Pretreatment – POTW Police

General Overview
Lacey James
Water Resources & Regulatory Manager
City of Avondale
OVERVIEW

- INTRODUCTION TO PRETREATMENT
- HISTORY OF REGULATIONS
- FRAMEWORK
- PURPOSE
- COMMERCIAL VS. INDUSTRIAL
- INSPECTIONS, SAMPLING, & PERMITTING
- ONE WATER
- CASE STUDY
- POTENTIAL TEST QUESTIONS
Our Urban Water Cycle

- CAP & SRP Canals Deliver Water
- Wetlands Recharge
- Recharge Facility
- Production
- Distribution
- Drinking Water
- Customer
- Sewer
- Pretreatment Collections
- Wastewater Treatment
- Solid Waste
- Aqua Fria River

Groundwater Aquifer
INTRODUCTION TO PRETREATMENT

WHAT IS PRETREATMENT?

• “Pretreatment” is defined as the reduction or removal of pollutants in wastewater PRIOR to discharge into the Publicly Owned Treatment Works (POTW).

• Collection System + Treatment Plant = POTW

• Limits on the amount of pollutants discharged. Established by EPA, the State, or the Local Authority (Municipality).
So Many Names...

• Pretreatment
• Commercial Fats, Oils, & Grease (FOG)
• Industrial Pollution Control
• Industrial Pretreatment
• Environmental Compliance or Services
• Environmental Quality Compliance
• Pretreatment Pollution Prevention
U.S. Environmental Protection Agency (EPA) created December 1970 by Presidential Executive Order.

Trivia Question: Who was the President in 1970?
Clean Water Act

• 1972- Congress passed “Federal water Pollution Control Act”

• 1977- Amended and re-titled “Clean Water Act”

• “Waters of the United States”

• 1978- EPA developed the “General Pretreatment Program Regulations” as part of Code of Federal Regulations

  ➢ National Pretreatment Program (40 CFR 403)
  ➢ National Pollutant Discharge Elimination System (NPDES) (40 CFR 122)
• 40 CFR Part 403

• U.S. Code of Federal Regulations (CFR)
  > Title 40 - Protection of the Environment
    > Chapter I - Environmental Protection Agency
      > Subchapter N - Effluent Guidelines and Standards
        > Part 403 - General Pretreatment Regulations for Existing and New Sources of Pollution
1. Corrosion of Collection System or of the Sewage Treatment Plant

2. Explosions

3. Exposure of Workers to Toxic Substances and Hazardous Fumes

4. Limited or More Expensive Sludge Disposal Options

5. Interference with Plant Treatment System

6. Pass-Through of Toxic Pollutants into Surface Waters
40 CFR Part 403.5(b) Specific Prohibitions - A user may not introduce pollutants into a POTW that create the following:

- Fire and explosion hazards
- Corrosion & Structural Damage
- Obstructions
- Interference by excessive flow, concentration
- Excessive heat
- Interference/Pass Through by certain oils
- Toxic gases, vapors, and fumes
- Some trucked/Hauled waste
NPDES applies to all “point sources discharging pollutants” into “waters of the United States”

point sources must obtain an NPDES permit from EPA or their delegated State

NPDES permits require development of Pretreatment Programs
How do you know if your facility is required to implement a Pretreatment Program?

- POTWs with design flows greater than 5 (MGD) million gallons
  - AND/OR Receives pollutants from industrial users that pass through or interfere
  - OR Receives discharges from categorical industrial users (defined later)

What about small POTWs?

- Smaller POTWs that receive industrial wastewater from Categorical Industries or Significant Industrial Users are encouraged to implement control mechanisms or have a “Mini Pretreatment” Program.
Commercial vs. Industrial Pretreatment

- **Commercial Pretreatment**
  - **Fats, Oils, and Grease Program (FOG)**
    - Regulating commercial properties like restaurants, car washes, schools etc.

- **Industrial Pretreatment**
  - **Significant Industrial User (SIU)**
    - 25,000 gallons per day of process flow; 5% of hydraulic or organic flow of POTW
    - Reasonable potential to cause pass through or interference
  - **Categorical Industrial User (CIU)**
    - 51 Categories Listed in Code of Federal Regulations (40 CFR Parts 405-471)
    - Limit the discharge of specific pollutants
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## Categorical Industrial Users

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<td>Pulp, Paper &amp; Paperboard</td>
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<td>Rubber Manufacturing (New Sources Only)</td>
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What is the most IMPORTANT component of a Pretreatment Program?

