

REGISTERED PRETREATMENT COORDINATOR COURSE

Pretreatment Standards and Requirements

Rodger L. Fain Jr., RPC, RIWP
City of Kokomo Sanitation Utility

Outline

- ▣ Definition of key terms
- ▣ Foundations and Evolution of Pretreatment Regulations
- ▣ Rulemaking Process
- ▣ Discussion of Pretreatment Standards
 - National Pretreatment Standards
 - Prohibited Discharge Standards
 - General Prohibitions
 - Specific Prohibitions
 - Categorical Discharge Standards
 - Local Limits
- ▣ Discussion of Pretreatment Requirements

DEFINITIONS

Definitions

- ▣ The term *Pretreatment* is defined in the General Pretreatment Regulations at 40 CFR 403.3(s) as follows:
- ▣ “. . . the **reduction** of the amount of pollutants, the **elimination** of pollutants, or the **alteration** of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a POTW. The reduction or alteration may be obtained by physical, chemical or biological processes, process changes or by other means, except as prohibited by §403.6(d). . . .”

Definitions

- The terms *National Pretreatment Standard*, *Pretreatment Standard*, and *Standard* are defined in the General Pretreatment Regulations at 40 CFR 403.3(l) as follows:
- “. . . any regulation containing pollutant discharge limits promulgated by the EPA in accordance with section 307 (b) and (c) of the Act, which applies to Industrial Users. This term includes prohibitive discharge limits established pursuant to §403.5.”

Definitions

- The term *Pretreatment Requirement* is defined in the General Pretreatment Regulations at 40 CFR 403.3(t) as follows:
- “. . . any substantive or procedural requirement related to Pretreatment, other than a National Pretreatment Standard, imposed on an Industrial User.”

FOUNDATIONS AND EVOLUTION OF PRETREATMENT REGULATIONS

History of Water Protection

- ▣ 1899 – Rivers and Harbors Act
- ▣ 1948 – FWPCA (PL 80-845)
- ▣ 1956 – FWPCA (PL 84-660)
- ▣ 1965 – Water Quality Act (PL 89-234)
- ▣ **1970 – EPA Established through Executive Order**
- ▣ 1972 – FWPCA (PL 92-500)
- ▣ **1977 – FWPCA / Clean Water Act (PL 95-217)**
- ▣ 1987 – Water Quality Act (PL 100-4)

History of FWPCA / CWA

- ❑ The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution.
- ❑ Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972.
- ❑ As amended in 1977, the law became commonly known as the Clean Water Act (CWA).

CWA Basis for Pretreatment Programs

- ❑ Clean Water Act (33 USC 1251, et seq.)
 - Sec. 101 – Goals & Policy
 - Sec. 212 – Definitions
 - Sec. 301 – Effluent Limitations
 - Sec. 307 – Toxic and Pretreatment Effluent Limitations
 - Sec. 308 – Inspections, Monitoring & Entry
 - Sec. 309 – Enforcement
 - Sec. 402 – NPDES Program
 - Sec. 502 – Definitions
 - Sec. 507 – Employee Protection

NPDES CONNECTION (40 CFR Part 122)

- ▣ NPDES applies to all “point sources discharging pollutants” into the “waters of the United States”
- ▣ Point source dischargers must obtain an NPDES Permit from EPA or their delegated State
- ▣ NPDES Permits for municipalities require the development of Pretreatment Programs

Evolution of Pretreatment Regulations

- ▣ 1978 – 40 CFR Part 403 Promulgated
- ▣ 1983 – POTW Program Approval Deadline
- ▣ 1985 – Pretreatment Implementation Review Task Force (PIRT) Report released
- ▣ 1986 – Domestic Sewage Study (DSS) Report to Congress
- ▣ 1988 – PIRT Rules Promulgated
- ▣ 1990 – DSS Regulations Promulgated
- ▣ 1997 – Program Modification Regulations Streamlined
- ▣ 2005 – Pretreatment Streamlining Rule Promulgated

