

U.S. Environmental Protection Agency

Introduction to the National Pretreatment Program



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Among other things, the document describes existing requirements with respect to industrial dischargers and publicly owned treatment works (POTWs) under the CWA and its implementing regulations at Title 40 of the *Code of Federal Regulations*, Parts 122, 123, 124, and 403 and chapter I, subchapter N. Although EPA has made every effort to ensure the accuracy of the discussion in this document, a discharger's obligations are determined, in the case of directly discharging POTWs, by the terms of its National Pollutant Discharge Elimination System permit and EPA's regulations or, in the case of indirect dischargers, by permits or equivalent control mechanisms issued to POTW industrial users or by regulatory requirements. Nothing in this document changes any statutory or regulatory requirement. If a conflict arises between this document's content and any permit or regulation, the permit or regulation would be controlling. EPA and local decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this document where appropriate and authorized by EPA regulations, state law, or local ordinances.

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PREFACE

The industrialization of the United States brought with it a level of pollution never before seen in the country. By the 1960s scenes of dying fish and burning rivers were repeated regularly on the evening news. In response to such critical environmental problems, in December 1970 the President of the United States created the U.S. Environmental Protection Agency (EPA) by executive order.

In 1972 Congress passed the Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), to restore and maintain the integrity of the nation's waters. The goals of the CWA are to eliminate the introduction of pollutants into the nation's navigable waters and to achieve fishable and swimmable water quality levels. The CWA's National Pollutant Discharge Elimination System (NPDES) Permit Program represents one of the key components established to accomplish the goals of the CWA. The NPDES Permit Program generally requires that point source discharges of pollutants to waters of the United States, i.e., *direct dischargers*, obtain an NPDES permit.¹ The CWA also established substantial penalty authority for noncompliance with NPDES permits.

In addition to addressing these direct discharges, the CWA also established a regulatory program to address *indirect discharges* from industries to publicly owned treatment works (POTWs) through the National Pretreatment Program, a component of the NPDES Permit Program. The National Pretreatment Program requires industrial and commercial dischargers, called *industrial users* (IUs), to obtain permits or other control mechanisms to discharge wastewater to the POTW. Such a permit may specify the effluent quality that necessitates that an IU pretreat or otherwise control pollutants in its wastewater before discharging it to a POTW.

Certain industrial discharge practices can interfere with the operation of POTWs, leading to the discharge of untreated or inadequately treated wastewater into rivers, lakes, and other waters of the United States. A discharge that causes *interference* inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal and therefore causes a violation of any requirement of the POTW's NPDES permit. Some pollutants are not amenable to biological wastewater treatment at POTWs and can pass through the treatment plant untreated. This *pass through* of pollutants affects the receiving water and might cause fish kills or other deleterious effects. Even when a POTW has the capability to remove toxic pollutants from wastewater, the pollutants can end up in the POTW's sewage sludge, which might then be processed into a fertilizer or soil conditioner that is land-applied to food crops, parks, or golf courses or elsewhere.

The General Pretreatment Regulations of the National Pretreatment Program require all large POTWs (those designed to treat flows of more than 5 million gallons per day) and smaller POTWs (that accept wastewater from IUs that could affect the treatment plant or its 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. Approximately 1,600 POTWs have developed and are implementing local pretreatment programs designed to control discharges from approximately 23,000 significant IUs.

Since the promulgation of the General Pretreatment Regulations in 1983, the National Pretreatment Program has made great strides in reducing the introduction of toxic pollutants to sewer systems and to waters of the United States. In the eyes of many, the National Pretreatment Program—implemented as a partnership between EPA, states, and POTWs—is a notable success among efforts to

¹ Some point sources, however, are not required to obtain NPDES permits; see Title 40 of the *Code of Federal Regulations* (CFR), section 122.3, Exclusions.

reduce the effects of pollution on human health and the environment. Such 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 National Pretreatment Program.

EPA has supported the National Pretreatment Program by developing numerous guidance manuals. In fact, it has released more than 40 manuals providing guidance to EPA, states, POTWs, and industry on various National Pretreatment Program requirements and policy determinations. Through such guidance, the National Pretreatment Program has maintained national consistency in interpreting the regulations.

Nonetheless, turnover in National Pretreatment Program staff has diluted historical knowledge, and new staff and other interested parties might be unfamiliar with existing guidance materials. With this in mind, the intent of this guidance manual, ***Introduction to the National Pretreatment Program***, is to

- ▲ Provide a reference for anyone interested in understanding the basics of National Pretreatment Program requirements
- ▲ Provide a road map to additional and more detailed guidance materials for those trying to implement specific elements of the National Pretreatment Program.

This guidance manual is intended to explain the basic concepts that shape the National Pretreatment Program, discuss the current status of the program and program guidance, and serve as a tool for pretreatment program implementation.

The manual is organized to provide an overview of program requirements and to refer the reader to more detailed EPA guidance on specific program elements. To help the reader, the first page of each chapter contains a list of EPA references applicable to the topics discussed in that chapter. Electronic versions of the documents listed are available through EPA's website at <http://www.epa.gov/npdes/pretreatment>.

ACRONYMS AND ABBREVIATIONS

AHL	Allowable Headworks Loading
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
BMR	Baseline Monitoring Report
BOD	Biochemical Oxygen Demand
BOD ₅	5-day Biochemical Oxygen Demand
BPT	Best Practicable Control Technology Currently Available
CDX	Central Data Exchange
CFR	<i>Code of Federal Regulations</i>
CIU	Categorical Industrial User
CROMERR	Cross-Media Electronic Reporting Rule
CSO	Combined Sewer Overflow
CWA	Clean Water Act
CWF	Combined Wastestream Formula
ELG	Effluent Limitations Guideline
EPA	[U.S.] Environmental Protection Agency
ERG	Enforcement Response Guide
ERP	Enforcement Response Plan
FDF	Fundamentally Different Factors
FOG	Fats, Oils, and Grease
FR	<i>Federal Register</i>
FWA	Flow-Weighted Average
gpd	Gallons per Day
IU	Industrial User
IWS	Industrial Waste Survey
MAHL	Maximum Allowable Headworks Loading
MAIL	Maximum Allowable Industrial Loading
mg/L	Milligrams per Liter
mgd	Million Gallons per Day
MTCIU	Middle-Tier Categorical Industrial User
NAICS	North American Industry Classification System (replaced Standard Industrial Classification [SIC] system)
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NSCIU	Nonsignificant Categorical Industrial User
NSPS	New Source Performance Standard
OPPT	Office of Pollution Prevention and Toxics (EPA)
P2	Pollution Prevention

PCBs	Polychlorinated Biphenyls
POTW	Publicly Owned Treatment Works
PPA	Pollution Prevention Act of 1990
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
RCRA	Resource Conservation and Recovery Act
SIC	Standard Industrial Classification (replaced by NAICS)
SIU	Significant Industrial User
SNC	Significant Noncompliance
SUO	Sewer Use Ordinance
TOMP	Toxic Organic Management Program
TRE	Toxicity Reduction Evaluation
TRC	Technical Review Criteria
TSS	Total Suspended Solids
TTO	Total Toxic Organics
U.S.C.	<i>United States Code</i>
WQS	Water Quality Standard
WET	Whole Effluent Toxicity

GLOSSARY OF TERMS

This glossary defines and explains each term used in this manual. To the extent that the definitions and explanations provided in this glossary differ from those in EPA regulations or other official documents, the definitions used in this glossary 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 (CWA), as amended, Title 33 of the *United States Code* (U.S.C.), sections 1251 *et seq.*

Allowable Headworks Loading (AHL)

The estimated maximum loading of a pollutant that can be received at a POTW’s headworks and not cause a POTW to violate a particular treatment plant or environmental criterion. AHLs are developed to prevent interference or pass through.

Approval Authority [40 CFR 403.3(c)]

The director in an NPDES Authorized State with an approved state pretreatment program, or the appropriate EPA regional administrator in a non-NPDES Authorized State or NPDES state without an approved state 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 that 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 that has been approved by a regional administrator.

Approved/Authorized state

A state with an NPDES permit program approved pursuant to CWA section 402(b) 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 pretreatment standard—or at least 90 days before beginning discharge for new sources—that 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 pretreatment standards.

Best Available Technology Economically Achievable (BAT)

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

Best Management Practice (BMP) [40 CFR 403.3(e)]

A schedule of activities, prohibition of practices, maintenance procedures, and other management practices to implement the prohibitions listed in 40 CFR 403.5(a)(1) and (b). 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 materials storage.

Best Practicable Control Technology Currently Available (BPT)

A level of technology represented by, typically, the average of the best practicable wastewater treatment performance levels currently available within a given industrial category or subcategory.

Biochemical Oxygen Demand (5-day) (BOD₅)

An indirect measure of the concentration of biologically degradable material present in organic wastes. It reflects the amount of oxygen consumed in 5 days by biological processes breaking down organic waste.

Blowdown

The discharge of water with high concentrations of accumulated solids from boilers to prevent plugging of the boiler tubes 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 [paraphrased from 40 CFR 403.6]

Standards specifying the quantity, concentration, or pollutant properties of pollutants that may be discharged to POTWs. EPA promulgates pretreatment standards for specific industry categories in accordance with CWA section 307. These standards are codified in 40 CFR chapter I, subchapter N, Parts 405–471.

Chronic effect

An adverse effect on a human or animal in which symptoms recur frequently or develop slowly over a long period.

Chronic exposure

Multiple exposures occurring over an extended period or over a significant fraction of an animal's or human's lifetime (usually 7 years to a lifetime).

Chronic toxicity

The capacity of a substance to cause long-term poisonous health effects in humans, animals, fish, and other organisms.

Clean Water Act (CWA)

The common name for the Federal Water Pollution Control Act. Public Law 92-500; 33 U.S.C. section 1251 *et seq.*; the statutory authority for both the NPDES Permit Program and the National Pretreatment Program.

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 before the headworks of a POTW. Because combined systems receive both storm event drainage (from rainfall or snowmelt, and street runoff) and untreated sewage, CSOs generally occur during wet weather when

the systems can become overloaded, resulting in bypassing of the 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 wastestream regulated by a categorical pretreatment standard is combined before treatment with wastestreams other than those subject to the standard.

Compliance schedule

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

Composite sample

A series of water samples taken over a given period of time and weighted by flow rate.

Concentration-based limit

A limit based on the relative strength of a pollutant in a wastestream, usually expressed in milligrams per liter (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 403.3(f)]*

The POTW, in the case of a POTW with an approved pretreatment program, or the Approval Authority, in the case of a POTW without an approved pretreatment program.

Conventional pollutants *[40 CFR 401.16]*

Pollutants typical of municipal sewage, and for which municipal secondary treatment plants are typically designed. EPA has, pursuant to section 304(a) of the CWA, identified BOD₅, total suspended solids (TSS), fecal coliform bacteria, oil and grease, and pH as conventional pollutants.

Daily maximum limitation

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 99 percent 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

A document that EPA prepares while developing effluent limitations guidelines and pretreatment standards. It explains the data and methodology used to establish effluent limitations and categorical pretreatment standards for an industrial category.

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

Used in calculating alternative standards for purposes of the combined wastestream formula, this wastestream is composed of the average daily flow (at least a 30-day average) from the following: (a)

boiler blowdown streams, noncontact cooling streams, stormwater streams, and demineralized backwash streams; provided, however, that where such streams contain a significant amount of a pollutant, and the combination of such streams, before treatment, with an industrial user's (IU's) regulated process wastestream(s) will result in a substantial reduction of the concentration of that pollutant, the Control Authority, upon application of the IU, 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 IU 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) any process wastestreams that were, or could have been, entirely exempted from categorical pretreatment standards pursuant to paragraph 8 of the *NRDC v. Costle* consent decree (12 ERC 1833) for one or more of the following reasons (see 40 CFR Part 403, appendix D):

- ▲ The pollutants of concern are not detectable in the effluent from the IU [paragraph (8)(a)(iii)].
- ▲ The pollutants of concern are present only in trace amounts and are neither causing nor likely to cause toxic effects [paragraph (8)(a)(iii)].
- ▲ The pollutants of concern are present in amounts too small to be effectively reduced by technologies known to the Administrator [paragraph (8)(a)(iii)].
- ▲ The wastestream contains only pollutants that are compatible with the POTW [paragraph (8)(b)(I)].

Direct discharger

A point source that discharges a pollutant(s) to waters of the United States, such as streams, lakes, or oceans. These sources are subject to the National Pollutant Discharge Elimination System program regulations. Municipal and industrial facilities that introduce pollution through a defined conveyance or system such as outlet pipes are direct dischargers.

Effluent Limitations Guideline (ELG)

Any effluent limitations regulation issued by EPA pursuant to CWA section 304(b). 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 that are discharged from point sources, in specific industrial categories (e.g., metal finishing, metal molding and casting). ELGs are sometimes referred to as effluent guidelines.

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

One of the key components of an approved POTW pretreatment program; includes step-by-step enforcement procedures developed and followed by POTW personnel to identify, document, and respond to violations by IUs.

Existing source

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

Federal Water Pollution Control Act (FWPCA)

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

Flow-proportional composite sample

A sample consisting of a series of aliquots (equal portions of the sample) in which each aliquot is collected after the passage of a defined volume of discharge.

Flow-Weighted Average Formula (FWA) *[paraphrased from 51FR21461]*

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

Fundamentally Different Factors (FDF) *[paraphrased from 40 CFR 403.13]*

Case-by-case variance from categorical pretreatment standards where the conditions at a specific IU are fundamentally different from the factors considered by EPA in developing the applicable category/subcategory standard.

General prohibitions *[40 CFR 403.5(a)(1)]*

Prohibitions that apply to each IU introducing pollutants into a POTW whether or not the IU is subject to other national pretreatment standards or any national, state, or local pretreatment requirements:

- ▲ No IU may introduce into a POTW any pollutant(s) that cause pass through or interference.
- ▲ An IU may have an affirmative defense in any action brought against it alleging a violation of the general or specific prohibitions where the IU can demonstrate that:
 - It did not know or 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
 - A local limit designed to prevent pass through or interference (or both) was developed for each pollutant in the IU's discharge that caused pass through or interference, and the IU was in compliance with each such local limit directly before and during the pass through or interference; or
 - If a local limit designed to prevent pass through or interference or both has not been developed for the pollutant(s) that caused the pass through or interference, the IU's discharge directly before and during the pass through or interference did not change substantially in nature or constituents from the IU's prior discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and, in the case of interference, applicable requirements for sewage sludge use or disposal.

Grab sample

A sample that is taken from a wastestream on a one-time basis with no regard to the flow of the wastestream. A single grab sample should be taken over a period not to exceed 15 minutes.

Headworks

The point at which wastewater enters a wastewater treatment plant. The headworks may consist of bar screens, comminuters, a wet well, or pumps.

Indirect discharge or discharge *[40 CFR 403.3(i)]*

The introduction of pollutants into a POTW from any nondomestic source regulated under CWA section 307(b), (c), or (d).

Industrial user (IU) or user *[40 CFR 403.3(j)]*

A source of indirect discharge.

Industrial Waste Survey (IWS)

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

Inhibition

Event that occurs when pollutant levels in a POTW's wastewater or sludge cause operational problems for biological treatment processes involving secondary or tertiary wastewater treatment and alter the POTW's ability to adequately remove BOD, TSS, and other pollutants.

Injunction

An order to a party to affirmatively perform, or to refrain from performing, some designated action. The federal environmental laws also empower EPA to issue administrative orders that require a regulated entity to perform, or refrain from performing, some designated action, and to come into, and maintain, compliance with those environmental laws.

Injunctive relief

Generally, action ordered of a defendant by a federal district court judge. This relief may be ordered either as a term of an order consented to by the parties in a lawsuit (where the parties file a "consent decree") or after a contested trial before the judge.

Interference *[paraphrased from 40 CFR 403.3(k)]*

A discharge that, 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 *[40 CFR 403.5(c)]*

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

Maximum Allowable Headworks Loading (MAHL)

The estimated maximum loading of a pollutant that can be received at a POTW's headworks without causing pass through or interference. The most protective (lowest) of the allowable headworks loadings (see definition) estimated for a pollutant.

Maximum Allowable Industrial Loading (MAIL)

The estimated maximum loading of a pollutant that can be received at a POTW's headworks from all permitted IUs and other controlled sources without causing pass through or interference. The MAIL is usually calculated by applying a safety factor to the MAHL and discounting for uncontrolled sources, hauled waste, and growth allowance.

Middle-Tier Categorical Industrial User (MTCIU) *[40 CFR 403.12(e)(3)(i)-(iii)]*

A classification that a Control Authority may apply to certain IUs, if their discharge of categorical wastewater does not exceed any of the following:

- ▲ 10.01 percent of the design dry-weather hydraulic capacity of the POTW, or 5,000 gallons per day (gpd), whichever is smaller, as measured by a continuous effluent flow monitoring device unless the IU discharges in batches
- ▲ 0.01 percent of the design dry-weather organic treatment capacity of the POTW

- ▲ 30.01 percent of the MAHL for any pollutant for which approved local limits were developed by a POTW.

The CA must also demonstrate that the CIU has not been in significant noncompliance for any time in the past two years, and that the CIU does not have daily flow rates, production levels, or pollutant levels that vary so significantly that decreasing the reporting requirement for the IU would result in data that are not representative of conditions occurring during the reporting period.

Monthly average

The arithmetic average value of all daily results for a calendar month for an individual pollutant parameter. Historically, EPA has considered a 30-day average to mean a monthly average.

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 CWA sections 307, 402, 318, and 405.

National pretreatment standard or pretreatment standard or standard [40 CFR 403.3(l)]

Any regulation containing pollutant discharge limits promulgated by EPA in accordance with CWA section 307(b) and (c) that applies to IUs. This term includes prohibitive discharge limits established pursuant to 40 CFR 403.5.

New source [40 CFR 403.3(m)]

Any building, structure, facility or installation from which there is or could be a discharge of pollutants, the construction of which began after the publication of proposed pretreatment standards under CWA section 307(c) that will be applicable to such source if such standards are thereafter promulgated in accordance with that section *provided that any of the following are true:*

- ▲ The building, structure, facility or installation is constructed at a site at which no other discharge source is located.
- ▲ The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source.
- ▲ 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 (m)(1)(ii), or (m)(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 begun, or caused to begin as part of a continuous onsite construction program:
- ▲ Any placement, assembly, or installation of facilities or equipment; or

- ▲ Significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities that is necessary for the placement, assembly, or installation of new source facilities or equipment; or
- ▲ Entered into a binding contractual obligation for the purchase of facilities or equipment that are intended to be used in its operation within a reasonable time. Options to purchase or contracts that 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.

Ninety-day final compliance report [*paraphrased from 40 CFR 403.12(d)*]

A report submitted by CIUs within 90 days following the date for final compliance with applicable categorical standards. The 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 pollutant

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

Noncontact cooling water

Water used for cooling that 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).

Nonsignificant Categorical Industrial User (NSCIU) [*40 CFR 403.3(v)(2)*]

An IU subject to categorical pretreatment standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N, that the POTW has determined is exempt from the definition of SIU on a finding that the IU never discharges more than 100 gpd of total categorical wastewater (excluding sanitary, noncontact cooling and boiler blowdown wastewater, unless specifically included in the pretreatment standard). The IU must also meet the following conditions:

- ▲ The IU, before the POTW's finding, has consistently complied with all applicable categorical pretreatment standards and requirements.
- ▲ The IU annually submits the certification statement required in 40 CFR 403.12(q) together with any additional information necessary to support the certification statement.
- ▲ The IU never discharges any untreated concentrated wastewater.

North American Industry Classification System (NAICS)

A system developed by the U.S. Office of Management and Budget (in cooperation with Statistics Canada and Mexico's *Instituto Nacional de Estadística, Geografía e Informática*) that is used to classify business establishments. NAICS replaced the Standard Industrial Classification (SIC) system in 1998.

Pass through [*40 CFR 403.3(p)*]

A discharge that exits the POTW into waters of the United States in quantities or concentrations that, 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 CIUs and significant non-CIUs to the POTW at least semiannually (once every 6 months). For middle-tier categorical industrial users, the POTW may reduce the requirement to report to no less frequently than once a year, unless required more frequently in the pretreatment standard or by the Approval Authority. A facility determined to be an NSCIU must annually submit a certification statement in addition to any other alternative report required by the POTW.

Point source *[40 CFR 122.2]*

Any discernible, confined, and discrete conveyance, including any pipe, ditch, channel, tunnel, conduit, well, discrete fixture, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or could 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. section 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(s)]*

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

Pretreatment requirements *[40 CFR 403.3(t)]*

Any substantive or procedural requirement related to pretreatment, other than a national pretreatment standard, imposed on an IU.

Pretreatment Standards for Existing Sources (PSES)

Categorical standards and requirements applicable to industrial sources that began construction before the publication of the proposed pretreatment standards for that industrial category (see individual standards at 40 CFR Parts 405–471) or on a date specifically provided in promulgation of the pretreatment standard.

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) or on a date specifically provided in promulgation of the pretreatment standard.

Process wastewater

Any water that, 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. For example, 40 CFR Part 467, Aluminum Forming, standards are in milligrams per kilograms of work piece removed during production. Other production-based categories express limits in milligrams per kilograms of material processed.

