



Pretreatment 101

(S36)

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This presentation is geared towards individuals with less pretreatment experience and municipalities without pretreatment program authority (non delegated).

Agenda

Intro to the
pretreatment
regulations

Roles and
responsibilities

Pretreatment
legal authority

FOG control

Addressing
CECs

Promoting local
programs



Intro to Pretreatment Regulations

Overview



What:

The National Pretreatment Program, a component of the NPDES Permit Program, is a regulatory program established in the **Clean Water Act** to address indirect discharges from industries to publicly owned treatment works.

Who:

- A POTW is a treatment works which is owned by a State or municipality, and includes any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage OR industrial wastes of a liquid nature [§403.3(q)].
- Non-domestic sources of wastewater that discharge into or are transported by truck or rail into a POTW.

Why:

POTWs are designed to treat primarily domestic wastewater, not to treat toxic or non-conventional pollutants that are present in industrial waste.

Overview



More on the why

Even where the POTW has the capability to remove the toxic pollutants from the water stream, those pollutants can end up in the sludge impacting biosolids disposal options or disposal cost.

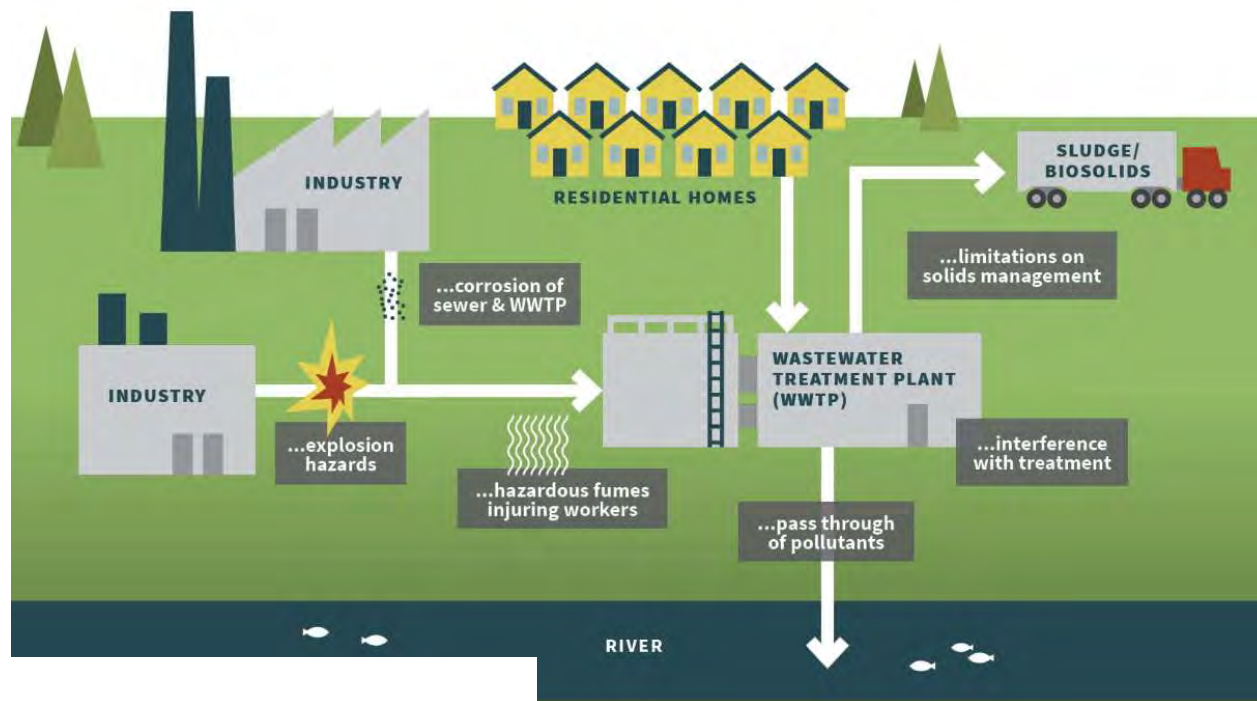
Toxic pollutants can affect the efficiency of the microbial processes at POTWs, reducing treatment capacity.