Legal Authority

City Code

Ordinance

Whatever you call it, it's the most crucial component of your program. You cannot legally regulate any facility without it! Not only does it gives the municipality the ability to regulate, but it also protects the City legally.
Division 3. Pretreatment

Editor's note—
Ord. No. 1406-410, § 2, adopted April 19, 2010, repealed the former Div. 3, §§ 24-101—24-108, and enacted a new Div. 3 as set out herein. The former Div. 3 pertained to discharge regulations and derived from § 12-4-1—12-4-11 of the 1971 Code; Ord. No. 546, 6-21-93; Ord. No. 571, § 1, 7-5-94.

24-101 General provisions.
(a) Purpose and Policy. The purpose of the City of Avondale Pretreatment Program, as established herein, is to set forth requirements for users and potential users of the City of Avondale's wastewater collection and treatment system, which is the city's POTW. The program enables the city to protect public health and the environment in conformity with all applicable local, state, and federal laws, including, but not limited to, the ACT (33 U.S.C. § 1251 et seq.) and the general pretreatment regulations (40 CFR Part 403). The objectives of this article are:

(1) To prevent the introduction of pollutants into the POTW, which will cause interference with the operation of the treatment facility or contaminate the collection system, and or cause worker health and safety problems.
Local Limits

• Treatment plants are only designed to treat domestic waste.
• A real snapshot of your community
• Can be more stringent than Federal limits, but cannot be less stringent
• What can your plant really treat?
• Example: 5 industries that do not meet the criteria for an SIU or CIU can impact your POTW just as much as one permitted facility.
Basics of a FOG Program:

- Identify
- Map
- Database
- Inspect
- Educate/ (BMP) Best Management Practices
- *Issue General Permit
- Maintain Program
Apartments
Homes
Churches
Restaurants
Wastewater Treatment Plant

( Grease Trap )

F.O.G.

Restaurants
Homes
Churches
Apartments

Wastewater Treatment Plant

= Sanitary Sewer Overflows
Residential Community - Public Education

TRASH THAT TRASH!
DON'T FLUSH TROUBLE!

COTTON BALLS AND SWABS
HAIR
FEMININE PRODUCTS & APPLICATORS
GLOVES
CLEANING AND FACIAL WIPES
DISPOSABLE DIAPERS, NURSING PADS & BABY WIPES

These items belong in the trash can.
SSO-Example at Carniceria

Before

After
Grease Interceptor
Gravity Grease Interceptor

Concrete Outdoor In-Ground Interceptor

INLET

OUTLET

SEWER SYSTEM

INLET

OUTLET

GREASE

KITCHEN DRAINAGE WATER

CLARIFIED WATER
Hydromechanical Interceptor AKA Trap

“Under-the-Counter” Steel / Iron Model
Safety Cones

Disposable Gloves

Manhole Hook

Sludge Judge

Lamping Mirror

Tracing Dyes

Wipes
40 CFR Parts 405-471 contain both effluent limits and pretreatment standards. The effluent limits only apply to **direct dischargers**, whereas pretreatment limits only apply to **indirect dischargers** whose wastewater goes to a **Publicly Owned Treatment Works (POTWs)**.

As a POTW we are only concerned with indirect dischargers.
Industrial Inspections

• What to bring
  • Your ID
  • PPE
  • Inspection Forms
  • Copies of Ordinance
  • GIS Maps
  • Site Plans
  • Facility File
  • Contact Phone Numbers
  • Camera
  • Sampling equipment/bottles

FYI! Its easier to just use your ordinance.
Ask Questions

• You’re doing your job if you ask LOTS of questions. You’re not an expert in every industrial process, so don’t act like you are.
• Develop a good relationship with the operators of the facility.
• It’s kind of like watching “How it’s made” but you’re the host of the show!
• Research, Research, Research
Review Records

• Hazardous Waste Manifest
• pH calibration logs
• Production Rates
• Flow Rates and flow metering equipment calibration
• Discharge Logs
• Written sampling procedures
• Current hazardous waste inventory/Fire Dept. Information
• **Talk with other municipalities, even if they are in another state!**
Permitting process in a nutshell...

- Permit Application
- Baseline Monitoring Report
- Development Documentation
- Fact Sheet (Documentation of Decisions)
- Permit (General & Individual)

- Required to inspect at least 1x a year
- Unannounced & Announced Inspections
- Sampling
- Reporting
Priority Pollutant List

- Annual Priority Pollutant Sampling @ WRF
- Sample each quarter for the Priority Pollutants in which you get a hit on
- Keep an eye on these! Very important indicator of industrial discharges
- Investigating an industry? Use the Priority Pollutant Scan
- The current list of 126 priority pollutants is available at http://water.epa.gov/scitech/methods/cwa/pollutants.cfm
Pretreatment—What is our end goal?

• Protect the employees working in the treatment works. We are your police!

• Protect the treatment plant from upsets and/or interference
  - **Pass Through**—Discharges that cause a violation of any NPDES (AZPDES) permit requirement or increases magnitude, duration of violation.
  - **Interference**—Discharges that inhibit or disrupt POTW treatment processes & operations, sludge processes, causing a permit violation.