Publicly Owned Treatment Works (POTW) [40 CFR 403.3(q)]

A treatment works (as defined by CWA section 212) that is owned by a state or municipality [as defined by CWA section 502(4)]. 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 CWA section 502(4)] that 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 for an IU from the otherwise applicable categorical pretreatment standard that reflects the POTW's removal of that 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 is 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 measure compliance with a permit or other regulatory requirements.

Sewage sludge [40 CFR 122.2]

Any solid, semisolid, or liquid residue removed during the treatment of municipal wastewater or domestic sewage. Sewage sludge includes solids removed during primary, secondary, or advanced wastewater treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 CFR part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge. Also referred to as *biosolids*.

Sewer Use Ordinance (SUO)

A legal mechanism implemented by a local government entity that establishes requirements for the discharge of pollutants into a POTW.

Significant Industrial User (SIU) [40 CFR 403.3(v)]

(1) All users subject to categorical pretreatment standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N, except those designated as NSCIUs (see definition above); and (2) any other IU that discharges an average of 25,000 gpd or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blowdown wastewater); contributes a process wastestream that 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 POTW on the basis that the IU 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)(viii)]

IU violations that meet one or more of the following criteria:

- ⬆ Chronic violations of wastewater discharge limits, defined here as those in which 66 percent or more of all the measurements for each pollutant parameter taken during a 6-month period exceed (by any magnitude) a numeric pretreatment standard or requirement, including instantaneous limits, as defined by 40 CFR 403.3(l)
- ⬆ Technical Review Criteria (TRC) violations, defined here as those in which 33 percent or more of all the measurements for each pollutant parameter taken during a 6-month period equal or exceed the product of the numeric pretreatment standard or requirement including instantaneous limits, as defined by 40 CFR 403.3(l) multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil, and grease and 1.2 for all other pollutants except pH)
- ⬆ Any other violation of a pretreatment standard or requirement as defined by 40 CFR 403.3(l) (daily maximum, long-term average, instantaneous limit, or narrative standard) that the POTW 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)
- ⬆ 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 40 CFR 403.8 to halt or prevent such a discharge
- ⬆ 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
- ⬆ Failure to provide, within 45 days² 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
- ⬆ Failure to accurately report noncompliance
- ⬆ Any other violation or group of violations, which can include a violation of best management practices, that the POTW determines will adversely affect the operation or implementation of the local pretreatment program.

Slug discharge [40 CFR 403.8(f)(2)(vi)]

Any discharge of a nonroutine, episodic nature, including an accidental spill or a noncustomary batch discharge that has a reasonable potential to cause interference or pass through, or in any other way violate the POTW's regulations, local limits, or permit conditions.

Specific prohibitions [40 CFR 403.5(b)]

Prohibitions that apply to each IU introducing pollutants into a POTW regardless of whether the IU is subject to other national pretreatment standards or any national, state, or local pretreatment requirements. The following pollutants must not be introduced into a POTW:

- ⬆ Pollutants that create a fire or explosion hazard in the POTW, including wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit (°F) or 60 degrees Celcius (°C) using the test methods specified in 40 CFR 261.21
- ⬆ Pollutants that will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges

² The Streamlining Rule changed the timeframe to 45 days. Many POTWs have elected to maintain the previous, more stringent requirement that reports submitted more than 30 days late are considered to be in significant noncompliance.

- ▲ Solid or viscous pollutants in amounts that will cause obstruction to the flow in the POTW resulting in interference
- ▲ Any pollutant, including oxygen-demanding pollutants (BOD and the like) released in a discharge at a flow rate or concentration that will cause interference with the POTW
- ▲ Heat in amounts that 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 104 °F (40 °C) unless the Approval Authority, at the POTW's request, approves alternative temperature limits
- ▲ Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through
- ▲ Pollutants that result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that could cause acute worker health and safety problems
- ▲ 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. In 1998 the North American Industry Classification System (NAICS) replaced the SIC.

Stormwater

Rainwater, snowmelt, and surface runoff and drainage.

Time-proportional composite sample

A sample consisting of a series of aliquots collected after the passage of a definite period, regardless of the volume or variability of the rate of flow during that period.

Toxic pollutant

Pollutant listed by the EPA Administrator under CWA section 307(a). The list of the current 126 toxic pollutants can be found at <http://water.epa.gov/scitech/methods/cwa/pollutants.cfm>.

Toxicity Reduction Evaluation (TRE)

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 from a specific chemical or effluent.

Unregulated wastestream

For purposes of applying the combined wastestream formula, a wastestream not regulated by a categorical standard and not considered a dilute wastestream.

Upset [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 IU. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

Water quality criteria

Elements of state water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. When criteria are met, water quality will generally protect the designated use.

Water Quality Standard (WQS)

Provisions of state or federal law that consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water, and serve the purposes of the Clean Water Act.

Whole Effluent Toxicity (WET)

The aggregate toxic effect of an effluent measured directly by a toxicity test.

CHAPTER 1.

POTWS AND THE NEED FOR THE PRETREATMENT PROGRAM

Chapter 1. Applicable EPA References

Environmental Regulations and Technology: The National Pretreatment Program (EPA/625/10-86/005)

EPA's National Pretreatment Program, 1973-2003: Thirty Years of Protecting the Environment
(EPA 833-F-03-001)

National Pretreatment Program: Report to Congress (EPA 21W-4004)

Report to Congress on the Discharge of Hazardous Wastes to POTWs (EPA 530-SW-86-004)

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(s). Collection systems can flow entirely by gravity or can include lift stations, which pump the wastewater via a force main to a higher elevation from which the wastewater can then continue by gravity. Ultimately, the collection system delivers this sewage to the treatment plant. The treatment plant then removes harmful organisms and other contaminants from the sewage so the wastewater can be discharged safely into a receiving stream. Without treatment, sewage creates bad odors; contaminates rivers, lakes, and water supplies; and spreads disease. There are more than 16,000 sewage treatment plants in the United States treating more than 32 billion gallons per day of wastewater.³ There are approximately 1,600 POTWs that have approved pretreatment programs, and there are 20,630 significant industrial users (SIUs) discharging to those POTWs. Many of the POTWs manage more than one sewage treatment plant. Some states and EPA Regions oversee indirect discharging SIUs rather than requiring the POTW to develop a pretreatment program. The number of indirect discharging SIUs that EPA and states oversee directly is 2,197. Therefore, a total of 22,827 SIUs are discharging to sewage treatment plants in the United States.⁴

Generally, POTWs are designed to treat only domestic sewage. The typical POTW treatment process consists of primary and secondary treatment, disinfection (to kill any remaining pathogens), and 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 by 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 can perform advanced treatment operations, such as nitrification (to convert ammonia and nitrite to the less-toxic nitrate form of nitrogen), denitrification (to convert nitrate to molecular nitrogen), and physical-chemical treatment (to remove dissolved metals and organics). After treatment is complete, effluent is discharged to a receiving stream, typically a creek, river, lake, estuary, or ocean. Some POTWs might apply treated

³ U.S. Environmental Protection Agency, *Clean Water Needs Survey 2008 Report to Congress* (2008).

⁴ Permit Compliance System and Integrated Compliance Information System data reported by EPA regions for 2010.

effluent directly to golf courses, parkland, or croplands. Industrial users (IUs) are increasingly implementing measures to reuse effluent. For example, effluent can be used as makeup water in cooling towers and boilers.

Both primary and secondary treatment processes generate waste solids, known as sewage sludge or biosolids. Sludge from the treatment process can be used as fertilizer or soil conditioner, disposed of in a landfill, or incinerated in a sewage sludge incinerator with the ash disposed of in a landfill.

As described earlier, POTWs are designed to treat typical household waste, biodegradable commercial waste, and biodegradable industrial waste. The regulations at Title 40 of the *Code of Federal Regulations* (CFR), section 401.16, define five contaminants as *conventional pollutants*. These conventional pollutants, identified in figure 1-1, include the specific pollutants that are expected to be present in domestic discharges to POTWs. Commercial and industrial facilities may, however, discharge *toxic or non-conventional pollutants* that the treatment plant is neither designed for nor able to remove.

Biochemical Oxygen Demand (BOD)
Total Suspended Solids (TSS)
Fecal Coliform
pH
Oil and Grease (O&G)

Figure 1-1. Conventional pollutants.

NEED FOR THE PRETREATMENT PROGRAM

As noted earlier, POTWs are not designed to treat most toxic or non-conventional pollutants that are present in industrial waste. Consequently, discharges from both industrial and commercial sources can cause problems at POTWs and can have detrimental effects on the water quality of the receiving waterbody. The undesirable effects of those discharges can be prevented by using treatment techniques or management practices to reduce or eliminate the discharge of the contaminants. The act of treating wastewater before discharge to a POTW is commonly referred to as *pretreatment*. The National Pretreatment Program, published in 40 CFR Part 403, provides the regulatory basis to require nondomestic dischargers to comply with pretreatment standards to ensure that the goals of the Clean Water Act (CWA) are attained. The objectives of the National Pretreatment Program are stated in 40 CFR 403.2, as follows:

- ▲ Prevent the introduction of pollutants into a POTW that will interfere with the operation of the POTW, including interference with its use or disposal of municipal sludge
- ▲ Prevent the introduction of pollutants into a POTW that will pass through the treatment works or otherwise be incompatible with such works
- ▲ 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 40 CFR 403.3(k) and (p):

Interference: A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- ▲ Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal, and
- ▲ 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 the following statutory provisions and regulations or permits issued thereunder (or more stringent state or local regulations):

CWA section 405; the Solid Waste Disposal Act (including the Resource Conservation and Recovery Act and state regulations contained in any state sludge management plan prepared pursuant to subtitle D of the Solid Waste Disposal Act); the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research and Sanctuaries Act.

Pass Through: A discharge that 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).

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

Even where the POTW has the capability to remove the toxic pollutants, the toxic pollutants can end up in the sewage sludge, thereby limiting sludge disposal options or increasing the cost of disposal. Incinerating contaminated sludge can release toxic emissions into the atmosphere. Toxic metals removed in primary treatment can affect the efficiency of sludge digestion, a process that uses bacteria to stabilize sludge solids. For example, chromium can inhibit reproduction of aerobic digestion microorganisms, thereby disrupting sludge treatment and producing sludge 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 land. Many municipalities apply treated sewage sludge to pastureland or parkland; that would not be an option if the sludge were contaminated.

Gases or vapors from volatile organics discharged to sewer systems can accumulate in the head space of sewers, increasing the likelihood of explosions that could cause significant damage. Probably the most well-known adverse effect from industrial discharges to POTWs in the United States is the explosion in Louisville, Kentucky, that occurred in 1981. The explosion was a result of excessive discharges of hexane into the collection system. The hexane in the pipes eventually ignited and destroyed more than 3 miles of sewers and roadways, causing \$20 million in damage. Discharge limitations and management practices to control slug discharges have significantly reduced the likelihood of future catastrophes like that explosion.

Discharges of toxic organics can also result in the release of poisonous gas. That 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. Such gases can be highly dangerous to POTW collection system operators as they perform their duties. Other problems associated with toxic discharges (summarized in figure 1-2) further document the urgency of keeping toxics out of collection systems and POTWs.

- ❖ **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 systems and treatment plants can be caused by 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 1-2. Other problems associated with toxic nondomestic discharges.

The National Pretreatment Program's strategic partnerships go beyond ensuring the success of POTWs. Such partnerships promote the following:

- ▲ Protecting drinking water supplies by reducing contaminants released into source waters by POTWs
- ▲ Preventing overflows that include raw sewage from sewers through controls on oil and grease
- ▲ Extending the life of the nation's wastewater infrastructure through EPA's Four Pillars of Sustainable Infrastructure Initiative. EPA believes that better management practices, efficient water use, full-cost pricing of water, and a watershed approach to environmental management can all help utilities to operate more sustainably now and in the long term.
- ▲ Worker safety by protecting workers from harmful fumes through limits on discharging dangerous gases and gas-forming substances
- ▲ Homeland security by ensuring proper disposal of waste from decontamination showers.⁵

The National Pretreatment Program is charged with controlling toxic, conventional, and non-conventional pollutants from nondomestic sources that discharge into sewer systems, as described in CWA section 307(a). The list of pollutants appears in the *Code of Federal Regulations* at 40 CFR 401.15. It is an important starting point for EPA to consider, for example, in developing national discharge standards (such as effluent guidelines) or in national permitting programs (such as NPDES). The list contains 65 entries; many entries, such as *haloethers*, are for groups of pollutants.

The Priority Pollutant list makes the list of toxic pollutants more usable, in a practical way, for the purposes assigned to EPA by the CWA. For example, the Priority Pollutant list is more practical than the list of toxic pollutants for testing and for regulation in that chemicals are described by their individual chemical names. The list of toxic pollutants, in contrast, contains open-ended groups of pollutants, such as *chlorinated benzenes*. That group contains hundreds of compounds; there is no test for the group as a whole, nor is it practical to regulate or test for all the compounds. The Priority Pollutants are a set of chemical pollutants that EPA regulates and for which EPA has published analytical test methods. These pollutants fall into two categories:

- ▲ Metals—including lead, mercury, chromium, and cadmium—cannot be destroyed or broken down through treatment or environmental degradation. Toxic metals can cause a number of human health problems, such as lead poisoning and cancer. In addition, the consumption of contaminated seafood and agricultural food crops can result 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 2008 EPA's Office of Science and Technology identified 4,249 waterbodies as having unsafe levels of toxic organics in fish and wildlife.⁶

The National Pretreatment Program also helps prevent excess loadings of the conventional pollutants biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform bacteria, oil and grease, and pH. Although POTWs are designed to treat conventional pollutants, these pollutants have caused violations or operational problems at the POTWs. Many POTWs have ongoing problems with

⁵ U.S. Environmental Protection Agency, Office of Water, *EPA's National Pretreatment Program, 1973-2003: Thirty Years of Protecting the Environment*, EPA 833-F-03-001 (2004).

⁶ U.S. Environmental Protection Agency, Office of Science and Technology, *National Listing of Fish Advisories*, EPA 823-F-09-007 (2008). <http://www.epa.gov/waterscience/fish/advisories>.

excessive loadings of BOD and TSS from industrial and commercial sources causing pass through or interference and problems in the collection system.

A nonconventional pollutant is any pollutant that is neither a toxic pollutant nor a conventional pollutant. In recent years, permitting agencies have sought to reduce the amount of nonconventional pollutants such as nutrients (e.g., ammonia, nitrogen, phosphorus) and other chemicals discharged from POTWs. Excess nutrients in surface waters can cause excessive algal growth, reduce dissolved oxygen, and impair aquatic life. Another example of nonconventional pollutants is molybdenum, which can be introduced to the wastestream from the use of corrosion inhibitors at IUs that add cooling water and boiler water corrosion control additives. Technology upgrades at POTWs have enabled additional nutrient and other nonconventional pollutant reductions.

Reductions in pollutants discharged can ensure that industrial development vital to the economic well-being of a community is compatible with a healthy environment. As noted later, in chapter 2, a POTW is responsible for ensuring that discharges by industrial and commercial facilities that discharge into its collection system do not cause problems at the POTW or result in deleterious impacts on receiving stream water quality. In 1991 EPA estimated that 190 million to 204 million pounds of metals and 30 million to 108 million pounds of organics were removed each year as a result of National Pretreatment Program requirements.⁷ That is substantiated by many POTWs reporting significant reductions in the loadings of toxics to their treatment plants that are directly attributable to implementing the National Pretreatment Program.

Section 304(a) of the CWA provides a list of priority pollutants for which EPA has established ambient water quality criteria (the basis of state water quality standards) and effluent limitations (rules controlling environmental releases from specific industrial categories that are based on the Best Available Technology Economically Achievable).

The current list of 126 priority pollutants is available at <http://water.epa.gov/scitech/methods/cwa/pollutants.cfm>.

⁷ U.S. Environmental Protection Agency, *National Pretreatment Program: Report to Congress, 1991* (1991).

CHAPTER 2.

OVERVIEW OF THE NATIONAL PRETREATMENT PROGRAM

Chapter 2. Applicable EPA Guidance

Control Authority Pretreatment Audit Checklist and Instructions (EPA 833-B-10-001)

Guidance for Conducting a Pretreatment Compliance Inspection (EPA 300R92009)

Guidance for Reporting and Evaluating POTW Noncompliance with Pretreatment Implementation Requirements
(EPA September 1987)

Guidance Manual for POTW Pretreatment Program Development (EPA 833/B-83-100)

Pretreatment Compliance Inspection and Audit Manual for Approval Authorities (EPA 833/B-86-100)

Procedures Manual for Reviewing a POTW Pretreatment Program Submission (EPA 833/B-83-200)

THE CLEAN WATER ACT

On October 18, 1972, the Federal Water Pollution Control Act Amendments of 1972 became law, declaring the restoration and maintenance of the chemical, physical, and biological integrity of the nation's water a national goal (figure 2-1). Although procedures for implementing the act (more commonly referred to as the Clean Water Act, or CWA) have been reevaluated and modified over time, the 1972 goal has remained unchanged throughout the act's 39-year history.

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

1. It is the national goal that the 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 areawide 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 2-1. Section 101(a) of the CWA.

The CWA established a water quality approach along with EPA-promulgated, industry-specific, technology-based effluent limitations. The 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 for direct dischargers and to implement the categorical pretreatment standards for indirect dischargers under the POTW pretreatment program. To implement pretreatment standards and

requirements, EPA promulgated 40 CFR Part 128 in late 1973, establishing general prohibitions against treatment plant interference and pass through and setting pretreatment standards for the discharge of incompatible pollutants from specific industrial categories.

In 1975 several environmental groups filed suit against EPA, challenging the Agency's criteria for identifying toxic pollutants, its failure to promulgate effluent standards, and its failure to promulgate pretreatment standards for numerous industrial categories. As a result of that litigation, EPA promulgated the General Pretreatment Regulations at 40 CFR Part 403 on June 26, 1978, replacing the 40 CFR Part 128 requirements. Also as a result of the suit, EPA agreed to regulate the discharge of 65 categories of pollutants comprising the 126 priority pollutants from 21 industrial categories. The list of priority pollutants remains in effect today; the list of regulated industrial categories has grown to more than 50 distinct industries. A discussion of industry-specific requirements is provided in chapter 3.

THE GENERAL PRETREATMENT REGULATIONS

The General Pretreatment Regulations establish responsibilities among federal, state, and local government; industry; and the public to implement pretreatment standards to control pollutants that pass through or interfere with POTW treatment processes or that can contaminate sewage sludge. The regulations, which have been revised numerous times since originally published in 1978, consist of 20 sections and seven appendices. The most recent revision of the General Pretreatment Regulations was promulgated under the pretreatment Streamlining Rule, which became effective in November 2005. (A copy of that rule is on EPA's website at <http://www.epa.gov/npdes/regulations/streamlining.pdf>.) The Streamlining Rule addresses requirements for, and oversight of, IUs that introduce pollutants into POTWs, and it is different from other major amendments to the General Pretreatment Regulations in that it increased POTW flexibility in program implementation. In certain instances, that flexibility can allow for a reduction in minimum program requirements. Throughout this document, wherever the Streamlining Rule is addressed, POTW staff must remember that approved programs in existence at the time of the Streamlining Rule are likely based on the older, more restrictive requirements. To ensure that sufficient legal authority exists and that approved program and NPDES permit requirements are not violated, POTWs will, in most cases, need to modify their approved pretreatment programs before implementing the Streamlining Rule. EPA encourages POTWs to discuss that and all program modifications with their Approval Authority. The overall framework for the General Pretreatment Regulations is provided in figure 2-2.

The General Pretreatment Regulations apply to all nondomestic sources that introduce pollutants into a POTW. These sources of indirect discharges are more commonly referred to as IUs. Because an IU can be as simple as an automated, coin-operated car wash or as complex as an automobile manufacturing plant or a synthetic organic chemical producer, EPA developed four criteria that define a significant IU (SIU). Many of the General Pretreatment Regulations apply to SIUs as opposed to IUs; the distinction is based on the presumption that control of SIUs will, in most cases, provide adequate protection of the POTW. Where a smaller IU has the potential to adversely affect the POTW, the POTW would be expected to designate the facility as an SIU.

An SIU is defined in 40 CFR 403.3(v) as any of the following:

- ▲ An IU subject to federal categorical pretreatment standards
- ▲ An IU that discharges an average of 25,000 gallons per day (gpd) 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 POTW as such because of its reasonable potential to adversely affect the POTW's operation or violate any pretreatment standard or requirement.

With the Streamlining Rule, EPA amended the pretreatment regulations so that the POTW may (although it is not required to) modify its approved pretreatment program to consider determining that a categorical industrial user (CIU)⁸ is a nonsignificant categorical industrial user (NSCIU). To do that, the POTW must make a finding that the CIU never discharges more than 100 gpd of total categorical wastewater (excluding sanitary, noncontact cooling, and boiler blowdown wastewater, unless specifically included in the pretreatment standard) and the CIU meets all the following conditions as stated in 40 CFR 403.3(v)(2):

- ▲ The IU, before the POTW's finding, has consistently complied with all applicable categorical pretreatment standards and requirements.
- ▲ The IU annually submits the certification statement required in section 403.12(q), together with any additional information necessary to support the certification statement.

- ▲ The IU never discharges any untreated concentrated wastewater.

Designation as an NSCIU results in reduced reporting requirements for the NSCIU and reduced oversight requirements for the POTW. It does not in any way, however, relieve the industry of the need to comply with the categorical pretreatment standards.