Gases or vapors from volatile organics can accumulate in the head space of sewers, increasing the likelihood of explosions or health and safety implications to collection system operators.

Overview

Objectives:

1. Prevent the introduction of pollutants into POTWs which will interfere with the operation of a POTW, including its use or disposal of biosolids.
2. Prevent the introduction of pollutants into POTWs which will pass through the treatment works or be incompatible with operations.
3. Improve opportunities to recycle and reclaim municipal and industrial wastewaters and biosolids.



Overview



The National Pretreatment Program's partnerships go beyond ensuring the success of POTWs and NPDES compliance.

- Protecting drinking water supplies
- Preventing sewer overflows
- Extending the life of the wastewater infrastructure
- Ensuring worker safety

Regulations

Everything stems from the Clean Water Act and Revised Code of Washington

Implementing rules and regulations

40 CFR 403 – General Pretreatment Regulations

40 CFR 122 – Permit Programs: NPDES

173-216 WAC – State waste discharge permit program

173-208 WAC – Grant of authority of sewerage systems

173-220 WAC – NPDES Permit Program

Pretreatment Basics



General discharge prohibitions applicable to all non-domestic users

[403.5\(a\)\(1\)](#)

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

Pretreatment Basics



General discharge prohibitions applicable to all non-domestic users

Definitions at [403.3](#)

Interference – Discharge which alone, or in conjunction with discharges from other sources, inhibits or disrupts the POTW (treatment processes, operations, or its sludge processes, use or disposal) AND therefore is a cause of a violation of any NPDES permit conditions or of the prevention of biosolids use and disposal.

Pass Through – Discharge which alone, or in conjunction with discharges from other sources, exits the POTW into waters of the state in quantities or concentrations that cause a violation of the NPDES permit conditions.

Pretreatment Basics

Specific discharge prohibitions applicable to all non-domestic users

403.5(b)

- Pollutants which create a fire or explosion hazard (flashpoint $< 60^{\circ}\text{C}$)
- Corrosive pollutants with $\text{pH} < 5.0$
- Solid or viscous pollutants which will cause obstruction of flow
- Any pollutant, including BOD, which will cause interference at the POTW
- Heat in amounts that will inhibit biological activity, in no case $> 40^{\circ}\text{C}$ at the headworks
- Nonpolar oils in amounts that will cause pass through or interference
- Pollutants that result in the presence of toxic gases, vapors, or fumes
- Any trucked or hauled pollutants, except at discharge points designated by the POTW

Pretreatment Basics



Additional state specific discharge prohibitions applicable to all non-domestic users

[WAC 173-216-060](#)

- Discharge restrictions and prohibitions of dangerous waste regulations (173-303 WAC)
- Corrosive pollutants with pH < 5.0 or > 11.0, unless the system is designed to accommodate such discharge and authorized in permit
- Any of the following discharges unless approved by the department under extraordinary circumstances and no other discharge alternatives exist,
 - Noncontact cooling water in significant volumes
 - Stormwater, and other direct inflow sources
 - Wastewaters significantly affecting system hydraulic loading, which do not require treatment

Industrial User Definition

The General Pretreatment Regulations apply to all non-domestic sources (industrial users) that introduce pollutants into a POTW.

[403.3\(i\)](#) and [403.3\(j\)](#)

Industrial user – source of indirect discharge

Indirect discharge – introduction of pollutants to a POTW from a non-domestic source regulated under section 307(b), (c) or (d) of the Act

EPA developed criteria to define **significant industrial users (SIUs)**. Most of the pretreatment regulations apply to SIUs. The presumption is that control of SIUs will, in most cases, provide adequate protection of the POTW.

