CFR Part	Subparts	Type of Standard	Overview of Pretreatment Standards
Aluminum Forming	467	A-F	PSES PSNS	Limits are production-based, daily maximums and monthly averages. Subpart C prohibits discharges from certain operations.
Battery Manufacturing	461	A-G	PSES PSNS	Limits are production-based, daily maximums and monthly averages. No discharge is allowed from any process not specifically identified in the regulations.
Builders' Paper and Board Mills	431	A	PSES PSNS	Limits are production-based daily maximums. These facilities may certify they do not use certain compounds in lieu of performing monitoring to demonstrate compliance.
Carbon Black Manufacturing	458	A-D	PSNS	Limits are for Oil & Grease only (no limit duration specified).
Coil Coating	465	A-D	PSES PSNS	Limits are production-based, daily maximums and monthly averages.
Copper Forming	468	A	PSES PSNS	Limits are production-based, daily maximums and monthly averages.
Electrical and Electronic Components	469	A-D	PSES PSNS	Limits are concentration-based, daily maximums and 30 day averages or monthly averages (varies per subpart and pollutant parameter). Certification is allowed in lieu of monitoring for certain pollutants when a management plan is approved and implemented.
Electroplating	413	A-B, D-H	PSES	Limits are concentration-based (or alternative mass-based equivalents), daily maximums and four consecutive monitoring days averages. Two sets of limits exist, depending on if facility discharges more or less than 10,000 gallons per day of process wastewater. Certification is allowed in lieu of monitoring for certain pollutants when a management plan is approved and implemented.
Feedlots	412	B	PSNS	Discharge of process wastewater is prohibited, except when there is an overflow resulting from a chronic or catastrophic rainfall event.
Fertilizer Manufacturing	418	A-G	PSNS	Limits may specify zero discharge of wastewater pollutants (Subpart A), production-based daily maximums and 30-day averages (Subparts B-E) or concentration-based (Subparts F-G) with no limit duration specified.
Glass Manufacturing	426	H, K-M	PSNS	Limits are either concentration- or production-based, daily maximums and monthly averages.
Grain Mills	406	A	PSNS	Discharge of process wastewater is prohibited at a flow rate or mass loading rate which is excessive over any time period during the peak load at a POTW.
Ink Formulating	447	A	PSNS	Regulations specify no discharge of process wastewater pollutants to the POTW.
Inorganic Chemicals Manufacturing	415	A-BO	PSES PSNS	Limits vary for each subpart with a majority of the limits concentration-based, daily maximums and 30-day averages, or may specify no discharge of wastewater pollutants. Numerous subparts have no pretreatment standards.
Iron and Steel Manufacturing	420	A-F, H-J, L	PSES PSNS	Limits are production-based, daily maximums and 30 day averages.
Leather Tanning and Finishing	425	A-I	PSES PSNS	Limits are concentration-based, daily maximums and monthly averages. In certain instances, production volume dictates applicable pretreatment standards.
Metal Finishing	433	A	PSES PSNS	Limits are concentration-based, daily maximums and monthly averages. Certification is allowed for certain pollutants where a management plan is approved and implemented.

**Figure 13. Summary of Categorical Pretreatment Standards**

Category	40 CFR Part	Subparts	Type of Standard	Overview of Pretreatment Standards
Metal Molding and Casting	464	A-D	PSES PSNS	Limits are primarily production-based, daily maximums and monthly averages. Discharges from certain processes are prohibited (Subparts A-C).
Nonferrous Metals Forming and Metal Powders	471	A-J	PSES PSNS	Limits are production-based, daily maximums and monthly averages. In some instances, the regulations prohibit the discharge of wastewater pollutants.
Nonferrous Metals Manufacturing	421	B-AE	PSES PSNS	Limits are production-based, daily maximums and monthly averages. The majority of the Subparts have both existing and new source limits, with others having solely new source requirements.
Organic Chemicals, Plastics, and Synthetic Fibers	414	B-H, K	PSES PSNS	Limits are mass-based (concentration-based standards multiplied by process flow), daily maximums and monthly averages. Standards for metals and cyanide apply only to metal- or cyanide-bearing wastestreams.
Paint Formulating	446	A	PSNS	Regulations specify no discharge of process wastewater pollutants to the POTW.
Paving and Roofing Materials (Tars and Asphalt)	443	A-D	PSNS	Limits are for Oil & Grease only (no limit duration specified).
Pesticide Chemicals	455	A, C, E	PSES PSNS	Limits are mass-based (concentration-based standards multiplied by process flow), daily maximums and monthly averages. Subpart C specifies no discharge of process wastewater pollutants but provides for pollution prevention alternatives. Subpart E specifies no discharge of process wastewater pollutants.
Petroleum Refining	419	A-E	PSES PSNS	Limits are concentration-based (or mass based equivalent), daily maximums.
Pharmaceutical Manufacturing	439	A-D	PSES PSNS	Limits are concentration-based, daily maximums and monthly averages. These facilities may certify they do not use or generate cyanide in lieu of performing monitoring to demonstrate compliance.
Porcelain Enameling	466	A-D	PSES PSNS	Limits are concentration-based (or alternative production-based), daily maximums and monthly averages. Subpart B prohibits discharges certain operations.
Pulp, Paper, and Paperboard	430	A-G, I-L	PSES PSNS	Limits are production-based daily maximums and monthly averages. These facilities may certify they do not use certain compounds in lieu of performing monitoring to demonstrate compliance. Facilities subject to Subparts B and E must also implement Best Management Practices as identified.
Rubber Manufacturing	428	E-K	PSNS	Limits are concentration- or production-based, daily maximums and monthly averages.
Soap and Detergent Manufacturing	417	O-R	PSNS	Regulations specify no discharge of process wastewater pollutants to the POTW.
Steam Electric Power Generating	423	N/A	PSES PSNS	Limits are either concentration-based, daily maximums, or "maximums for any time", or compliance can be demonstrated through engineering calculations.
Timber Products Processing	429	F-H	PSES PSNS	All PSNS (and PSES for Subpart F) prohibit the discharge of wastewater pollutants. PSES for Subparts G and H are concentration-based, daily maximums (with production-based alternatives).

Categorical standards apply to regulated wastewaters, i.e. wastewater from an industrial process that is regulated for a particular pollutant by a categorical pretreatment standard. Therefore, demonstrating compliance with categorical pretreatment standards is intended to be based on measurements of wastestreams containing only the regulated process wastewater. However, recognizing isolation of regulated wastestreams from nonregulated wastestreams was not always practicable nor desirable, EPA developed the combined wastestream formula (CWF) and flow weighted average (FWA) approach for determining compliance with combined wastestreams.

Pursuant to 40 CFR §403.6(e), the CWF is applicable where a regulated wastestream combines with one or more unregulated or dilute wastestreams (Figure 14) prior to treatment. Where nonregulated wastestreams combine with process streams after pretreatment, the more stringent approach (whether CWF or FWA) is used to adjust the limits<sup>8</sup> (Figure 15). The CWF and FWA approaches differ primarily in their allowances for nonregulated wastestreams. While the CWF provides a “full credit” (i.e., same pollutant levels as regulated wastestreams) for unregulated wastestreams yet no credit for dilute wastestreams, the FWA requires sampling and analysis of the untreated, nonregulated wastestreams to determine the credit to be granted (not to exceed that allowed for the regulated wastestreams).

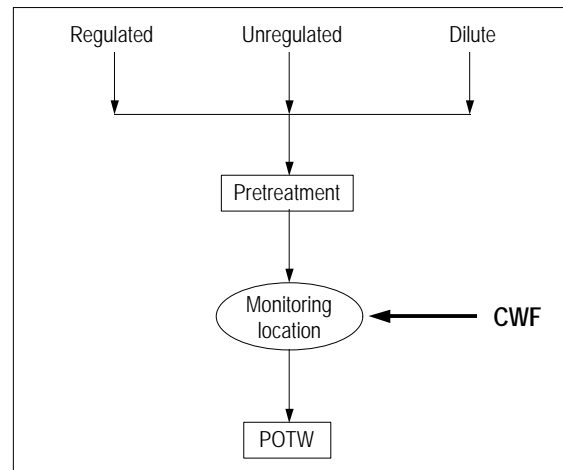


Figure 14. Combined Wastestream Formula

Application of the CWF and FWA requires proper identification, classification, and quantification of the three wastestream types (Figure 16.) Note: in circumstances where boiler blowdown, noncontact cooling water, stormwater, or demineralized wastestreams contain a significant amount of a regulated pollutant, and the treatment of the wastewater with the regulated wastestream results in substantial reduction of the regulated pollutant, the Control Authority can classify the wastestream as unregulated rather than as a dilute wastestream. Clarification on category-specific wastestream classifications may be provided by consulting the applicable regulation(s) and associated development documents, since wastestream types are addressed in the effluent guideline and categorical standard development process. When in doubt, the Control Authority can always require the CIU to monitor the wastestream(s) in question to quantify the presence (or lack thereof) of categorically regulated pollutants. Reasonably accurate flow data must also be obtained for each wastestream type flowing through the monitoring point to ensure categorical pretreatment standards are adjusted accordingly. Proper application of the CWF or FWA will result in:

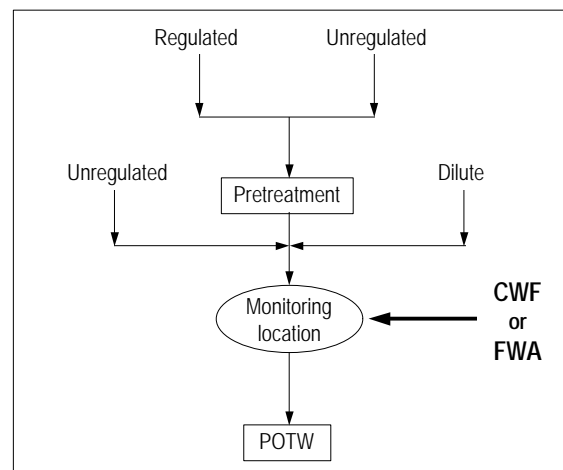


Figure 15. CWF vs. FWA

- ▶ alternative limits being established for each regulated pollutant in each regulated processes;
- ▶ both daily maximum and long-term average (i.e., 4-day, 30-day, or monthly) alternative limits being calculated for each regulated pollutant;

<sup>8</sup>

Where commingled wastestreams combine with nonregulated wastestreams after treatment, the CWF adjusted limitations are further adjusted by use of the CWF or FWA to address the untreated, nonregulated wastestreams (Figure 17.) For more detailed discussion of FWA, see Federal Register preamble language, 51 FR 21454 (June 12, 1986).



- ▶ 4-day average limits being adjusted to equivalent monthly average limits when two or more categorical pretreatment standards apply to the facility and one of the applicable standards is 40 CFR Part 413; and
- ▶ calculated alternative limits remaining above the analytical detection limit for that pollutant.  
**NOTE:** If adjusted limit(s) are below the detection limit, the Control Authority shall instruct the IU to either:
  - separate the dilute wastestreams from the regulated wastestreams prior to the combined treatment facility, or
  - segregate all wastestreams entirely.

EPA's *Guidance Manual for the Use of Production Based Pretreatment Standards and the Combined Wastestream Formula* should be consulted for more information on the proper application and adjustment of categorical pretreatment standards.

Regulated	Nonregulated	
	Unregulated	Dilute
Wastewater from an industrial process that is regulated for a particular pollutant by a categorical pretreatment standard	Wastestreams from an industrial process that are not regulated for a particular pollutant by a categorical pretreatment standard and are not defined as a dilute wastestream, e.g.: <ul style="list-style-type: none"> <li>• a process wastestream for which categorical standards have been promulgated but for which the deadline for compliance has not yet been reached</li> <li>• a process wastestream that currently is not subject to categorical pretreatment standards</li> <li>• a process wastestream that is not regulated for the pollutant in question but is regulated for other pollutants.</li> </ul>	Wastestreams which have no more than trace or non-detectable amounts of the regulated pollutant.  Defined in 40 CFR § 403.6(e)(1) of the General Pretreatment Regulations to include sanitary wastestreams, demineralized backwash streams, boiler blowdown, noncontact cooling water, storm water, and process wastestreams from certain standards based on the findings that these wastewaters contained none of the regulated pollutant or only trace amounts of it.

Figure 16. Wastestream Types

Although categorical standards are established based on a particular industrial category, EPA provides several options for unique circumstances that justify adjustment of categorical standards for an individual facility:

**Removal Credits** 40 CFR §403.7 details the conditions by which a Control Authority may demonstrate consistent removal of pollutants regulated by categorical standards at their POTW, and in so doing, may extend removal credits to industries on a pollutant-specific basis to prevent redundant treatment. Removal credits are available for a pollutant if the pollutant is regulated by the sewage sludge use or disposal option employed by the POTW making the application request, or if the pollutant is listed in 40 CFR Part 403, Appendix G. Also, the availability of removal credits is not limited to Appendix G pollutants for POTWs that dispose of sewage sludge in municipal solid waste landfills. Steps for developing such a request are detailed in EPA's *Guidance Manual for the Preparation and Review of Removal Credit Applications*.

