

Chapter 1

Introduction

Goals, Basic Structure, and History

Sewage treatment plants are typically designed to treat the conventional pollutants (BOD, TSS, NH₃) in the sanitary wastewater discharged by homes, offices, and stores. They are generally not designed to treat the concentrated conventional pollutants or the toxic or hazardous pollutants discharged by industries into sewer systems as a result of manufacturing processes. Lifeless rivers, poisoned water supplies, contaminated municipal sludges, and crippled sewage treatment plants are the potential costs if discharges of these pollutants into our sewers are not adequately controlled and treated.

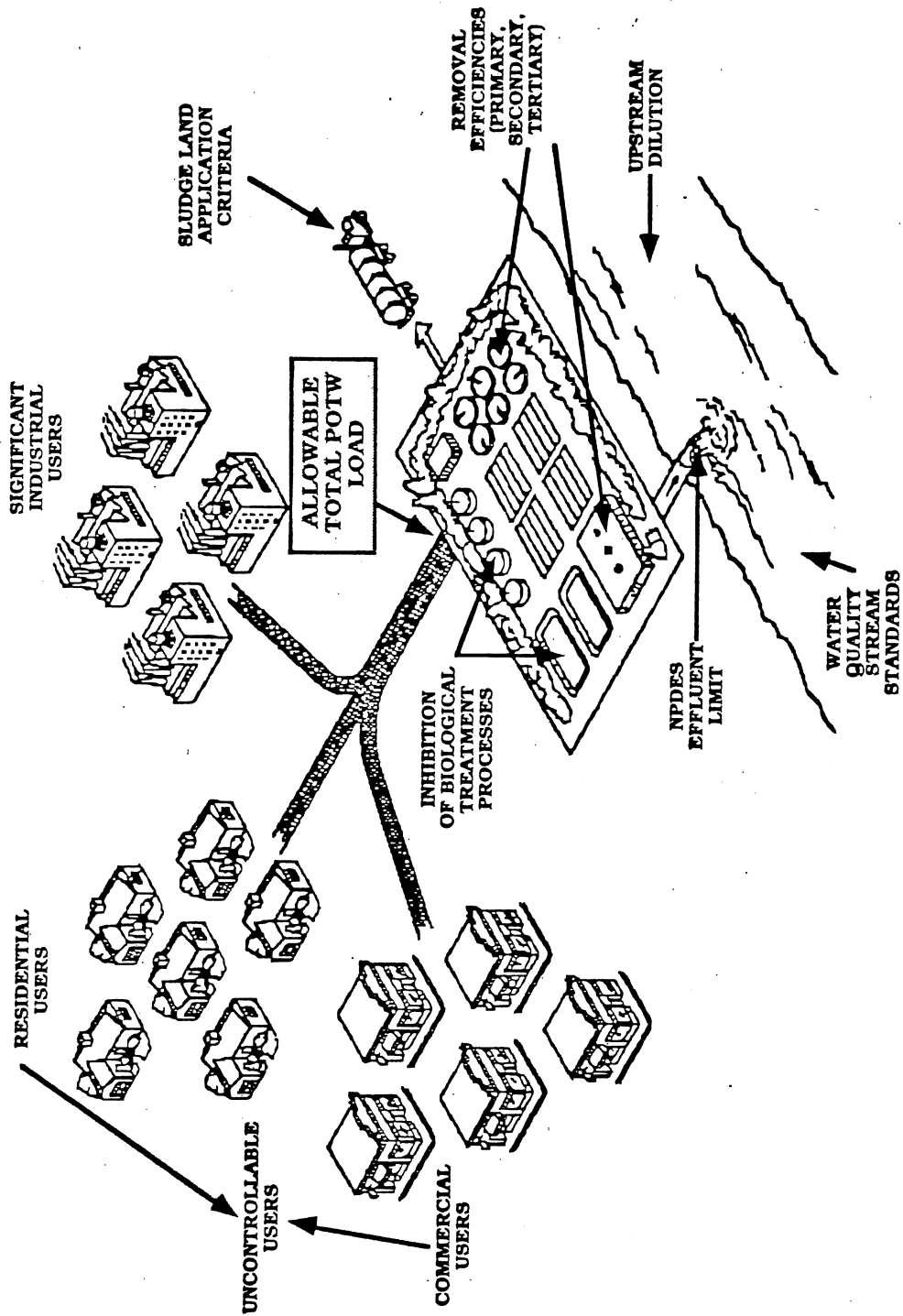
In order to prevent these results, Congress wrote pretreatment requirements into the Clean Water Act in 1972 and the National Pretreatment Program was created to protect municipal or publicly owned wastewater treatment works (POTWs) and their receiving environments from the detrimental impacts from nondomestic users of POTWs, commonly called industrial users or indirect dischargers. While the term "pretreatment" often refers to the treatment of industrial wastewater at the industrial facility prior to discharge to a local sewer collection system, the term is also used to refer to the administrative activities involved in regulating discharges from industries into sewer systems, as in "a pretreatment program."