Industrial User Definition

Significant Industrial User 403.3(v)

- An IU subject to federal categorical pretreatment standards.
- An IU that discharges an average of 25,000 gpd or more of process wastewater.
- An IU that contributes a process wastestream that is 5% or more of the average dry-weather hydraulic or organic capacity of the POTW.
- An IU designated by the POTW because of a reasonable potential to adversely affect the POTW or violate any pretreatment standard or requirement.

Categorical Industrial User (CIU)



Specified industry types that have federal categorical pretreatment standards.

Each categorical industry has its own federal effluent guideline in [40 CFR Chapter I Subchapter N](#) (Part 405-471)

Access information on the federal effluent guidelines on EPA's website, [Effluent Guidelines | US EPA](#)

EPA develop an Effluent Guidelines Program Plan every 2 years to evaluate changes to the effluent guidelines. Subsequent rulemakings may change the implementation of these standards for pretreatment purposes.

Supposed to be self-implementing reporting and notification requirements.

CIU

The following industry types of categorical (federal) pretreatment standards and must have resulting process wastewater permitted for discharge.

Aluminum Forming	Nonferrous Metals Forming and Powders
Asbestos Manufacturing	Nonferrous Metals Manufacturing
Battery Manufacturing	Oil and Gas Extraction
Carbon Black Manufacturing	Organic Chemicals, Plastics, and Synthetic Fibers
Centralized Waste Treatment (oils, metals, and organics)	Pesticide Chemicals
Coil Coating	Petroleum Refining
Copper Forming	Pharmaceutical Manufacturing
Electrical and Electrical Components	Porcelain Enameling
Electroplating	Pulp, Paper, and Paperboard
Fertilizer Manufacturing	Rubber Manufacturing
Glass Manufacturing	Steam Electric Power Generating
Grain Mills	Transportation Equipment Cleaning
Metal Finishing	Waste Combustors
Metal Molding and Casting (Foundries)	

Industrial User Permitting



Federal requirements

[403.8\(f\)](#) outlines the POTW pretreatment program legal authority and procedural requirements.

A major element is that SIUs require control through individual permit or individual control mechanism.

State requirements

[WAC 173-216-040](#) No waste materials may be discharged from any commercial or industrial operation into waters of the state, or into any municipal sewerage system, except as authorized pursuant to 173-216 WAC

Exception for wastes from industrial or commercial sources whose wastewater is similar in character and strength to normal domestic wastewater, provided that the discharges do not have the potential to adversely affect performance of the system. Examples include hotels, restaurants, laundries, and FSEs. (WAC 173-216-050(1)(d))

POTW Permit Basics



Notification requirements for all POTWs

122.42(b)

- Any new introduction of pollutants into the POTW from an indirect discharger which could be subject to section 301 or 306 of the CWA if it were directly discharging those pollutants
- Any substantial change in volume or character of pollutants by an existing source
- Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW, and any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW

POTW Permit Basics



Pretreatment program requirements for all POTWs [122.44\(j\)](#)

- Identify in terms of character and volume of pollutants, any significant industrial dischargers into the POTW subject to Pretreatment Standards under 307(b) of the CWA and 40 CFR Part 403
- Submit a local program when required by and in accordance with 40 CFR Part 403 to assure compliance with pretreatment standards
- Provide a written technical evaluation of the need to revise local limits
- POTWs which are “sludge only facilities” may be required to develop a pretreatment program under 40 CFR Part 403



Roles and Responsibilities for Pretreatment

Pretreatment Program Implementation

The National Pretreatment Program, implemented as a partnership between EPA, states, and POTWs.

The General Pretreatment Regulations use two terms to describe responsibilities:

1. **Control Authority** – the authority (local or State) implementing an authorized and approved pretreatment program controlling industrial users
2. **Approval Authority** – the authority with the responsibility to administer the National Pretreatment Program (Washington State)

Pretreatment Program Implementation

Who has to implement the program?

403.8(a)

A POTW (or combination of treatment plants operated by the same authority) with a total design flow > 5 MGD must establish a local pretreatment program to prevent pass through and interference.