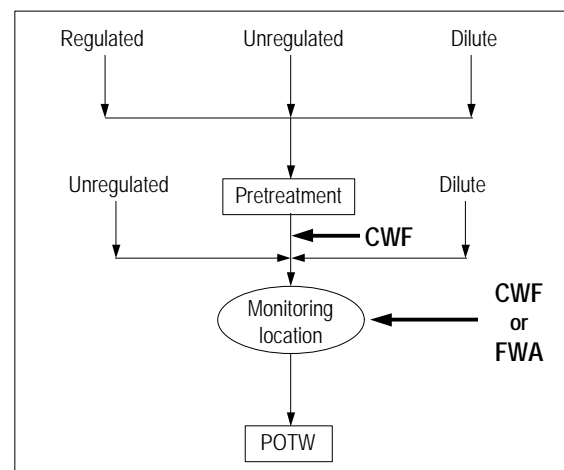
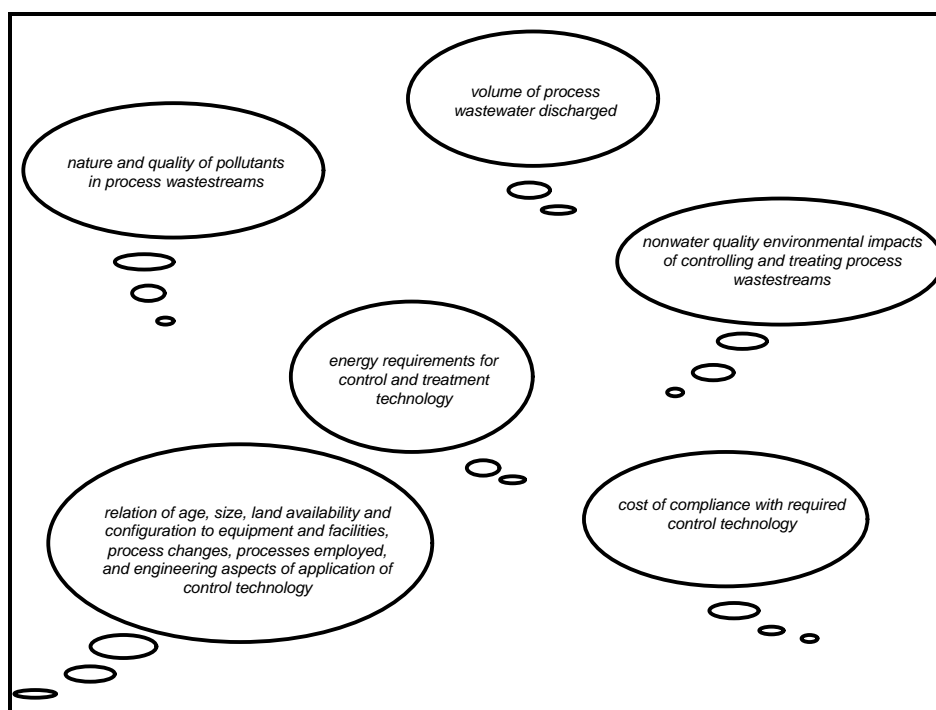


Figure 17. Multiple use of the CWF/FWA

**Fundamentally Different Factors Variance** Section 301(n) of the CWA authorizes adjustments of categorical pretreatment standards for existing sources who demonstrate they have factors which are fundamentally different from the factors EPA considered during standards development (40 CFR §403.13). Variance requests must be based solely on information and data submitted during the development of the categorical standards (Figure 18) and the adjusted effluent limitations must neither be more nor less stringent than justified by the fundamental difference nor result in a nonwater quality environmental impact markedly more adverse than the impact considered by EPA when developing the categorical standard.

Successful requests must detail factors well outside the range considered by EPA in establishing the standard and not merely factors deviating from the average. Further, differences must not be similar to a significant number of other facilities in the category. A facility must request a variance in writing no later than 180 days after publication of a categorical Pretreatment Standard in the Federal Register.



**Figure 18. Factors to Consider for an FDF Variance Request**

**Net/Gross Adjustment** Categorical pretreatment standards can be adjusted to reflect the presence of pollutants in a CIU's intake waters (40 CFR §403.15). To obtain a net/gross credit, the CIU must submit a formal written request to the Control Authority that demonstrates:

- ▶ its intake water is drawn from the same body of water that the POTW discharges into (this can be waived if the Control Authority finds no environmental degradation will result);
- ▶ the pollutants present in the intake water will not be entirely removed by the treatment system operated by the CIU; and
- ▶ the pollutants in the intake water do not vary chemically or biologically from the pollutants limited by the applicable standard.

Inherent in this provision is the requirement that the CIU employ a treatment technology capable of meeting the categorical pretreatment standard(s). Net/gross adjustments should not be granted to CIUs that have no treatment. Further, credits are only granted to the extent necessary to meet the applicable standard(s), up to a maximum value equal to the influent value.

Innovative Technology In accordance with 307(e) of the CWA, existing CIUs choosing to install an innovative treatment system may receive approval from the Control Authority for up to a two year extension to their applicable categorical pretreatment standards compliance deadline, provided:

- ▶ the innovative treatment has a reasonable potential to result in significantly greater pollutant removal or equivalent removal at a substantially lower cost than the technologies considered by EPA when developing the categorical standard;
- ▶ the innovative technique has the potential for industry-wide application; and
- ▶ the proposed compliance extension will not cause or contribute to the violation of the POTW's NPDES permit.

While policy has been established for universal categorical variance requests, occasionally, a Control Authority may merely need assistance to classify a CIU and/or to determine applicable categorical limitations. Provisions in the General Pretreatment Regulations allow POTWs and IUs to request an EPA category determination for a specific IU within 60 days after the effective date of the standard in question [40 CFR §403.6(a)]. Even after the formal timeframe for requesting a categorical determination, EPA (and states) will assist POTWs and IUs with categorization issues. Such requests, however, do not affect applicable reporting requirements, including timely requests submitted under 40 CFR §403.6(a). Additionally, EPA has addressed universal CIU questions posed by Control Authorities in various memoranda and guidance:

Research and Development (R&D) Facilities Unless specifically addressed in the categorical regulation or associated development document, R&D facilities where there is no commercial sale of products from the facility, are not subject to categorical standards.<sup>9</sup> Should an R&D facility need pollution controls to comply with prohibited discharge standards and/or local limits, the development documents may serve as guidance on the performance of pollution control technologies.

Certification Statements In lieu of requiring self-monitoring, some standards allow CIUs to certify that they do not use, generate or discharge a regulated pollutant [e.g. Pulp, Paper and Paperboard facilities can certify that chlorophenolic compounds are not used (40 CFR Part 430) and Pharmaceutical Manufacturing facilities can certify that cyanide is not used or generated (40 CFR Part 439)]. Facilities providing such certifications are still considered CIUs, and therefore are subject to other pretreatment standards and requirements.

Lack of specific categorical effluent limitations IUs subject to PSES or PSNS that merely require compliance with 40 CFR Part 403 are not considered CIUs. However, these users may still be classified as SIUs and are still subject to the general and specific prohibitions and any local limits.

Total Toxic Organics (TTO) Seven categorical regulations currently limit the discharge of TTO:

- ▶ 40 CFR Part 413 - Electroplating
- ▶ 40 CFR Part 433 - Metal Finishing
- ▶ 40 CFR Part 464 - Metal Molding and Casting
- ▶ 40 CFR Part 465 - Coil Coating
- ▶ 40 CFR Part 467 - Aluminum Forming
- ▶ 40 CFR Part 468 - Copper Forming
- ▶ 40 CFR Part 469 - Electrical and Electronic Components (Phase I and II)

For each of these standards, TTO refers to the sum of the masses or concentrations of certain toxic organic pollutants found in the regulated discharge at a concentration greater than 0.01 milligrams per liter (mg/l). However, the toxic organic pollutants regulated by the TTO limit are specific to each industrial category. Further, industrial categories may provide some flexibility with regard to monitoring and/or reporting requirements as follows:

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<sup>9</sup> June 26, 1987 letter from Ms. Rebecca W. Hanmer, Deputy Assistant Administrator for Water.

- ▶ 40 CFR Parts 413 and 433 allow development and implementation of a Toxic Organic Management Plan (TOMP) in lieu of routine monitoring while 40 CFR Part 469 allows development and implementation of a Solvent Management Plan. Upon approval of these plans by the Control Authority, the CIU can demonstrate compliance with TTO requirements by certifying that the facility is adhering to this Plan to prevent organics from being discharged to the POTW. A specific certification statement must be signed and provided to the Control Authority on a regular basis.
- ▶ 40 CFR Parts 464, 465, 467, and 468 allow an option to demonstrate compliance with an Oil and Grease limit in lieu of demonstrating compliance with a TTO limit. The option chosen by the CIU must be utilized for all reports required (i.e., BMR, 90-day compliance report, and periodic compliance reports).

EPA's *Guidance Manual for Implementing Total Toxic Organics (TTO) Pretreatment Standards* should be consulted for more information on TTO.

## LOCAL LIMITS

Prohibited discharge standards are designed to protect against pass-through and interference generally. Categorical pretreatment standards, on the other hand, are designed to ensure that IUs implement technology-based controls to limit the discharge of pollutants. Local limits, however, address the specific needs and concerns of a POTW and its receiving waters. Federal regulations at 40 CFR §§403.8(f)(4) and 122.21(j)(4) require Control Authorities to evaluate the need for local limits and, if necessary, implement and enforce specific limits as part of pretreatment program activities.

Local limits are developed for pollutants (e.g. metals, cyanide, BOD<sub>5</sub>, TSS, oil and grease, organics) that may cause interference, pass through, sludge contamination, and/or worker health and safety problems if discharged in excess of the receiving POTW treatment plant's capabilities and/or receiving water quality standards. Typically, local limits are developed to regulate the discharge from all IUs, not just to CIUs, and are usually imposed at the "end-of-pipe" discharge from an IU (i.e., at the point of connection to the POTW's collection system). In evaluating the need for local limit development, it is recommended that Control Authorities:

- ▶ conduct an industrial waste survey to identify all IUs that might be subject to the pretreatment program;
- ▶ determine the character and volume of pollutants contributed to the POTW by these industries;
- ▶ determine which pollutants have a reasonable potential for pass through, interference, or sludge contamination;
- ▶ conduct a technical evaluation to determine the maximum allowable POTW treatment plant headworks (influent) loading for at least arsenic, cadmium, chromium, copper, cyanide, lead, mercury, nickel, silver, and zinc (Figure 19);
- ▶ identify additional pollutants of concern;
- ▶ determine contributions from unpermitted sources to determine the maximum allowable treatment plant headworks loading from "controllable" industrial sources (Figure 20);
- ▶ implement a system to ensure these loadings will not be exceeded.

### **Maximum Allowable Headworks Loading Method**

**(MAHL)** Pollutant by pollutant, treatment plant data are used to calculate removal efficiencies, before applying the most stringent criteria (i.e., water quality, sludge quality, NPDES permit, or pollutant inhibition levels) to back calculate the MAHLs. Subtracting out contributions from domestic sources, the available industrial loading is then either evenly distributed among the IUs, or allocated on an as needed basis to those IUs discharging the pollutant above background levels.

**Figure 19. MAHL**

Other local limit approaches available to Control Authorities include:

Collection System Approach Pollutants found to be present which may cause fire and

### **Maximum Allowable Industrial Load (MAIL)**

The MAIL is the total daily mass that a POTW can accept from all permitted IUs and ensure the POTW is protecting against pass through and interference.

**Figure 20. MAIL**

explosion hazards or other worker health and safety concerns, are evaluated for their propensity to volatilize and are modeled to evaluate their expected concentration in air. Comparisons are made with worker health exposure criteria and lower explosive limits. Where values are of concern, the Control Authority may set limits or require development of management practices to control undesirable discharges. The collection system approach may also consider the prohibition of pollutants with specific flashpoints to prevent discharges of ignitable wastes. EPA's *Guidance to Protect POTW Workers from Toxic and Reactive Gases and Vapors* details strategies for developing such local limits.

Industrial User Management Practice Plans These plans typically consist of narrative local limits requiring IUs to develop management practices (e.g., chemical management practices, best management practices, and spill prevention plans) for the handling of chemicals and wastes. The need for and suggested contents of such plans may be found in EPA's *Control of Slug Loadings to POTWs: Guidance Manual*, and *Spill Prevention, Control, and Countermeasure (SPCC) Information Guide*.

Case-by-Case Discharge Limits These numeric local limits are based on best professional judgement (BPJ) and available pollution prevention and treatment technologies which are known to be economically feasible. This approach is most often used when insufficient data are available to employ the methods outlined above.

Local Specific Prohibitions POTW specific prohibitions may be imposed in addition to the prohibitions detailed in 40 CFR § 403.5 (a) & (b) to address hydraulic, pollutant specific, and/or aesthetic concerns; e.g.:

- ▶ noxious or malodorous liquids, gases, or solids creating a public nuisance
- ▶ wastestreams which impart color and pass through the POTW treatment plant
- ▶ storm water, roof runoff, swimming pool drainage
- ▶ wastewaters containing radioactive wastes or isotopes
- ▶ removed substances from pretreatment of wastewater.