With the Streamlining Rule, EPA also amended the pretreatment regulations so that the POTW may (although it is not required to) modify its approved pretreatment program to classify a CIU as a middle-tier categorical industrial user (MTCIU) as described in 40 CFR 403.12(e)(3). The POTW may apply this classification to a CIU if its discharge of categorical wastewater does not exceed any of the following:

§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 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
§403.19	Provisions of specific applicability to the Owatonna Waste Water Treatment Facility
§403.20	Pretreatment Program Reinvention Pilot Projects under Project XL
Appendix A:	[Reserved]
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 2-2. The General Pretreatment Regulations.

⁸ A CIU is an industrial user subject to national categorical pretreatment standards

- ▲ 0.01 percent of the design dry-weather hydraulic capacity of the POTW, or 5,000 gpd, whichever is smaller, as measured by a continuous effluent-flow-monitoring device unless the IU discharges in batches
- ▲ 0.01 percent of the design dry-weather organic treatment capacity of the POTW
- ▲ 0.01 percent of the maximum allowable headworks loading (MAHL) for any pollutant for which approved local limits were developed by a POTW.

The POTW may apply the middle-tier classification only if the CIU has not been in significant noncompliance (SNC) for any time in the past two years and if the CIU does not have daily flow rates, production levels, or pollutant levels that vary so significantly that decreasing the reporting requirement for this IU would result in data that are not representative of conditions occurring during the reporting period.

Unlike other environmental programs that rely on federal or state governments to implement and enforce specific requirements, under the National Pretreatment Program most of the responsibility rests on local municipalities. Thus, section 403.8(a) of the General Pretreatment Regulations provides 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 in defined circumstances must establish a local pretreatment program to prevent pass through and interference. As of early 2011, approximately 1,600 POTWs are required to have local programs. Although that represents only about 10 percent of the total treatment plants nationwide, those POTWs account for more than 80 percent (i.e., approximately 32 billion gallons a day) of the wastewater flow nationwide.

The General Pretreatment Regulations use two terms in describing responsibilities under the regulations. One is the term *Control Authority*. Under the regulations, where a POTW has an approved pretreatment program, the POTW is the Control Authority. If a POTW has not received approval of a pretreatment program submission, the Control Authority is either a state authorized to administer the National Pretreatment Program⁹ or EPA. The term *Approval Authority* describes the party with responsibility to administer the National Pretreatment Program—either a state with an approved pretreatment program or, in a state without an approved pretreatment program, the EPA region for that state [40 CFR 403.3(f)]. Section 403.10(f)(2)(i) of the regulations requires the director of an NPDES-authorized state to develop procedures to address the requirements at 40 CFR 403.8(f)(2) for IUs discharging to a POTW without an approved pretreatment program (figure 2-3). In addition, CWA section 403.10(e) provides a state with the option to implement the pretreatment programs for the POTWs in the state in lieu of requiring its POTWs to implement programs. Five states (Alabama, Connecticut, Mississippi, Nebraska, and Vermont) have elected to assume that responsibility. In such cases, the state is defined as the Control Authority for all IUs in the state.

As described earlier, POTWs establish local pretreatment programs to control discharges from nondomestic sources. These programs must be approved by the Approval Authority, which is also responsible for overseeing implementation and enforcement of the programs. For the list of states and territories authorized to implement state NPDES permit programs and act as National Pretreatment Program Approval Authorities, see attachment 2-1. Visit <http://cfpub.epa.gov/npdes/statestats.cfm> for updates to this list.

⁹ An approved/authorized state is one with an NPDES permit program approved pursuant to CWA section 402(b) and an approved state pretreatment program.

§403.8(f)(2)		POTW Pretreatment Requirements: Procedures
§403.8(f)(2)	(i)	Identify and locate all possible IUs
§403.8(f)(2)	(ii)	Identify character and volume of pollutants from IUs
§403.8(f)(2)	(iii)	Notify IUs of applicable pretreatment standards
§403.8(f)(2)	(iv)	Receive and analyze reports from IUs
§403.8(f)(2)	(v)	Randomly sample and analyze effluent from IUs
§403.8(f)(2)	(vi)	Evaluate whether IUs need slug discharge control plans
§403.8(f)(2)	(vii)	Investigate instances of noncompliance
§403.8(f)(2)	(viii)	Comply with public participation requirements

Figure 2-3. POTW pretreatment requirements.

POTW PRETREATMENT PROGRAMS

Once the determination has been made 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 elements to the Approval Authority for review and approval. Consistent with CWA section 403.8(f), POTW pretreatment programs must contain six minimum elements, presented in figure 2-4.

In addition to the six specific elements, pretreatment program submissions must include the following [40 CFR 403.9(b)]:

- ▲ A statement from the city solicitor (or the equivalent) declaring that 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 or funding the program
- ▲ A brief description and organizational chart of the organization administering the program
- ▲ A description of funding levels and manpower available to implement the program.

Pretreatment program submissions that are complete proceed to the public notice process, as described in chapter 4, Public Participation. Upon program approval, the Approval Authority is responsible for modifying the POTW's NPDES permit to require implementation of the approved pretreatment program. Once the POTW pretreatment program has been approved, the Approval Authority oversees program implementation by receiving annual POTW reports and conducting periodic audits and inspections.

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 requirements developed pursuant to the CWA and implementing regulations. 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. Identifying and locating all IUs subject to the pretreatment program;
- ii. Identifying the character and volume of pollutants contributed by such users;
- iii. Notifying users of applicable pretreatment standards and requirements;
- iv. Receiving and analyzing reports from IUs;
- v. Sampling and analyzing IU discharges;
- vi. Evaluating the need for IU slug control plans;
- vii. Investigating instances of noncompliance; and
- viii. Complying 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 in defined circumstances 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 SIUs and where applicable indicate which SIUs are NSCIUs or MTCIUs.

Figure 2-4. Six minimum pretreatment program elements.

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. The general responsibilities of each of the three regulatory entities are presented in figure 2-5.

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

Figure 2-5. Roles and responsibilities.

ATTACHMENT 2-1: STATE AND TERRITORY PROGRAM AUTHORIZATION STATUS

State or territory	Approved NPDES permit program	Approved pretreatment program
Alabama	10/19/1979	10/19/1979*
American Samoa	--	--
Alaska	10/31/2008	10/31/2008
Arizona	12/05/2002	12/05/2002
Arkansas	11/01/1986	11/01/1986
California	05/14/1973	09/22/1989
Colorado	03/27/1975	--
Connecticut	09/26/1973	06/03/1981*
Delaware	04/01/1974	--
Florida	05/01/1995	05/01/1995
Guam	--	--
Georgia	06/28/1974	03/12/1981
Hawaii	11/28/1974	08/12/1983
Illinois	10/23/1977	--
Indiana	01/01/1975	--
Johnson Atoll	--	--
Iowa	08/10/1978	06/03/1981
Kansas	06/28/1974	--
Kentucky	09/30/1983	09/30/1983
Louisiana	08/27/1996	08/27/1996
Maine	01/12/2003	01/12/2003
Maryland	09/05/1974	09/30/1985
Midway Island	--	--
Michigan	10/17/1973	04/16/1985
Minnesota	06/30/1974	07/16/1979
Mississippi	05/01/1974	05/13/1982*
Missouri	10/30/1974	06/03/1981
Montana	06/10/1974	--
Nebraska	06/12/1974	09/07/1984*
Nevada	09/19/1975	--
New Jersey	04/13/1982	04/13/1982
New York	10/28/1975	--
North Carolina	10/19/1975	06/14/1982
Northern Mariana Islands	--	--
North Dakota	06/13/1975	09/16/2005
Ohio	03/11/1974	07/27/1983
Oklahoma	11/19/1996	11/19/1996
Oregon	09/26/1973	03/12/1981
Puerto Rico	--	--

State or territory	Approved NPDES permit program	Approved pretreatment program
Pennsylvania	06/30/1978	--
Rhode Island	09/17/1984	09/17/1984
South Carolina	06/10/1975	04/09/1982
South Dakota	12/30/1993	12/30/1993
Tennessee	12/28/1977	08/10/1983
Texas	09/14/1998	09/14/1998
Utah	07/07/1987	07/07/1987
Vermont	03/11/1974	03/16/1982*
Virgin Islands	06/30/1976	--
Wake Island	--	--
Virginia	03/31/1975	04/14/1989
Washington	11/14/1973	09/30/1986
West Virginia	05/10/1982	05/10/1982
Wisconsin	02/04/1974	12/24/1980
Wyoming	01/30/1975	--

* Denotes 403.10(e) state approval.
Table is current as of March 2011.

CHAPTER 3.

PRETREATMENT STANDARDS

Chapter 3. Applicable EPA Guidance

Guidance Manual for Implementing Total Toxic Organics (TTO) Pretreatment Standards (EPA September 1985)

Guidance Manual for Preparation and Review of Removal Credit Applications (EPA July 1985)

Guidance Manual for Preventing Interference at POTWs (EPA 833/B-87-201)

Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe (EPA 833/B-87-100)

Guidance Manual for the Use of Production-Based Pretreatment Standards and the Combined Wastestream Formula (EPA 833/B-85-201)

Local Limits Development Guidance (EPA 833R-04-002A, 2004)

Guidance to Protect POTW Workers from Toxic and Reactive Gases and Vapors (EPA 812-B-92-001)

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 (EPA 21W-4002)

New Source Dates for Direct and Indirect Dischargers (EPA September 2006)

Industry-Specific Guides

Guidance Manual: Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards (EPA 800B89001)

Guidance Manual for Battery Manufacturing Pretreatment Standards (EPA August 1987)

Guidance Manual for Electroplating and Metal Finishing Pretreatment Standard (EPA-440/1-84/091g)

Guidance Manual for Iron and Steel Manufacturing Pretreatment Standards (EPA September 1985)

Guidance Manual for Leather Tanning and Finishing Pretreatment Standards (EPA 833B86101)

Guidance Manual for Pulp, Paper, and Paperboard and Builders' Paper and Board Mills Pretreatment Standards (EPA July 1984)

Permitting Guidance for Semiconductor Manufacturing Facilities (EPA April 1998)

Permit Guidance Document – Pulp, Paper and Paperboard Manufacturing Point Source Category (EPA 821-B-00-003)

Permit Guidance Document – Transportation Equipment Cleaning (EPA 821-R-01-021)

Small Entity Compliance Guide – CWT [Centralized Waste Treatment] (EPA 821-B-01-003)

Product and Product Group Discharges (OCPSF) (EPA April 2005)

Pollution Prevention (P2) Manual for the Pesticide Formulating Packaging and Repackaging Industry (EPA 821-B-98-017)

The National Pretreatment Program regulations identify specific requirements that apply to all IUs, additional requirements that apply to all SIUs, and certain requirements that apply only to CIUs. There are three types of national pretreatment requirements:

- ▲ Prohibited discharge standards that include general and specific prohibition on discharges
- ▲ Categorical pretreatment standards
- ▲ Local limits.

PROHIBITED DISCHARGE STANDARDS

All IUs—regardless of whether they are 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 (the regulations use the term *introduction*) of any pollutant(s) to a POTW that cause pass through or interference. *Pass through* and *interference* are terms with very specific meaning in the regulations. *Pass through* is defined as a discharge that exits the POTW into waters of the United States in quantities or concentrations that, 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. *Interference* is defined as a discharge that, 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. Specific prohibitions in 40 CFR 403.5(b) forbid the following eight categories of pollutant discharges:

- ▲ Discharges containing pollutants that create a fire or explosion hazard in the POTW, including wastestreams with a closed-cup flashpoint of less than 140 °F (60 °C) using the test methods specified in 40 CFR 261.21
- ▲ 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
- ▲ Discharges containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference
- ▲ Discharges of any pollutants released at a flow rate or concentration that will cause interference with the POTW
- ▲ Discharges of heat in amounts that 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 104 °F (40 °C) unless the Approval Authority, at the POTW's request, approves alternative temperature limits
- ▲ Discharges of petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through
- ▲ Discharges that result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that could cause acute worker health and safety problems
- ▲ 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. The prohibited discharge standards are intended to provide general protection for POTWs. To address site-specific conditions, POTWs might also need to develop more specific limitations or additional controls to prevent pass through and interference. In addition to the prohibitions described above, IUs are also subject to categorical pretreatment standards and local limits.

EFFLUENT GUIDELINES AND CATEGORICAL PRETREATMENT STANDARDS DEVELOPMENT

Effluent limitations guidelines, also referred to as *effluent guidelines*, are national standards developed by EPA on an industry-by-industry basis, and they are intended to represent the greatest pollutant reductions economically achievable for an industry. To develop these technology-based

regulations, EPA first gathers information on the industry's practices; characteristics of discharges (stormwater flows and pollutants); technologies or practices used to prevent or treat the discharges; and economic characteristics. EPA identifies the best available technology that is economically achievable for that industry and sets regulatory requirements based on the performance of that technology. The effluent guidelines do not require facilities to install the particular technology identified by EPA; however, the regulations do require facilities to achieve the regulatory standards that were developed based on a particular model technology. Effluent limitations guidelines are implemented through the NPDES permit program. Discharges from direct dischargers (i.e., facilities that discharge wastewaters directly into waters of the United States) are regulated in permits that specify limits using Best Practicable Control Technology Currently Available (BPT), Best Available Technology Economically Achievable (BAT), Best Conventional Pollutant Control Technology (BCT), and New Source Performance Standards (NSPS).

Pretreatment standards are implemented through the National Pretreatment Program. Discharges from indirect dischargers (i.e., facilities that discharge their wastewaters to a POTW) are regulated through *categorical standards* issued based on Pretreatment Standards for New Sources (PSNS) and Pretreatment Standards for Existing Sources (PSES).

Industries identified as major sources of pollutants are typically prioritized for effluent guideline and categorical standard development. EPA typically summarizes the industries it is investigating for potential rulemakings and the related data collection and reviews in its Effluent Guidelines Program Plan. The biennial plans are published in the *Federal Register*, and EPA solicits public comment before finalizing them.¹⁰ If limits are deemed necessary, EPA initiates a rulemaking, investigates affected industrial sectors, and gathers information regarding process operations and treatment and management practices, accounting for differences in facility size and age, equipment age, and wastewater characteristics.¹¹ Subcategorization within an industrial category is evaluated on the basis of 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 effects, available pollution prevention measures,¹² and economic effects are evaluated before EPA presents its findings in proposed development documents and publishes a notice of the proposed regulations in the *Federal Register*. After making any revisions reflecting public comments on the proposed rule, EPA promulgate (publishes) the standards (figure 3-1). EPA encourages all stakeholders, including pretreatment professionals, to review EPA's proposed categorical standards and provide data and comments during the public comment period. A list of the industrial categories that have categorical pretreatment standards is provided as attachment 3-1.

¹⁰ The latest information on EPA's Effluent Guidelines Program Plans and when to submit comments is at <http://epa.gov/guide/304m/index.html>.

¹¹ See EPA's Effluent Guidelines Web page (<http://epa.gov/guide>) or the most recent Federal Regulatory Agenda, which is published twice a year (usually in April and October) in the *Federal Register*. For a listing of all ongoing effluent guidelines rulemakings, see <http://www.gpoaccess.gov/ua>.

¹² For more information on this topic, refer to EPA's *Considerations of Pollution Prevention in EPA's Effluent Guideline Development Process*.

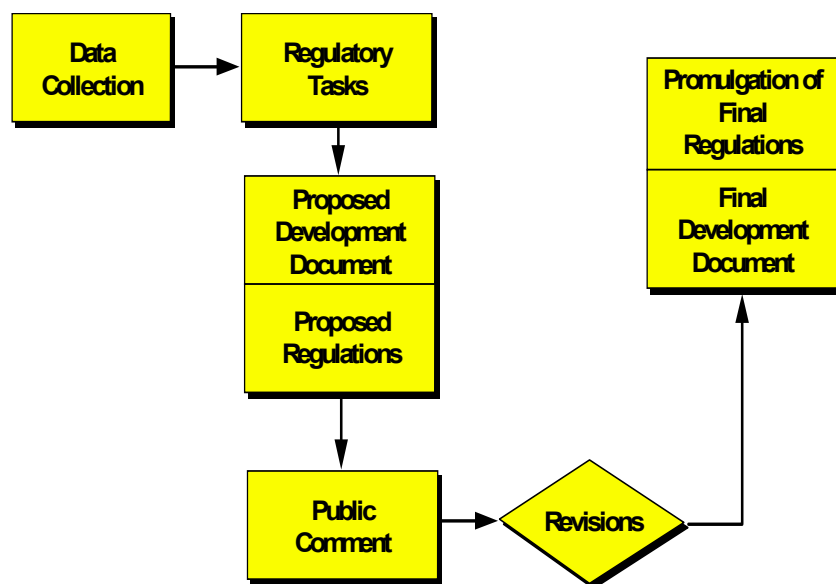


Figure 3-1. The Effluent guideline development process.

As noted earlier, categorical pretreatment standards may be developed for both existing sources (PSES) and new sources (PSNS). Facilities are classified as either PSES or PSNS on the basis of the definition of *new source* set forth in 40 CFR 403.3(m) of the General Pretreatment Regulations (figure 3-2). Dischargers subject to PSES are required to comply with those standards by a specified date, typically no more than 3 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 because of the opportunity for new sources to install the best available demonstrated technology and operate the most efficient production processes. For additional information on EPA’s regulatory requirements for determining which sources are new sources, see the New Source Memorandum on EPA’s website at <http://www.epa.gov/npdes/pretreatment>. That document provides a summary of relevant regulatory criteria for consideration in this determination, as well as a listing of applicable new source dates used in making new source determinations.

EPA typically does not establish pretreatment standards for conventional pollutants (e.g., BOD, TSS, oil and grease) because POTWs are designed to treat those pollutants. EPA has, however, exercised its authority to establish some categorical pretreatment standards for conventional pollutants as surrogates for toxic or nonconventional pollutants or to prevent interference. For example, EPA established categorical pretreatment standards for new and existing sources with a 1-day maximum concentration of 100 mg/L oil and grease in the Petroleum Refining Point Source Category (40 CFR Part 419) based on “the necessity to minimize [the] possibility of slug loadings of oil and grease being discharged to POTWs.”¹³

¹³ Refer to U.S. Environmental Protection Agency, *Interim Final Supplement for Pretreatment to the Development Document for the Petroleum Refining Industry Existing Point Source Category*, EPA-440-1-76-083A (1977), p. 92.

New source is defined at 40 CFR 403.3(m)(1) as 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 (m)(1)(ii), or (m)(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 (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
 - 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 3-2. Definition of *new source* [40 CFR 403.3(m)].

EPA has established the following types of categorical pretreatment standards for certain industrial sectors:

- ▲ Concentration-based standards that are implemented directly as concentration limits
- ▲ Mass limits based on production rates
- ▲ Both concentration-based and production-based limits
- ▲ Mass limits based on a concentration standard multiplied by a facility's process wastewater flow
- ▲ Standards that allow for the use of best management practices (BMPs)
- ▲ Standards that prohibit discharge of any kind.

EPA generally establishes concentration-based categorical pretreatment standards when production and achievable wastewater flow cannot be normalized on a national basis. Production-normalized, mass-based standards are calculated from production-normalized flows (volume of wastewater/production unit) and incorporate wastewater flow reductions representing BAT (which is the technology basis for PSES) or best available demonstrated technology (which is the technology basis for PSNS). Flow-normalized, mass-based, and concentration-based standards can consider flow reduction when estimating the PSES and PSNS incremental compliance costs; however, the standards themselves do not specifically require flow reductions to maintain compliance. The last type of mass limits described can be calculated by using a reasonable measure of the IU's actual long-term daily production (for production-normalized, mass-based standards) or the IU's actual long-term average daily flow rate (for flow-normalized, mass-based, concentration-based standards). EPA prefers setting production-normalized, mass-based standards, where feasible, because production-normalized limitations can account for flow reduction and reduce the potential for using dilution instead of actual treatment to reduce a concentration value in the effluent.

LOCAL LIMITS

The general and specific 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 introduction of pollutants to the POTW. Local limits address the specific needs and concerns of a POTW, its sludge, and its receiving waters. The federal regulations at 40 CFR 403.8(f)(4) and 122.21(j)(4) require POTWs 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 that could cause interference, pass through, sludge contamination, or worker health and safety problems if discharged in excess of the receiving POTW treatment plant's capabilities or receiving water quality standards. Typically, local limits are developed to regulate the discharge from all SIUs, not just CIUs, and they 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 limits development, it is recommended that POTWs do the following:

- ▲ 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 as these terms are defined in EPA's pretreatment regulations.
- ▲ Identify additional pollutants of concern.
- ▲ Conduct a technical evaluation to determine the maximum allowable headworks (influent) loading (MAHL) for at least ammonia (for plants that accept nondomestic sources of ammonia), arsenic, BOD₅, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, selenium, silver, TSS, and zinc (figure 3-3).
- ▲ Determine contributions from background sources (e.g., residential and commercial) to determine the MAHL from *controllable* industrial sources (figure 3-4).
- ▲ Implement a system to ensure that such MAHLs will not be exceeded.

Maximum Allowable Headworks Loading (MAHL). Treatment plant data are used to calculate removal efficiencies for each pollutant to back-calculate the MAHLs before applying the most stringent criteria (i.e., water quality, sludge quality, NPDES permit, or pollutant inhibition levels). Subtracting contributions from unpermitted 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 3-3. MAHL.