*In defined circumstances, smaller POTWs must establish a program

403.10(e)

A state can implement pretreatment programs for POTWs in lieu of requiring its POTWs to do so

Pretreatment Program Implementation



Who is implementing the pretreatment program?

Of the ~300 POTWs in the state, 18 municipalities (some with multiple POTWs) have been delegated authority from Ecology to implement a local pretreatment program. One additional POTW is actively working on developing a local program for approval.

For the rest of the POTWs, Ecology acts as the control authority. However, elements of the program are still accomplished by the POTWs.

- Ecology issues IU permits in 50 municipalities.

Delegated Programs in WA

- 
- | | |
|------------------|-----------------------------------|
| 1. King County | 10. Discover Clean Water Alliance |
| 2. Lynnwood | 11. Kennewick |
| 3. Everett | 12. Richland |
| 4. Bellingham | 13. Yakima |
| 5. Tacoma | 14. Spokane City |
| 6. LOTT | 15. Spokane County |
| 7. Vancouver | 16. Walla Walla |
| 8. Pierce County | 17. Pasco |
| 9. Port Angeles | 18. Quincy |

Typical Separation of Responsibilities

Non-delegated Programs



POTW	Ecology
Implements discharge prohibitions for all IUs	Issues permits to SIUs, and sometimes minor IUs
Conducts routine industrial user surveys	Receives and reviews IU monitoring reports
Reviews and authorizes new users, determine if an Ecology permit is required	Enacts enforcement, as necessary to address permitted IU noncompliance
Notifies Ecology of new users or significant changes to existing users	Conducts periodic inspections of industrial users
Develop technically justified local limits	Implement local limits in SIU permits
Allocates or manages organic and solids loading from IUs	Implements allocations as limits or requires routine monitoring for organic and solids loading, industry dependent

IU Survey

Stepwise approach for non-delegated POTWs

Step 1: Industrial User Inventory

- Identify and locate all possible industrial users which might be subject to pretreatment standards

Step 2: Characterization of industrial users

- Sort and compile
- Identify the character and volume of pollutants contributing to the POTW by the IU

Step 3: Notification requirements

- Notify IUs of any applicable pretreatment standards
- Notify SIUs of their status and of all requirements, including obtaining an Ecology-issued permit

Typically required in permits to conduct an IU Survey every 5 years or every permit term.

IU Survey:

Step 1 Inventory

Methods and Tools

Drive-bys
Evaluations/surveys
Facility inspections
Local telephone directories
Local newspaper
Business journal

Billing records
(water and wastewater)
Sewer permit tap records
Business license records
Property tax records
EPCRA and TRI reporting

- Coordinate with other local departments (building/planning/engineering, community development, fire/police, code enforcement)
- Outreach and education

IU Survey:

Step 2 Characterization

Sort and Compile Users

Create a database with identifying information such as facility name, address, contact information

Sort and identify industrial users

- SIC or NAICS codes
- Compare industry type to categories in 40 CFR Part 405-471
- IUs that might impact POTW

Characterize

- Identify pollutants of concern based on industry type or sampling
- Identify estimated volume of process (nondomestic) wastewater

IU Survey: Step 2 Characterization



IU Survey:

Step 3 Notification

Notify industrial users of applicable requirements

1. Applicable general and specific discharge prohibitions
2. Permit requirements

Local Limits

Determining allowable headworks loadings for pollutants of concern based on,

- Water quality standards
- Biosolids quality standards
- Inhibition of treatment process
- Air quality standards, if applicable