Regardless of the approaches taken by a Control Authority, local limits should correct existing problems, prevent potential problems, protect the receiving waters, improve sludge use options, and protect POTW personnel. Additional existing EPA guidance on the subject includes:

- ▶ *Guidance for Preventing Interference at POTWs*
- ▶ *Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program*
- ▶ *Supplemental Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program: Residential and Commercial Toxic Pollutant Loadings and POTW Removal Efficiency Estimation*
- ▶ *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents.*

Additionally, many EPA Regions and States have developed local limits guidance to address regional and state issues.

## SUMMARY OF STANDARDS

A summary of all of the pretreatment standards, including general and specific prohibitions, categorical pretreatment standards, and local limits, is provided as Figure 21.

	General and Specific Prohibitions	Categorical Pretreatment Standards	Local Limits
<b>Development</b>	Established at the Federal level	Established at the Federal level	Developed by Control Authorities
<b>Reference</b>	40 CFR 403.5(a) & (b)	40 CFR Parts 405-471	Requirements for development found in 40 CFR §§403.5(c) & 403.8(f)(4)
<b>Applicability</b>	All IUs	CIUs	Commonly all IUs or all SIUs, but depends on allocation method used when developing limits.
<b>Purpose</b>	Provide for general protection of the POTW. May be superseded by more stringent categorical pretreatment standards or local limits.	Minimum standards based on available treatment technology and pollution prevention measures for controlling nonconventional and toxic pollutants that may cause pass through, interference, etc. at the POTW. May be superseded by more stringent local limits.	Provide site specific protection for a POTW and its receiving waters. May be superseded by more stringent categorical standards.
<p>All standards are considered pretreatment standards for the purpose of section 307(d) of the Clean Water Act. A POTW is responsible for identifying standard(s) applicable to each industrial user and applying the most stringent requirements where multiple provisions exist. Compliance with imposed standards can be achieved through implementation of best management practices, development of a pollution prevention program, and/or installation of pretreatment.</p>			

**Figure 21. Summary of Standards**

# 4. POTW PRETREATMENT PROGRAM RESPONSIBILITIES

Chapter 2 describes the basis for POTWs to develop pretreatment programs that implement Federal pretreatment standards and requirements, in addition to protecting any local concerns. This Chapter provides an overview of these POTW programs, highlighting each of the specific program areas that are to be addressed.

## LEGAL AUTHORITY

As discussed in Chapter 2, POTWs seeking pretreatment program approval must develop policy and procedures for program implementation and establish the legal authority to implement and enforce program requirements. The General Pretreatment Regulations do not provide Control Authorities with the legal authority to carry out their pretreatment programs; rather the regulations do set forth the minimum requirements for POTWs with pretreatment programs.

A Control Authority's legal authority actually derives from State law. Therefore, State law must confer the minimum Federal legal authority requirements on a Control Authority. Where deficient, State law must be modified to grant the minimum requirements.

In order to apply regulatory authority provided by State law, it is generally necessary for the Control Authority to establish local regulations to legally implement and enforce pretreatment requirements. Where the Control Authority is a municipality, legal authority is detailed in a Sewer Use Ordinance (SUO), which is usually part of city or county code. Regional Control Authorities frequently adopt similar provisions in the form of "rules and regulations." Likewise, State agencies implementing a State-wide program under 40 CFR §403.10(e) set out pretreatment requirements as State regulations, rather than as an SUO. [Local regulations cannot give the Control Authority greater authority than that provided by State law.] EPA's 1992 guidance, *EPA Model Pretreatment Ordinance* provides a model for POTWs that are required to develop pretreatment programs.

As POTW service areas expand, new contributions may arise from "extrajurisdictional" IUs located outside of the Control Authority's legal jurisdiction (see Figure 22). Multijurisdictional arrangements require special legal/contractual mechanisms to ensure adequate authority to implement and enforce program requirements in these other jurisdictions. Some state statutes may provide for general extraterritorial powers (i.e., a Control Authority is automatically allowed to regulate extrajurisdictional IUs

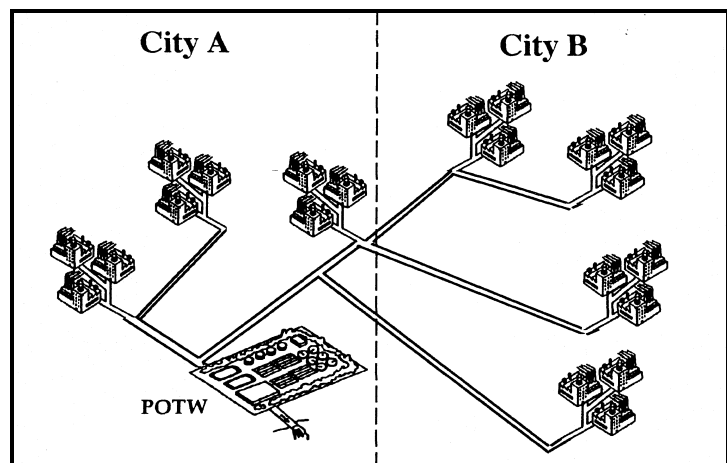
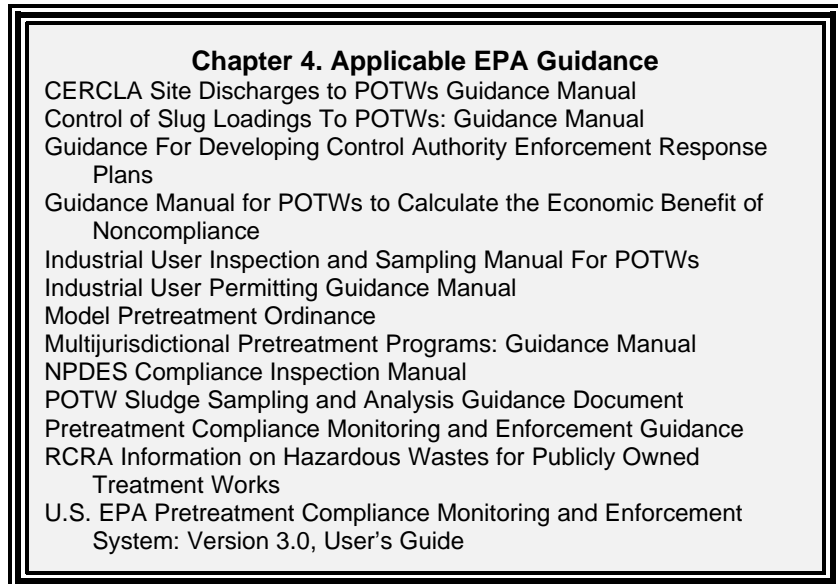


Figure 22. Multijurisdictional Programs

contributing to their system). However, the extent to which authorities (i.e., to permit, inspect, enforce, monitor, etc.) are granted may be somewhat limited, thereby, restricting a Control Authority's ability to implement and enforce a program. Where obtaining authority from the State to regulate extrajurisdictional IUs is not feasible, other options may be pursued:

- Districts The creation of an independent organization (by affected municipalities or the State) which is authorized to administer and enforce an approved pretreatment program for the entire area in which it provides services is common in areas where multiple POTWs each serve various jurisdictions.
- Agreements Affected Control Authorities may opt to enter into agreements requiring each municipality to implement and enforce the approved pretreatment program covering all IUs within their jurisdiction. The Control Authority must retain the means to regulate extrajurisdictional IUs where the contributing jurisdiction's efforts are inadequate. It is essential that agreements clearly define the roles of each party.
- Annexation Where extrajurisdictional IUs lie in unincorporated areas, a Control Authority may annex or utility annex the service area.
- Contracts A Control Authority may enter into a contract with an extrajurisdictional IU, although contracts generally limit the enforcement capabilities of the Control Authority. As such, contracts should only be pursued when all other means fail.

Since procedures for obtaining jurisdiction, creating sanitary districts, annexing service areas, etc. vary among states, Control Authority personnel should consult with their legal staff to thoroughly examine options allowed. This may include requesting State legislative changes if necessary. EPA's 1994 *Multijurisdictional Pretreatment Programs - Guidance Manual* provides more information on these jurisdictional issues, including sample language for agreements and contracts.

## INDUSTRIAL WASTE SURVEYS

As part of program development and maintenance, the Federal regulations [40 CFR §403.8(f)(2)(I)] require Control Authorities to identify and locate all IUs that might be subject to the pretreatment program. While the General Pretreatment Regulations do not specify how a Control Authority is to accomplish this, it is beneficial to conduct an initial in-depth survey, then institute measures to update the list continuously. Control Authorities must ensure that the entire service area is reviewed. This may include IUs located outside the jurisdictional boundaries of the POTW. In these instances, it may be appropriate to solicit assistance from other jurisdictions in developing the list of potential dischargers. The types of resources that may be consulted in compiling and updating the master list include:

- Water and sewer billing records
- Applications for sewer service
- Local telephone directories
- Chamber of Commerce and local business directories
- Business license records
- POTW and wastewater collection personnel and field observations
- Business associations
- Internet

Once IUs are identified, the Control Authority must classify these users to determine if pretreatment standards and requirements should apply to these facilities. Typically, the Control Authority develops and distributes an Industrial Waste Survey (IWS) questionnaire to the identified IUs. The IWS questionnaire requests information regarding IU activities and the nature of wastes discharged. The Control Authority may opt to send a detailed IWS questionnaire initially or conduct the survey in two phases (i.e., send a screener requesting basic information to eliminate obvious facilities and then send a detailed IWS to those facilities with greater potential to be SIUs). Key to the IWS is to identify facilities that are subject to categorical standards (i.e., CIUs) or otherwise have the potential to impact the POTW (i.e., SIUs).



A POTW's IU inventory should include the name, location, classification, applicable standards, basis for limits imposed, volume of discharge, control mechanism status, compliance dates and other special requirements for each IU. The IWS should provide most of the information required to develop the inventory, although some supplementary information might be required from other sources, such as the permit application or monitoring data.

The IU inventory must be updated as needed [40 CFR §403.8(f)(2)(I)] and provided to the Approval Authority as part of the annual report requirement (see POTW Reports section in this Chapter). The on-going task of maintaining a complete list of IUs requires the Control Authority to implement a system to track existing IU information and/or classification changes and new user information. Some Control Authorities may proactively opt to institute a "utility connect questionnaire" program. These types of forms are completed when a customer applies for new utility service (e.g., water, sewerage, or electricity).

## PERMITTING

The General Pretreatment Regulations require all IUs be controlled through permit, order, or similar means to ensure compliance with applicable pretreatment standards and requirements. Section 403.8(f)(1)(iii)(A-E) clarifies this requirement to specify that all SIUs be issued a permit or equivalent individual control mechanism which contains, at a minimum:

- ▶ statement of duration (not to exceed five years);
- ▶ statement of nontransferability (unless outlined provisions are met);
- ▶ effluent limitations based on applicable standards;
- ▶ self-monitoring, sampling, reporting, notification, and record keeping requirements;
- ▶ statement of applicable civil and criminal penalties; and
- ▶ a schedule of compliance (where appropriate).

EPA's 1989 *Industrial User Permitting Guidance Manual* details procedures for drafting IU discharge permits. SIU permits issued are site specific and tailored to the unique circumstances of the IU. Permit conditions must establish clear and explicit requirements for the permittee, to include using such terms such as "shall" and "must" in lieu of vague terms such as "recommend" or "may". The Control Authority must document its decision-making process when developing permits to ensure defensibility and enforceability. Adherence to sound, documented procedures will prevent any arbitrary and capricious claims by the permittee. Whether developing or reissuing a permit, the permitting process consists of three phases:

- ▶ Phase I - Collection and verification of information
  - ▶ Phase II - Data interpretation and fact sheet development
  - ▶ Phase III - Permit development and issuance.

As part of Phase I, Control Authorities may review and verify information contained in the permit application, perform an inspection of the IU for confirmation of facts, tally data, and potentially sample and analyze the IU's wastestream. Knowledgeable Control Authority personnel, effective communication, and SIU cooperation are essential to collection of complete and accurate information.

Phase II requires that the Control Authority interpret data and other information and document the permit decision-making rationale, preferably in a permit fact sheet. Although the contents of a fact sheet will vary by permittee, fact sheets should provide a justification of all permitting decisions. Typical components of a fact sheet are provided in Figure 23. Completed fact sheets should be included as part of the permit and provided to the Permittee to document the soundness of permitting decisions.

After all permitting decisions are made, the Control Authority must incorporate those decisions into a permit. The permit, signed by the specified Control Authority official is provided to the Permittee for comment and after comments are addressed, a final permit is issued to the IU. While many comments may be easily addressed/resolved by the Control Authority, occasionally resolution must be obtained through a formal adjudicatory hearing process where both the Permittee and Control Authority present their case to a third party.

Many POTWs also control contributions from non-SIUs using various means, such as through general permits issued to an entire industrial sector. These types of control mechanisms may not necessarily require compliance with specific pollutant limitations. For example:

- ▶ grease trap maintenance and record keeping requirements for food establishments;
- ▶ maintenance and record keeping requirements for photo processors' silver reclamation units;
- ▶ best management practices for mercury recovery by hospitals and dentists.