General Pretreatment Regulations: Objectives

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

THE RULEMAKING PROCESS

Rulemaking Process

- ❑ Promulgation / Publication of Proposed Rule in Federal Register
- ❑ Comment / Review / Modification
- ❑ Promulgation / Publication of Final Rule in Federal Register
- ❑ Codification
- ❑ Implementation by Appropriate Agencies

Rulemaking Process: Proposed Rules

- ❑ When EPA proposes new or revised rules to implement the CWA, they include a preamble and the text of the new or revised rule in the Federal Register and request public comments on the proposal.
- ❑ The preamble is an introduction to the rule that provides a discussion on what issues and information were considered when developing the proposal.

Rulemaking Process: Final Rules

- ❑ After receiving public comment on a proposed rule, EPA issues a final rule taking those public comments into account.
- ❑ Final rules contain a preamble and the text of the final rule.
- ❑ The preamble or introduction typically discusses changes that were made from the proposed rule, what must be done to comply with the final rule, and why EPA chose this approach.
- ❑ EPA publishes final rules in the Federal Register.

Rulemaking Process: Codification

- ❑ Once a Final Rule is adopted it is “codified” in the “Code of Federal Regulations” or CFR
- ❑ The Code of Federal Regulations includes the text of all existing regulations, including any rules issued through July 1 of that year. For example, the 2009 CFR codifies any rules as of July 1, 2009.
- ❑ Pretreatment Rules are codified in Title 40, Chapter I, Subchapter N

Rulemaking Process: Codification

- US Code of Federal Regulations
 - Title 40 – Protection of the Environment
 - Chapter I – Environmental Protection Agency
 - Subchapter N – Effluent Guidelines and Standards
 - Part (i.e., Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution)
 - Subpart
 - Paragraph

DISCUSSION OF PRETREATMENT STANDARDS

National Pretreatment Standards

- Promulgated at the Federal level
- Enforceable Nationwide
- Two Major Types
 - Prohibited Discharge Standards (40 CFR Part 403.5)
 - Categorical Discharge Standards (40 CFR Parts 405 - 471)

Prohibited Discharge Standards

- National Standards w/ general application (i.e., Horizontal Standards);
- Apply whether or not the POTW has an approved pretreatment program;
- Apply whether or not the industrial user has been issued a permit;
- Designed to protect against pass through and interference, protect the POTW collection system, and to promote worker safety and beneficial biosolids use.

Prohibited Discharge Standards

- General Prohibitions
 - Prohibit the introduction of pollutants to the POTW that would result in *pass through* to the receiving stream of untreated pollutant at levels that would violate the POTW's NPDES Permit.
 - Prohibit the discharge of pollutants to the POTW that would result in *interference* with the operation of the POTW's treatment works.

Prohibited Discharge Standards

- Specific Prohibitions provide that the following pollutants “shall not be introduced into a POTW”:
 - Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21;
 - Pollutants which will cause corrosive structural damage to the POTW, but in no case Discharges with pH lower than 5.0, unless the works is specifically designed to accommodate such Discharges;

Prohibited Discharge Standards

- Specific Prohibitions (Cont'd):
 - Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in Interference;
 - Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW.

Prohibited Discharge Standards

- Specific Prohibitions (Cont'd):
 - Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40 °C (104 °F) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits.
 - Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

Prohibited Discharge Standards

- Specific Prohibitions (Cont'd):
 - Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
 - Any trucked or hauled pollutants, except at discharge points designated by the POTW.