Local limit allocation to IUs

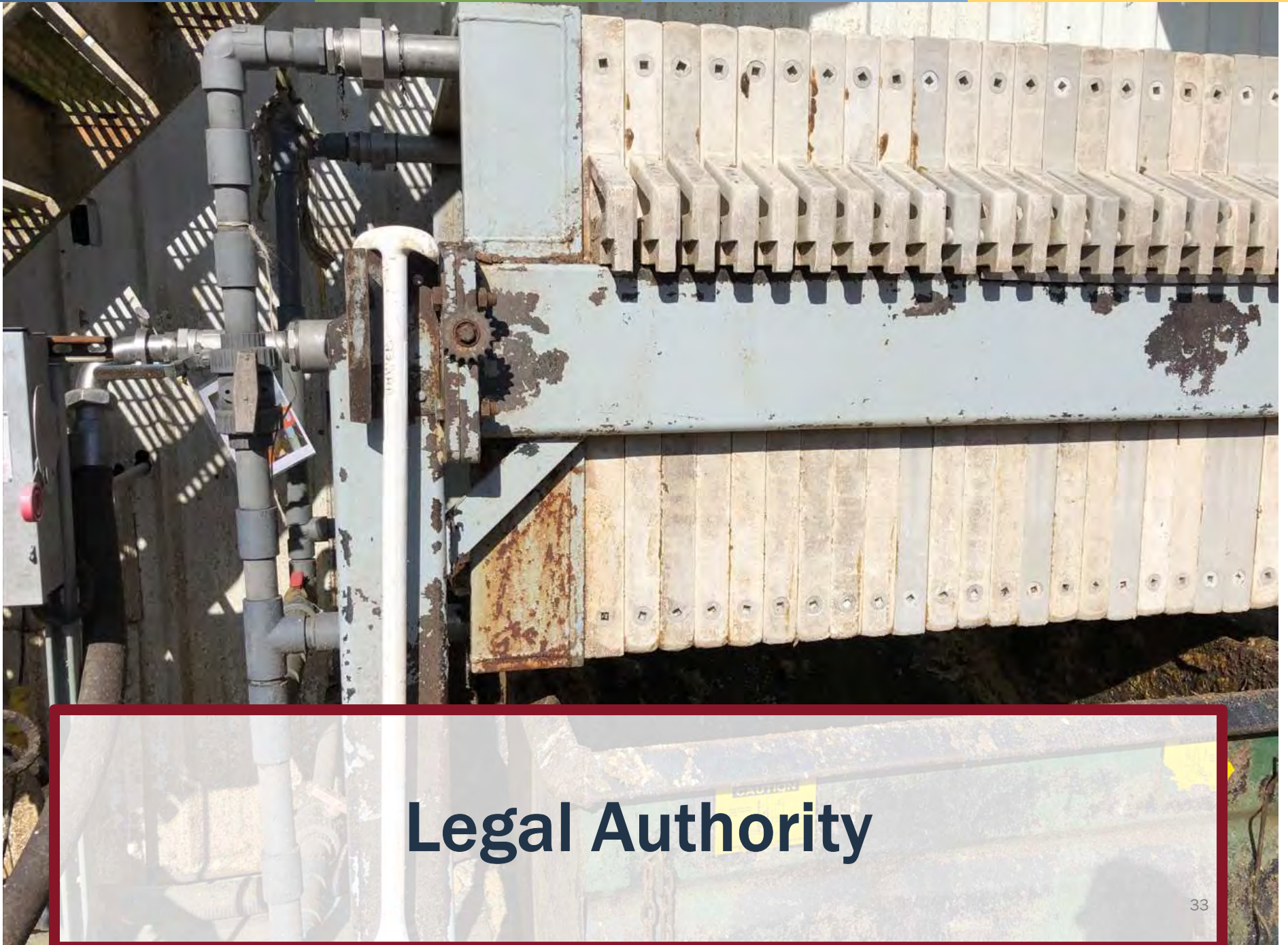
Allowable headworks loading – uncontrollable domestic loading – safety and growth factors = allowable industrial loading

- Uniform concentration
- YGWYN

Local limits should not be based on,

- Local limits of other cities
- Categorical standards for a specific industry type

These are not necessarily protective of your POTW and in some cases may be too restrictive