Industrial sector general permitting programs are common where a real or potential POTW problem is linked to a particular pollutant discharged (e.g., collection system blockages caused by the discharge of excess oils and grease from food establishments). POTWs do have authority to enforce their SUO or rules or regulations against non-SIUs without the need for any type of individual control mechanism. Control Authorities do have the authority to require non-SIUs to comply with pretreatment standards and requirements contained in their local regulations and then take appropriate actions against IUs as noncompliance is identified.

## INSPECTIONS

Control Authorities are required to inspect and sample all SIUs a minimum of once per year pursuant to 40 CFR §403.8(f)(2)(v). The frequency with which a Control Authority actually inspects an SIU may vary depending on issues such as the variability of an SIU's effluent, the impact of their discharge on the POTW, and their compliance history. Inspection considerations (see Figure 24) will hinge upon the type of inspection performed (i.e., scheduled, unscheduled or demand). EPA's 1994 *Industrial User Inspection and Sampling Manual for POTWs* provides a detailed reference for inspection procedures and protocols.

Scheduled inspections are useful when the Control Authority wants to gather specific information from the facility that necessitates meeting with specific SIU contacts. However, since scheduled inspections may interrupt normal operations (e.g., altered production schedule as a result of preparative work undertaken by the IU), unscheduled inspections may more accurately reflect IU compliance status when the inspection is performed for that reason.

For CIUs:

- the basis for the categorical determination(s)
- the identity and flow volume of all wastestreams generated and discharged to the POTW, and classified accordingly (i.e., regulated, unregulated, or dilution)
- data used and/or justification for estimates used to determine categorical limitations
- basis for limits imposed for categorical parameters.

For SIUs/CIUs:

- basis for limits imposed for non-categorical parameters
- rationale for compliance schedules, special plans required, special conditions, etc.
- basis for monitoring and reporting frequencies.

**Figure 23. Components of Permit Fact Sheet**

- ▶ Provide current data on IUs
- ▶ Confirm or determine IUs' compliance status
- ▶ Determine completeness and accuracy of the IU's performance/compliance records
- ▶ Assess the adequacy of the IU's self-monitoring and reporting requirements
- ▶ Assess the adequacy of monitoring locations and IU's sampling techniques
- ▶ Assess the adequacy of imposed limitations and pollutants of concern
- ▶ Develop rapport with IUs
- ▶ Evaluate operation and maintenance and overall performance of an IU's pretreatment system
- ▶ Assess the potential for spills and slug loadings
- ▶ Evaluate the effectiveness of slug control plan
- ▶ Reveal issues requiring action
- ▶ Identify noncompliance needing resolution
- ▶ Suggest pollution prevention opportunities
- ▶ Collect samples
- ▶ Obtain data to support enforcement actions

**Figure 24. Inspection Considerations**

POTWs must evaluate, at least once every two years, whether each SIU needs a plan to control slug discharges (i.e., a discharge of a non-routine, episodic nature, including but not limited to an accidental spill or non-customary batch discharge). To accurately evaluate the slug potential, Control Authorities likely will have to examine the SIU during normal operating conditions. If undetected, slug discharges can have serious impacts on the POTW. EPA's 1991 *Control of Slug Loadings to POTWs Guidance Manual* provides a description of procedures for development, implementation, and review of slug control plans.

Demand inspections are non-routine in nature and occur in response to a concern (e.g., POTW collection problems downstream from an IU, elevated enforcement actions against an IU, suspicious IU behavior, or an informer complaint).

Routine Control Authority inspections of SIUs typically consist of three activities; preparation, on-site assessment, and follow-up.

**Preparation** - Control Authority personnel should review POTW records for SIUs to be inspected to familiarize themselves with the facility. Information reviewed may include compliance status, compliance schedule activities, reports and plans, upcoming report and plan due dates, enforcement activities, permit applications, waste surveys, previous inspection summaries, categorical regulations, water use/billing records, and POTW collection system maps. Control Authority personnel should also be familiar with any specific issues and concerns regarding the POTW treatment plant or collection system problems receiving the SIU's discharge.

**On-site Assessment** - Control Authority personnel typically discuss IU operations with IU contacts and perform a walkthrough of the facility to: update IU information regarding contacts, processes, production rates, pretreatment, and other waste management activities; review records required to be kept by the IU; visually verify the need for a slug control plan; and review pretreatment system maintenance, categorical standards applicable to processes employed, metering and sampling equipment, sampling procedures, chemicals used, processes employed, management practices, containment structures, locations of floor drains, etc. Many POTWs have developed a standard inspection questionnaire to facilitate the interview process and promote consistency during the inspection.

**Follow-up** - An inspection report should be prepared as soon as possible after the inspector returns to the office. Unanswered questions, required permit modifications, and/or necessary enforcement actions should be processed in a timely manner.

Non-routine inspections (e.g., demand) may not encompass all the activities and steps specified above, but, like routine inspections, these activities may provide the Control Authority an opportunity to collect samples of the IU's discharge.

## SAMPLING

The General Pretreatment Regulations require Control Authorities to monitor each SIU at least annually and each SIU to self-monitor semi-annually. As with inspections, the Control Authority should assess site-specific issues, such as SIU effluent variability, impact of this effluent on the POTW, and the SIU's compliance history to determine appropriate sampling frequencies (i.e., if more frequent monitoring is necessary). A more detailed discussion of IU monitoring requirements is provided in Chapter 5. For more detailed information on sampling frequencies, consult EPA's 1994 *Industrial User Inspection and Sampling Manual for POTWs*.

Sampling is the most appropriate method for verifying compliance with pretreatment standards. Monitoring location(s) are designated by the Control Authority and must be such that compliance with permitted discharge limits can be determined. Where possible, the Control Authority should not designate monitoring locations that are confined spaces or that are difficult to access or difficult to place the automated sampling equipment. Monitoring locations should:

- ▶ be appropriate for waste stream conditions;
- ▶ be representative of the discharge;
- ▶ have no bypass capabilities; and
- ▶ allow for unrestricted access at all times.

Control Authorities should measure flow to allow for collection of flow-proportioned composite samples, which are required, unless flow-proportional sampling is not feasible. Flow-proportional composite samples are preferred over time composite samples particularly where the monitored discharge is intermittent or variable. Desired analyses dictate the preparation protocols, equipment, and collection bottles to use to avoid contamination of samples or loss of pollutants through improper collection. Sampling for such pollutants as pH, cyanide, oil and grease, flashpoint, and volatile organic compounds require manual collection of grab samples. Similar to composite samples, grab samples must be representative of the monitored discharge and are to be collected from actively flowing wastestreams. Fluctuations in flow or the nature of the discharge may require collection of and hand-compositing of more than one grab sample to accurately assess compliance. To ensure defensibility of data, Control Authorities should develop and implement standard operating procedures and policies detailing sample collection and handling protocols in accordance with 40 CFR Part 136.

Adherence to proper sample collection and handling protocols, 40 CFR Part 136 approved analytical methodologies, and record keeping requirements [40 CFR §403.12(o)(1)] (see Figure 25) can be verified through review of field measurement records, chain of custodies, and lab reports. Field measurement records may require information regarding sample location, condition of and programmed settings for sampling equipment, wastewater meter readings, and information for such parameters as pH and temperature which require analysis in the field. Chain of custody forms serve as a link between field personnel and the laboratory and contain information regarding sample matrix, type, and handling. Lab reports should contain the minimum information specified in 40 CFR §403.12(o)(1)(ii-iv) as well as any additional information necessary to demonstrate compliance with 40 CFR Part 136 requirements (e.g., analytical methodology, sample preparation date and time, time of analysis). Use of standardized forms which prompt recording of information necessary for demonstrating compliance with applicable requirements, will aid in ensuring it can be used as admissible evidence in enforcement proceedings or in judicial actions.

**Figure 25. Sample Collection Techniques**

Parameter	Sample type	Container	Preservative	Holding time
pH	Grab	Polyethylene or Glass	N/A	analyze immediately
BOD	Composite	Polyethylene or Glass	chilled to 4°C	48 hours
TSS	Composite	Polyethylene or Glass	chilled to 4°C	7 days
NH <sub>3</sub> as N	Composite	Polyethylene or Glass	chilled to 4°C, H <sub>2</sub> SO <sub>4</sub> to pH<2	28 days
Oil and Grease	Grab	Glass	chilled to 4°C, HCl or H <sub>2</sub> SO <sub>4</sub> to pH<2	28 days
Cyanide, total	Grab	Polyethylene or Glass	chilled to 4°C, NaOH to a pH >12, and 0.6g of ascorbic acid if residual chlorine is present	14 days
Metals (total) excl. Cr <sup>6+</sup> , B, and Hg	Composite	Polyethylene or Glass	HNO <sub>3</sub> to pH<2	6 months
624 (volatiles organics)	Grab	Amber glass, w/ teflon septum lid and zero headspace	chilled to 4°C (additional laboratory preservation required)	7 or 14 days, depending on specific organic
625 (semi-volatile organics)	Composite	Amber glass w/ teflon lined lid	chilled to 4°C (additional laboratory preservation required)	7 days for sample prep; 40 days for extract

## ENFORCEMENT

In addition to requirements for permitting, sampling, and inspecting IUs, the General Pretreatment Regulations also require Control Authorities to review IU reports and plans, and respond to instances of IU noncompliance in a timely, fair, and consistent manner. Enforcement of pretreatment requirements is a critical element of the Pretreatment Program, but in the past extenuating circumstances may have prevented POTWs from taking adequate enforcement. For example, political and economic pressures from local officials could keep POTW personnel from taking appropriate actions. After this was identified as a major concern, EPA promulgated regulations in 1990 (55 FR 30082) that require all POTWs with approved pretreatment programs to adopt and implement an Enforcement Response Plan (ERP). These ERP regulations, at 40 CFR §403.8(f)(5), establish a framework for POTWs to formalize procedures for investigating and responding to instances of IU noncompliance. With an approved ERP in place, POTWs can enforce against IUs on a more objective basis and minimize outside pressures.

To evaluate IU compliance, Control Authorities must first identify applicable requirements for each IU. In general, IU reports (discussed in Chapter 5) and POTW monitoring activities are the basis for POTW evaluation of IU compliance. Discharge permit limit exceedances, discrepancies, deficiencies, and lateness are all violations that must be resolved.

To ensure enforcement response is appropriate and that the Control Authority actions are not arbitrary or capricious, EPA strongly recommends that an Enforcement Response Guide (ERG) be included as part of the approved ERP. The ERG identifies responsible Control Authority officials, general time frame for actions, expected IU responses, and potential escalated actions based on:

- ▶ the nature of the violation
  - pretreatment standards
  - reporting (late or deficient)
  - compliance schedules
- ▶ magnitude of the violation
- ▶ duration of the violation
- ▶ frequency of the violation (isolated or recurring)
- ▶ (potential) impact of the violation (e.g., interference, pass through, or POTW worker safety)
- ▶ economic benefit gained by the violator
- ▶ attitude of the violator

The types of questions that dictate whether an ERP is adequate are presented in Figure 26. Factors that should be considered in determining appropriate enforcement responses to noncompliance events are discussed in detail in EPA's 1989 *Guidance for Developing Control Authority Enforcement Response Plans*.

The General Pretreatment Regulations set as an enforcement priority, facilities that meet the criteria for "Significant Noncompliance (SNC)" as defined in 40 CFR §403.8(f)(2)(vii) and depicted in Figure 27. A decision to seek formal enforcement is generally triggered by an unresolved instance of SNC, failure to achieve compliance in a specified time period through less formal means, or the advice of legal counsel. SNC evaluations are to be conducted in six-month increments; names of IUs found to be in SNC must be published in the local newspaper (see Public Participation in this Chapter).

Formal enforcement must be supported by well-documented records of the violations and of any prior efforts by the Control Authority to obtain compliance. Where effluent limitations have been exceeded, records must be reviewed to verify compliance with 40 CFR Part 136 test methods. If the IU has received conflicting information from the Control Authority regarding its compliance status, its status must be clarified in writing. Although not required, the Control Authority may consider a "show cause" meeting with the IU before commencing formal enforcement action. Similarly, the regulations do allow, in certain instances, an affirmative defense for violations.