Maximum Allowable Industrial Load (MAIL). The MAIL is the total daily mass that a POTW can accept from all permitted IUs and still ensure that the POTW is protecting against pass through and interference.

Figure 3-4. MAIL.

As stated in EPA's 2004 *Local Limits Development Guidance*, when POTWs evaluate a pollutant for the first time, they should assume that local limits are needed when any of the following are true:

- ▲ The average influent loading of a toxic pollutant exceeds 60 percent of the MAHL.
- ▲ The maximum daily influent loading of a toxic pollutant exceeds 80 percent of the MAHL at any time in the 12-month period preceding the analysis.
- ▲ The monthly average influent loading reaches 80 percent of the average design capacity for BOD₅, TSS, and ammonia during any one month in the 12-month period preceding the analysis.

Those percentages that trigger local limits development are default assumptions that can vary from plant to plant. The approach used for toxic pollutants is more conservative because most POTWs are not designed to treat toxic pollutants. For more details, refer to EPA's *Local Limits Development Guidance*.

Other local limit approaches available to POTWs are the following:

- ▲ **Collection system approach.** Pollutants found to be present that could cause fire and 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 POTW may set limits or require development of management practices to control undesirable discharges. With such an approach, the POTW 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* and EPA's 2004 *Local Limits Development Guidance* detail strategies for developing such local limits. In addition to the low-end pH limit specified in the General Pretreatment Regulations, the 2004 *Local Limits Development Guidance* also recommends that POTWs evaluate the need to set upper pH limits or more stringent low-end pH limits. A POTW should set an upper pH limit if corrosion damage attributable to high-pH discharges is identified. In addition, with the collection system approach, the POTW may consider pollutants in amounts that will obstruct flows to the POTW and result in interference. As stated in the 2004 *Local Limits Development Guidance*, the greatest threat of obstruction in POTWs comes from polar fats, oils, and greases (FOG) of animal and vegetable origin. Polar FOG can accumulate and congeal in collection systems, pumping stations, and treatment plants. It can interfere with the POTW's collection system through blockages when the wastewater cools enough to allow the suspended FOG to congeal.
- ▲ **Case-by-case discharge limits.** Such numeric local limits are based on best professional judgment and available pollution-prevention and treatment technologies that have been shown through case studies to be economically feasible. Such an approach is most often used when insufficient data are available to employ the methods outlined earlier.
- ▲ **Best management practices.** BMPs are management and operational procedures that are intended to prevent pollutants from entering a facility's wastestream or from reaching a discharge point. BMPs also include treatment requirements; operating procedures; sludge or waste disposal; management of drainage from raw materials storage; oil and grease collection requirements; and practices to control plant site runoff, spillage, or leaks. BMPs should be enforceable, and they may be used as the local limits required by 40 CFR 403.5(c).
- ▲ **Local specific prohibitions.** POTW-specific prohibitions may be imposed under local law in addition to the prohibitions detailed in 40 CFR 403.5 (a) and (b) to address hydraulic, pollutant-specific, or aesthetic concerns. Following are examples:
 - Noxious or malodorous liquids, gases, or solids creating a public nuisance
 - Wastestreams that impart color and pass through the POTW treatment plant
 - Stormwater, roof runoff, swimming pool drainage
 - Wastewaters containing radioactive wastes or isotopes
 - Removed substances from pretreatment of wastewater

Regardless of the approaches that a POTW takes, local limits should correct existing problems, prevent potential problems, protect the receiving waters, improve sludge use options, and protect POTW personnel. EPA's *Local Limits Development Guidance* and *Guidance for Preventing Interference at POTWs* provide basic information on the subject. In addition, many EPA Regions and states have developed local limits guidance to address regional and state issues.

SUMMARY OF STANDARDS

A general summary of all the pretreatment standards, including general and specific prohibitions, categorical pretreatment standards, and local limits, is provided in figure 3-5. A summary of specific categorical standards is presented in Attachment 3-1.

	General and specific prohibitions	Categorical pretreatment standards	Local limits
Development	Established at the federal level.	Established at the federal level.	Developed by the POTWs.
Reference	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). Local limits are often found in the local sewer use ordinance.
Applicability	All IUs	CIUs	Commonly all IUs or all SIUs, but depends on the allocation method used when developing limits.
Purpose	Provide for general protection of the POTW. Categorical pretreatment standards or local limits may be more stringent.	Minimum standards based on available treatment technology and pollution prevention measures for controlling nonconventional and toxic pollutants that could cause pass through, interference, and such at the POTW. Local limits may be more stringent.	Provide site-specific protection for a POTW and its receiving waters. Categorical standards may be more stringent.
All standards are considered pretreatment standards for the purpose of CWA section 307(d), and therefore all standards, including local limits developed in accordance with 40 CFR 403.5(c), are enforceable by EPA and the state even though they might be developed at the local level. A POTW is responsible for identifying standard(s) applicable to each IU and applying the most stringent requirements where multiple provisions exist. Compliance with imposed standards can be achieved by any of the following: implementing BMPs, developing a pollution prevention program, or installing pretreatment.			

Figure 3-5. Summary of standards.

ATTACHMENT 3-1: SUMMARY OF CATEGORICAL STANDARDS

EPA has established categorical pretreatment standards (for indirect dischargers) for 35 categories. Plans for EPA's expansion and modification of the list are detailed in the *Effluent Guidelines Plan*, published in the *Federal Register* biennially as required at CWA section 304(m). The list of the industrial categories that have categorical pretreatment standards—Pretreatment Standards for Existing Sources (PSES) and Pretreatment Standards for New Sources (PSNS)—as of March 2011 is provided below.

Summary of categorical pretreatment standards

No.	Category	40 CFR Part	Subparts	Type of standard	Overview of pretreatment standards
1	Aluminum Forming	467	A–F	PSES PSNS	Limits are production-based daily maximums and monthly averages. Subpart C prohibits discharges from certain operations.
2	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.
3	Carbon Black Manufacturing	458	A–D	PSNS	Limits are for oil and grease only (no duration specified).
4	Centralized Waste Treatment	437	A–D	PSES PSNS	Limits are concentration-based daily maximums and monthly averages.
5	Coil Coating	465	A–D	PSES PSNS	Limits are production-based daily maximums and monthly averages.
6	Concentrated Animal Feeding Operations (CAFO)	412	B	PSNS	Discharge of process wastewater is prohibited, except when there is an overflow resulting from a chronic or catastrophic rainfall event.
7	Copper Forming	468	A	PSES PSNS	Limits are production-based daily maximums and monthly averages.
8	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.
9	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 whether facility is discharging more or less than 10,000 gpd of process wastewater. Certification is allowed in lieu of monitoring for certain pollutants when a management plan is approved and implemented.

No.	Category	40 CFR Part	Subparts	Type of standard	Overview of pretreatment standards
10	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 may be concentration-based (Subparts F–G), with no duration of limit specified.
11	Glass Manufacturing	426	H K–M	PSNS	Limits are concentration- or production-based daily maximums and monthly averages.
12	Grain Mills	406	A	PSNS	Discharge of process wastewater is prohibited at a flow rate or mass loading rate (BOD ₅ and TSS) that is excessive during periods when a POTW is receiving peak loads.
13	Ink Formulating	447	A	PSNS	Regulations specify no discharge of process wastewater pollutants to a POTW.
14	Inorganic Chemicals Manufacturing	415	A,B,F,L, AH,AJ,AL, AR,AU,BC, BL,BM,BO	PSES	Limits vary for each subpart with a majority of the limits concentration-based, daily maximums, and 30-day averages, or they may specify no discharge of wastewater pollutants.
			B–F, H, K–N,P,Q, T,V,AA, AC,AE,AH AI,AJ,AL, AN,AP,AQ AR,AU,AX BB,BC, BH, BK–BO	PSNS	
15	Iron and Steel Manufacturing	420	A–F, H–J, L	PSES PSNS	Limits are production-based daily maximums and 30-day averages.
16	Leather Tanning and Finishing	425	A–I	PSES PSNS	Limits are concentration-based daily maximums and monthly averages. In certain instances, applicability of pretreatment standards is dictated by volume of production.
17	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.
18	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).
19	Nonferrous Metals Forming and Metal Powders	471	A–J	PSES PSNS	Limits are production-based daily maximums and monthly averages. In some instances, the discharge of wastewater pollutants is prohibited.

No.	Category	40 CFR Part	Subparts	Type of standard	Overview of pretreatment standards
20	Nonferrous Metals Manufacturing	421	C, F–M, P, Q, V, X, Y, AA–AC	PSES	Limits are production-based daily maximums and monthly averages. PSES (Subpart F) specify no discharge from existing facilities of process wastewater pollutants to the POTW except for some stormwater events.
			A–Z, AA–AE	PSNS	Limits are production-based daily maximums and monthly averages. PSNS (Subparts D and F) specify no discharge from existing facilities of process wastewater pollutants to the POTW.
21	Oil and Gas Extraction	435	D	PSES PSNS	Regulations specify no discharge of wastes (e.g., produced water, drill cuttings) to a POTW.
22	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.
23	Paint Formulating	446	A	PSNS	Regulations specify no discharge of process wastewater pollutants to the POTW.
24	Paving and Roofing Materials (Tars and Asphalt)	443	A–D	PSNS	Limits are for oil and grease only (no limit duration specified).
25	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.
26	Petroleum Refining	419	A–E	PSES PSNS	Limits are concentration-based (or mass-based equivalent) daily maximums.
27	Pharmaceutical Manufacturing	439	A–D	PSES PSNS	Limits are concentration-based daily maximums and monthly averages. Such facilities may certify that they do not use or generate cyanide in lieu of performing monitoring to demonstrate compliance.
28	Porcelain Enameling	466	A–D	PSES PSNS	Limits are concentration-based (or alternative production-based) daily maximums and monthly averages. Subpart B prohibits discharges from certain operations.

No.	Category	40 CFR Part	Subparts	Type of standard	Overview of pretreatment standards
29	Pulp, Paper, and Paperboard	430	A–G, I–L	PSES PSNS	Limits are production-based daily maximums and monthly averages. Such facilities may certify that they do not use certain compounds in lieu of performing monitoring to demonstrate compliance. Facilities subject to Subparts B and E must also implement BMPs as identified.
30	Rubber Manufacturing	428	E–K	PSNS	Limits are concentration- or production-based daily maximums and monthly averages.
31	Soap and Detergent Manufacturing	417	O–R	PSNS	Regulations specify no discharge of process wastewater pollutants to a POTW when the wastewater chemical oxygen demand (COD)/BOD ₇ ratio exceeds 10.0 and the COD concentrations exceed subcategory specific concentrations.
32	Steam Electric Power Generating	423	—	PSES PSNS	Limits are concentration-based daily maximums, or <i>maximums for any time</i> , or compliance may be demonstrated through engineering calculations.
33	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).
34	Transportation Equipment Cleaning	442	A–C	PSES PSNS	Operators subject to effluent guidelines in subparts A–B must either meet concentration-based daily maximum standards or develop a Pollutant Management Plan. Operators subject to effluent guidelines in subpart C must meet concentration-based daily maximum standards.
35	Waste Combustors	444	A	PSES PSNS	Limits are concentration-based daily maximums and monthly averages.

CHAPTER 4.

POTW PRETREATMENT PROGRAM RESPONSIBILITIES

Chapter 4. Applicable EPA Guidance

CERCLA Site Discharges to POTWs Guidance Manual (EPA 540G90005)
Control of Slug Loadings to POTWs: Guidance Manual (EPA 21W-4001)
Guidance for Developing Control Authority Enforcement Response Plans (EPA September 1989)
Guidance Manual for POTWs to Calculate the Economic Benefit of Noncompliance (EPA 833B93007)
Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-001)
Industrial User Permitting Guidance Manual (EPA September 1989)
Model Pretreatment Ordinance (EPA 833B06002)
Multijurisdictional Pretreatment Programs: Guidance Manual (EPA 833-B-94-005)
NPDES Compliance Inspection Manual (EPA July 2004)
POTW Sludge Sampling and Analysis Guidance Document (EPA 833-B-89-100)
Pretreatment Compliance Monitoring and Enforcement Guidance (EPA July 1986)
RCRA Information on Hazardous Wastes for Publicly Owned Treatment Works (EPA 833/B-85-2025)

Chapter 2 describes the basis on which POTWs can develop pretreatment programs that implement federal pretreatment standards and requirements, in addition to providing protection to address any local concerns. This chapter provides an overview of those POTW programs, highlighting each of the specific areas that the pretreatment program is to address. In cases where POTWs are not required to develop a pretreatment program, an approved state or EPA region is the Control Authority and must address the requirements in 40 CFR 403.8(f)(2).

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 POTWs with the legal authority to carry out their pretreatment programs; rather, the regulations set forth the minimum requirements for POTWs that are required to implement a pretreatment program.

A POTW's legal authority derives from state law. Therefore, state law must confer the minimum legal authority required by the General Pretreatment Regulations on a POTW. Where state law is deficient, it will need to be amended to provide the minimum requirements.

To apply the regulatory authority provided by state law, it is usually necessary for the POTW to establish local regulations to legally implement and enforce pretreatment requirements. Where the POTW is a municipality, legal authority is typically spelled out in a sewer use ordinance (SUO), which is usually part of the city or county code. Regional POTWs frequently adopt similar provisions in the form of rules and regulations. Likewise, state agencies implementing a statewide program under 40 CFR 403.10(e) set

out pretreatment requirements as state regulations, rather than as an SUO. EPA's 2007 guidance *EPA Model Pretreatment Ordinance* provides a model for POTWs that are required to develop pretreatment programs.

As POTW service areas expand, new contributions can arise from extrajurisdictional IUs—those outside the POTW's legal jurisdiction (Figure 4-1). Multijurisdictional arrangements require special legal/contractual mechanisms to ensure adequate authority to implement and enforce program requirements in multiple jurisdictions. Some state statutes might provide for general extraterritorial powers (i.e., a POTW is automatically allowed to regulate extrajurisdictional IUs contributing to its system). However, the extent to which authorities (e.g., to permit, inspect, enforce, and/or monitor) are granted might be somewhat limited, thereby restricting a POTW's ability to implement and enforce a program. Where obtaining authority from the state to regulate extrajurisdictional IUs is not feasible, the POTW may pursue other options:

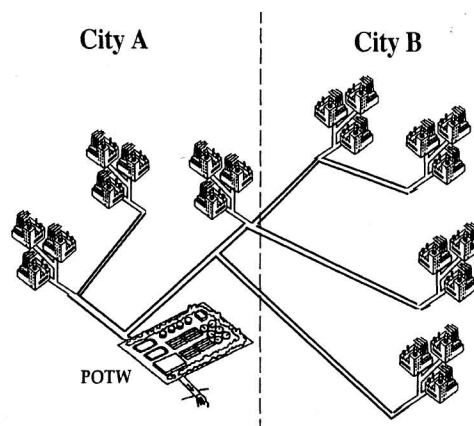


Figure 4-1. Multijurisdictional program.

- ▲ **Districts.** Creating an independent organization (by affected municipalities or the state) that 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 serve various jurisdictions.
- ▲ **Agreements.** Affected POTWs may opt to enter into agreements either requiring each municipality to implement and enforce the approved pretreatment program covering *all* IUs within its jurisdiction or providing the POTW with the ability to implement and enforce the program within that municipality. If the other municipality is to implement the program, the POTW must, at a minimum, 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 are in unincorporated areas, a POTW may annex or utility-annex the service area.
- ▲ **Contracts.** A POTW may enter into a contract with an extrajurisdictional IU, although contracts typically limit the enforcement capabilities of the POTW. Contracts, therefore, should be pursued only when all other means fail.

Because procedures for obtaining jurisdiction, creating sanitary districts, annexing service areas, and so forth vary among states, POTW personnel should consult with legal staff to thoroughly examine the options allowed under state law. These could 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) and 40 CFR 122.44(j)(1)] require POTWs to identify and locate all IUs that might be subject to the pretreatment program. The POTW must also prepare and maintain a list of its SIUs. The list must be submitted to the Approval Authority with the original pretreatment program submission and then updated

annually as part of the annual POTW report [see 40 CFR 403.8(f)(2)(i)-(ii) and 40 CFR 403.12(i), respectively]. Although the General Pretreatment Regulations do not specify how a POTW is to identify its users, it is beneficial to conduct an initial in-depth survey and institute measures to update the list continuously. POTWs should ensure that they review the entire service area so they include relevant IUs outside the POTW's jurisdictional boundaries. In such cases, it might be useful to solicit assistance from other jurisdictions in developing the list of potential dischargers. The types of resources that can be consulted in compiling and updating the master list are the following:

- ▲ 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
- ▲ The Internet.

Once the IUs are identified, the POTW must classify them to determine whether pretreatment standards and requirements apply to any of the facilities (40 CFR 403.8(f)(2)). Typically, the POTW 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 POTW may opt to send a detailed IWS questionnaire or to conduct the survey in two phases, i.e., first sending a screener requesting basic information to eliminate obvious facilities and then sending a detailed IWS to those facilities with greater potential to be SIUs. The IWS must identify facilities that are subject to categorical standards (i.e., CIUs) or otherwise have the potential to affect the POTW (i.e., SIUs).

The POTW must notify each SIU of its status and of all applicable pretreatment standards and requirements [see 40 CFR 403.8(f)(2)(iii)]. Therefore, 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 completed 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 the POTW Reports section in this chapter.) The ongoing task of maintaining a complete list of IUs requires the POTW to implement a system to track existing IU information, classification changes, and new user information. Some POTWs might proactively opt to institute a utility connect questionnaire program. Such types of forms are completed when a customer applies for new utility service, such as water, sewer, or electricity.

IU PERMITS/CONTROL MECHANISMS

The General Pretreatment Regulations require that all IUs discharging to a POTW with an approved pretreatment program be controlled through permit, order, or similar means to ensure compliance with applicable pretreatment standards and requirements. The regulation at 40 CFR 403.8(f)(1)(iii)(A and B) clarifies this requirement to specify that all SIUs must be issued an individual permit or equivalent individual control mechanism. Control mechanisms must be enforceable and contain, at a minimum, the following conditions:

- ▲ A statement of duration (not to exceed 5 years)
- ▲ A statement of nontransferability (unless outlined provisions are met)
- ▲ Effluent limits, including BMPs, that are based on applicable standards

- ▲ Self-monitoring, sampling, reporting, notification, and record-keeping requirements
- ▲ An identification of the pollutants to be monitored
- ▲ The process for seeking a waiver for a pollutant neither present nor expected to be present in the discharge or a specific waived pollutant in the case of an individual control mechanism
- ▲ Sampling location, sampling frequency, and sample type
- ▲ A statement of applicable civil and criminal penalties
- ▲ A schedule of compliance (where appropriate)
- ▲ A requirement to control slug discharges, if determined by the POTW to be necessary.

As a result of changes from the Streamlining Rule, and upon incorporation of appropriate authority and procedures into the approved program, a POTW may choose to issue a general permit to multiple IUs. All the facilities to be covered by a general permit must

- ▲ Involve the same or substantially similar types of operations
- ▲ Discharge the same types of wastes
- ▲ Require the same effluent limitations
- ▲ Require the same or similar monitoring
- ▲ In the opinion of the POTW, be more appropriately controlled under a general permit than under individual permits.

To be covered by a general permit, an SIU must file a written request for coverage that includes information found in 40 CFR 403.8(f)(1)(iii)(A)(2). A POTW may not control an SIU through a general permit in cases where the facility's categorical pretreatment standards are production-based or expressed as mass of pollutant discharged per day, or where the facility's limits are based on the combined wastestream formula (CWF) or net/gross calculations [40 CFR 403.6(e) and 403.15]. General permits must contain the minimum conditions required for individual permits, as listed earlier.

EPA's *Industrial User Permitting Guidance Manual* (Draft) details procedures for drafting IU discharge permits. SIU permits are site-specific and tailored to the unique circumstances of the IU. Permit conditions should contain clear and explicit requirements for the permittee, including using terms such as *must* and *must not*, where appropriate, in lieu of vague terms such as *recommend*, *may*, and *should*. The POTW should document its decision-making process when developing permits to ensure defensibility and enforceability. Adherence to sound, documented procedures will help prevent claims by the permittee that the POTW's actions were arbitrary or capricious. Whether developing or reissuing a permit, the permitting process usually 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, POTWs may review and verify information 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 POTW personnel, effective communication, and SIU cooperation are essential to collecting complete and accurate information.

Phase II could require the POTW to interpret data and other information and document the permit decision-making rationale, preferably in a permit fact sheet. Although the contents of the fact sheets will

vary by permittee, they need to provide a justification for all permitting decisions. The typical components of a fact sheet are listed in figure 4-2. Completed fact sheets should be included in each IU file and provided to the permittee to underscore the soundness of permitting decisions.

After all permitting decisions have been made, the POTW incorporates them into a permit (Phase III). The POTW provides the draft permit, signed by the specified POTW official, to the permittee for comment; after comments are addressed, the POTW issues a final permit to the IU. Although the POTW can easily address and resolve many comments, occasionally a resolution must be reached through a formal adjudicatory hearing, at which both the permittee and POTW present their cases to a third party (e.g., permit appeal).