Legal Authority

Legal Authority Essentials

7 essential elements of legal authority

1. Control of discharges
2. Requirement for compliance with Pretreatment Standards (general and specific prohibitions)
3. Permit and/or control mechanisms
4. Right of entry (inspections, surveillance, monitoring)
5. Remedies for noncompliance
6. Confidentiality requirements
7. Require development of compliance schedule to meet Pretreatment Standards and Requirements

Control of Discharges

Levels of control:

Deny – Prohibit or require to haul away

Condition – Require treatment and/or permit

Allow – No treatment

What to consider when determining control level:

National Pretreatment Standards

New discharges

Increased contributions

Changes in the nature of pollutants

Reassessment of local limits

Compliance with Pretreatment Standards

5 types of pretreatment standards:

1. General prohibitions
2. Specific prohibitions
3. Categorical standards (*technology-based limits for CIUs*)
4. Local limits
5. Best management practices

Local Limits/BMPs

Give yourself flexibility!

- Ability to allocate loading for BOD₅, TSS and flow!
- Ability to set site specific local limits

Control Mechanisms

Identify types of users that require control mechanisms
(permits)

CIUs

SIUs

*If non-delegated, condition those IUs that require permits to apply for an Ecology-issued permit

Identify types of users that do not require control mechanisms but may have to meet best management practices or other local requirements

FSEs

Other minor industry or commercial types

In between users...

Dental offices – have federal categorical requirements, but do not require permits

Right of Entry

Ability to be allowed on the facility's property.

- Inspection
- Surveillance
- Monitoring

In line with Right of Entry is Requirement to Provide Information

- Requiring industrial users to respond to surveys on wastewater generation and characterization will assist the POTW on completing a robust IU survey

Remedies for Non-Compliance



Injunctive Relief – Prohibit/stop a discharge

Civil Penalties – Compensation for damages

Criminal Penalties – Punish person for wrong doing

[403.8\(f\)\(1\)\(vi\)\(A\)](#)

All POTWs shall have the authority to seek or assess civil or criminal penalties in at least the amount of \$1,000 a day for each violation

Remedies for Non-Compliance



403.8(f)(1)(vi)(B)

Endangerment to Health and Welfare

POTW shall have authority and procedures to immediately and effectively halt or prevent any discharge of pollutants to the POTW which reasonably appears to present an imminent endangerment to the health and welfare of persons

Environmental or Interference with POTW

The POTW shall have authority and procedures to halt or prevent any discharge to the POTW which presents or may present an endangerment to the environment or which threatens to interfere with the operation of the POTW

Confidentiality requirements

403.8(f)(1)(vii)

Method for maintaining confidential business information

- Claims must be asserted at time of submission
- Stamping of confidential business information
- Confidentiality claims shall be treated in accordance with 40 CFR Part 2
- Effluent data shall be available to the public without restriction



Fats, Oils, and Grease Control Programs

FOG Problem

FOG generated by restaurants and other food service establishments

What is the problem?

- The EPA estimates that FOG causes just over 50% of all sanitary sewer overflows
- Municipalities, which collect overflow data, reported FOG to be the cause of as much as 70% of sanitary sewer overflows

Control approach

Develop a FOG control ordinance requiring control at FSE, implement and enforce

- Tiered approach to implementation – Focus on 1) new and renovated FSEs, 2) FSEs in areas of the collection system experiencing SSOs or more frequent maintenance

FOG Control

Benefits of FOG control

- Prevent sanitary sewer overflows and backups (protect residents, businesses, and the environment)
- Reduce the amount of FOG discharged to the sewer system and influent to the plant
- Reduce maintenance costs due to FOG in the collection system

FOG Control Resources



FOG control is a specialty of pretreatment

- Reach out to other jurisdictions that have implemented a FOG program
- Attend FOG trainings and conferences

Western States Alliance FREE FOG abatement training, online training, and many resources



Tackling Emerging Contaminants



Using pretreatment authorities and tools to
identify and control industrial sources of
emerging contaminants