Affirmative Defenses to PDSs

- A User shall have an affirmative defense in any action brought against it alleging a violation of the general prohibitions §403.5(a)(1) and the specific prohibitions in paragraphs §403.5(b)(3) through (b)(7) where the User 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

Affirmative Defenses to PDSs

- The User must also demonstrate one of the following:
 - A local limit designed to prevent Pass Through and/or Interference, existed for the pollutant(s) in the discharge that caused Pass Through or Interference, and the User was in compliance directly prior to and during the Pass Through or Interference; or
 - A local limit designed to prevent Pass Through and/or Interference, did not exist for the pollutant(s) that caused the Pass Through or Interference, and the discharge directly prior to and during the Pass Through or Interference did not change substantially in nature or constituents from the discharge activity when the POTW was regularly in compliance with the POTW's NPDES permit requirements and/or applicable requirements for sewage sludge use or disposal.

Categorical Discharge Standards

- National Standards w/ specific application (i.e., Vertical Standards)
- Limitations on pollutant discharges to publicly owned treatment works (POTWs), promulgated by EPA in accordance with Section 307 of the Clean Water Act
- Apply to specific industrial categories; specific processes w/in category; and specific pollutants w/in process discharge
- Enforceable "End-of-Process" unless adjusted using CWA and/or FWA formulas

Categorical Discharge Standards

- ▣ Technology-based standards;
- ▣ Apply whether or not the POTW has an approved pretreatment program;
- ▣ Apply whether or not the industrial user has been issued a permit;
- ▣ Industrial Users regulated through such standards are called Categorical Industrial Users (CIUs);
- ▣ The standards applicable to industrial discharges from CIUs are codified in 40 CFR Parts 405 - 471.

Categorical Discharge Standards: Preliminary Considerations

- ▣ Does the IU meet the criteria for coverage in the “Applicability” section?
- ▣ Is the IU a “Direct” or “Indirect” Discharger?
 - Discharge to the Receiving Stream; or
 - Discharge to the POTW
- ▣ Is the IU a “New Source” or an “Existing Source”?
 - NSPS or PSNS
 - BPT, BAT, BCT or PSES

Categorical Discharge Standards: Direct Dischargers

- ▣ Industries that discharge process wastewater directly to waters of the U.S. and not to a POTW should have an NPDES Permit. Such “direct dischargers” are covered by the effluent limitations requiring one of the following:
 - Existing Sources
 - Best Practicable Control Technology Curr. Available (BPT);
 - Best Available Technology Economically Achievable (BAT);
 - Best Conventional Pollutant Control Technology (BCT);
 - New Sources
 - New Source Performance Standards (NSPS)

Categorical Discharge Standards: Indirect Dischargers

- ▣ Industries that discharge process wastewater indirectly to waters of the U.S. through a POTW do not require an NPDES Permit. Such “indirect dischargers” are covered by one of the following types of effluent limitations:
 - Pretreatment Standards for Existing Sources (PSES); or
 - Pretreatment Standards for New Sources (PSNS)

Categorical Discharge Standards: Indirect Dischargers

- ❑ PSNS apply to industrial dischargers qualifying as *New Sources* per 40 CFR 403.3(m)(1):
- ❑ **Actual or potential discharge** of pollutants;
- ❑ **Commencement of Construction** of facility, etc., after the publication of “proposed” rules, *provided that*:
 - **Independent Construction Site** “at which no other source is located”; or
 - **Total Replacement** of “process or production equipment that causes the discharge” at an existing source; or
 - **Substantial Independence** of “production or wastewater generating processes” from an existing source at the same site.

Categorical Discharge Standards: Indirect Dischargers

- ❑ PSES apply to industrial dischargers that do not meet the criteria for *New Sources* as set forth in 40 CFR 403(m)(1).
- ❑ When in doubt regarding New Source/Existing Source designations:
 - Check EPA guidance;
 - Call IDEM (Natalie Maupin); and/or
 - Call Region V (Carol Staniec, Ash Sajjad)

Categorical Discharge Standards: Indirect Dischargers

- ▣ Where the Effluent Guidelines and Limitations for a specific industrial category do not contain “numeric” PSES or PSNS; and/or
- ▣ Where the only requirement is to comply with the provisions of 40 CFR Part 403; then
- ▣ The discharger need not be classified as a “Categorical Industrial User” and may be permitted and regulated as a Non-categorical Industrial User.
- ▣ Reference: Pretreatment Bulletin #3, 11-06-1987; “Non-consent Decree Categorical Pretreatment Standards” Memorandum by James Elder, 08-24-1988; Jeffrey Lape guidance letter concerning “Applicability of Categorical Standards”, 4-16-1993.