The range of enforcement mechanisms available to a Control Authority depends on the specific legal authorities it has been given by city, county, and State legislatures. These mechanisms may range from a simple telephone call to suits seeking significant criminal penalties. Common enforcement mechanisms include:

- |    |  |
|----|--|
| Q: | Is a Control Authority response required for all violations identified?  |
| Q: | Is the IU notified by the Control Authority when a violation is found?   |
| Q: | Is the IU required to respond to each violation with an explanation and, as appropriate, a plan to correct the violation within a specified time period?   |
| Q: | Where noncompliance continues and/or the IU response is inadequate, does the Control Authority's response become more formal and commitments (or schedules, as appropriate) for compliance established in an enforceable document? |
| Q: | Is the enforcement response selected related to the seriousness of the violation?  |
| Q: | Where the violation constitutes SNC, and is ongoing, is the minimum response an administrative order?  |

**Figure 26. How Complete is Your ERG?**

- ▶ **Informal notice to IU** - This may consist of a telephone call or "reminder" letter to an appropriate IU official to notify them of a minor violation and to seek an explanation. Such informal notice may be used to correct minor instances of noncompliance.
- ▶ **Informal meetings** - Used to obtain an IU's commitment to comply with their pretreatment obligations or to inform the IU of stronger enforcement mechanisms available for unresolved and/or continued noncompliance.
- ▶ **Warning letter or Notice of Violation (NOV)** - Written notice to the IU in response to a violation of pretreatment standards or requirements. These notices should request an explanation of the noncompliance and measures that will be taken to eliminate future violations.
- ▶ **Administrative orders and compliance schedules** - These require an IU to "show cause" to the Control Authority as to why formal enforcement action should not be taken and/or sewer service discontinued, or actions that will be taken to comply with pretreatment standards or requirements. Orders as such may be negotiated (i.e., Consent Order) or issued at the reasonable discretion of the Control Authority (i.e., Compliance Order). For more egregious or serious violations, the Control Authority may issue a Cease and Desist Order.
- ▶ **Administrative fines** - Assessed by Control Authorities against IUs for violations and intended to recapture partial or full economic benefit for the noncompliance and to deter future violations.
- ▶ **Civil suits** - Formal process of filing lawsuits against IUs to correct violations and to obtain penalties for violations. Civil penalty amounts are generally limited through State or municipal laws. However, 40 CFR §403.8(f)(1)(vi) requires that Control Authorities have the legal authority to seek or assess civil or criminal penalties of at least \$1,000 per day for each violation. A civil suit for injunctive relief may be used when the IU is unlikely to successfully execute the steps that the Control Authority believes are necessary to achieve or maintain compliance, when the violation is serious enough to warrant court action to deter future similar violations, or when the danger presented by an IU's lengthy negotiation of a settlement is intolerable.

**NOTE:** Surcharges are not penalties or fines. Surcharges are intended to recoup the cost of treatment of wastes by the POTW and must not be used to allow discharges of toxic pollutants that cause interference or pass through.

**An IU is in SNC if its violation meets one or more of the following criteria (40 CFR 403.8(f)(2)(vii):**

- (A) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent or more of all of the measurements taken during a six-month period **exceed (by any magnitude)** the daily maximum limit or the average limit for the same pollutant parameter;
- (B) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent or more of all of the measurements for each pollutant parameter taken during a six-month period equal or exceed the product of the daily maximum or the average limit multiplied by the applicable TRC (TRC = 1.4 for BOD<sub>5</sub>, TSS, fats, oil, and grease, and 1.2 for all other pollutants except pH);
- (C) Any other violation of a pretreatment effluent limit (daily maximum or longer-term average) that the Control Authority determines has caused, alone or in combination with other discharges, interference or pass through (including endangering the health of POTW personnel or the general public);
- (D) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority under 40 CFR § 403.8(f)(1)(vi)(B) of this section to halt or prevent such a discharge;
- (E) Failure to meet, within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance;
- (F) Failure to provide, within 30 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;
- (G) Failure to accurately report noncompliance;
- (H) Any other violation or group of violations which the Control Authority determines will adversely affect the operation or implementation of the local pretreatment program.

**Figure 27. Definition of Significant Noncompliance (SNC)**

- ▶ **Criminal prosecution** - This type of enforcement is a formal judicial process where sufficient admissible evidence exists to prove beyond a reasonable doubt that a person has willfully or negligently violated pretreatment standards or that a person has knowingly made a false statement regarding any report, application, record, or other document required by the General Pretreatment Regulations. As noted above, Control Authorities must have the legal authority to seek or assess civil or criminal penalties of at least \$1,000 per day for each violation. Examples of criminal violations include falsification of data and tampering with sampling results or equipment.
- ▶ **Termination of service (revocation of permit)** - These actions may be pursued by Control Authorities to immediately halt an actual or threatened discharge to the POTW that may represent an endangerment to the public health, the environment, or the POTW. Use of these remedies may also be used in bringing recalcitrant users into compliance.

Regardless of the response taken, the Control Authority should document and track all contact, notices, and meetings with IUs and IU responses. Control Authority responses and IU responses (or lack thereof) should be documented and include a record of any direct contact with the IU to attempt to resolve the noncompliance. Control Authorities must take timely and effective enforcement against violators. Unresolved IU noncompliance may result in the Approval Authority enforcing directly against the IU and/or the Control Authority. EPA may also take enforcement action where it deems action by the State or the Control Authority is inappropriate. An Approval Authority will routinely review the overall performance of a Control Authority in monitoring IUs, identifying violations, and in enforcing regulations. Performance will be evaluated based on POTW self-monitoring data, written enforcement response plans, audits, inspections, and pretreatment program reports. Therefore, it is essential for Control Authorities to effectively manage program information to demonstrate proper implementation.

Section 505 of the CWA allows citizens to file suit against a Control Authority that has failed to implement its approved pretreatment program as required by its NPDES permit. The Control Authority may be fined as well as required to enforce against violations of pretreatment standards and requirements in a court order.

## DATA MANAGEMENT AND RECORD KEEPING

Any IU subject to pretreatment program reporting requirements is required to maintain records resulting from monitoring in a readily accessible manner for a minimum of 3 years (longer if during periods of any ongoing litigation). While the means for maintaining files is usually at the discretion of the POTW, all pretreatment activities should be documented and the documents maintained. Types of IU records that the Control Authority should maintain are summarized in Figure 28.

Tracking due dates, submissions, deficiencies, notifications, etc. and calculating effluent limitation noncompliance may be facilitated by a computerized data management system. Similarly, many Control Authorities use standardized forms (e.g., inspection questionnaires, chains-of-custody, field measurement records) and procedures (e.g., sampling, periodic compliance report reviews) to promote consistency and organization of program data.

In addition to specific IU records, Control Authorities should also maintain general program files that document specific program development and implementation activities that are not IU-specific (see Figure 29). All information should be filed in an orderly manner and be readily accessible for inspection and copying by EPA and State representatives or the public. The pretreatment regulations specify that all information submitted to the Control Authority or State must be available to the public without restriction, except for confidential business information.

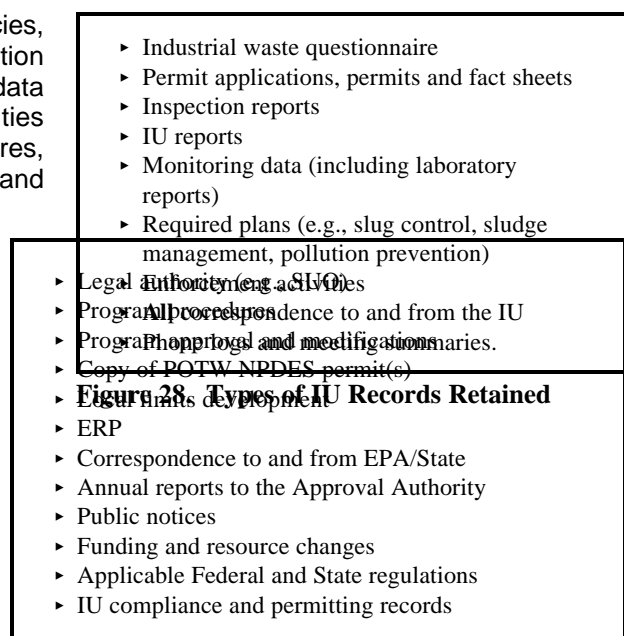


Figure 29. Types of POTW Records Retained

## PUBLIC PARTICIPATION AND POTW REPORTING

Section 101(e) of the CWA establishes public participation as one of its goals, in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by EPA or any State. The General Pretreatment Regulations encourage public participation by requiring public notices and/or hearings for program approval, removal credits, program modifications, local limits development and modifications, and IUs in SNC.

POTW pretreatment program approval requests require the Approval Authority to publish a notice (including a notice for a public hearing) in a newspaper of general circulation within the jurisdiction served by the POTW. All comments regarding the request as well as any request for a public hearing must be filed with the Approval Authority within the specified comment period, which generally last 30 days. The Approval Authority is required to account for all comments received when deciding to approve or deny the submission. The decision is then provided to the POTW and other interested parties, published in the newspaper with all comments received available to the public for inspection and copying.

Once a local pretreatment program is approved, the Control Authority must implement that program as approved. Before there is a significant change in the operation of a POTW pretreatment program, a program modification must be initiated.

For substantial program modifications (see Figure 30), the Control Authority is required to notify the Approval Authority of the desire to modify its program and the basis for the change. These changes become effective upon approval. Approval Authorities (or POTWs) are required to public notice the request for a modification, but are not required to public notice the decision if no comments are received and the request is approved without changes.

Nonsubstantial modifications must also be submitted to the Approval Authority for review and approval, but these changes do not require public notice. And unlike substantial modifications, nonsubstantial modifications become effective 45 days after submission unless the Approval Authority notifies the POTW otherwise.

The POTW is also required to provide annual publication, in the largest daily newspaper in the municipality in which the POTW is located, of IUs that at any time during the previous twelve months were in SNC.

In accordance with 40 CFR §403.12(l), Control Authorities are required to submit annual reports to the Approval Authority documenting program status and activities performed during the previous calendar year. At a minimum, these reports must contain the following information:

1. Modifications that relax POTW legal authorities (as described in 40 CFR §403.8(f)(1)), except for modifications that directly reflect a revision to 40 CFR Part 403, and are reported pursuant to 40 CFR §403.18(d) - Approval procedures for nonsubstantial modifications;
2. Modifications that relax local limits, except for modifications to local limits for pH and reallocations of the Maximum Allowable Industrial Loading of a pollutant that do not increase the total industrial loadings for a pollutant, which are reported pursuant to 40 CFR §403.18(d) - Approval procedures for nonsubstantial modifications;
3. Changes to POTW's control mechanism, as described in 40 CFR §403.(f)(1)(iii);
4. A decrease in the frequency of self-monitoring or reporting required of industrial users;
5. A decrease in the frequency of industrial user inspections or sampling by the POTW;
6. Changes to the POTW's confidentiality procedures; and
7. Other modifications designated as substantial modifications by the Approval Authority on the basis that the modification could have a significant impact on the operation of the POTW's Pretreatment Program; could result in an increase in pollutant loadings at the POTW; or could result in less stringent requirements being imposed on Industrial users of the POTW.

**Figure 30. Substantial Modifications of POTW Pretreatment Programs (40 CFR §403.18)**



1. List of all POTW's IUs including names, addresses, pretreatment standards applicable to each user, IUs subject to categorical pretreatment standards or a brief explanation of deletions and a list of additions (with the aforementioned information) keyed to a previously submitted list;
2. A summary of the status of the IU compliance during the reporting period;
3. A summary of compliance and enforcement activities (including inspections) conducted by the POTW during the reporting period;
4. A summary of changes to the POTW's pretreatment program that have not been previously reported to the Approval Authority; and
5. Any other relevant information requested by the Approval Authority.

The first report is due within one year after program approval and at least annually thereafter. Approval Authorities may require additional information, or require that the reports be submitted in a specific format and/or at an increased frequency (e.g., semi-annually).

# 5. INDUSTRIAL USER PRETREATMENT PROGRAM RESPONSIBILITIES

Industrial Users (IUs) are required to comply with all applicable pretreatment standards and requirements. Demonstration of compliance requires certain IUs to submit reports, self-monitor, and maintain records. A summary of the reporting requirements are provided in Figure 32, with details of each of these requirements discussed below.

## REPORTING REQUIREMENTS

Minimum Federal Pretreatment Program reporting requirements for IUs are specified in 40 CFR §403.12. Since Control Authorities are responsible for communicating applicable standards and requirements to IUs and for receiving and analyzing reports, it is essential for Control Authority personnel to understand IU reporting and notification requirements contained in the General Pretreatment Regulations. These requirements are summarized below.

### Categorical Industrial User (CIU) Reporting Requirements

#### Baseline Monitoring Report (BMR) [40 CFR §403.12(b)]

Each existing IU that is subject to a categorical pretreatment standard (identified as a Categorical Industrial User, or CIU) is required to submit a BMR within 180 days after the effective date of the standard. If a category determination has been requested, the BMR is not due until 180 days after a final administrative decision has been made concerning the industry's inclusion in the category. The BMR must contain the following information:

- ▶ name and address of the facility and names of the operator and owners
- ▶ list of all environmental control permits held by or for the facility
- ▶ description of operations, including the average rate of production, applicable Standard Industrial Classification (SIC) codes, schematic process diagrams, and points of discharge to the POTW from regulated processes
- ▶ flow measurements (average daily and maximum daily) for regulated process wastestreams and nonregulated wastestreams, where necessary
- ▶ pollutant measurements [daily maximum, average concentration, and mass (where applicable)] and applicable standards
- ▶ certification, by a qualified professional, reviewed by a representative of the CIU, of whether applicable pretreatment standards are being met and, if not, a description of the additional operation and maintenance (O&M) or pretreatment facilities that are needed to comply with the standards
- ▶ a schedule by which the IU will provide the additional O&M or pretreatment needed to comply with the applicable pretreatment standards.