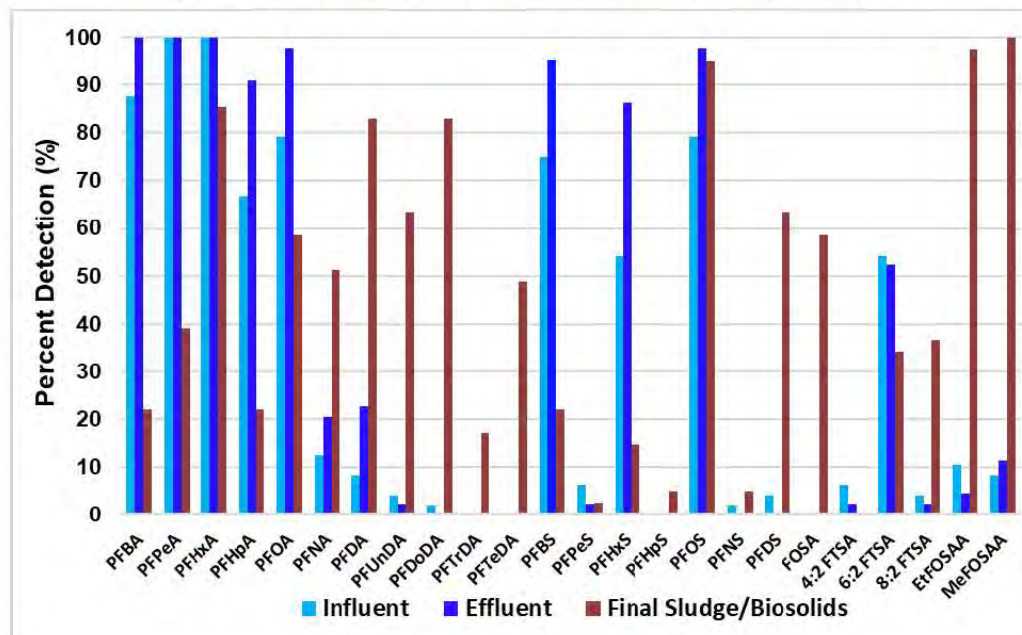
PFAS

Ecology's current approach for addressing PFAS with pretreatment (case by case decisions):

- Implementing PFAS source identification requirements in industrial user surveys – primarily targeted at delegated POTWs and larger, nondelegated POTWs with potential sources
- Implementing PFAS monitoring, source identification, and evaluation of source reduction for Ecology permitted industrial users if a known or suspected source

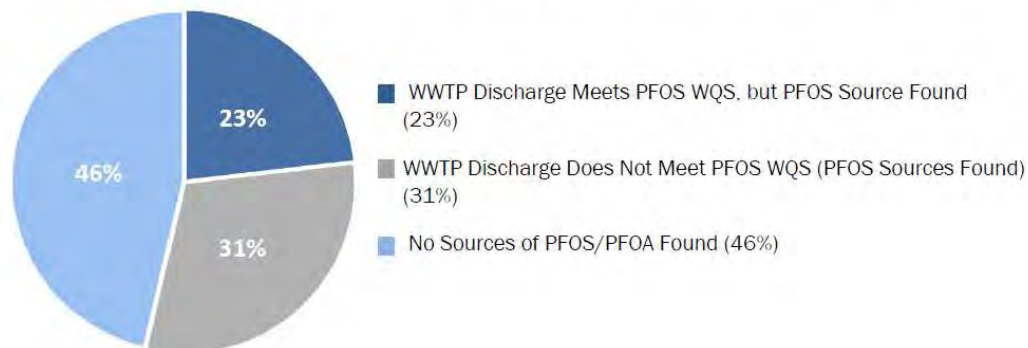
*Changing regulatory landscape around PFAS. Above approach highlights actions around pretreatment

Figure 4. Percent Detection of PFAS in Influent, Effluent, and Final Biosolids/Sludge*



*Provided by AECOM Technical Services, Inc.