The four objectives of the National Pretreatment Program (40 CFR 403.2) are to regulate the introduction of pollutants into a POTW so as to:

- Prevent interference with POTW operations, which may involve any aspect of POTW operation from physical obstruction of the collection system to inhibition of biological activity in a treatment unit process;
- Prevent contamination of the POTW's municipal sludge, in other words, to ensure POTW sludge of suitable quality for proper disposal, preferably for beneficial reuse; and
- Prevent pass-through to the POTW's receiving stream, which refers to the discharge of toxic levels of a pollutant into the POTW's receiving stream due to incomplete removal of the pollutant during treatment;
- Prevent exposure of POTW workers to chemical hazards, most typically toxic fumes and explosivity.

The diagram on the next page visually depicts these objectives, showing the relationship of the POTW and the industrial and commercial users to interference/inhibition, sludge contamination, pass-through, and worker protection.

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The National Pretreatment Program requires the cooperation of federal, state, and local governments (POTWs) to effectively control the discharges of industrial users. The primary responsibility to control the industrial wastes that are entering its sewer system rests with the POTW. Where a state has been approved by EPA to oversee the National Pretreatment Program, as in the case of North Carolina, the state is responsible for approving, monitoring, and regulating the performance of the local pretreatment programs. For those states without an approved pretreatment program, the EPA regional office retains approval authority.

Basic Elements of EPA and State Pretreatment Regulations

EPA first issued pretreatment regulations (40 CFR 403) in 1978, with revisions in 1981, 1987, and 1990. These federal regulations establish general and specific prohibited discharge standards to control pollutant discharges into treatment plants to accomplish the four objectives of the National Pretreatment Program (Prevention of Interference, Pass-through, Sludge Contamination, and Worker Exposure). Prohibited discharge standards apply to all industrial and commercial establishments connected to POTWs. These standards include the General Prohibitions found at 40 CFR 403.5(a)(1) and 15A NCAC 2H .0909 and the Specific Prohibitions found at 40 CFR 403.5(b)(1) and 15A NCAC 2H .0909.

The General Prohibitions state:

"A User may not introduce into any POTW any pollutant(s) which cause Pass-Through or Interference."

The Specific Prohibitions state:

"The following pollutants shall not be introduced into a POTW:

- (1) Pollutants which create a fire or explosive hazard in the POTW, including, but not limited to, wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit (60 degrees Centigrade) using the test methods specified in 40 CFR 261.21.
- (2) Pollutants which will cause corrosive structural damage to the POTW, but in no case Discharges with a pH lower than 5.0, unless the works is specifically designed to accommodate such Discharges.
- (3) Solid or viscous substances in amounts which will cause obstruction of the flow in the POTW resulting in interference.
- (4) Any pollutant, including oxygen demanding pollutants (BOD, etc.) released in a Discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW.

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(5) Heat in amounts which will inhibit biological activity in the POTW resulting in Interference, but in no case heat in such quantities that the temperature at the POTW Treatment Plant exceeds 40 degrees Centigrade (104 degrees Fahrenheit) unless the Approval Authority, upon request of the POTW, approved alternate temperature limits.

(6) Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference or pass through.

(7) Any pollutants which result in the presence of toxic gases, vapors or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

(8) Any trucked or hauled pollutants, except at discharge points designated by the POTW."