### Chapter 5. Applicable EPA Guidance

Guidance Manual For Implementing Total Toxic Organics (TTO) Pretreatment Standards  
 Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe  
 Guidance Manual for the Use of Production-Based Pretreatment Standards and the Combined Wastestream Formula  
 Industrial User Inspection and Sampling Manual for POTWs  
 RCRA Information on Hazardous Wastes for Publicly Owned Treatment Works

### Industry-Specific Guides

Aluminum, Copper, And Nonferrous Metals Forming And Metal Powders Pretreatment Standards: A Guidance Manual  
 Guidance Manual For Battery Manufacturing Pretreatment Standards  
 Guidance Manual for Electroplating and Metal Finishing Pretreatment Standard  
 Guidance Manual For Iron And Steel Manufacturing Pretreatment Standards  
 Guidance Manual for Leather Tanning and Finishing Pretreatment Standards  
 Guidance Manual for Pulp, Paper, and Paperboard and Builders' Paper and Board Mills Pretreatment Standards

In addition to the certification noted above, BMRs must be signed and certified as detailed in 40 CFR §403.12(l) and as described later in this Chapter. If a CIU has already submitted the specific information required in a permit application or data disclosure form and this information is still current, it need not be reproduced and resubmitted in the BMR. The BMR is a one-time report, unless changed Federal categorical standards require submission of a new BMR.

At least 90 days prior to commencement of discharge, new sources are required to submit the above information, excluding the certification and compliance schedule, and information on the method that the source intends to use to meet the applicable pretreatment standards.

#### Compliance Schedule Progress Report [40 CFR §403.12(c)(3)]

A CIU that is not in compliance with applicable categorical standards by the time the standards are effective often will have to modify process operations and/or install end-of-pipe treatment to comply. Federal regulations require that the Control Authority develop and impose a compliance schedule for the CIU to install technology to meet applicable standards. As part of the BMR, a CIU that is unable to comply with the categorical standards must include a schedule for attaining compliance with the discharge standards. In no case can the final or completion date in the schedule be later than the final compliance date specified in the categorical standards. If deemed appropriate, the Control Authority may require compliance earlier than the final compliance date specified in the Federal regulations.

Compliance schedules are to contain increments of progress in the form of dates (not to exceed nine months per event) for commencement and completion of major actions leading to construction and operation of a pretreatment system and/or in-plant process modifications. Major activities could include hiring an engineer, completing preliminary analysis and evaluation, finalizing plans, executing a contract for major components, commencing construction, completion of construction, or testing operation.

In addition, the CIU must submit progress reports to the Control Authority no later than 14 days following each date in the compliance schedule (and final date for compliance), that include:

- ▶ a statement of the CIU's status with respect to the compliance schedule
- ▶ a statement of when the CIU expects to be back on schedule if it is falling behind, and the reason for the delay and steps being taken by the IU to return to the established schedule.

The Control Authority should review these reports as quickly as possible. When a CIU is falling behind schedule, the Control Authority should maintain close contact with the CIU. If the CIU fails to demonstrate good faith in meeting the schedule, the Control Authority may consider initiating appropriate enforcement action to correct the problem(s).

#### 90-Day Compliance Reports [40 CFR §403.12(d)]

Section 403.12(d) of the General Pretreatment Regulations requires a CIU to submit a final compliance report to the Control Authority. An existing source must file a final compliance report within 90 days following the final compliance date specified in a categorical regulation or within 90 days of the compliance date specified by the Control Authority, whichever is earlier. A new source must file a compliance report within 90 days from commencement of discharge to the POTW. These reports must contain:

- ▶ flow measurements (average daily and maximum daily) for regulated process wastestreams and nonregulated wastestreams, where necessary
- ▶ pollutant measurements [daily maximum, average concentration, and mass (where applicable)] and applicable standards
- ▶ certification, by a qualified professional, reviewed by a representative of the CIU, of whether applicable pretreatment standards are being met and, if not, a description of the additional operation and maintenance (O&M) or pretreatment facilities that are needed to comply with the standards. In addition to the certification noted above, 90-day final compliance reports must be signed and certified as detailed in 40 CFR §403.12(l) and as described later in this Chapter.

#### Upset Reports [40 CFR §403.16]

CIUs are allowed an affirmative defense for noncompliance with categorical standards if they can demonstrate that the noncompliance was the result of an upset (Figure 31). Conditions necessary to demonstrate an upset has occurred are detailed in 40 CFR §403.16 and require the CIU to submit at least an oral report to the Control Authority within 24 hours of becoming aware of the upset and containing the following information:

**Upset** is defined as an exceptional incident in which there is unintentional and temporary noncompliance with categorical standards due to factors beyond the reasonable control of the CIU. 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 operation.

**Figure 31. Definition of Upset (40 CFR §403.16)**

- ▶ a description of the indirect discharge and the cause of the noncompliance
- ▶ the date(s) and times of the noncompliance
- ▶ steps being taken and/or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

If this notification is provided orally, a written report must also be submitted within five days. In any enforcement action, the IU has the burden of proof in establishing that an upset has occurred. EPA is responsible for determining the technical validity of this claim.

### **Categorical and Significant Industrial User (SIU) Reporting Requirements**

#### **Periodic Compliance Reports [40 CFR §403.12 (e) & (h)]**

After the final compliance date, CIUs are required to report, during the months of June and December, the self-monitoring results of their wastewater discharge(s). The Control Authority must also require semi-annual reporting from SIUs not subject to categorical standards. EPA established a minimum frequency of once every six months, determining this to be adequate for small SIUs or other facilities that have little potential to cause pass-through or interference or to contaminate the sewage sludge. EPA assumed that larger IUs and those that have more potential to cause problems would be required by the Control Authority to sample and report more often. All results for self-monitoring performed must be reported to the Control Authority, even if the IU is monitoring more frequently than required. Periodic compliance reports must include:

- ▶ nature and concentration of pollutants limited by applicable categorical standards or required by the Control Authority
- ▶ flow data (average and maximum daily) as required by the Control Authority
- ▶ mass of pollutants discharged (applicable to CIUs where mass limits have been imposed)
- ▶ production rates (applicable to CIUs where equivalent limits have been imposed or where limits imposed are expressed in allowable pollutant discharged per unit of production).

A Control Authority may choose to monitor IUs in lieu of the IU performing the self-monitoring.

Additionally, 40 CFR §403.12(e) and (h) require compliance with 40 CFR Part 136 (Guidelines for Establishing Test Procedures for the Analysis of Pollutants). To demonstrate compliance with these requirements, IUs may have to submit information regarding sample handling and analytical procedures to the Control Authority. Development of standardized forms for use by IUs and their testing labs can facilitate documentation and submission of all required information and can streamline the IU and Control Authority review process.

#### **Bypass [40 CFR §403.17]**

The General Pretreatment Regulations define “bypass” as the intentional diversion of wastestreams from any portion of a users treatment facility. If a bypass results in noncompliance, even if it was due to essential maintenance, the IU must provide a report to the Control Authority detailing a description of the bypass and the cause, the duration of the bypass, and the steps being taken and/or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

Oral notice must be provided to the Control Authority within 24 hours of the detection of an unanticipated bypass, with a written follow-up due within 5 days. For an anticipated bypass, the IU must submit notice to the Control Authority, preferably 10 days prior to the intent to bypass.

#### Notification of Potential Problems [40 CFR §403.12(f)]

All IUs are required to notify the Control Authority immediately of any discharges which may cause potential problems. These discharges include spills, slug loads, or any other discharge which may cause a potential problem to the POTW.

#### Noncompliance Notification [40 CFR §403.12(g)(2)]

If monitoring performed by an IU indicates noncompliance, the IU is required to notify the Control Authority within 24 hours of becoming aware of the violation. In addition, the IU must repeat sampling and analysis and report results of the resampling within 30 days. The repeat sampling is not required if the Control Authority samples the IU at least once per month or if the Control Authority samples the IU between the time of the original sample and the time the results of the sampling are received.

#### Notification of Changed Discharge [40 CFR §403.12(j)]

All IUs are required to promptly notify the Control Authority in advance of any substantial changes in the volume or character of pollutants in their discharge.

#### Notification of Discharge of Hazardous Wastes [40 CFR §403.12(p)]

IUs discharging more than 15 kilograms per month of a waste, which if otherwise disposed of, would be a hazardous waste pursuant to the RCRA requirements under 40 CFR Part 261 are required to provide a one time written notification of such discharge to the Control Authority, State, and EPA. IUs discharging any amount of waste, which if disposed of otherwise, would be an acutely hazardous waste pursuant to RCRA must also provide this notification. This written notification must contain the EPA hazardous waste number and the type of discharge (i.e., batch, continuous). If the IU discharges more than 100 kilograms per month of the hazardous waste, the written notification must also include:

- ▶ an identification of the hazardous constituent in the IU's discharge,
- ▶ an estimate of the mass and concentration of the constituents in the IU's discharge, and
- ▶ an estimate of the mass and concentration of constituents in the IU's discharge in a year.

IUs must also provide a certification accompanying this notification that a waste reduction program is in place to reduce the volume and toxicity of hazardous wastes to the greatest degree economically practical. Within 90 days of the effective date of the listing of any additional hazardous wastes pursuant to RCRA, IUs must provide a notification of the discharge of such wastes.

#### Signatory and Certification Requirements [40 CFR §403.12(l)]

Pursuant to 40 CFR §403.12(l), BMRs, 90-day compliance reports and periodic compliance reports from CIUs must be signed by an authorized representative of the facility and contain a certification statement attesting to the integrity of the information reported. The reports should be signed by one of the following:

- ▶ a responsible corporate officer if the IU is a corporation
- ▶ a general partner or proprietor if the IU is a partnership or sole proprietorship
- ▶ a duly authorized representative of the above specified persons if such authorization is in writing, submitted to the Control Authority and specifies a person or position having overall responsibility for the facility where the discharge originates or having overall responsibility of environmental matters for the facility.

As required in 40 CFR §403.6(a)(2)(ii), the certification statement must read as follows:

*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

While Federal regulations only require Control Authorities to require these signatures and certifications from CIUs, many POTWs have found it important to impose these requirements for all IU reports. To facilitate compliance, many Control Authorities have developed forms that include the certification statement and signatory requirements for use by all IUs.

## SELF-MONITORING REQUIREMENTS

All SIUs, including CIUs must conduct self-monitoring as part of several different reporting requirements as noted above. For CIUs, this includes the BMR, 90-day compliance report and periodic compliance reports (40 CFR §§403.12(b),(d), and (e), respectively). Non-categorical SIUs are required to self-monitor as part of the periodic reporting requirements (40 CFR §403.12(h)). As noted in 40 CFR §§403.12(g)(4), sample collection and analysis for all required pretreatment program reports must be conducted using 40 CFR Part 136 procedures and amendments thereto. Refer to Chapter 4 of this manual and EPA's 1994 *Industrial User Inspection and Sampling Manual for POTWs* for additional information on sample collection and analysis procedures.

Based on the specific pollutants regulated by categorical standards, different types of samples may have to be collected. For BMR and 90-day compliance reports, a minimum of four grab samples must be collected for pH, cyanide, total phenols, oil and grease, sulfide, and volatile organics. If these pollutants are not regulated by the specific categorical standard, monitoring is not required. Twenty-four hour flow-proportional composite samples must be collected for all other pollutants. The Control Authority may waive flow-proportional composite sampling if an IU demonstrates that flow-proportional is not feasible. In these cases, time-proportional composite samples may be collected.

Self-monitoring for periodic compliance reports must be conducted in accordance with the IU's discharge permit requirements. The Control Authority must ensure that these permits specify sampling location(s), required sampling frequencies, sample types to be collected, sampling and analytical procedures (40 CFR Part 136), and associated reporting requirements. At a minimum, CIUs must monitor for all categorically regulated pollutants at least once every six months, although, permits issued by the local Control Authority may require more frequent monitoring.

In certain instances, CIUs subject to TTO standards may implement alternatives in lieu of monitoring all regulated toxic organic compounds. A listing of categories that contain TTO standards is provided in Chapter 3. For example, the electroplating and metal finishing standards allow IUs to monitor only for those toxic organic compounds that are reasonably expected to be present. Additional TTO guidance related to the electroplating and metal finishing categories can be found in EPA's 1984 *Guidance Manual for Electroplating and Metal Finishing Pretreatment Standards*.

For certain industries (i.e., electroplating, metal finishing, and electrical and electronic components) Control Authorities have the option of allowing the CIU to prepare and implement a Toxic Organic Management Plan (TOMP) in lieu of periodic monitoring. In those instances, the TOMP should identify all potential sources from which toxic organic materials could enter the wastestream and propose control measures to eliminate the possibility. Where a TOMP is allowed, an IU can demonstrate compliance through adherence to the TOMP and submission of periodic certification statements attesting to the fact that:

*"no dumping of concentrated toxic organic pollutants has occurred and that the facility's TOMP is being implemented."*

TOMPs cannot be used in lieu of monitoring for BMRs and 90-day compliance reporting requirements.