Categorical Discharge Standards

- ▣ Categories with no PSES or PSNS of any kind:
 - Part 422 – Phosphate Manufacturing
 - Part 434 – Coal Mining
 - Part 436 – Mineral Mining and Processing
 - Part 440 – Ore Mining and Dressing
 - Part 445 – Landfills
 - Part 454 – Gum and Wood Chemicals Manufacturing
 - Part 457 – Explosives Manufacturing
 - Part 459 – Photographic Processing
 - Part 460 – Hospitals

Categorical Discharge Standards

- Categories without “specific” numeric PSES and/or PSNS:
 - Part 405, Part 407, Part 408, Part 409, Part 410, Part 411, Part 424, Part 427, Part 432, Part 435 and Part 463

- “Any existing source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR Part 403.”

Categorical Discharge Standards

- Concentration-based
 - Direct Application (“End-of-Process”); using the limit as published in the CFR
 - Imposition of Equivalents; using average flow to determine mass-based equivalent
 - Adjusted Limits (“Post-treatment”); using CWF and/or FWA to adjust the limits in the CFR

Categorical Discharge Standards

- Production-based
 - Direct Application (“End-of-Process”); using flow, production rate and limit as published in the CFR
 - Imposition of Equivalents; using average production rate instead of actual production rate during sample collection
 - Adjusted Limits (“Post-treatment”); using CWF and/or FWA to adjust the limits in the CFR

Local Limits

- Promulgated at the Local Level
- Enforceable Locally
- Types
 - Numeric
 - Additional Specific Prohibitions
 - BMPs (If Authorized by Local Ordinance)
- Enforceable “End-of-Pipe”

Local Limits

- ▣ Developed to reflect specific needs and capabilities at individual POTWs.
- ▣ Designed to protect the POTW receiving waters.
- ▣ POTWs must develop local limits or demonstrate that they are unnecessary [Reference: 40 CFR 403.8(f)(4)]
- ▣ Local limits are needed when pollutants are received that could result in pass through or interference at the POTW [Reference: 40 CFR 403.5(c)]
- ▣ Essentially, local limits translate the general prohibited discharge standards of 40 CFR 403.5 to site-specific needs.

Local Limits

- ▣ Protect the POTW (Equipment and Processes)
 - pH, Temperature, etc.
 - Inhibition Based
- ▣ Protect the Receiving Waters
 - NPDES Based
 - Water Quality Criteria Based
 - ▣ Federal:
<http://www.epa.gov/waterscience/criteria/wqctable/>
 - ▣ State: 327 IAC 2

Local Limits

- Protect Sludge Disposal/Beneficial Re-use Options
 - Federal Sludge Quality Based (40 CFR 503)
 - State Sludge Quality Based (327 IAC 6.1)

- Protect POTW Personnel
 - Toxicity
 - Flammability and/or Combustibility

Other Pretreatment Standards

- There are two circumstances in which BMPs may be Pretreatment Standards:
 - The first is when a POTW establishes BMPs as local limits to implement the general and specific prohibitions.
 - The second is when the BMPs are categorical Pretreatment Standards established by EPA.

Reference: 70 FR 60147

DISCUSSION OF PRETREATMENT REQUIREMENTS

Pretreatment Requirements

- ❑ 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 are distinguished from numeric effluent limits that regulate the pollutants once they enter a wastestream.

Reference: 70 FR 60147

Pretreatment Requirements

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

Reference: 70 FR 60147