Figure 2: PFAS Compliance Status 95 WWTPs with IPPs as of March 26, 2020 (EGLE, 2020)



Source (Figure 4 and Figure 2): Michigan EGLE "Summary Report: Initiatives to Evaluate the Presence of PFAS in Municipal Wastewater and Associated Residuals in Michigan" June 2020

Table 3: Substantial Reductions in PFOS concentrations at WWTPs.

Municipal WWTP	PFOS, Effluent (ppt, most recent**)	PFOS Reduction in Effluent (highest to most recent)	Actions Taken to Reduce PFOS
Lapeer	<18*	99%	Treatment (GAC) at source (1)
Wixom	17*	99%	Treatment (GAC) at source (1)
Port Huron	15*	99%	Elimination of PFOS source (2)
Howell	4	97%	Treatment (GAC/resin) at source (1)
Bronson	12	97%	Treatment (GAC) at source (1)
Ionia	25*	95%	Treatment (GAC) at source (1)
Kalamazoo	5	88%	Treatment (GAC) at sources (2), change water supply
K I Sawyer	13*	95%	Eliminate leak AFFF, some cleaning
GLWA (Detroit)	37*	23%	Treatment (GAC) at sources (9)

*Greater than Michigan's Water Quality Standard of 12 ppt

**Data (rounded) received as of June 26, 2020

Source (Figure 3): Michigan EGLE "Michigan IPP PFAS Initiative Identified Industrial Sources of PFOS to Municipal Wastewater Treatment Plants" August 2020

Identified known or suspected sources of PFAS

- Landfills (including closed landfills)
- Metal finishing
- Contaminated sites (including contaminated groundwater infiltration to sewers)
- Centralized waste treaters
- Paper manufacturing and packaging
- Commercial industrial laundries
- Chemical manufacturers
- AFFF contaminated sewers
- Sites with historical AFFF use
- Coating and paint manufacturing
- Textile mills
- Semiconductor manufacturing
- Recreation equipment manufacturing
- Plastics molding and forming

PBDEs

2004-2009 – several bans and voluntary phase-outs of manufacturing and use of most forms of PBDEs in the US and WA state

Still identifying sources contributing PBDEs in wastewater

Products containing PBDEs remaining in the market and in circulation

Table 5. Total PBDE concentrations and estimated instantaneous loads in wastewater from the nine sampled facilities.

Organized by total concentration values from high to low.

Facility Site ID	Total PBDE Concentration (pg/L)	Total PBDE Instantaneous Load (lbs/day)
H-Industrial Laundry	3,490,000	0.00172
D-Aerospace/Aircraft Modification	167,000	0.00000278
G-Landfill	104,000	0.000124
I-Ship Building and Repair	13,400	0.0000457
E-Metal Finishing	9,200	0.000000115
B-Metal Finishing	4,110	0.0000000514
F-Aerospace/Aircraft Modification	471	0.0000000507
C-Steel Foundry	52	0.000000000122
A-Food Processing	29	0.00000000767

Source: Ecology "Chemicals of Emerging Concern in Pretreated Industrial Wastewater in Northwest Washington State" August 2022

PBDEs

Similar to the approach for PFAS, where there is a water quality or designated use impairment, Ecology is evaluating opportunities to,

- Implementing PBDE source identification requirements in industrial user surveys and requiring evaluation for source reductions



Promoting Local Programs

Resources (more information!)

EPA National Pretreatment Program

Trainings (prerecorded) - [National Pretreatment Program Training and Webinars | US EPA](#)

PNW Pretreatment Conference (November 6-8, 2023)

[Pacific Northwest Pretreatment Workshop 2023 | Western States Allia \(westernstatesalliance.org\)](#)

NACWA National Pretreatment Conference

(last year's conference presentations online, 2024 conference location not announced yet)

[2023 National Pretreatment Workshop + Training \(nacwa.org\)](#)

Western States Alliance FOG resources

[Tech Resources | Western States Allia \(westernstatesalliance.org\)](#)

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Questions?