The categorical standards for some industries (i.e., aluminum forming, copper forming, coil coating, and metal molding and casting) allow IUs to monitor oil and grease (O&G) as an alternative to TTO monitoring. This option may be used to fulfill TTO monitoring requirements of the BMR, 90-day compliance report, and periodic compliance reports and allows the IU to determine whether it wants to demonstrate compliance with the TTO or the O&G standards. A detailed description of TTO monitoring requirements is provided in EPA's 1985 *Guidance Manual for Implementing Total Toxic Organics (TTO) Pretreatment Standards*.

## RECORD KEEPING REQUIREMENTS

IUs are required to maintain records of their monitoring activities [40 CFR §403.12(o)]. Information, at a minimum, shall include the following:

- ▶ sampling methods, dates and times
- ▶ identity of the person(s) collecting the samples and of the sampling location(s)
- ▶ the dates the analyses were performed and the methods used
- ▶ the identity of the person(s) performing the analyses and the results of the analyses.

These records shall be retained for at least 3 years, or longer in cases where there is pending litigation involving the Control Authority or IU, or when requested by the Approval Authority. These records must be available to the Control Authority and Approval Authority for review and copying. Historically, most Control Authorities do not dispose of any records, rather older records are archived at an off-site location.

**Figure 32. Industrial User Reporting Requirements**

REQUIRED REPORT AND CITATION	APPLY TO	REPORT DUE DATE	PURPOSE OF REPORT
<b>Baseline Monitoring Report (BMR)</b> 40 CFR §403.12(b)(1-7)	CIUs	Existing Source - Within 180 days of effective date of the regulation or an administrative decision on category determination.  New Source - At least 90 days prior to commencement of discharge.	<ul style="list-style-type: none"> <li>- To provide baseline information on industrial facility to Control Authority</li> <li>- To determine wastewater discharge sampling points</li> <li>- To determine compliance status with categorical pretreatment standards</li> </ul>
<b>Compliance Schedule Progress Reports</b> 40 CFR §403.12(c)(1-3)	All IUs	Within 14 days of each milestone date on the compliance schedule; at least every 9 months.	<ul style="list-style-type: none"> <li>- To track progress of the industrial facility through the duration of a compliance schedule.</li> </ul>
<b>90-Day Compliance Report</b> 40 CFR §403.12(d)	CIUs	Within 90 days of the date for final compliance with applicable categorical pretreatment standard; for new sources, the compliance report is due within 90 days following commencement of wastewater discharge to the POTW.	<ul style="list-style-type: none"> <li>- To notify Control Authority as to whether compliance with the applicable categorical pretreatment standards has been achieved</li> <li>- If facility is noncompliant, to specify how compliance will be achieved.</li> </ul>
<b>Periodic Compliance Report</b> 40 CFR §403.12(e)	CIUs	Every June and December after the final compliance date (or after commencement of a discharge for new sources) unless frequency is increased by the Control Authority.	<ul style="list-style-type: none"> <li>- To provide the Control Authority with current information on the discharge of pollutants to the POTW from categorical industries.</li> </ul>
<b>Notice of Potential Problems</b> 40 CFR §403.12(f)	All IUs	Notification of POTW immediately after occurrence of slug load, or any other discharge that may cause problems to the POTW.	<ul style="list-style-type: none"> <li>- To alert the POTW to the potential hazards of the discharge.</li> </ul>
<b>Noncompliance Notification</b> 40 CFR §403.12(g)(2)	All IUs	Notification of POTW within 24 hours of becoming aware of violation.	<ul style="list-style-type: none"> <li>- To alert the POTW of a known violation and potential problems which may occur.</li> </ul>
<b>Periodic Compliance Reports for Noncategorical Users</b> 40 CFR §403.12(h)	Non-Cat. SIUs	Every six months on dates specified by the Control Authority.	<ul style="list-style-type: none"> <li>- To provide the POTW with current information on the discharge of pollutants to the POTW from industrial users not regulated by categorical standards.</li> </ul>
<b>Notification of Changed Discharge</b> 40 CFR §403.12(j)	All IUs	In advance of any substantial changes in the volume or character of pollutants in the discharge.	<ul style="list-style-type: none"> <li>- To notify POTW of anticipated changes in wastewater characteristics and flow which may affect the POTW.</li> </ul>
<b>Notification of Hazardous Wastes Discharge</b> 40 CFR §403.12(p)	All IUs	For new discharges, within 180 days after commencement of discharge.	<ul style="list-style-type: none"> <li>- To notify POTW, EPA, and State of discharges of hazardous wastes under 40 CFR Part 261.</li> </ul>
<b>Upset</b> 40 CFR §403.16	CIUs	24 hours of becoming aware of the upset (5 days where notification was provided orally)	<ul style="list-style-type: none"> <li>- To notify the POTW of unintentional and temporary noncompliance with categorical standards.</li> </ul>
<b>Bypass</b> 40 CFR §403.17	All IUs	10 days prior to date of the bypass or oral notice within 24 hours of the IU becoming aware of the bypass with written notification within 5 day	<ul style="list-style-type: none"> <li>- To notify the POTW of noncompliance and potential problems which may occur</li> </ul>



## 6. HAULED WASTES

In addition to receiving wastes through the collection system, many POTWs accept trucked wastes, and in a few instances, wastes received via train. As specified in 40 CFR §403.1(b)(1), pollutants from non-domestic sources which are transported to the POTW by truck or rail are also subject to the General Pretreatment Regulations. Hauled wastes, like wastes received through the collection system, have the potential to impact the POTW, making regulatory control of these wastes necessary. Recent studies have shown an increasing frequency of uncontrolled discharges to POTWs from waste haulers. Because of their unique nature, waste haulers are not regulated in the same way as other types of IUs. Since no specific Federal regulatory controls exist, some POTWs have developed hauled waste control programs. For more information on hauled waste, refer to EPA's 1998 *Guidance Manual for the Control of Waste Hauled to Publicly Owned Treatment Works*.

### Chapter 6. Applicable EPA Guidance

CERCLA Site Discharges to POTWs Guidance Manual  
 Guidance Manual for the Identification of Hazardous Wastes  
 Delivered to Publicly Owned Treatment Works by  
 Truck, Rail, or Dedicated Pipe  
 Industrial User Inspection and Sampling Manual for POTWs  
 Industrial User Permitting Guidance Manual  
 RCRA Information on Hazardous Wastes to Publicly Owned  
 Treatment Works  
 Guidance Manual for the Control of Waste Hauled to  
 Publicly Owned Treatment Works

### NATURE OF HAULED WASTES

Wastes are hauled to POTWs for several reasons. By far, the majority of hauled waste is domestic septage (Figure 33). Since these wastes are domestic in nature, treatment at a POTW is the most appropriate disposal method. Other types of wastes are also regularly hauled to POTWs for a variety of reasons, such as:

- ▶ the facility is located outside the jurisdictional boundaries of the POTW (e.g., located in rural areas) and is not connected to the collection system,
- ▶ the wastes may be known to cause collection system problems, but can be treated at the POTW (e.g., grease trap cleanout wastes),
- ▶ the facility is connected to the sewer but does not have the capacity to discharge the volume of waste generated (e.g., groundwater remediation activities at an IU),
- ▶ a POTW rejects acceptance of a waste from an IU forcing the IU to haul the waste to a different POTW that agrees to accept the waste.

**Domestic septage** is defined as either the liquid or solid material removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar treatment works that holds only domestic sewage. Domestic septage does not include liquid or solid material removed from these systems that receives either commercial wastewater or industrial wastewater and does not include grease removed from a restaurant grease trap. [40 CFR Part 503.9(f)]

**Figure 33. Definition of Domestic Septage**

Common to all these wastes is the fact that the POTW does not know for certain the nature and concentration of these wastes, as hauled, without implementing some type of control or surveillance program.

### CONTROL PROGRAMS

Section 403.5(b)(8) of the General Pretreatment Regulations specifically prohibits the introduction of any trucked or hauled pollutants to the POTW, except at discharge points designated by the POTW. This is the

only pretreatment requirement specifically addressing hauled wastes. However, many POTWs have determined that additional controls are necessary to further limit these discharges and to prevent adverse impacts from these discharges. These control programs include practices such as permitting, sampling, manifesting, surveillance, and other forms of hauler documentation. In many instances, these control programs have shifted the hauling of waste from one POTW to other POTWs that are not implementing such a program. Most often, it is the smaller POTWs that do not have hauler control programs, including many POTWs that are not even required to implement Pretreatment Programs. The effect of this change from larger to smaller POTWs and from more to less control is that there has been an increase in negative impacts to POTWs and receiving streams. Two apparent options for addressing this concern are for: (1) the smaller and non-pretreatment POTWs to initiate waste hauler control programs; or (2) the larger POTWs to institute sound control programs that will adequately regulate these wastes yet not drive these haulers to search for other less sound disposal alternatives. POTW waste hauler control programs should address the following six elements:

**Impact to POTW** - Prior to acceptance of a new waste from a hauler, the POTW needs to evaluate the potential impacts to the POTW from this waste. POTWs may require haulers or generators of hauled waste to perform a treatability study to demonstrate the effectiveness of treatment on this waste. POTWs must evaluate the impacts of these waste when evaluating the adequacy of local limits as well as when developing or revising local limits.

**Permitting** - A permit is the most direct and efficient method of regulating waste haulers. Permits provide the opportunity to monitor and regulate haulers based on the nature of the hauled waste and the potential impacts of that waste on the POTW. Unique permit conditions may include: right of refusal, daily flow limitations, discharge time limitations, and manifesting requirements.

**Discharge Point** - As specified in the General Pretreatment Regulations, hauled waste can only be discharged at points designated by the POTW. This option is to provide the POTW with the ability to control and observe these discharges at specified locations thereby minimizing the potential for adverse impacts.

**Monitoring** - The POTW should institute a monitoring program to evaluate the nature and concentration of discharges. Both POTW monitoring and hauler self-monitoring may be appropriate. Many POTWs require that all loads of hauled waste must be sampled, but analyses are only performed on a predetermined percentage of these wastes or when problems occur. Unanalyzed samples are refrigerated and kept for several weeks or months until the POTW is certain that the waste has not impacted the POTW. The frequency of sampling may also be dependent on the variability of the waste. Each load from a hauler that delivers highly variable loads may have to be sampled and analyzed; whereas, a much smaller percentage may be appropriate for more consistent waste types. As noted earlier, all Federal, State, and local discharge limitations apply to these wastes. The POTW may also consider inspecting the waste generators to confirm the source of these wastes.

**Hauler Documentation** - The POTW should require waste haulers to document the source of wastes being discharged, potentially including manifests. Manifests should include general hauler information, information on the waste generator (e.g., name, address, and phone number), the type of wastes collected, volumes, known or suspected pollutants, and certification that the load is not a hazardous waste. A useful technique is to contact the waste generators to verify the information on the manifest.

**Legal Authority** - If not already in place, the POTW's local ordinance (and approved pretreatment program) should be modified to add language specifying all of the controls that are applicable to waste haulers. This will ensure that waste haulers and POTW personnel will know the procedures, expectations, liabilities, etc. associated with the control program.

In addition to the specific controls described above, POTWs should implement procedures to identify and eliminate illegal discharges. Procedures may include periodic sewer line sampling, surveillance of suspected illegal discharge points, education of industries regarding hauled waste, increased enforcement, and public awareness of illegal dumping.

## CONCERNS

Every hauled waste discharge has the potential to impact the POTW. Unlike discharges from IUs connected to the POTW, the makeup of a load of hauled waste is virtually unknown without some type of monitoring, be it visual or analytical. Even loads of domestic septage can cause problems at a POTW. The majority of waste haulers are reputable business people who provide a valuable service to the public and industry; however, the unique attributes of hauled waste can be devastating when unethical haulers dump incompatible wastes at POTWs. Domestic septage can be partially digested, higher in metals concentrations than normal domestic wastes, or contain small amounts of household contaminants (e.g., cleaners). Similarly, disinfectants used in portable toilets have the potential to impact POTW operations.

Receipt of hauled hazardous waste (as defined in the Resource Conservation and Recovery Act (RCRA)) may not only impact POTW operations, but subject the POTW to additional reporting requirements. The Domestic Sewage Exclusion, specified in 40 CFR §261.4(a)(1)(ii), provides that hazardous wastes mixed with domestic sewage are exempt from the RCRA waste regulations. However, hazardous wastes received by truck or rail (or dedicated pipe) are not exempt from the regulations. POTWs that accept hazardous wastes from these sources are granted “permit by rule” status under RCRA (40 CFR §270.60(c)) provided that certain requirements are met. The two most significant conditions are that the POTW must be in compliance with all of its NPDES permit requirements and the waste must comply with all Federal, State, and local pretreatment requirements. Nationwide, very few POTWs are knowingly accepting hauled hazardous waste.

POTWs should be aware that hauled process wastes from facilities subject to Federal categorical pretreatment standards are still subject to those standards. This condition highlights the need for POTWs to have a clear understanding of the source of the waste since applicable standards may be based on the origin of that waste.

Another potential problematic waste is that from remedial site clean-up operations. Groundwater contaminated with gasoline or diesel fuel is by far the most common type of waste from these operations. While these wastes may contain flammable and toxic compounds (e.g., benzene and toluene), another concern is that large volumes of this waste at a small POTW may actually “flush” the treatment plant, thereby interfering with treatment operations. Similar concerns also exist for landfill leachate, another commonly hauled wastestream. Remedial wastes may also come from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites, also known as Superfund sites. For CERCLA guidance, refer to EPA’s 1990 *CERCLA Site Discharges to POTWs Guidance Manual*.