For CIUs

- ❖ The basis for the categorical determination(s)
- ❖ The identity and flow volume of all wastestreams generated and discharged to the POTW, classified accordingly (i.e., regulated, unregulated, or dilution)
- ❖ Calculations, if needed, for applying CWF, flow-weighted average, and production-based standards
- ❖ Basis of selecting any values used in calculations
- ❖ Data uses and/or justification for estimates used to determine categorical limitations

For SIUs/CIUs

- ❖ The basis for limits imposed for all parameters (categorical, local limits, and such)
- ❖ The rationale for any compliance schedules, special plans required, and special conditions
- ❖ The basis for monitoring and reporting frequencies

Figure 4-2. Components of the permit fact sheet.

Many POTWs also control contributions from non-SIUs using various means, such as general permits issued to an entire industrial sector. These types of control mechanisms could require compliance with BMPs in addition to or in place of 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
- ▲ Mercury recovery by hospitals and dentists.

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

INSPECTIONS

POTWs are required to inspect all SIUs at least once a year pursuant to 40 CFR 403.8(f)(2)(v). Although EPA regulations establish a minimum frequency for inspections, additional inspections by the POTW might be necessary depending on issues such as the variability of an SIU's effluent, the effect of the SIU's discharge on the POTW, and the facility's compliance history. Inspection considerations (figure 4-3) hinge on the type of inspection performed (e.g., scheduled, unscheduled, or on-demand). EPA's 1994 *Industrial User Inspection and Sampling Manual for POTWs* provides a detailed reference for inspection procedures and protocols.

The Streamlining Rule revisions allow POTWs to classify some CIUs as MTCIUs. MTCIUs are still SIUs, but if they meet the conditions in 40 CFR 403.12(e)(3), they qualify for reduced reporting and oversight. POTWs are required to inspect MTCIUs at least once every 2 years. If an MTCIU no longer

meets the conditions in 40 CFR 403.12(e)(3), the POTW must immediately begin inspecting the CIU at least once a year (the minimum frequency for inspecting an SIU).

- ❖ Provide current data on the IU.
- ❖ Confirm or determine the IU's 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 a rapport with the IU.
- ❖ 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 4-3. Inspection considerations.

Scheduled inspections are useful when the POTW wants to gather specific information from the facility that necessitates meeting with specific SIU contacts. However, on-demand inspections or unscheduled inspections might more accurately reflect SIU compliance status because scheduled inspections sometimes interrupt normal operations. (For example, the production schedule might be altered as a result of preparatory work undertaken by the SIU.) On-demand inspections are nonroutine and occur in response to a concern such as POTW collection problems downstream from an IU, elevated enforcement actions against an IU, suspicious IU behavior, or an informer's complaint.

Routine POTW inspections of SIUs typically consist of three activities—preparation, on-site assessment, and follow-up.

- ▲ **Preparation.** POTW personnel should review POTW records for an SIU to be inspected to familiarize themselves with the facility. The information reviewed might 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. POTW personnel should also be familiar with any specific issues and concerns regarding the POTW's treatment plant or collection system potentially caused by the SIU's discharge.
- ▲ **On-site assessment.** POTW personnel typically discuss IU operations with IU contacts and walk through the facility to update IU information regarding contacts, processes, production rates, pretreatment, and other waste management activities; review records that the IU is required to keep; 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, and the like. Many POTWs have developed a standard inspection questionnaire to facilitate the interview process and promote consistency during the inspection.

- ▲ **Follow-up.** The POTW should prepare an inspection report as soon as possible after the inspector returns to the office. Unanswered questions, required permit modifications, or necessary enforcement actions should be processed in a timely manner.

Nonroutine inspections such as on-demand inspections might not encompass all the activities and steps specified above. Like routine inspections, however, such activities should provide the POTW an opportunity to collect samples of the IU's discharge.

POTWs must also evaluate whether each SIU needs a plan or other action to control slug discharges. (A slug discharge is a discharge of a nonroutine, episodic nature, including an accidental spill or noncustomary batch discharge.) To accurately evaluate the slug potential, POTWs likely will have to examine the SIU during its normal operating conditions. If undetected, slug discharges can have serious effects on the POTW. EPA's 1991 *Control of Slug Loadings to POTWs Guidance Manual* provides procedures for developing, implementing, and reviewing slug control plans. Additional information on slug control plans is included in chapter 5 of this manual.

SAMPLING

With the exception of MTCIUs and NSCIUs, the General Pretreatment Regulations require POTWs to monitor each SIU at least annually and each SIU to self-monitor at least semiannually (once every six months). The POTW may choose to monitor in lieu of requiring the IU to perform the self-monitoring. If sampling conducted by the IU indicates a violation, the IU must repeat the sampling and submit analytical results within 30 days after becoming aware of the violation. If the IU performed the initial sampling, the IU must notify the POTW within 24 hours of becoming aware of the violation in addition to performing the follow-up sampling and analysis. In cases where the POTW has assumed responsibility for sampling in lieu of the SIU, the POTW must repeat the sampling and analysis. An exception to that requirement is made if the POTW performs the sampling at the IU at a frequency of at least once per month or if the POTW performs sampling at the IU between the time of the initial sampling and the receipt of the results of that sampling. For a discussion on self-monitoring, see chapter 5.

For MTCIUs, the POTW is required to conduct sampling at least once every 2 years. For NSCIUs, the POTW is required to evaluate, at least every 2 years, whether the IU continues to meet the criteria that qualify it as an NSCIU. Where the POTW has authorized the SIU to forego sampling of a pollutant regulated by a categorical pretreatment standard (under 40 CFR 403.12(e)(2)), the POTW must sample for the waived pollutant(s) at least once during the term of the CIU's control mechanism (maximum duration of 5 years).

As with inspections, the POTW should assess site-specific issues, such as SIU effluent variability, the effect of the effluent on the POTW, and the SIU's compliance history, to determine appropriate sampling frequencies (i.e., if more or less frequent monitoring is necessary). A more detailed discussion of IU monitoring requirements is provided in chapter 5. For more detailed information on sampling frequencies, refer to EPA's 1994 *Industrial User Inspection and Sampling Manual for POTWs*.

Sampling is the most appropriate method for verifying compliance with pretreatment standards. The POTW designates the monitoring location(s), which must be selected such that compliance with permitted discharge limits can be determined. Where possible, the POTW should not designate monitoring locations that are confined spaces, are difficult to access, or make it difficult to place the automated sampling equipment. Monitoring locations should

- ▲ Be appropriate for wastestream conditions
- ▲ Be representative of the discharge
- ▲ Have no bypass capabilities

- ▲ Allow for unrestricted access at all times.

Grab samples must be used for pH, cyanide, total phenols, oil and grease, sulfide, and volatile organic compounds. For all other pollutants, 24-hour composite samples must be obtained through flow-proportional composite sampling techniques, unless the POTW authorizes time-proportional composite sampling or grab sampling. Where the POTW authorizes time-proportional composite sampling or grab sampling, (1) the samples must be representative of the discharge, and (2) the justification for the decision to allow the alternative sampling must be documented in the IU's file for that facility or facilities. Using protocols (including appropriate preservation) specified in 40 CFR Part 136 and appropriate EPA guidance, multiple grab samples collected during a 24-hour period may be composited before the analysis as follows: for cyanide, total phenols, and sulfides, the samples may be composited in the laboratory or in the field; for volatile organics and oil and grease, the samples may be composited in the laboratory. The POTW may authorize, as appropriate, composite samples for other parameters unaffected by the compositing procedures as documented in approved EPA methodologies.

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 4-4) can be verified by reviewing field measurement records, chain-of-custody forms, and lab reports. Field

Parameter	Sample type	Container	Preservative	Holding time
pH	Grab	Polyethylene or glass	N/A	Analyze immediately
BOD	Composite	Polyethylene or glass	Chilled to $\leq 6^{\circ}\text{C}$	48 hours
TSS	Composite	Polyethylene or glass	Chilled to $\leq 6^{\circ}\text{C}$	7 days
NH ₃ as N	Composite	Polyethylene or glass	Chilled to $\leq 6^{\circ}\text{C}$, H ₂ SO ₄ to pH < 2	28 days
Oil and grease	Grab	Glass	Chilled to $\leq 6^{\circ}\text{C}$, HCl or H ₂ SO ₄ to pH < 2	28 days
Cyanide, total	Grab	Polyethylene or glass	Chilled to $\leq 6^{\circ}\text{C}$, NaOH to a pH > 12, and 0.6 g of ascorbic acid if residual chlorine is present	14 days
Metals (total)	Composite	Polyethylene or glass	HNO ₃ to pH < 2	6 months
Chromium, hexavalent	Composite	Polyethylene, fluoropolymer, or glass	Chilled to $\leq 6^{\circ}\text{C}$	28 days
Boron	Composite	Polyethylene, fluoropolymer, or Quartz	HNO ₃	6 months
Mercury	Composite	Polyethylene, fluoropolymer, or glass	HNO ₃	28 days
624 (volatiles organics)	Grab	Amber glass, w/Teflon septum lid and zero headspace	Chilled to $\leq 6^{\circ}\text{C}$ (additional laboratory preservation required)	7 or 14 days, depending on specific organic
625 (semivolatile organics)	Composite	Amber glass w/Teflon-lined lid	Chilled to $\leq 6^{\circ}\text{C}$ (additional laboratory preservation required)	7 days for sample prep; 40 days for extract

Figure 4-4. Suggested sample collection techniques.

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 are a link between field personnel and the laboratory, and they 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) and 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). Using standardized forms that prompt recording the information necessary to demonstrate compliance with applicable requirements helps to ensure that data can be used as admissible evidence in enforcement proceedings or in judicial actions.

CONTROL AUTHORITY ENFORCEMENT

In addition to requirements for permitting, sampling, and inspecting IUs, the General Pretreatment Regulations require POTWs to review IU reports and plans and to respond to instances of IU noncompliance in a timely, fair, and consistent manner. Enforcement of pretreatment requirements is a critical element of the National Pretreatment Program. In the early years of the Program, EPA became aware that in certain instances extenuating circumstances could prevent POTWs from taking adequate enforcement steps. For example, political and economic pressures from local officials might keep POTW personnel from taking appropriate actions. After that 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). The 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. The purpose of developing and following an approved ERP is so that POTWs enforce against IUs objectively, consistently, and equitably and thereby minimize any potential outside pressures to overlook potential violations.

To evaluate IU compliance, POTWs must first identify the 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 that enforcement response is appropriate and that the POTW's actions are not arbitrary or capricious, EPA strongly recommends that the POTW include an enforcement response guide (ERG) as part of the approved ERP. The ERG typically identifies responsible POTW officials, a general time frame for actions, expected IU responses, and potential escalated actions based on the following:

- ▲ 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) effect of the violation (e.g., interference, pass through, or POTW worker safety)
- ▲ Economic benefit gained by the violator
- ▲ Attitude of the violator.

Figure 4-5 illustrates the types of questions that dictate whether an ERG is adequate. Factors that the POTW should consider in determining appropriate enforcement responses to noncompliance events are discussed in detail in EPA's 1989 *Guidance for Developing Control Authority Enforcement Response Plans*.

- Q: Is a POTW response required for all violations that were identified?
- Q: Is the IU notified by the POTW 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 period?
- Q: Where noncompliance continues or the IU response is inadequate, does the POTW's response become more formal and are 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 4-5. How complete is your ERG?

Although POTWs should strive for consistent compliance by all permitted IUs, the General Pretreatment Regulations establish criteria for SNC for violations that would have a potential for greater environmental impact. SNC is defined in 40 CFR 403.8(f)(2)(viii) and depicted in figure 4-6. A decision to seek formal enforcement is generally triggered by an unresolved instance of SNC, failure to achieve compliance in a specified period through less formal means, or the advice of legal counsel. SNC evaluations are to be conducted in 6-month increments. The names of IUs found to be in SNC must be published in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW; refer to the Public Participation section in this chapter.

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

- (A) Chronic violations of wastewater discharge limits, defined here as those in which 66 percent or more of all the measurements taken during a 6-month period exceed (by any magnitude) a numeric pretreatment standard or requirement, including instantaneous limits, as defined by 40 CFR 403.3(l)
- (B) Technical Review Criteria (TRC) violations, defined here as those in which 33 percent or more of all of the measurements for each pollutant parameter taken during a 6-month period equal or exceed the product of the numeric pretreatment standard or requirement including instantaneous limits, as defined by 40 CFR 403.3(l) multiplied by the applicable TRC (TRC = 1.4 for BOD₅, TSS, fats, oil, and grease; and 1.2 for all other pollutants except pH)
- (C) Any other violation of a pretreatment Standard or Requirement as defined at 40 CFR 403.3(1) (daily maximum, long-term average, instantaneous limit, or narrative standard) that the POTW 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 45 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 could include a violation of BMPs, that the POTW determines will adversely affect the operation or implementation of the local pretreatment program

Figure 4-6. Definition of SNC.

Formal enforcement needs to be supported by well-documented records of the violations and of any prior efforts by the POTW to obtain compliance. Where effluent limitations have been exceeded, records should be reviewed to verify compliance with 40 CFR Part 136 test methods. If the IU has received conflicting information from the POTW regarding its compliance status, its status should be clarified in writing. The POTW might wish to consider a *show cause* meeting with the IU before beginning formal enforcement action because the regulations do allow, in certain instances, an affirmative defense for violations.

The range of enforcement mechanisms available to a POTW depends on the specific legal authorities provided by city, county, and state law. The mechanisms could range from a simple telephone call to suits seeking significant criminal penalties. Common enforcement mechanisms include the following:

- ▲ **Informal notice to IU.** This notice could consist of a telephone call or a reminder letter to an appropriate IU official to notify him or her of a minor violation and to seek an explanation. Such an informal notice can be used to correct minor instances of noncompliance.
- ▲ **Informal meetings.** Informal meetings can be used to obtain an IU's commitment to comply with its pretreatment obligations or to inform the IU of stronger enforcement mechanisms available for unresolved or continued noncompliance.
- ▲ **Warning letter or Notice of Violation (NOV).** This written notice to the IU in response to a violation of pretreatment standards or requirements should request an explanation of the noncompliance and measures that will be taken to eliminate future violations.
- ▲ **Administrative orders and compliance schedules.** These may require an IU to *show cause* to the POTW as to why formal enforcement action should not be taken or sewer service discontinued, or what actions will be taken to comply with pretreatment standards or requirements. Such orders may be negotiated (i.e., Consent Order) or issued at the reasonable discretion of the POTW (i.e., Compliance Order). For more egregious or serious violations, the POTW may issue a Cease and Desist Order.
- ▲ **Administrative fines.** POTWs may assess fines against IUs for violations. The fines are intended to recapture partial or full economic benefit for the noncompliance and to deter future violations.

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

- ▲ **Civil suits.** Civil suits are a formal process of filing lawsuits against IUs to correct violations and to obtain penalties for violations. Civil penalty amounts are generally established through state or municipal laws. However, 40 CFR 403.8(f)(1)(vii) requires that POTWs 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 POTW 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.
- ▲ **Criminal prosecution.** This type of enforcement is a formal judicial process in which 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 earlier, POTWs 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 falsifying data and tampering with sampling results or equipment.
- ▲ **Termination of service (revocation of permit).** POTWs may pursue permit revocation to immediately halt an actual or threatened discharge to the POTW that could represent an

endangerment to the public health, the environment, or the POTW. This remedy may also be used to bring recalcitrant IUs into compliance.

Regardless of the response taken, the POTW should document and track all contact, notices, and meetings with IUs and any IU responses. POTW actions and IU responses (or lack thereof) should be documented, including a record of any direct contact with the IU to attempt to resolve the noncompliance. POTWs should take timely and effective enforcement actions against violators.

PROGRAM MANAGEMENT AND RECORD KEEPING

POTWs must maintain general program files that document program development and implementation activities that are not IU-specific (figure 4-7). Furthermore, pretreatment programs are required to maintain local limits records during at least the effective dates of the developed local limits and for 3 years after. 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 POTW or state must be available to the public without restriction, except for confidential business information (40 CFR 403.14).

The POTW is required to maintain records resulting from monitoring in a readily accessible manner for at least 3 years (40 CFR 403.12(o)). Although the means for maintaining files is usually at the discretion of the POTW, all required pretreatment activities must be recorded and the documents maintained. Types of records submitted by and pertaining to IUs are summarized in figure 4-8.¹⁴ POTWs must also maintain the following documentation, when applicable:

- ✧ ***Equivalent limits [40 CFR 403.6(c)(6)].***
If the POTW allows the conversion of the mass limits of the categorical pretreatment standards at 40 CFR Parts 414, 419, and 455 to concentration-based limits, the POTW should document that dilution is not being substituted for treatment.

- ✧ ***Equivalent limits [40 CFR 403.6(c)(7)].***
If the POTW allows equivalent concentration- or mass-based limits, the POTW should document how the equivalent limits were derived and make this information publicly available.

- ❖ Legal authority (e.g., SUO)
- ❖ Program procedures
- ❖ Program approval and modifications
- ❖ List of SIUs
- ❖ Copy of POTW NPDES permit(s)
- ❖ Local limits development
- ❖ ERP
- ❖ Correspondence to and from EPA/state
- ❖ Annual reports to the Approval Authority
- ❖ Public notices
- ❖ Funding and resource changes
- ❖ Applicable federal and state regulations
- ❖ IU compliance and permitting records
- ❖ IWS results

Figure 4-7. Types of POTW records retained.

- ❖ Industrial waste questionnaires
- ❖ Permit applications, permits and fact sheets
- ❖ Inspection reports
- ❖ IU reports
- ❖ Monitoring data (including laboratory reports)
- ❖ Required plans (e.g., slug control, sludge management, pollution prevention)
- ❖ Enforcement activities
- ❖ All correspondence to and from the IU
- ❖ Phone logs and meeting summaries

Figure 4-8. Types of IU records retained by POTW.

¹⁴ Descriptions of the documents required to be submitted by IUs are provided in chapter 5.

- ▲ **General control mechanism [40 CFR 403.8(f)(1)(iii)(A)(2)].** A copy of the general control mechanism, documentation to support the POTW's determination that a specific SIU meets the criteria necessary to qualify for a general permit, and a copy of the IU's written request for coverage must be maintained for 3 years after the expiration of the general control mechanism.
- ▲ **Monitoring waiver for pollutant not present [40 CFR 403.12(e)(2)(iv)].** The reasons supporting the monitoring waiver and any information submitted by the IU in its request for the waiver must be maintained for 3 years after expiration of the waiver.
- ▲ **MTCIU [40 CFR 403.12(e)(3)(v)].** Documentation to support the POTW's determination that a specific IU qualifies for reduced reporting requirements must be maintained for 3 years after the expiration of the term of the control mechanism in which the middle-tier requirements were applied.
- ▲ **Alternative sampling method [40 CFR 403.12(g)(3)].** Documentation on the justification to allow time-proportional composite sampling or grab sampling in lieu of flow-proportional composite sampling must be maintained.
- ▲ **BMPs [40 CFR 403.12(o)].** Documentation associated with BMP compliance must be maintained for 3 years.

A computerized data management system can assist in tracking due dates, submissions, deficiencies, notifications, and the like and in calculating effluent limitation noncompliance. Similarly, many POTWs use standardized forms (e.g., inspection questionnaires, chains of custody, and field measurement records) and procedures (e.g., sampling and periodic compliance report reviews) to promote the consistency and organization of program data.

PUBLIC PARTICIPATION

One of the goals of CWA section 101(e) is public participation 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 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 and any request for a public hearing must be filed with the Approval Authority within the specified comment period, which is typically 30 days. The Approval Authority takes into consideration all comments received when deciding to approve or deny the submission. The decision is then provided to the POTW and other interested parties and published in the newspaper; all comments received must be available to the public for inspection and copying.

After a local pretreatment program is approved, the requirement to implement the program is incorporated into the NPDES permit and the POTW must implement that program as approved. Before a POTW may implement a significant change in its pretreatment program operation, it must initiate a program modification.

For substantial program modifications (figure 4-9), the POTW is required to notify the Approval Authority of its desire to modify its program and the basis for the change. Such changes become effective upon approval. Approval Authorities (or POTWs) are required to provide public notice of the request for

a modification, but they are not required to provide public notice of the decision if no comments are received and the request is approved without changes (40 CFR 403.11 and 403.18(c)(3)&(4)). After EPA amends the General Pretreatment Regulations, a POTW will often be required to modify its approved program to ensure that the legal authority and program procedures provide for implementation of those requirements. That is true even where the amendments to the General Pretreatment Regulations allow for relaxed requirements for the POTW or its IUs. Failure to submit program modifications before implementation in such cases could result in the POTW's violating its NPDES permit because implementation of the approved program is usually a requirement of the POTW's NPDES permit.

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

The POTW also must annually publish—in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW—a list of IUs that were in SNC at any time during the previous 12 months.

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)
2. Modifications that relax local limits, except for modifications to local limits for pH and reallocations of the MAIL of a pollutant that do not increase the total industrial loadings for a pollutant, and that are reported pursuant to 40 CFR 403.18(d)
3. Changes to a POTW's control mechanism, as described in 40 CFR 403.8(f)(1)(iii)
4. A decrease in the frequency of self-monitoring or reporting required of IUs
5. A decrease in the frequency of IU inspections or sampling by the POTW
6. Changes to the POTW's confidentiality procedures
7. Other modifications designated as substantial modifications by the Approval Authority because the modification could have a significant effect 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 the POTW's IUs

Figure 4-9. Substantial modifications of POTW pretreatment programs (40 CFR 403.18).