In addition, the federal regulations establish Categorical Pretreatment Standards to control pollutant discharges into treatment plants. Categorical Pretreatment Standards apply to industrial and commercial discharges in at least 25 specific industrial categories determined to be the most significant sources of toxic pollutants. Each categorical pretreatment standard is published by EPA as a separate regulation (40 CFR 405-472). These standards contain limits for pollutants commonly discharged by the specific industrial category and are based on wastewater treatment technologies available to the industry class and the economic ability of the industry class to install the technology. Categorical Pretreatment Standards apply to all industrial users in the industry class unless local limits are more stringent, in which case local limits apply.

Finally, the federal pretreatment regulations establish the minimum administrative elements of a local pretreatment program, and outline procedures for the development, approval, and implementation of these programs.

North Carolina's pretreatment regulations (15A NCAC 2H .0900) first became effective in 1980 and have also undergone revision. The State regulations adopt many of the Federal regulations by reference. However, the State regulations include several requirements different from the Federal regulations. These unique state regulations include:

- 1) a comparable, although different, definition of SIU;
- 2) procedures for Division review of SIU permits;
- 3) more frequent POTW reporting to the Division on pretreatment program activities;

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- 4) authority to administer civil penalties higher than the minimum required by EPA to SIUs for pretreatment violations;
- 5) more frequent monitoring of SIUs by the POTW.

The approximately 100 POTWs in North Carolina initially identified as needing a pretreatment program received approval of their programs in 1983. Several additional POTWs have since been required to develop programs. As of 1993, there are approximately 135 approved pretreatment programs.

Local Limits

At the heart of pretreatment programs are local limits designed to accomplish the four objectives of the National Pretreatment Program (Prevention of Interference, Pass-through, Sludge Contamination, and Worker Exposure). Local limits are developed in addition to any applicable national categorical pretreatment standards or state pretreatment requirements. Federal regulations (40 CFR 122.21(j)) require that local limits be technically based. The process for developing technically based local limits involves determining the maximum amount of each pollutant that can be accepted at the influent or headworks of the WWTP and still protect the WWTP itself (Interference), the receiving stream (Pass-Through), the POTW's sludge disposal options, and worker health and safety. Allowable influent or headworks loads based on passthrough, interference and sludge handling considerations are calculated by performing headworks analysis calculations (HWA) using data obtained through extensive site-specific long term monitoring (LTMP). The most restrictive of these allowable influent loads calculated through the HWA is the POTW's Maximum Allowable Headworks Loading (MAHL). From these loadings, industrial-specific effluent limits may be derived.

Implementation of a Pretreatment Program

The minimum obligations of a POTW in implementing its pretreatment program are set out in the federal and state pretreatment regulations and the POTW's approved pretreatment program. Requirements are listed in Part III of the NPDES permit or comparable section of the Non-Discharge permit (see Appendix 1-A). Implementation of a local pretreatment program includes:

- (1) Legal Authority, usually a Sewer Use Ordinance (SUO);
- (2) Industrial Waste Survey (IWS);
- (3) Long Term Monitoring Program (LTMP);
- (4) Headworks Analysis (HWA);
- (5) Industrial User Permits (IUPs);
- (6) Compliance Activities;
- (7) Annual Public Notification;
- (8) Enforcement; and
- (9) Reporting Requirements.

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About This Document

This Comprehensive Guidance document covers each of the major elements of implementing a pretreatment program. It replaces many of the previous Division guidance documents. This guidance document includes chapters on:

- SUO - Sewer Use Ordinance
- IWS - Industrial Waste Survey
- LTMP - Long Term Monitoring Plan
- HWA - Headworks Analysis
- IUP - Industrial User Permits
- Compliance and Inspection Activities
- Enforcement
- SAR - Semi-Annual Report (including annual public notification)

The first section of each chapter is a Quick Reference section, with a brief listing of purpose, definition, acronyms, minimum required frequency, regulatory references, etc., on the program elements addressed by the chapter. The remaining sections of each chapter contain discussions and "How-To" sections to give detailed guidance. The Appendices include examples, spreadsheets, tables, and forms helpful in implementing that particular part of the program.

Appendix 1-B of this chapter contains a master list of all pretreatment acronyms used in the guidance document. Appendix 1-C of this chapter provides information on how to obtain the guidance documents referenced throughout this document.

This comprehensive guidance document is designed so that as regulations and procedures change, as they inevitably will, it can be easily updated by replacing sections or chapters as needed. Revision dates are printed on each section.