Other concerns for POTWs that accept hauled wastes include:

- ▶ Illegal dischargers may be discharging toxic pollutants that can pass through or interfere with the POTW operations;
- ▶ Grease trap wastes can coat and inhibit POTW treatment operations;
- ▶ Local limits may not account for pollutants in hauled wastes;
- ▶ Hauled wastes may contain pollutants for which local limits do not exist; thus, the impacts of this waste are not readily identifiable;
- ▶ Hauled wastes may be unmixed and/or highly concentrated.

For further information on the acceptance of hazardous waste at POTWs, refer to the *Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe*.

# 7. POLLUTION PREVENTION

As the nation's environmental laws and regulations have developed over the past three decades, a new paradigm has shifted the approach to waste management. Initially, EPA focused on managing the pollution generated through treatment and disposal in an environmentally safe manner. However, we have learned that conventional treatment and disposal can transfer pollutants from one medium to another with no net reduction.<sup>10</sup> In striving to meet new and often more stringent environmental laws, industries have found ways to reduce or prevent pollution at the source. Recognizing that source reduction is more desirable than treatment and disposal, EPA now emphasizes preventing or eliminating the generation of waste. The Pollution Prevention Act of 1990 (PPA) established pollution prevention (referred to as "P2") as a national objective.

## Chapter 7. Applicable EPA Guidance

Guides to Pollution Prevention: Municipal Pretreatment Program  
NPDES Compliance Inspection Manual

As the nation's environmental laws and regulations have developed over the past three decades, a new paradigm has shifted the approach to waste management. Initially, EPA focused on managing the pollution generated through treatment and disposal in an environmentally safe manner. However, we have learned that conventional treatment and disposal can transfer pollutants from one medium to another with no net reduction.<sup>10</sup> In striving to meet new and often more stringent environmental laws, industries have found ways to reduce or prevent pollution at the source. Recognizing that source reduction is more desirable than treatment and disposal, EPA now emphasizes preventing or eliminating the generation of waste. The Pollution Prevention Act of 1990 (PPA) established pollution prevention (referred to as "P2") as a national objective.

Pollution prevention is indirectly defined in the PPA as source reduction. Source reduction is any practice that reduces or eliminates the creation of pollutants. Thus, the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) is reduced prior to recycling, treatment, or disposal. Source reduction can be achieved through equipment or technology modifications, process or procedural modifications, reformulation or redesign of products, substitution of raw materials, or improvements in housekeeping, maintenance, training, or inventory control.

The PPA established a pollution prevention hierarchy as national policy, declaring that:

- ▶ Pollution should be prevented or reduced at the source.
- ▶ Pollution that cannot be prevented should be recycled in an environmentally safe manner.
- ▶ Pollution that cannot be prevented or recycled should be treated in an environmentally safe manner.
- ▶ Disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

Thus, under the Pollution Prevention Act, recycling, energy recovery, treatment, and disposal are not included within the definition of pollution prevention. However, some practices commonly described as "in-process recycling" may qualify as pollution prevention. Although recycling is not pollution prevention, as indicated in the hierarchy, it is the next desirable practice where pollution cannot be prevented or reduced. Recycling conducted in an environmentally sound manner shares many of the advantages of prevention for it can reduce the need for treatment or disposal and conserve energy and resources.

EPA's Office of Pollution Prevention and Toxic Substances (OPPTS) developed a pollution prevention strategy for incorporating pollution prevention concepts into EPA's ongoing environmental protection efforts. The specific objectives of the strategy are to provide guidance and direction for efforts to incorporate pollution prevention within EPA's existing regulatory and nonregulatory programs, and to set forth an initiative to achieve specific objectives in pollution prevention within a reasonable time frame. EPA's numerous activities include the following:

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<sup>10</sup> **For example, a wet scrubber is used to remove most of the metal emissions to the air. The metals are captured in the scrubber water. This water must be treated to remove the metals prior to discharge. The treatment process produces a sludge that contains most of the metals that were once in the water. The sludge is disposed in a landfill. The metals have been dispersed to the air, water, and land.**

- ▶ Coordinating development of regulations that will help identify the potential for multi-media prevention strategies and that reduce end of pipe compliance costs
- ▶ Examining the use of pollution prevention in enforcement actions and negotiations
- ▶ Investigating the feasibility of overcoming identified regulatory barriers to encourage cost effective(source reduction) strategies
- ▶ Working with State and local governments and trade associations to promote pollution prevention among small and medium size business that often lack the capital to make changes
- ▶ Investing in outside programs, usually States, by providing grant funds for the reduction of target chemicals, the agricultural and transportation industry, etc.
- ▶ Providing scientific and technical knowledge necessary to implement pollution prevention initiatives on a cross media basis, pursuant to the Pollution Prevention Research Strategic Plan.

## POLLUTION PREVENTION AND THE PRETREATMENT PROGRAM

Although pollution prevention is not a required element of the National Pretreatment Program, source reduction is not new to the Program. The Pretreatment Program is designed to prevent toxic pollutants from being discharged to POTWs through controls on the sources that discharge these pollutants. Thus, pollution prevention may be considered an extension of current pretreatment program implementation activities. For example, Pretreatment Programs have the authority to require and enforce waste management practices in order to meet NPDES permit requirements and eliminate interference with treatment facilities. Requiring slug control plans and developing compliance schedules for improved operation and maintenance (O&M) procedures are examples of pollution prevention activities that have long been required by many Control Authorities. Other pretreatment program implementation tools available to make pollution prevention a more integral part of a pretreatment program include:

- ▶ **Inspections** - Pretreatment personnel are usually quite familiar with processes performed at their local industrial facilities and have exposure to a variety of industries performing the same or similar processes; therefore, they can easily disseminate (nonconfidential) information about actual pollution prevention measures implemented as well as identify new P2 opportunities.
- ▶ **Permits** - Where local regulations allow, questions about pollution prevention measures and plans can be made part of the permit application process. Also, a permittee may be required to undergo a pollution prevention assessment and /or develop a pollution prevention plan as a condition of the permit.
- ▶ **Local limits** - POTWs near or above maximum allowable headworks loadings may institute POTW wide-pollution prevention programs to reduce specific pollutants.
- ▶ **Enforcement negotiations** - A pollution prevention audit may be required through a consent or compliance order, or implementation of pollution prevention measures may be required as part of a settlement.

Several Control Authorities have implemented these pollution prevention activities. For example, the City of Palo Alto, CA established a silver local limit for photoprocessors and Best Management Practices (BMPs) for automotive facilities. To reduce mercury loadings from dental offices, Western Lake Superior Sanitary Sewer District (WLSSD) in Duluth, MN developed and implemented pollution prevention BMPs. These and many other POTWs that have successfully integrated pollution prevention into their pretreatment programs have become recognized environmental leaders in their communities.

While pollution prevention activities can be unique to each POTW, the following are key elements of successful pollution prevention programs:

- ▶ **Integrate pollution prevention into existing activities** - POTWs that view pollution prevention as an enhancement (instead of an additional requirement) to their existing pretreatment programs make small modifications to existing pretreatment activities efficiently and effectively.
- ▶ **Start small** - POTWs that slowly phase in new pollution prevention activities overcome impediments such as limited resources and resistance. Implementing small changes gradually can be done with

minimal resources. This approach enables pollution prevention activities to become an accepted integral part of the pretreatment program.

- ▶ **Define attainable goals and measure success** - Short-term, narrowly focused efforts have a greater chance of succeeding. For example, POTWs have targeted a specific pollutant and group of industries, established specific pollution prevention activities, and monitored the progress and success of these activities. With each new success recorded, the benefits of pollution prevention are illustrated and the demand for further activities will grow.
- ▶ **Provide incentives** - Incentives are effective tools for persuading users to investigate pollution prevention opportunities. POTWs have used a wide range of tools such as public recognition of pollution prevention achievements and reduction of regulatory requirements.

## BENEFITS OF POLLUTION PREVENTION

For both IUs and POTWs, pollution prevention has many benefits (Figures 34 and 35) that can be broadly categorized under tangible economic rewards and public goodwill and support. For example, pollution prevention:

- ▶ Creates cost savings
  - ▶ Enhances process efficiency
  - ▶ Avoids or reduces regulatory costs
  - ▶ Reduces future liabilities
  - ▶ Improves protection of worker health
  - ▶ Improves public image.
- Decrease pollutant loadings to water, air, and sludge
  - Decrease pollutant loadings to POTW that result in lower O&M costs and reduces or eliminates need for capital expenditures for POTW treatment plant expansions
  - Enables continued or expanded growth in the community without harm to the environment.

**Figure 34. Benefits of Pollution Prevention to POTWs**

Although the numerous benefits make pursuing pollution prevention attractive, implementation of source reduction in some situations may not be possible. Before implementing a pollution prevention practice, the benefits and barriers of the potential opportunity must be evaluated. Common impediments include the following:

- ▶ Technology
  - Decrease product quality
  - Unable to change raw materials because of currently available technology
- ▶ Financial
  - Incur high costs associated with implementing alternatives (i.e., new equipment or materials, or personnel and training)
  - Loss due to downtime during switch overs and start ups
  - Foreign competitors may have an economic advantage if they are not obligated to comply with US regulations
  - Binding contracts with existing waste haulers and Treatment, Storage and Disposal (TSD) facilities may exist
- ▶ Organizational
  - Lack of or poor communication between persons possessing the knowledge and ideas for improvements and those that can actually implement the changes
  - Limited personnel or internal resources available to investigate and/or make changes
  - Lack of coordination and cooperation among divisions in the corporation
- ▶ Behavioral
  - Alternatives may be considered inconvenient by personnel (e.g., dry sweeping then a wet wash down as opposed to just a wet wash down)

- ▶ Regulatory
  - Concentrating a pollutant for recycling may classify it as a hazardous waste (e.g., silver). As such, an industrial user may choose to discharge the pollutant rather than be subject to regulations regarding the handling, treatment and disposal of a hazardous waste.

## POLLUTION PREVENTION ASSISTANCE

With the creation of the PPA came an abundance of pollution prevention related assistance. This includes direct technical assistance, training courses, and a variety of publications. POTWs can find further information on integrating pollution prevention into their pretreatment programs in EPA's 1993 *Guides to Pollution Prevention - Municipal Pretreatment Programs*. Specific industry trade associations and university technology transfer and outreach departments usually are aware of pollution prevention assistance materials, specific pollution prevention opportunities, and the costs and success of implementing these. Some further sources that disseminate pollution prevention information include:

- ▶ **Pollution Prevention Information Clearinghouse (PPIC)** - a free, nonregulatory clearinghouse available to the public which focuses on source reduction and recycling for industrial toxic wastes.
- ▶ **State Programs** - provide technical assistance to conduct pollution prevention assessments, develop guidance manuals on conducting these assessments, actually conduct these assessments, provide assistance in developing POTW-wide pollution prevention plans, provide training for industry, State and POTW personnel, and offer grants for pollution prevention projects.
- ▶ **Envirosense** - an on-line computer system (*internet address: [es.inel.gov](http://es.inel.gov)*) of summary information for PPIC documents, includes pollution prevention news, upcoming events, and mini-exchanges (discrete pollution prevention topic areas, pollution prevention databases, and message center).
- ▶ **National Institute of Standards and Technology (NIST)** - an office of the Department of Commerce, NIST develops technology to improve product quality, modernize manufacturing processes, ensure product reliability, and facilitate rapid commercialization of products based on new scientific discoveries. NIST web sites for different industry sectors are available. For example, the metal finishing web site (i.e., the National Metal Finishing Resource Center) is found at "[www.nmfrc.org](http://www.nmfrc.org)."

- Regulatory
  - Elimination of regulated wastewater discharges, and hence, monitoring requirements
  - Reduced paperwork requirements for waste hauling and treatment
  - Compliance with RCRA reports on waste reduction (i.e., companies generating RCRA wastes are required to certify that they have a program to reduce the volume and toxicity of hazardous waste generated)
  - Compliance with land disposal restrictions and bans
- Environmental
  - Minimization of material emissions to all media resulting in reduced health risks to workers and the community
- Financial
  - Reduced landfill and treatment costs due to less waste being generated (includes reduced transportation costs as well)
  - Reduced raw material and manufacturing costs (e.g., by preventing spills or leaks, improving equipment maintenance and inventory control techniques, reuse, etc. raw materials are handled more efficiently and do not have the chance to become waste. With a greater percentage of raw material going into process, raw material use goes down in relation to volume of product produced)
  - Increased manufacturing efficiency and productivity and improved product quality with fewer offspec products
- Compliance and public relations
  - Achieving compliance with local limits and categorical standards
  - Reducing waste and implementing best management practices can improve public and community relations.

Figure 35. Benefits of Pollution Prevention to IUs

## 8. BIBLIOGRAPHY

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Control of Slug Loadings To POTWs: Guidance Manual	February 1991	21W-4001	--	--
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