POTW REPORTING

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

- ▲ A list of all the POTW's IUs, including names, addresses, pretreatment standards applicable to each user, a brief explanation of deletions, and a list of additions (with the aforementioned information) keyed to a previously submitted list. The list must also identify IUs that are designated as MTCIUs and must identify which IUs are NSCIUs
- ▲ A summary of the status of IU compliance during the reporting period
- ▲ A summary of compliance and enforcement activities (including inspections) conducted by the POTW during the reporting period
- ▲ A summary of changes to the POTW's pretreatment program that have not been previously reported to the Approval Authority
- ▲ Any other relevant information requested by the Approval Authority.

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

The reports must be signed by a principal executive officer, ranking elected official, or other duly authorized employee. The duly authorized employee must be an individual or position having responsibility for the overall operation of the facility or the pretreatment program. This authorization must be made in writing by the principal executive officer or ranking elected official and submitted to the Approval Authority before or together with the report being submitted.

In addition, 40 CFR 122.42(b) requires POTWs to notify the director of new pollutants or changes in discharge. All POTWs are required to provide adequate notice to the director of the following: (1) any new introduction of pollutants into the POTW from an indirect discharger that would be subject to section 301 or 306 of the CWA if it were directly discharging those pollutants and (2) any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

APPROVAL AUTHORITY ENFORCEMENT

POTW or IU noncompliance can result in the Approval Authority's enforcing directly against the IU, the POTW, or both. An Approval Authority routinely reviews the overall performance of a POTW in monitoring IUs, identifying violations, and enforcing regulations. Performance will be evaluated on the basis of POTW self-monitoring data, written ERPs, audits, inspections, and pretreatment program reports (including IU self-monitoring reports and other data). Therefore, it is essential for POTWs to effectively manage program information to demonstrate proper implementation.

CWA section 505 allows citizens to file suit against a POTW that has failed to implement its approved pretreatment program as required by its NPDES permit. The POTW may be fined, as well as subject to injunctive relief. Citizens may also file suit against IUs that have failed to comply with pretreatment standards and requirements.

CHAPTER 5.

INDUSTRIAL USER PRETREATMENT PROGRAM RESPONSIBILITIES

Chapter 5. Applicable EPA Guidance

Guidance Manual for Implementing Total Toxic Organics (TTO) Pretreatment Standards (EPA September 1985)

Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe (EPA July 1987)

Guidance Manual for the Use of Production-Based Pretreatment Standards and the Combined Wastestream Formula (EPA September 1985)

Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-001)

RCRA Information on Hazardous Wastes for Publicly Owned Treatment Works (EPA September 1985)

Industry-Specific Guides

Aluminum, Copper, and Nonferrous Metals Forming and Metal Powders Pretreatment Standards: A Guidance Manual (EPA 800B89001)

Guidance Manual for Battery Manufacturing Pretreatment Standards (EPA August 1987)

Guidance Manual for Electroplating and Metal Finishing Pretreatment Standard (EPA-440/1-84/091g)

Guidance Manual for Iron and Steel Manufacturing Pretreatment Standards (EPA September 1985)

Guidance Manual for Leather Tanning and Finishing Pretreatment Standards (EPA 833B86101)

Guidance Manual for Pulp, Paper, and Paperboard and Builders' Paper and Board Mills Pretreatment Standards (EPA July 1984)

IUs are required to comply with all applicable federal, state, and local pretreatment standards and requirements. Demonstration of compliance requires certain IUs to submit reports, self-monitor, and maintain records. Summaries of the federal reporting and notification requirements are provided in attachments 5-1 and 5-2; details of each of these requirements are discussed below. POTW personnel must also be aware of, and comply with, all relevant state and local pretreatment requirements.

REPORTING REQUIREMENTS

National minimum pretreatment program reporting requirements for IUs are specified in 40 CFR 403.12. Because POTWs are responsible for communicating applicable standards and requirements to IUs and for receiving and analyzing reports, it is essential for POTW personnel to understand the IU reporting requirements in the General Pretreatment Regulations. Those requirements are summarized below. In cases where the POTW itself collects all the information required for a specific report, including flow data, the IU is not required to submit that report.

Categorical Industrial User Reporting Requirements

Baseline Monitoring Report [40 CFR 403.12(b)]

Each IU that is subject to a categorical pretreatment standard (identified as a CIU) is required to self-monitor and submit a baseline monitoring report (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:

- ▲ The name and address of the facility and name(s) of the operator and owners.
- ▲ A list of all environmental control permits held by or for the facility.
- ▲ A description of operations, including the average rate of production, applicable North American Industry Classification System (NAICS) 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.
- ▲ Categorical pretreatment standards applicable to each regulated process. In cases where the standard requires compliance with a BMP or pollution-prevention alternative, the CIU must submit documentation as required by the POTW or the applicable standards to determine compliance with the standard.
- ▲ Sampling and analysis results (daily maximum, average concentration, and mass (where applicable)).
- ▲ Time, date, and place of sampling; methods of analysis; certification that sampling and analysis are representative of normal work cycles and expected pollutant discharges to the POTW.
- ▲ Certification by a qualified professional, reviewed by an authorized representative of the CIU, of whether applicable pretreatment standards are being met on a consistent basis and, if not, a description of the additional operation and maintenance or pretreatment facilities that are needed to comply with the standards. In cases where the POTW performs the required sampling and analysis in lieu of the IU, the IU will not be required to submit the compliance certification.
- ▲ Schedule for providing the additional operation and maintenance or pretreatment needed by the IU to comply with the applicable pretreatment standards.

In addition to the certification noted above, BMRs must be signed and certified by an authorized representative of the CIU 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 the information is still current, it need not be reproduced and resubmitted in the BMR. The BMR is a one-time report, unless changes in the federal categorical standards require submission of a new or updated BMR.

At least 90 days before beginning discharge, new sources are required to submit the above information, excluding the certification from the qualified professional regarding consistent compliance (because compliance from initial date of discharge is expected) and compliance schedule (although new sources must provide information on the treatment 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 might have to modify process operations or install treatment facilities to comply. Federal regulations require that the POTW 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. The final compliance or completion date in the schedule may not be later than the final compliance date specified in the categorical standards. Where authorized to do so, the POTW may require compliance earlier than the final compliance date specified in the federal regulations.

Compliance schedules must include increments of progress in the form of dates (not to exceed 9 months per event) for beginning and completing major actions leading to construction and operation of a pretreatment system 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, beginning construction, completing construction, or testing operation.

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

- ▲ 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 the CIU is taking to return to the established schedule.

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

Although EPA regulations require the compliance schedule progress report only for schedules submitted with a BMR, EPA recommends such incremental progress reporting for any compliance schedule.

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

Section 403.12(d) of the General Pretreatment Regulations requires a CIU to submit the results of the self-monitoring of its wastewater discharge(s) to the POTW in a final compliance report. 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 POTW, whichever is earlier. A new source must file a compliance report within 90 days of beginning discharge to the POTW. The report must contain the following:

- ▲ Flow measurements (average daily and maximum daily) for regulated process wastestreams and nonregulated wastestreams, where necessary.
- ▲ Categorical pretreatment standards applicable to each regulated process. In cases where the standard requires compliance with a BMP or pollution-prevention alternative, the CIU must submit documentation as required by the POTW or the applicable standards to determine compliance with the standard.
- ▲ Sampling and analysis results (daily maximum, average concentration, and mass [where applicable]).

- ▲ Time, date, and place of sampling; methods of analysis; certification that sampling and analysis is representative of normal work cycles and expected pollutant discharges to the POTW.
- ▲ 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 or pretreatment facilities that are needed to comply with the standards. In cases where the POTW performs the required sampling and analysis in lieu of the IU, the IU is not required to submit the compliance certification.

Again, in addition to the certification statement noted above, 90-day compliance reports must be signed and certified by an authorized representative of the CIU as detailed in 40 CFR 403.12(l) and as described later in this chapter.

For CIUs subject to equivalent mass or concentration limits established by the POTW [40 CFR 403.6(c)], the report must contain a reasonable measure of the IU's long-term production rate. For CIU subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or another measure of operation), the report must include the IU's actual production during the appropriate sampling period.

Periodic Compliance Report [40 CFR 403.12 (e)]

After the final compliance date or, in the case of a new source, after beginning the discharge into the POTW, CIUs (except NSCIUs) are required to submit, in June and December, the self-monitoring results of their wastewater discharge(s). The POTW may modify the months in which the reports are to be submitted. In addition, CIUs might need to report more frequently as required in the pretreatment standards, by the POTW, or by the Approval Authority. All results for self-monitoring performed must be reported to the POTW, even if the CIU is monitoring more frequently than required. Periodic compliance reports must include the following:

- ▲ The nature and concentration of pollutants limited by applicable categorical standards or required by the POTW
- ▲ Flow data (average and maximum daily) as required by the POTW
- ▲ 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)
- ▲ Documentation required by the POTW or the pretreatment standard necessary to determine the compliance status of the IU (applies to CIUs with pretreatment standards that require compliance with a BMP).

For a CIU determined by the POTW to be an MTCIU [40 CFR 403.12(e)(3)], the POTW may reduce the minimum requirement to report from twice a year to once a year, unless more frequent reporting is required in the pretreatment standard or by the Approval Authority. A CIU must immediately resume self-monitoring and reporting at least twice a year if it is determined that it is no longer an MTCIU.

A CIU that the POTW has classified as an NSCIU is not required to submit the periodic compliance report. Instead, the CIU must annually submit a certification statement with the alternative report required by the POTW [40 CFR 403.12(q)].

As a result of the Streamlining Rule, POTWs may update their programs to include the authority to allow an IU subject to a categorical pretreatment standard to forego sampling of a pollutant regulated

by that categorical pretreatment standard if the CIU has demonstrated through sampling and other technical factors that the pollutant is neither present nor expected to be present in the discharge, or is present only at background levels from intake water and without any increase in the pollutant resulting from activities of the CIU. The POTW must receive approval from the Approval Authority before implementing the program update. To be authorized to forego this sampling, the IU must provide the sampling data and meet the requirements in 40 CFR 403.12(e)(2). Non-detectable sample results may be used only as a demonstration that a pollutant is not present if the EPA-approved method from 40 CFR Part 136 with the lowest minimum detection level for that pollutant was used in the analysis. This monitoring waiver does not supersede certification processes and requirements established in categorical pretreatment standards, except as otherwise specified in the categorical pretreatment standard.

For a CIU authorized by the POTW to forego sampling of a pollutant regulated by a categorical pretreatment standard, the CIU must certify on each report, using the statement in 40 CFR 403.12(e)(2)(v), that there has been no increase in the pollutant in its wastestream from activities of the IU. The monitoring waiver is valid only for the duration of the effective period of the IU's control mechanism, but it may not be longer than 5 years. The CIU must submit a new request for the waiver before the waiver can be granted for each subsequent control mechanism.

Upset Report [40 CFR 403.16]

An 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 preventive maintenance, or careless or improper operation. CIUs are allowed an affirmative defense for noncompliance with categorical standards if they can demonstrate that the noncompliance was the result of an upset. The regulations in 40 CFR 403.16 detail the conditions necessary to demonstrate that an upset has occurred, and they require the CIU to submit at least an oral report to the POTW within 24 hours of becoming aware of the upset. The report must contain the following information:

- ▲ A description of the indirect discharge and the cause of the noncompliance
- ▲ The date(s) and times of the noncompliance
- ▲ Steps being taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

If the CIU provides the notification orally, it must also submit a written report within 5 days. In any enforcement action, the CIU has the burden of proof in establishing that an upset has occurred. EPA is responsible for determining the technical validity of the claim.

Significant Industrial User Reporting Requirements

Periodic Compliance Report [40 CFR 403.12 (h)]

After the final compliance date, SIUs not subject to categorical pretreatment standards must submit to the POTW at least once every 6 months (on dates specified by the POTW) a description of the nature, concentration, and flow of the pollutants required to be reported by the POTW. EPA established a minimum frequency of once every 6 months, determining that to be adequate for IUs that have little potential to cause pass through or interference, to contaminate the sewage sludge, or to otherwise violate pretreatment standards or requirements. EPA assumes that larger IUs and those that have more potential to cause problems or violate standards would be required by the POTW to sample and report more often. All results for self-monitoring performed must be reported to the POTW, even if the IU is monitoring

more frequently than required (40 CFR 403.12(g)(6)). Periodic compliance reports must include the following:

- ▲ The nature and concentration of pollutants as required by the POTW
- ▲ Flow data (average and maximum daily) as required by the POTW
- ▲ Documentation required by the POTW necessary to determine the compliance status of the IU (applies to SIUs with local limits or other requirements that require compliance with a BMP).

Slug Control Plan [40 CFR 403.8(f)(2)(vi)]

POTWs must evaluate whether each SIU needs a plan or other action to control slug discharges. A slug discharge is any discharge of a nonroutine, episodic nature, including an accidental spill or noncustomary batch discharge that has a reasonable potential to cause interference or pass through, or in any other way violate the POTW's regulations, local limits, or permit conditions. For IUs identified as SIUs before November 14, 2005, this evaluation must have been conducted at least once by October 14, 2006; additional SIUs must be evaluated within one year of being so designated. To accurately evaluate the slug potential, POTWs likely will have to examine the SIU during its normal operating conditions. If undetected, slug discharges can have serious effects on the POTW. EPA's 1991 *Control of Slug Loadings to POTWs Guidance Manual* provides procedures for developing, implementing, and reviewing slug control plans. If the POTW determines that a slug control plan is needed, the SIU must submit a plan that contains at least the following elements [40 CFR 403.8(f)(2)(vi)]:

- ▲ Description of discharge practices, including nonroutine batch discharges
- ▲ Description of stored chemicals
- ▲ Procedures for immediately notifying the POTW of slug discharges with procedures for follow-up, written notification within 5 days
- ▲ If necessary, procedures to prevent adverse effects from accidental spills, including inspecting and maintaining storage areas, handling and transferring materials, loading and unloading operations, controlling plant site runoff, worker training, building containment structures or equipment, measures for containing toxic organic pollutants (including solvents), or measures and equipment for emergency response.

Bypass Report [40 CFR 403.17]

The General Pretreatment Regulations define *bypass* as the intentional diversion of wastestreams from any portion of an IU's treatment facility. If a bypass results in noncompliance, even if it resulted from performing essential maintenance, the IU must provide a report to the POTW detailing a description of the bypass and the cause, the duration of the bypass, and the steps being taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

The IU must provide oral notice to the POTW within 24 hours of detecting an unanticipated bypass; a written follow-up is due within 5 days. For an anticipated bypass, the IU must submit notice to the POTW, if possible at least 10 days before the intent to bypass.

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 must contain a certification statement attesting to the integrity of the information reported. The reports must be signed by one of the following:

- ▲ A responsible corporate officer if the IU is a corporation; a responsible corporate officer is defined as either of the following:
 - A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function
 - The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for control mechanism requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures
- ▲ 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, is submitted to the POTW, and specifies a person or position having overall responsibility for the facility where the discharge originates or having overall responsibility for 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.

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

Cross-Media Electronic Reporting [40 CFR Part 3]

The Cross-Media Electronic Reporting Rule (CROMERR) promulgated in October 2005 provides the legal framework for electronic reporting under all of EPA's environmental regulations. The POTW that chooses to receive electronic documents must satisfy the requirements of 40 CFR Part 3, specifically, the following electronic reporting provisions:

- ▲ Modify current requirements in the CFR to remove any obstacles to electronic reporting

- ▲ Allow regulated entities to submit any report electronically, but only after EPA announces that electronic reporting is available for the specific report
- ▲ Require submission of electronic reports to EPA's Central Data Exchange (CDX) or to another designated EPA system
- ▲ Require validation of electronic signatures on reports submitted to EPA through CDX (or another designated EPA system) and ensure that valid electronic signatures have the same legal force as their wet-ink counterparts
- ▲ Set forth requirements that EPA-authorized programs must satisfy when implementing electronic reporting, and provide a streamlined process for these programs to obtain EPA approval of their electronic reporting implementation.

SELF-MONITORING REQUIREMENTS

All SIUs, including CIUs, must conduct self-monitoring as part of several different reporting requirements as noted earlier. For CIUs, that includes the BMR, 90-day compliance report, and periodic compliance reports [40 CFR 403.12(b), (d), and (e), respectively]. Noncategorical SIUs are required to self-monitor as part of the periodic reporting requirements [40 CFR 403.12(h)]. Those reports must be based on data that were obtained through appropriate sampling and analysis performed during the period covered by the report and are representative of conditions occurring during the reporting period. The monitoring must occur at a frequency necessary to assess and assure compliance by IUs with applicable pretreatment standards and requirements. In cases where a violation is identified, the IU must repeat the sampling and analysis for the pollutant in violation and submit the results within 30 days after becoming aware of the violation. Resampling is not required if the conditions in 40 CFR 403.12(g)(2)(i) and (ii) are met.

The POTW may choose to monitor in lieu of the IU's performing the self-monitoring. In cases where a violation is identified and the POTW has assumed responsibility for sampling in lieu of the SIU, the POTW must repeat sampling and analysis within 30 days of becoming aware of an exceedance. The only exception to that requirement is if the POTW specifically requires the IU to perform the repeat analysis.

As noted in 40 CFR 403.12(g)(5), sample collection and analysis for all required pretreatment program reports must be conducted using 40 CFR Part 136 procedures (as amended) or with any other test procedures approved by the EPA Administrator. To demonstrate compliance with those requirements, IUs may have to submit information regarding sample handling and analytical procedures to the POTW. Developing 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 POTW review process. For additional information on sample collection and analysis procedures, refer to chapter 4 of this manual and EPA's *Industrial User Inspection and Sampling Manual for POTWs*.

On the basis of the specific pollutants regulated by categorical pretreatment standards, different types of samples might have to be collected. Grab samples must be used for pH, cyanide, total phenols, oil and grease, sulfide, and volatile organic compounds. For all other pollutants, 24-hour, flow-proportional composite samples must be collected. The POTW may waive flow-proportional composite sampling if an IU demonstrates that a different type of sampling will provide a representative sample. In such cases, time-proportional composite or grab samples, if representative, may be collected. Multiple grab samples collected during 24-hour period may be composited before the analysis as follows: for cyanide, total phenols, and sulfides, the samples may be composited in the laboratory or in the field; for volatile organics and oil and grease the samples may be composited in the laboratory. Composite samples for other parameters unaffected by the compositing procedures as documented in approved EPA

methodologies may be authorized by the POTW, as appropriate. The decision to allow time-proportional composite or grab sampling must be documented in the IU file for the facility.

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 those pollutants are not regulated by the specific categorical standard, monitoring is not required. The POTW may authorize a lower number of samples to be collected for facilities with historical sampling data. Samples should be taken immediately downstream from pretreatment facilities if they exist or immediately downstream from the regulated process if no pretreatment exists. If other wastewaters are mixed with the regulated wastewater before pretreatment, the IU should measure the flows and concentrations necessary to allow use of the CWF to evaluate compliance with the pretreatment standards. Where an alternate concentration or mass limit has been calculated by the IU using the CWF, the adjusted limit along with supporting data must be submitted to the POTW.

For periodic compliance reports [40 CFR 403.12(e) and (h)], the POTW must require the number of grab samples necessary to assess and assure compliance by IUs with applicable pretreatment standards and requirements. The POTW must ensure that each IU's control mechanism specifies sampling location(s), required sampling frequencies, sample types to be collected, sampling and analytical procedures (40 CFR Part 136), and associated reporting requirements.

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

For certain industries (e.g., electroplating, metal finishing, and electrical and electronic components), POTWs have the option of allowing the CIU to prepare and implement a toxic organic management program (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 by adhering to the TOMP and submitting periodic certification statements attesting to the facts 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. In addition, the POTW may not waive the semiannual certification requirement or TTO monitoring requirement through a mechanism such as a pollutants not present waiver.

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 as an alternative to TTO monitoring. This option may be used to fulfill the TTO monitoring requirements of the BMR, 90-day compliance report, and periodic compliance reports, and it allows the IU to determine whether it wants to demonstrate compliance with the TTO or the oil and grease standards. A detailed description of TTO monitoring requirements is provided in EPA's 1985 *Guidance Manual for Implementing Total Toxic Organics (TTO) Pretreatment Standards*.

Categorical standards for certain industrial categories allow IUs to submit a certification to exempt them from monitoring for one or more pollutants. For example,

- ▲ IUs from two categories (aluminum forming and coil coating) may choose to submit an annual certification requesting exemption for cyanide from the second semiannual self-monitoring event.
- ▲ IUs belonging to the pharmaceutical manufacturing category may choose to submit a certification requesting exemption from monitoring for cyanide and other regulated pollutants that are neither used nor generated at the facility..
- ▲ IUs belonging to the category of porcelain enameling may choose to submit an annual certification requesting exemption from the second semiannual self-monitoring event for chromium.
- ▲ Certain facilities in the pulp and paper categories may choose an alternative monitoring program by certification once every 5 years if they use a totally chlorine free process. Certain facilities in this category can also submit certifications in lieu of monitoring for pentachlorophenol and trichlorophenol if they do not use those compounds in their biocides.
- ▲ IUs belonging to the steam electric category may choose to provide a demonstration and certification that regulated parameters are not detectable in the final discharge (except chromium and zinc).
- ▲ Certain facilities in the electroplating, metal finishing, and electrical and electronic components categories may choose to submit a TTO certification semiannually in lieu of TTO monitoring, but such facilities must also develop and submit a TOMP.
- ▲ Centralized waste treatment facilities that opt for regulation under Subpart D must certify annually that they are operating their treatment systems to provide equivalent treatment as set forth in their initial certification.