• Protecting our community’s investment

• Water reuse!
Emerging Contaminates

On-going 16 year drought

Direct Potable Reuse (DPR)

Indirect Potable Reuse (IPR)

APP & AZPDES

What is the future of Pretreatment?
Case Study

- New pretreatment inspector is doing a drive around the city. They have researched the database, but want to get a good feel for what types of commercial and industrial facilities are operating. The pretreatment inspector comes across a small radiator shop that isn’t in the database. So, the inspector decides to do a surprise inspection. With an inspection form, inspection rights form, a GIS map of the sewer, and other proper PPE the inspector walks onto the yard and identifies themselves as a City Pretreatment Inspector.
Case Study

- This is what the inspector sees...
Case Study

• This is what the inspector sees...
Case Study

- This is what the inspector sees...
Case Study

- But wait there is more...
Case Study

• The inspector knows this site has no pretreatment and they are disposing of solids with a commercial vendor without an EPA tracking number or testing before disposing.

• The owner is extremely combative and uncooperative.

• ADEQ Hazardous Waste had issued an NOV eight years ago.

• Time to investigate!
Case Study

Figure 1.1
Tom’s Radiator Sampling

1st Sampling Location 3/10/15
Diluted due to residential waste

2nd Sampling Location 6/3/15
More concentrated sample.
Case Study

- Results from City of Avondale investigatory sampling 3/10/2015:
  - Antifreeze: 120 mg/L (demonstrates presence of antifreeze in sewer)
  - Copper: 3.13 mg/L (Exceeds Local Limit of 3.0 mg/L - Violation of City Code Ch. 24)
  - Lead: 8.93 mg/L (Exceeds Local Limit of 1.6 mg/L Violation of City Code Ch. 24)
Case Study

- Results from City of Avondale investigatory sampling 6/3/2015:
  - Antifreeze: 560 mg/L (demonstrates presence of antifreeze in sewer)
  - Copper: 7.91 mg/L (Exceeds Local Limit is 3.0 mg/L)
  - Lead: 21.5 mg/L (Exceeds Local Limit of 1.6 mg/L)
Case Study

- City has enough information on the discharge that they contact ADEQ Hazardous Waste team to conduct an inspection.
- Pretreatment & RCRA
- August 2015 ADEQ issues NOV
- August 2015 City issues NOV
- August 2015 Radiator Shop- Owner retires and hands the shop over to his son.
- Different attitude- wants to clean up the business
Case Study

- Installation of Pretreatment Equipment
- Concrete floor drains
<table>
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<th>Lacey James</th>
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<td>Photo No.</td>
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<tr>
<td>Direction Photo Taken:</td>
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<td>Photo Description:</td>
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**Results**
- Total Metals Copper: 18.2 mg/L
- Total Metals Lead: 1060 mg/L
- TCLP Lead: 34.4 mg/L
**Results**

- Total Metals Copper: 4.08 mg/L
- Total Metals Lead: 17.6 mg/L
- TCLP Lead: 0.22 mg/L

**Photographer:**

- Lacey James

**Photo Details:**

- **Photo No.:** 4
- **Date:** 02/17/2016
- **Direction Photo Taken:**
- **Photo Description:** Location #3 (Waste Totes Liquids)
Case Study

- ADEQ Haz Waste- Closed
- Individual Wastewater Permit- Zero Discharge
- Annual Inspections
  - Review of records
  - Pretreatment equipment
  - Ensure no new drains installed that connect to the POTW
POTENTIAL OPERATOR CERTIFICATION TEST QUESTIONS

• What is Pretreatment referring to?

• Terms like CIU and SIU

• What is the maximum influent received at a POTW that requires a pretreatment program?

• Causes of a sanitary sewer overflow (SSO)

• Clean Water Act & 40 CFR 403
Please Join Us!!!

- Go to azwater.org
- Committees
- Special Interests
- Pretreatment
  - AZ Water Pretreatment
  - AZ Water FOG
- $50 Annual Fee
- $15 Student

AZ Water Pretreatment- FOG
Left to Right:
Richard Dalton (Not Shown)- Chair of Pretreatment:
richard_dalton@tempe.gov
Don Spencer -Chair of FOG: Don.Spencer@goodyeararaz.gov
Kathryn Boland -Secretary: kathryn.boland@surpriseaz.gov
Lacey James- Vice Chair: ljames@avondale.org
Christina Gonzalez- Outreach Liaison: gonzalezcm@cdmsmith.com
PRETREATMENT – POTW POLICE

GENERAL OVERVIEW

LACEY JAMES

WATER RESOURCES & REGULATORY MANAGER

CITY OF AVONDALE