Although the Streamlining Rule allows for reduced monitoring under the pollutants not present provision [40 CFR 403.12(e)(2)], the Streamlining Rule does not supersede the applicable certification processes and requirements established in the categorical pretreatment standards.

NOTIFICATION REQUIREMENTS

Notification of Production Level Change in the Equivalent Limit Calculation [40 CFR 403.6(c)(9)]

Any IU operating under a control mechanism that incorporates equivalent mass or equivalent concentration limits calculated from a production-based standard must notify the POTW within 2 business days after the IU has a reasonable basis to know that the production level will significantly change within the next calendar month.

Notification of Material/Significant Change in the Alternative Limit Calculation [40 CFR 403.6(e)]

Where process effluent is mixed before treatment with wastewaters other than those generated by the regulated process, fixed alternative discharge limits may be derived by the POTW or by the IU with the written concurrence of the POTW. An IU must immediately report to the POTW any material or significant change in the values used in the calculation.

Notification of Waived Pollutant Present [40 CFR 403.12(e)(2)(vi)]

The POTW may authorize the IU subject to a categorical pretreatment standard to forego sampling of a pollutant regulated by the categorical pretreatment standard if the IU has demonstrated through sampling and other technical factors that the pollutant is neither present nor expected to be present in the discharge, or is present only at background levels from intake water and without increase in the pollutant because of activities of the IU. This authorization is subject to the conditions listed in 40 CFR 403.12(e)(2). If a waived pollutant is found to be present or is expected to be present because of changes that occur in the IU's operation, the IU must immediately do the following:

- ▲ Begin self-monitoring twice per year or more frequently if required by the POTW.
- ▲ Notify the POTW.

Notification of Middle-Tier Categorical Industrial User 40 CFR 403.12(e)(3)(iv)]

A CIU that the POTW has determined to be an MTCIU must notify the POTW if the CIU no longer meets the conditions that qualify it as a middle-tier user. The CIU must also immediately begin complying with the semiannual self-monitoring and reporting requirements.

Notification of Potential Problems Including Slug Loading [40 CFR 403.12(f)]

All IUs are required to notify the POTW immediately of any discharges that could cause problems. The discharges include spills, slug loads, or any other discharge that could cause a problem at the POTW.

Noncompliance Notification and Repeat Sampling Report [40 CFR 403.12(g)(2)]

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

Notification of Changed Discharge [40 CFR 403.12(j) and 40 CFR 122.42(b)]

All IUs are required to promptly notify the Control Authority (and the POTW if the POTW is not the Control Authority) in advance of any substantial changes in the volume or character of pollutants in their discharge. As a general rule, changes greater than 20 percent are considered substantial. An IU is also required to notify the POTW immediately of any changes at its facility that affect the potential for a slug discharge [40 CFR 403.8(f)(2)(vi)]. An IU must also provide notification if it expects to discharge a pollutant for which it has been granted a waiver under the pollutants not present provision [40 CFR 403.12(e)].

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

IUs discharging more than 15 kilograms per month of a waste that, if otherwise disposed of, would be a hazardous waste pursuant to the Resource Conservation and Recovery Act (RCRA) requirements under 40 CFR Part 261 are required to provide a one-time written notification of such discharge to the POTW, state, and EPA. IUs discharging any amount of waste that, if disposed of otherwise, would be an acutely hazardous waste pursuant to RCRA must also provide the notification. The 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, at a minimum the following:

- ▲ 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
- ▲ 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.

Notification of Upset [40 CFR 403.16]

A CIU must notify the POTW with the information required in 40 CFR 403.16(c)(3) within 24 hours of becoming aware of the upset. If CIU provides the information orally, it must also provide a written submission within 5 days.

Notification of Bypass [40 CFR 403.17]

If an IU knows in advance of the need for a bypass, it must submit prior notice to the POTW, if possible at least 10 days before the date of the bypass. An IU must submit oral notice of an unanticipated bypass that exceeds applicable pretreatment standards to the POTW within 24 hours from the time the IU becomes aware of the bypass.

RECORD-KEEPING REQUIREMENTS

IUs are required to maintain records of their monitoring activities (including documentation associated with BMPs) [40 CFR 403.12(o)]. At a minimum, information documented must 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
- ▲ Other information necessary to document compliance with applicable BMPs

The IU must retain those records for at least 3 years, or longer in cases where there is pending litigation involving the POTW or IU, or when requested by the Approval Authority. These records must be available to the POTW and Approval Authority for review and copying. Historically, most POTWs do not dispose of *any* records; rather, they archive older records at an off-site location.

ATTACHMENT 5-1: SUMMARY OF REPORTING AND NOTIFICATION REQUIREMENTS FOR ALL IUS

Required report/notification and citation	Apply to	Report due date or notification requirement	Purpose of report or notification
Baseline Monitoring Report (BMR) <i>40 CFR 403.12(b)(1–7)</i>	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 before beginning discharge.	<ul style="list-style-type: none"> - To provide basic information on the industrial facility to the POTW - To determine wastewater discharge sampling points - To determine compliance status with categorical pretreatment standards
Compliance Schedule Progress Reports <i>40 CFR 403.12(c)(1–3)</i>	CIUs	Within 14 days of each milestone date on the compliance schedule; at least every 9 months.	<ul style="list-style-type: none"> - To track progress of the industrial facility through the duration of a compliance schedule submitted with a BMR
90-Day Compliance Report <i>40 CFR 403.12(d)</i>	CIUs	Existing source—Within 90 days of the date for final compliance with applicable categorical pretreatment standard. New source—Within 90 days after beginning wastewater discharge to the POTW.	<ul style="list-style-type: none"> - To notify the POTW as to whether compliance with the applicable categorical pretreatment standards has been achieved - If facility is noncompliant, to specify how compliance will be achieved
Periodic Compliance Report <i>40 CFR 403.12(e)</i>	CIUs	Existing source—Every June and December after the final compliance date, unless frequency is increased by the POTW. New source—Every June and December after beginning a discharge, unless frequency is increased by the POTW. Facilities designated as MTCIUs by the POTW may be authorized to report annually. Facilities designated as NSCIUs by the POTW do not need to submit periodic compliance reports. NSCIUs must submit a certification statement with the alternative report required by the POTW [40 CFR 403.12(q)].	<ul style="list-style-type: none"> - To provide the POTW with current information on the discharge of pollutants to the POTW from categorical industries and the compliance status of the user
Notification of Potential Problems including Slug Loadings <i>40 CFR 403.12(f)</i>	All IUs	Notification to POTW immediately after occurrence of slug load, or any other discharge that could cause problems at the POTW.	<ul style="list-style-type: none"> - To alert the POTW to the potential hazards of the discharge

Required report/notification and citation	Apply to	Report due date or notification requirement	Purpose of report or notification
Noncompliance Notification and Repeat Sampling Report <i>40 CFR 403.12(g)(2)</i>	All IUs	Notification to POTW within 24 hours of becoming aware of violation. Repeat sampling and analysis and submit the results to the POTW 30 days after becoming aware of the violation.	- To alert the POTW of a known violation and problems that could occur
Periodic Compliance Reports for Noncategorical Users <i>40 CFR 403.12(h)</i>	Non-Cat. SIUs	Every 6 months on dates specified by the POTW unless the frequency is increased by the POTW.	- To provide the POTW with current information on the discharge of pollutants to the POTW from IUs not regulated by categorical standards
Notification of Changed Discharge <i>40 CFR 403.12(j)</i>	All IUs	Before any substantial changes in the volume or character of pollutants in the discharge. In addition, 40 CFR 403.8(f)(2)(vi) requires IUs to notify POTWs of any changes at its facility affecting potential for a slug discharge.	- To notify the Control Authority (and the POTW if the POTW is not the Control Authority) of anticipated changes in wastewater characteristics and flow that could affect the POTW
Notification of Hazardous Wastes Discharge <i>40 CFR 403.12(p)</i>	All IUs	Existing source—Within 180 days of effective date of rule. New source—Within 180 days after commencement of discharge.	- To notify the POTW, EPA, and state of discharges of hazardous wastes under 40 CFR Part 261
Notification of Upset <i>40 CFR 403.16</i>	CIUs	Within 24 hours of becoming aware of the upset. (Five days where 24-hour notification was provided orally,)	- To notify the POTW of unintentional and temporary noncompliance with categorical standards
Notification of Bypass <i>40 CFR 403.17</i>	All IUs	Ten days before the date of the bypass or oral notice within 24 hours of the IU's becoming aware of the bypass, with written notification within 5 days.	- To notify the POTW of noncompliance and problems that could occur

ATTACHMENT 5-2: SUMMARY OF NOTIFICATION AND CITATION REQUIREMENTS THAT MIGHT NOT APPLY TO ALL IUS

Required report/notification and citation	Apply to	Report due date or notification requirement	Purpose of report or notification
Notification of Production Level Change in the Equivalent Limit Calculation <i>40 CFR 403.6(c)(9)</i>	CIUs	Within 2 business days after the IU has a reasonable basis to know that the production level will significantly change within the next calendar month.	- To notify the POTW of change in the production level used to calculate the equivalent mass or equivalent concentration limits in its control mechanism
Notification of Material/Significant Change in the Alternative Limit Calculation <i>40 CFR 403.6(e)</i>	CIUs	Immediately report any material or significant change in the values used in the calculation.	- To notify the POTW of change in the values used in calculating alternative limit for process effluent mixed before treatment with wastewaters other than those generated by the regulated process
Notification of Waived Pollutant Present <i>40 CFR 403.12(e)(2)(vi)</i>	CIUs	Notify POTW of expected discharge of a pollutant for which it has been granted a waiver under the pollutant not present provision [40 CFR 403.12(e)] and immediately comply with the monitoring requirements in 40 CFR 403.12(e)(1) or more frequent monitoring requirements imposed by the POTW.	- To alert the POTW that a waived pollutant is found to be present or is expected to be present because of changes that occur in the IU's operations
Notification of Middle-Tiered Categorical Industrial User <i>40 CFR 403.12(e)(3)(iv)</i>	CIUs	Immediately notify the POTW of changes causing the IU to no longer meet the conditions for reduced reporting requirements that it has been granted. Upon notification, comply with the minimum reporting requirements in 40 CFR 403.12(e)(1).	- To alert the POTW that the IU no longer meets the conditions in 40 CFR 403.12(e)(3)(i) or (ii)

CHAPTER 6.

HAULED WASTES

Chapter 6. Applicable EPA Guidance

CERCLA Site Discharges to POTWs Guidance Manual (EPA 540G90005)

Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe (EPA July 1987)

Industrial User Inspection and Sampling Manual for POTWs (EPA 831-B-94-001)

Industrial User Permitting Guidance Manual (EPA September 1989)

RCRA Information on Hazardous Wastes to Publicly Owned Treatment Works (EPA September 1985)

Guidance Manual for the Control of Waste Hauled to Publicly Owned Treatment Works (EPA-833B-98-003)

In addition to receiving wastes through the collection system, many POTWs accept trucked wastes and, in a few instances, wastes received by train. As stipulated in 40 CFR 403.1(b)(1), pollutants from nondomestic sources that are transported to the POTW by truck or rail are also subject to the General Pretreatment Regulations. They may also be subject to categorical pretreatment standards. Therefore, hauled wastes from CIUs or hauled waste that otherwise qualifies the discharger as an IU must be regulated in accordance with the requirements of the General Pretreatment Regulations, including any applicable requirements for permitting and inspecting the generating facility. Hauled wastes, like wastes received through the collection system, have the potential to negatively affect the POTW, making regulatory control of the wastes necessary.

POTWs have seen an increase in the 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. Because only minimal federal regulatory controls exist, some POTWs have developed hauled waste control programs. In addition, hauled waste could be subject to RCRA requirements at 40 CFR 270.60(c). For more information on hauled waste, refer to EPA's 1999 *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, most hauled waste is domestic septage (figure 6-1), typically from homes outside the POTW's service area but compatible in nature. Because such discharges are predominantly compatible wastes, treatment at a POTW is the most appropriate disposal method. Wastes are regularly hauled to POTWs for a variety of reasons, including the following:

- ▲ The facility is outside the POTW's service area (e.g., is in a rural area) and is not connected to the collection system.

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

Figure 6-1. Definition of domestic septage.

- ▲ The wastes might be known to cause collection system problems but can be treated at the wastewater treatment plant (e.g., grease trap cleanout wastes). Some wastes might even be beneficial to the POTW (fats, oil, and grease, for example) for energy generation.
- ▲ 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.

Common to all of these wastes is the fact that the POTW cannot know for certain the nature and concentration of the 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. That is the only pretreatment requirement specifically addressing hauled wastes, although if the type of hauled waste qualifies the discharger as a CIU or IU, program requirements for those types of users would apply. However, even where only minimal regulatory requirements exist for the hauled waste, many POTWs have determined that additional controls are necessary to further regulate such discharges and to prevent adverse effects from them. These control programs include practices such as permitting, sampling, manifesting, surveillance, and other forms of hauler documentation. In many instances, these control programs have unintentionally 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 a pretreatment program. 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 effects on POTWs and receiving streams. Two options for addressing that concern are (1) for the smaller and non-pretreatment POTWs to initiate waste hauler control programs or (2) for the larger POTWs to institute sound control programs that adequately regulate these wastes without driving haulers to search for other, less-restrictive disposal alternatives. Any POTW waste hauler control program should address the following six elements:

- ▲ **Effect on POTW.** Before accepting new waste from a hauler, the POTW should evaluate the potential effects on the treatment works from the waste. POTWs may require haulers or generators of hauled waste to perform a treatability study to demonstrate the effectiveness of treatment on the waste. POTWs must evaluate the potential effects of the waste when developing local limits and when considering the adequacy of existing local limits or the need to revise them. The POTW must include the hauled waste loadings as part of the loading allowances in its local limits development process, even if the POTW decides that the waste can be safely accepted for treatment purposes and separate permitting is not applied.
- ▲ **Permitting.** A permit is the most direct and efficient method of regulating waste haulers. Permits provide the opportunity to monitor and regulate haulers because of the nature of the hauled waste and the potential effects of that waste on the POTW. Unique permit conditions include right of refusal, daily flow limitations, discharge time limits, and reporting and certification requirements.
- ▲ **Discharge point.** As specified in the General Pretreatment Regulations, hauled waste can be discharged only at points designated by the POTW. This requirement provides the POTW with the ability to control and observe these discharges at specified locations, thereby minimizing the potential for adverse effects.

- ▲ **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 sampling of all loads of hauled waste (pH, temperature, conductivity); however, they perform analyses on only a predetermined percentage of the wastes or when problems occur as a result of the hauled waste discharge. Unanalyzed samples are refrigerated and kept for several weeks or months until the POTW is certain that the waste has not affected the POTW. The frequency of sampling may also depend on the variability of the waste. Each load from a hauler that delivers highly variable loads might have to be sampled and analyzed, whereas a much smaller percentage might be appropriate for more consistent waste types. As noted earlier, all federal, state, and local discharge limitations apply to such wastes. Even where the discharger is not a CIU or SIU, the POTW could also consider inspecting the waste generators to confirm the source of the wastes.
- ▲ **Hauler documentation.** The POTW should require waste haulers to document the source of wastes being discharged, potentially requiring 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 the controls that are applicable to waste haulers. Doing so ensures that waste haulers and POTW personnel know the procedures, expectations, liabilities, and such, associated with the control program.

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

CONCERNS

Every discharge has the potential to affect the POTW. Unlike discharges from IUs directly 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. Most 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. Even loads of domestic septage can cause problems for a POTW due to high strength or discharge rate. Domestic septage can be partially digested, can be higher in metals concentrations than normal domestic wastes, or can contain small amounts of household contaminants (e.g., cleaners). Similarly, disinfectants used in portable toilets have the potential to affect POTW operations.

Receipt of hauled hazardous waste (as defined in RCRA) not only might affect POTW operations but also could 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) at the treatment plant are not exempt from the regulations. POTWs that accept hazardous wastes from those sources are subject to *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 its NPDES permit requirements and that the waste must comply with all federal,

state, and local pretreatment requirements. Under 40 CFR 403.12(p), IUs are required to notify the POTW and other waste management authorities of hazardous waste discharges into the POTW. 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. That condition highlights the need for POTWs to have a clear understanding of the source of the waste because applicable standards can be based on the origin of that waste.

Another potential problematic waste is that from remedial site cleanup operations. Groundwater contaminated with gasoline or diesel fuel is by far the most common type of waste from those operations. While the wastes can contain flammable and toxic compounds (e.g., benzene and toluene), another concern is that large volumes of the waste at a small POTW can actually flush the treatment plant, thereby interfering with treatment operations. Similar concerns also exist for landfill leachate, another commonly hauled wastestream. Remedial wastes can 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 the following:

- ▲ Illegal dischargers could be discharging toxic pollutants that can pass through or interfere with the POTW operations.
- ▲ Grease trap wastes can coat and inhibit POTW treatment equipment.
- ▲ Local limits might not have accounted for pollutant loading or the variability of certain pollutants in hauled wastes.
- ▲ Hauled wastes could contain pollutants for which local limits do not exist, and thus the effects of the waste are not readily identifiable.
- ▲ Hauled wastes could be unmixed or highly concentrated.

For more information on the acceptance of hazardous waste at POTWs, refer to EPA's June 1987 *Guidance Manual for the Identification of Hazardous Wastes Delivered to Publicly Owned Treatment Works by Truck, Rail, or Dedicated Pipe*.

CHAPTER 7.

POLLUTION PREVENTION

Chapter 7. Applicable EPA Guidance

Guides to Pollution Prevention: Municipal Pretreatment Program (EPA/625/R-93/006)

NPDES Compliance Inspection Manual (EPA July 2004)

Guide to Industrial Assessments for Pollution Prevention and Energy Efficiency (EPA-625-C-99-003)

Why Should You Care About Preventing Waste: Pollution Prevention Pocketbook (EPA-742-E-01-001)

Introduction to Pollution Prevention: Training Manual (EPA-742-B-95-003)

Pollution Prevention at POTWs Case Studies (EPA 742-F-94-001)

Ensuring a Sustainable Future: An Energy Management Guidebook for Wastewater and Water Utilities (EPA January 2008)

One of the objectives of the National Pretreatment Program is to improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges (40 CFR 403.2(c)). Recycling and reclamation are forms of pollution prevention (P2). P2 is the practice of reducing or eliminating waste at the source by modifying production processes, promoting the use of nontoxic or less-toxic substances, implementing conservation techniques, and reusing materials rather than putting them into the wastestream.¹⁵ P2 addresses all aspects of production processes—from raw material usage and inventory procedures to waste management and utilities conservation. Management techniques that incorporate P2 reduce or eliminate the generation of pollutants, wastes, and adverse ecological impacts through new approaches, material substitutions, and optimizing processes and operating procedures.

The Pollution Prevention Act of 1990 (PPA) established P2 as a national objective. The PPA equates P2 with source reduction, which it defines as “any practice [that] reduces the amount of any hazardous substance, pollutant, or contaminant entering any wastestream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal, and reduces the hazards to human health and the environment associated with the release.”¹⁶ In defining P2, EPA has clarified that *in-process* recycling might qualify as P2, that P2 approaches can be applied to all pollution-generating activities—including those found in the energy, agricultural, federal, consumer, and industrial sectors—and that energy and water efficiency and conservation practices that reduce the creation of pollutants conform to the PPA’s definition of source reduction.¹⁷ Subsequently, Executive Orders likewise define energy and water efficiency/conservation as within the definition of source reduction and P2.

The PPA established a P2 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.

¹⁵ EPA P2 website at www.epa.gov/p2.

¹⁶ 42 U.S.C. chapter 133, section 13102 (5).

¹⁷ P2 Policy Statement. <http://www.epa.gov/p2/pubs/p2policy/policy.htm>.

- ▲ 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 as a last resort only and should be conducted in an environmentally safe manner.

The PPA also directs EPA to integrate P2 concepts fully into all of its regulatory programs. EPA activities to promote and integrate P2 across all media programs include the following:

- ▲ Coordinating development of regulations that will help to identify the potential for multimedia prevention strategies and that reduce end-of-pipe compliance costs.
- ▲ Examining the use of P2 in enforcement actions and negotiations. P2 can be incorporated into environmental enforcement settlements through P2 supplemental environmental projects, which are environmentally beneficial projects that a company agrees to undertake when settling an enforcement action.
- ▲ Working with state and local governments and trade associations to promote P2 among small- and medium-size businesses that often lack the capital to make changes.
- ▲ Investing in outside programs, usually at the state level, by providing grant funds for reducing target chemicals from agricultural and transportation industries, and others.
- ▲ Providing the scientific and technical knowledge necessary to implement P2 initiatives on a cross-media basis.

In February 2010, EPA released its 2010–2014 Pollution Prevention Program Strategic Plan. Figure 7-1 presents the broad mission of EPA's P2 Program. The P2 Program's strategy over the next 5 years is to identify and leverage pollution prevention opportunities to help reduce the emission of greenhouse gasses, the use of hazardous materials, and the use of natural resources, while contributing to a greener and more sustainable economy. In addition, the Plan includes an appendix that describes the P2 Program's 5-year strategy for each of five sector areas: Chemicals and Manufacturing Industries, Hospitality, Electronics, Building and Construction, and Municipalities and Institutions. Figure 7-2 lists EPA's P2 goals from the 2010–2014 Pollution Prevention Program Strategic Plan.

The broad mission of EPA's P2 Program is to prevent pollution at the source, promote the use of greener substances, and conserve natural resources, which are critical steps towards achieving a sustainable society.

Figure 7-1. EPA's P2 mission (from 2010–2014 Strategic Plan).

- Goal 1:** Reduce the generation of greenhouse gas emissions to mitigate climate change.
- Goal 2:** Reduce the manufacture and use of hazardous materials to improve human and ecological health.
- Goal 3:** Reduce the use of water and conserve other natural resources to protect ecosystems.
- Goal 4:** Create business efficiencies that derive economic benefits and improve environmental performance.
- Goal 5:** Institutionalize and integrate pollution prevention practices through government services, policies, and initiatives.

Figure 7-2. EPA's P2 goals (from 2010–2014 Strategic Plan).

P2 AND THE PRETREATMENT PROGRAM

POTW personnel have many opportunities to encourage industries to adopt P2 measures. More than any other public authority, POTWs maintain close contact with local IUs and have an understanding of the IUs' specific industrial process operations and wastestreams.

Source reduction is an inherent element of the National Pretreatment Program. The program is designed to prevent toxic pollutants from being discharged to POTWs through controls on the IUs that discharge the pollutants. Thus, P2 could be considered an extension of current pretreatment program implementation activities. For example, pretreatment programs have the authority to require and enforce IU management practices to ensure that the POTW meets its NPDES permit requirements and to prevent interference with its POTW treatment facilities. POTWs are already involved in promoting P2 by requiring IUs to reduce pollutants in the wastestream before discharging to the POTW. By further integrating P2 concepts into existing pretreatment program activities, POTW personnel can help industrial and commercial facilities identify P2 opportunities, encourage them to assess the opportunities in greater detail, and, in general, heighten their awareness of P2 as another means of meeting their permit requirements. Pretreatment program implementation tools available to make P2 a more integral part of a pretreatment program are presented in figure 7-3.

- ❖ **IU Permits.** Where local regulations allow, information about P2 measures and plans may be obtained as part of the permit application process. Also, where authorized a permittee may be required to perform a P2 assessment or develop a P2 plan (or both) as a condition of the permit. In issuing IU permits, POTWs may also require slug control plans, compliance schedules for improved operation and maintenance procedures, spill-prevention plans and TOMP, and BMP conditions in the permits.
- ❖ **Inspections.** POTW 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 P2 measures implemented and identify new P2 opportunities.
- ❖ **Local limits.** POTWs near or above MAHLs may institute P2 programs for their users to reduce specific pollutants.
- ❖ **Enforcement negotiations.** A P2 audit may be required through a consent or compliance order, or implementation of P2 measures may be required as part of a settlement.
- ❖ **Outreach.** POTWs can develop and disseminate information about P2 opportunities and success stories to IUs and the public. POTWs can hold workshops for IUs and disseminate information at public gatherings, such as Earth Day festivals.

Figure 7-3. Pretreatment program P2 implementation tools.

A P2 measure often employed by POTWs is requiring dental offices to switch from using mercury amalgams to alternative types of amalgams to reduce the discharge of mercury before the discharge enters the wastestream. Another P2 measure is encouraging industrial laundries to switch to alternative detergents that have lower levels of phosphates and endocrine-disrupting chemicals such as alkylphenol ethoxylates, which are common constituents in some detergents. Also, water and heat/energy conservation has been achieved at industrial laundries by reconfiguring some of the rinse cycles. Many healthcare facilities previously using film-generating X-ray and magnetic resonance imaging technology have now converted to digital imagery, eliminating wastewater-generating processes entirely. Another example of P2 at IUs is dry sweeping process area floors before they are washed.

Many POTWs have also implemented fats, oils, and grease (FOG) programs to prevent blockages in the sewer system, primarily caused by grease buildup from restaurants. FOG programs promote educating the public about how pouring fats, oils, and greases down the drain can harm the POTW and the environment. Restaurants can also train restaurant employees to wipe down cookware before putting it in the dishwasher and wipe up FOG before mopping with water. Effective FOG programs include

enforcement authority for the POTWs. Increasingly, federal pretreatment regulations are incorporating P2 measures. The *Pretreatment Standards for the Transportation Equipment Cleaning Industry*, for example, include a regulatory alternative to numeric effluent limits based on a pollutant management plan and a low-flow exclusion to encourage water conservation and reuse.

KEY ELEMENTS OF A SUCCESSFUL POTW P2 PROGRAM

Although P2 activities can be unique to each POTW, the following are key elements of successful P2 programs:

- ▲ ***Integrate P2 into existing activities.*** POTWs that view P2 as an enhancement (instead of an additional requirement) to their existing pretreatment programs modify their existing pretreatment activities efficiently and effectively.
- ▲ ***Start small.*** POTWs that slowly phase in new P2 activities overcome impediments such as limited resources and resistance. Small changes (such as dry sweeping the process area floor before washdown, or switching to environmentally friendly detergents or lubricants) can be implemented gradually with minimal resources. Such an approach enables P2 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 P2 activities, and monitored the progress and success of those activities. With each new success recorded, the benefits of P2 are illustrated, and resistance to change might be overcome by the demand for further success.
- ▲ ***Provide incentives.*** Incentives are effective tools for persuading users to investigate P2 opportunities. POTWs have used a wide range of tools, such as publicly recognizing P2 achievements and reducing regulatory requirements.
- ▲ ***Train POTW field personnel.*** POTW inspectors that are knowledgeable about P2 opportunities can work closely with IUs to encourage them to implement P2. Cross-media training of POTW staff about P2 opportunities in all media (e.g., water, stormwater, air, solid waste) provides that much more opportunity for POTW personnel to notice and promote P2 opportunities.
- ▲ ***Learn from others.*** A vast amount of information has been acquired and compiled about practical implementation of P2 measures. Conduct research on the Internet, and use other resources to learn more about P2 measures applicable to specific circumstances. Showing managers case studies and cost savings realized with P2 measures can gain management support of P2 programs. EPA provides grant monies for researching P2 opportunities and makes the reports available to the public. For more detail on this program, see <http://www.epa.gov/p2/pubs/grants/index.htm>.

BENEFITS OF P2 FOR POTWS

P2 offers substantial benefits to POTWs. By incorporating P2 into pretreatment programs and reducing the quantity and toxicity of user discharges, P2 can help POTWs

- ▲ Meet federal and state environmental quality standards, including sludge disposal requirements, current or future toxic air emission requirements, and NPDES permit requirements
- ▲ Reduce influent pollutant loadings and wastewater flows to POTWs, resulting in lower operation and maintenance costs and reduced or eliminated need for capital expenditures

- ▲ Improve biosolids quality through reduced loadings of heavy metals and refractory organics
- ▲ Realize energy, chemical, and sludge management savings because of reduced wastewater treatment needs
- ▲ Reduce the transfer of influent contaminants from one environmental medium (e.g., wastewater) to others (e.g., land, surface and groundwater, and air)
- ▲ Increase POTW personnel safety and reduce collection system hazards from toxic or hazardous gases
- ▲ Further reduce the occurrences of interference and pass through
- ▲ Enable continued or expanded growth in the community without harm to the environment
- ▲ Improve public image
- ▲ Reduce future liabilities.

BENEFITS OF P2 FOR IUS

Industrial and commercial facilities also can benefit from P2. In many cases, P2 might be the least expensive means of reducing unacceptable toxic discharges. Pretreatment personnel can point out the benefits of P2 to their sewer users. Through P2, IUs can

- ▲ Achieve compliance with pretreatment program requirements
- ▲ Minimize emissions to all media and reduce water consumption
- ▲ Reduce wastewater monitoring, treatment, and disposal costs
- ▲ Reduce raw-material use, feedstock purchases, and manufacturing costs
- ▲ Reduce operation and maintenance costs
- ▲ Increase productivity and manufacturing efficiency and reduce off-specification products
- ▲ Reduce regulatory compliance costs
- ▲ Reduce hazards to employees through exposure to chemicals
- ▲ Reduce costs of environmental impairment insurance
- ▲ Improve public image and employee morale
- ▲ Reduce potential liability associated with toxic waste
- ▲ Decrease regulatory requirements by eliminating the need for permits, hazardous waste manifests, monitoring, and reporting.

Figure 7-4 summarizes the types of activities IU can implement to realize P2 benefits at their facility.

To realize P2 benefits industrial facilities can	
❖	Modify equipment or technology
❖	Modify process or procedure
❖	Reformulate or redesign products
❖	Substitute raw materials
❖	Improve housekeeping, maintenance, training, or inventory control

Figure 7-4. Types of P2 activities IUs can implement.

WATER CONSERVATION AS P2

One important form of P2 is water conservation. Some of the main drivers of water conservation practices are (1) the economic considerations that result from higher operating costs of using more water (e.g., increased water bills and wastewater treatment costs, pumping costs, wastewater sludge generation and disposal costs) and (2) water source restrictions (e.g., widespread regional droughts, increasing water demands of urban populations). Cost savings also include decreasing the energy needed to heat or chill water and reducing or delaying the need for wastewater treatment capacity expansion. (For more information on energy conservation, refer to *Ensuring a Sustainable Future: Energy Management Guidebook for Wastewater and Water Utilities*, EPA, January 2008 (<http://www.peercenter.net/ewebeditpro/items/O73F22367.pdf>).

The cost savings realized from implementing water reuse¹⁸ and reduction technologies and P2 practices can be significant. The monetary savings of implementing water-conservation measures can be substantial, with payback periods often measured within a few months or years. They are compelling reasons for IUs to consider enhancing their water-conservation efforts. Furthermore, encouraging nondomestic users to reconfigure industrial operations to eliminate process wastewaters altogether (zero discharge) assists in meeting the ultimate goal of the Clean Water Act to restore and maintain the chemical, physical, and biological integrity of the nation's waters.

EPA's ELG rulemaking records identify when water-conservation practices are being used in existing industrial processes. The rulemaking process compares and contrasts treatment and cost efficiency for a variety of treatment options per industrial sector. The findings support that, for a variety of industrial sectors with well-designed and operated on-site treatment systems, the systems are more efficient at treating and removing pollutants from wastewater when the wastewater is more highly concentrated. That is because wastewater treatment technologies operating within their design specifications are limited solely by the physical/chemical properties of the pollutants in the wastewater, not necessarily by influent concentrations. Flow reduction generally increases the pollutant concentrations to on-site wastewater treatment systems, thereby increasing the efficiency of the wastewater treatment system.¹⁹ Consequently, a properly managed wastewater treatment system operating within its design specifications can produce a consistent effluent despite fluctuations or increases in influent concentration.

EPA also notes that implementing water-conservation measures requires a systematic approach because changes in industrial processes could require adjustments in downstream operations. The water systems of many plants are already complex as a result of plant changes and improvements to existing systems. Isolated attempts to reuse water or change the water system are often stop-gap solutions that can cause more problems in the long term and even lead to unexpected or undesirable surprises in plant operations. Therefore, water management strategies, industrial water reclamation technologies, and a systematic approach to using them are necessary if plant-wide water reuse and effluent discharge reduction goals are to be reached.

A number of new tools are available for implementing water-conservation measures through a systematic approach, e.g., water-pinch technology and mathematical optimization. Such tools seek to identify a pinch point, called the *freshwater pinch*, on the basis of a key contaminant's concentration. Within a given process plant, water-using operations that can tolerate contaminant levels above that concentration do not require freshwater; they can instead reuse water streams from elsewhere in the process. Analogously, plant water streams with contaminant levels below that pinch concentration do not

¹⁸ U.S. Environmental Protection Agency, *Guidelines for Water Reuse* (September 2004), <http://www.epa.gov/ORD/NRMRL/pubs/625r04108/625r04108.htm>.

¹⁹ W. Wesley Eckenfelder, *Industrial Water Pollution Control*, McGraw-Hill, Inc., New York (1989), p. 60.

need to be sent for disposal but can be reused elsewhere in the plant. Using that information, system designers and retrofitters can maximize water reuse and minimize wastewater generation on-site.²⁰ For example, segregating processes wastewaters for pretreatment of that key contaminant or decentralized water reuse can reduce costs and simplify and improve the performance of end-of-pipe wastewater treatment and reuse by avoiding cross-contamination by difficult-to-treat chemical compounds.²¹

POTENTIAL IMPEDIMENTS TO P2

Although the numerous benefits make pursuing P2 attractive, implementing source reduction might not be possible in some situations. Before implementing a P2 practice, the benefits and barriers of the potential opportunity must be evaluated. Any such change could be met with resistance because of institutionalized practice. Common impediments could arise in any of the following categories:

- ▲ Technology
 - Decrease in product quality.
 - Unable to change raw materials because of available technology or contractual requirements.
- ▲ Financial
 - Potentially high costs associated with implementing alternatives (i.e., new equipment or materials, or personnel and training) without examining the cost's rate of return.
 - Losses from downtime during switchovers and startups.
 - Foreign competitors might have an economic advantage if they are not obligated to comply with U.S. regulations.
 - Binding contracts with existing waste haulers and treatment, storage and disposal facilities may exist.
- ▲ Organizational
 - Lack of or poor communication between persons who possess the knowledge and ideas for improvements and those who can actually implement the changes.
 - Limited personnel or internal resources available to investigate or make changes.
 - Lack of coordination and cooperation among divisions in the corporation.
- ▲ Behavioral
 - Personnel might consider alternatives as inconvenient (e.g., dry sweeping followed by a washdown as opposed to a washdown alone).
 - Companies might be skeptical of the benefits or might be unwilling or unable to invest the necessary funds.
 - POTW personnel might have difficulty persuading municipal officials that activities promoting P2 are integral to meeting the goals of the local pretreatment program. POTW personnel might also have to educate officials and managers that funding for P2 initiatives is needed to meet the program goals and that doing so might lead to significant returns on investment.

²⁰ Y.A. Liu, Bruce Lucas, and James G. Mann, Up-to-date Tools for Water-System Optimization, *Chemical Engineering* (January 2004).

²¹ B. Durham and L. Patria, Wastewater: A Reliable Water Resource, *Chemical Engineering* (October 2006).

- ▲ Regulatory
 - Concentrating a pollutant for recycling could classify it as a hazardous waste (e.g., silver). Consequently, an IU could choose to discharge the pollutant rather than be subject to regulations regarding the handling, treatment, and disposal of a hazardous waste. However, concentrating wastewaters generally reduces treatment costs and might enable the IU to recover its costs (e.g., recovery of silver through electrowinning).
 - POTWs might need to expand their authority to incorporate P2 planning or other P2 requirements into permitting and enforcement actions.

P2 ASSISTANCE

EPA, states, industry trade associations, and university technology transfer and outreach departments provide P2 information through direct technical assistance, training courses, and a variety of publications. For more information on POTWs integrating P2 into their pretreatment programs, refer to EPA's 1993 *Guides to Pollution Prevention—Municipal Pretreatment Programs* and the 2004 *NPDES Compliance Inspection Manual*. Specific industry trade associations and university technology transfer and outreach departments are usually aware of P2 assistance materials, specific P2 opportunities, and the costs and success of implementing them. Some further sources that disseminate P2 information follow:

- ▲ ***EPA's Pollution Prevention (P2) website.*** Provides general information about P2 policies and programs, P2 technical assistance information, case studies, and P2 resources. The annual Pollution Prevention Grant Programs information is also featured on the site. See <http://www.epa.gov/p2/index.htm> and *Pollution Prevention at POTWs, Case Studies* (winter 1994) at <http://www.epa.gov/p2/pubs/potw.pdf>.
- ▲ ***Pollution Prevention Information Clearinghouse.*** A free information service dedicated to reducing and eliminating industrial pollutants through technology transfer, source reduction, education, and public awareness. See <http://www.epa.gov/oppt/ppic>.
- ▲ ***State programs.*** Provide technical assistance to conduct P2 assessments, develop guidance manuals on conducting these assessments; actually conduct these assessments; provide assistance in developing P2 plans for all the POTW's users; provide training for industry, state, and POTW personnel; and offer grants for P2 projects.
- ▲ ***National Institute of Standards and Technology (NIST).*** An office of the U.S. Department of Commerce that develops technology to improve product quality, modernize manufacturing processes, ensure product reliability, and facilitate rapid commercialization of products that are based on new scientific discoveries. You can search the NIST websites (www.nist.gov) for different industry sectors.
- ▲ ***EPA technical support documents.*** EPA's technical support documents (<http://www.epa.gov/guide/plan.html>) and records supporting EPA's biennial ELG program plans also provide useful information. They provide a sample of the current limitation and latest developments in industrial pollutant prevention, water conservation, and wastewater treatment. The technical support documents also identify the industrial sectors not regulated by effluent guidelines.
- ▲ ***Design for the Environment publications.*** EPA is working with individual industry sectors to compare and improve the performance and human health and environmental risks and costs of existing and alternative products, processes, and practices (<http://www.epa.gov/dfe/pubs>).
- ▲ ***EPA National Service Center for Environmental Publications (NSCEP).*** The NSCEP maintains and distributes EPA publications in hard copy, CD-ROM, and other multimedia

formats. NSCEP also develops and distributes the annual EPA *National Publications Catalog*. The website allows users to search the catalog for P2 documents and other related topics. Order documents online or through the Government Printing Office, as described below (<http://www.epa.gov/nscep>). Note that you must have the EPA publication number or title of the document available when ordering.

- ▲ **Industry sector notebooks.** EPA's Office of Compliance has developed a series of profiles or "notebooks" containing information on selected major industries, including dry cleaning, printing, and wood furniture. Each notebook provides comprehensive industrial process information, regulatory requirements, and P2 techniques. View the documents online or order printed copies for a fee (between \$6 and \$25 depending on length) from the Government Printing Office by calling (202) 512-1800 (<http://www.epa.gov/Compliance/resources/publications/assistance/sectors/notebooks/index.html#industry>).
- ▲ **Association websites.** Many associations, including industrial sector associations, provide training and information related to P2. Examples are the California Water Environment Association (<http://cwea.org/p3s>) and the Water Environment Federation (<http://www.wef.org>).

In addition to getting the available information about P2, IUs can become involved in several EPA voluntary programs. Information on these programs is available from the Office of Pollution Prevention and Toxics:

- ▲ **Design for the Environment.** A voluntary partnership program that helps businesses design or redesign products, processes, and management systems that are cleaner, more cost-effective, and safer for workers and the public.
- ▲ **Environmental Labeling.** Covers a broad range of activities from business-to-business transfers of product-specific environmental information to environmental labeling in retail markets. Provides an opportunity to inform consumers about product characteristics that might not be readily apparent and guide their use in an environmentally beneficial manner.
- ▲ **Environmentally Preferable Purchasing.** A federal government-wide program managed by the EPA Office of Pollution Prevention and Toxics (OPPT) that requires and helps executive agencies to purchase environmentally preferable products and services.
- ▲ **Electronic Product Environmental Assessment Tool.** A procurement tool to help institutional purchasers in the public and private sectors evaluate, compare, and select desktop computers, notebooks and monitors on the basis of their environmental attributes.
- ▲ **Green Chemistry.** An initiative under OPPT's DfE program that focuses on P2 through the environmentally conscious design of chemical products and processes.
- ▲ **Green Engineering.** An initiative under the DfE program designed to promote the development and commercialization of environmentally beneficial design methods, risk-based design tools, and green technologies through education, outreach, and partnering with the academic, research, and industrial communities.
- ▲ **Green Suppliers Network.** A collaborative venture between industry and EPA that works with all levels of the manufacturing supply chain to achieve environmental and economic benefits, improve performance, minimize waste generation, and remove institutional roadblocks through its innovative approach to leveraging a national network of manufacturing technical assistance resources.

- ▲ **Hospitals for a Healthy Environment (H2E).** A voluntary program working with the healthcare industry to reduce its environmental impact. In 2006 this program became EPA's first voluntary program to become an independent nonprofit organization.
- ▲ **Sustainable Futures.** A pilot project designed to encourage industry to use EPA-developed chemical risk screening tools and P2 principles in making decisions about new chemicals at the research and development stage before submittal as premanufacture notices.
- ▲ **Suppliers Partnership for the Environment.** A trade association composed of small, mid-sized, and large automotive and vehicle suppliers that are working in partnership with EPA to create new and innovative business-centered approaches to environmental protection that improve the environment while providing value to the participants.²²

For additional information on these voluntary pollution programs, see EPA's P2 website at www.epa.gov/p2.

One of the ways EPA promotes P2 is by supporting the development of a network of state and tribal P2 programs. The OPPT P2 Grant Program, created under the authority of the PPA, provides matching funds to states and tribes to support P2 activities and develop state programs. The majority of the P2 grants fund projects in the areas of technical assistance and training, education and outreach, regulatory integration, data collection and research, demonstration projects, and recognition programs. Additional information on OPPT's grant programs that promote P2 activities is at <http://www.epa.gov/p2/pubs/grants/index.htm>.

²² Overview: Office of Pollution Prevention and Toxics Programs (January 2007).
<http://www.epa.gov/oppt/pubs/oppt101c2.pdf>.