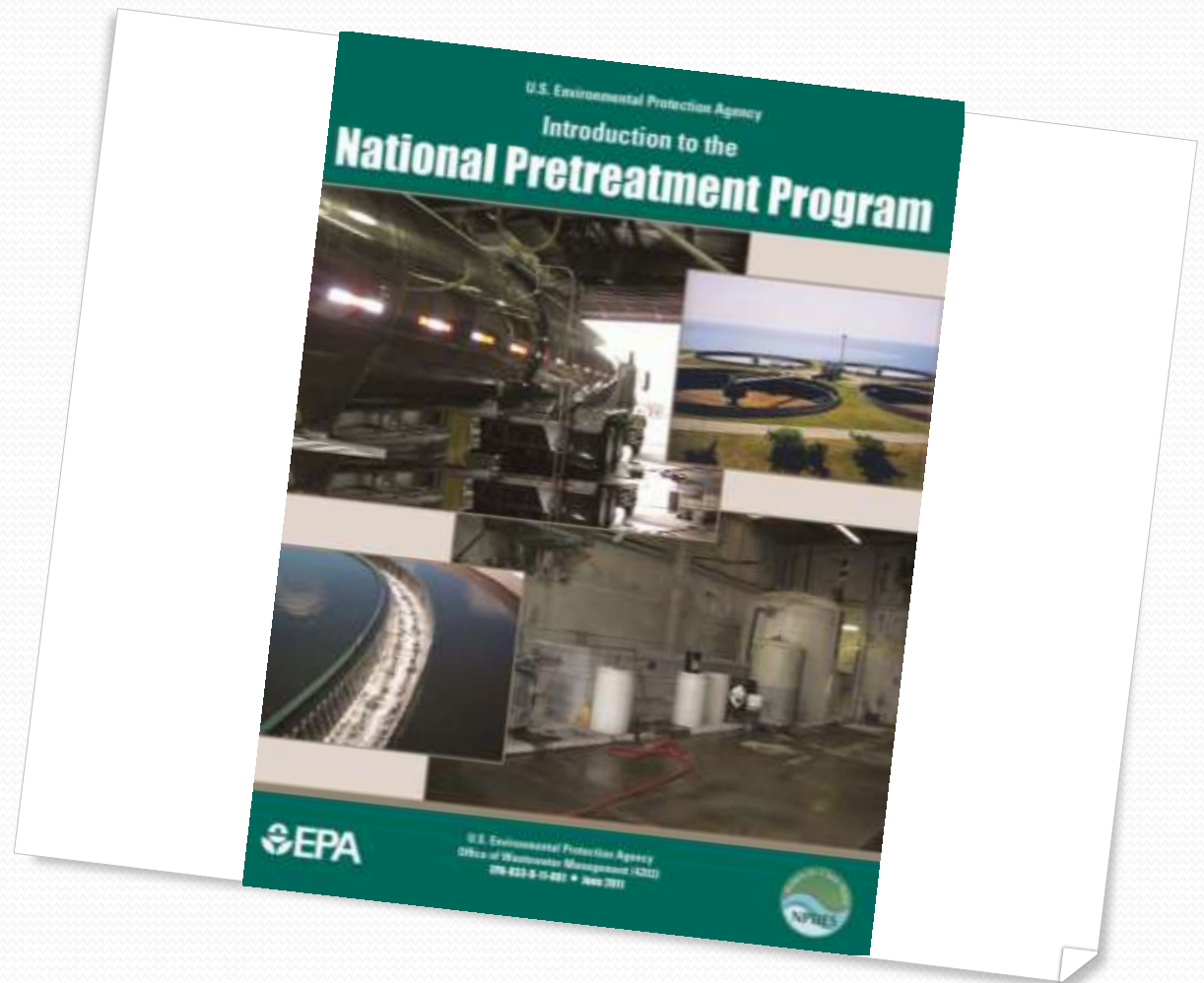


Introduction to Pretreatment

Wastewater Pretreatment 101

**Taken from:
Introduction to the
National
Pretreatment
Program**

U.S. Environmental
Protection Agency, 2011

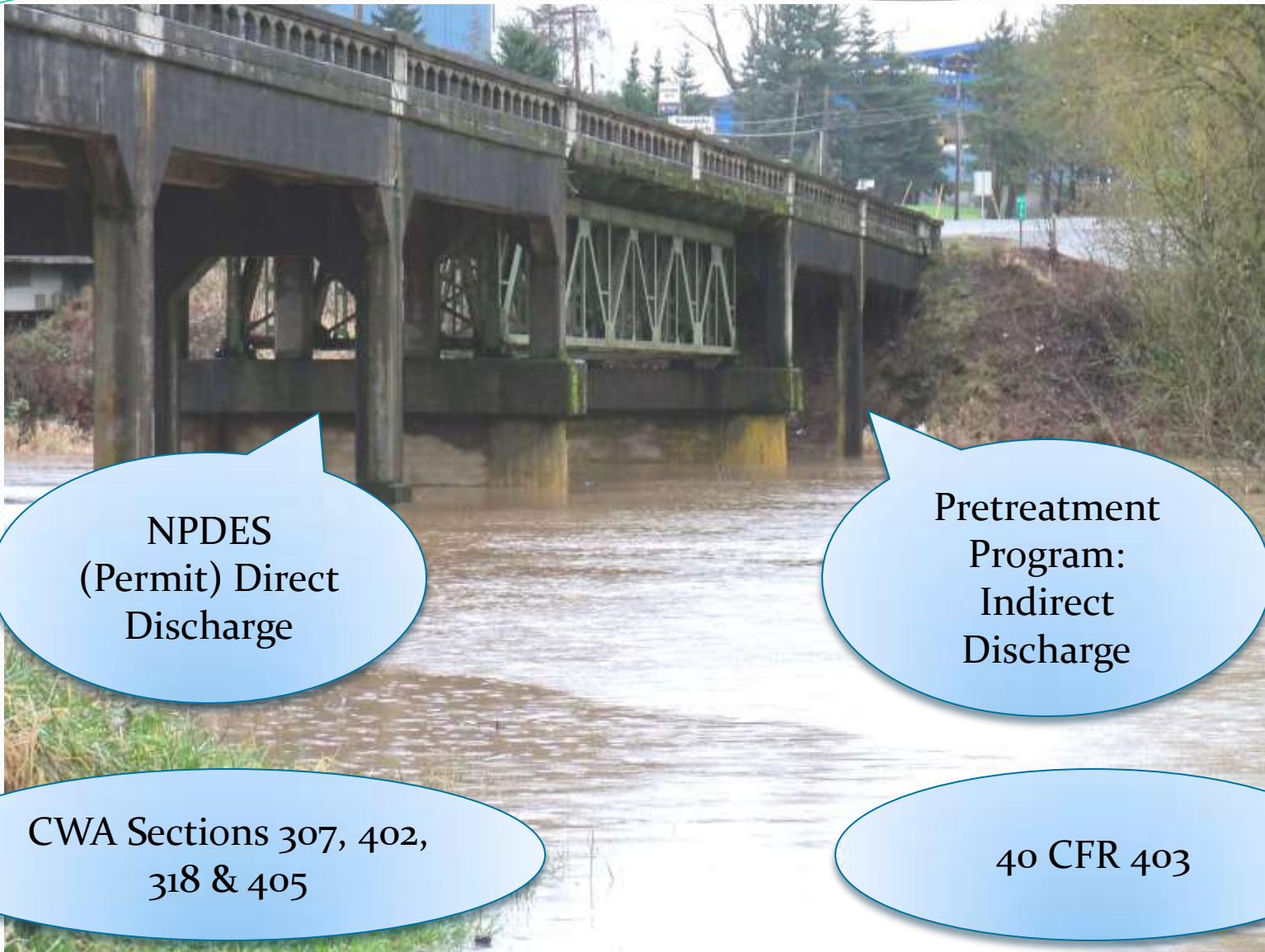


Timeline of Federal Pollution Control Laws

- 1899 The Rivers and Harbors Act
- 1912 The Public Health Service Act
- 1965 The Oil Pollution Control Act
- 1966 The Clean Water Restoration Act
- 1970 The Water Quality Improvements
- 1970 EPA created (December 1970)
- 1972 Federal Water Pollution Control Act
- 1977 Clean Water Act
- 1987 Water Quality Act

AKA:
The Clean
Water Act

Cuyahoga River Fire 1952

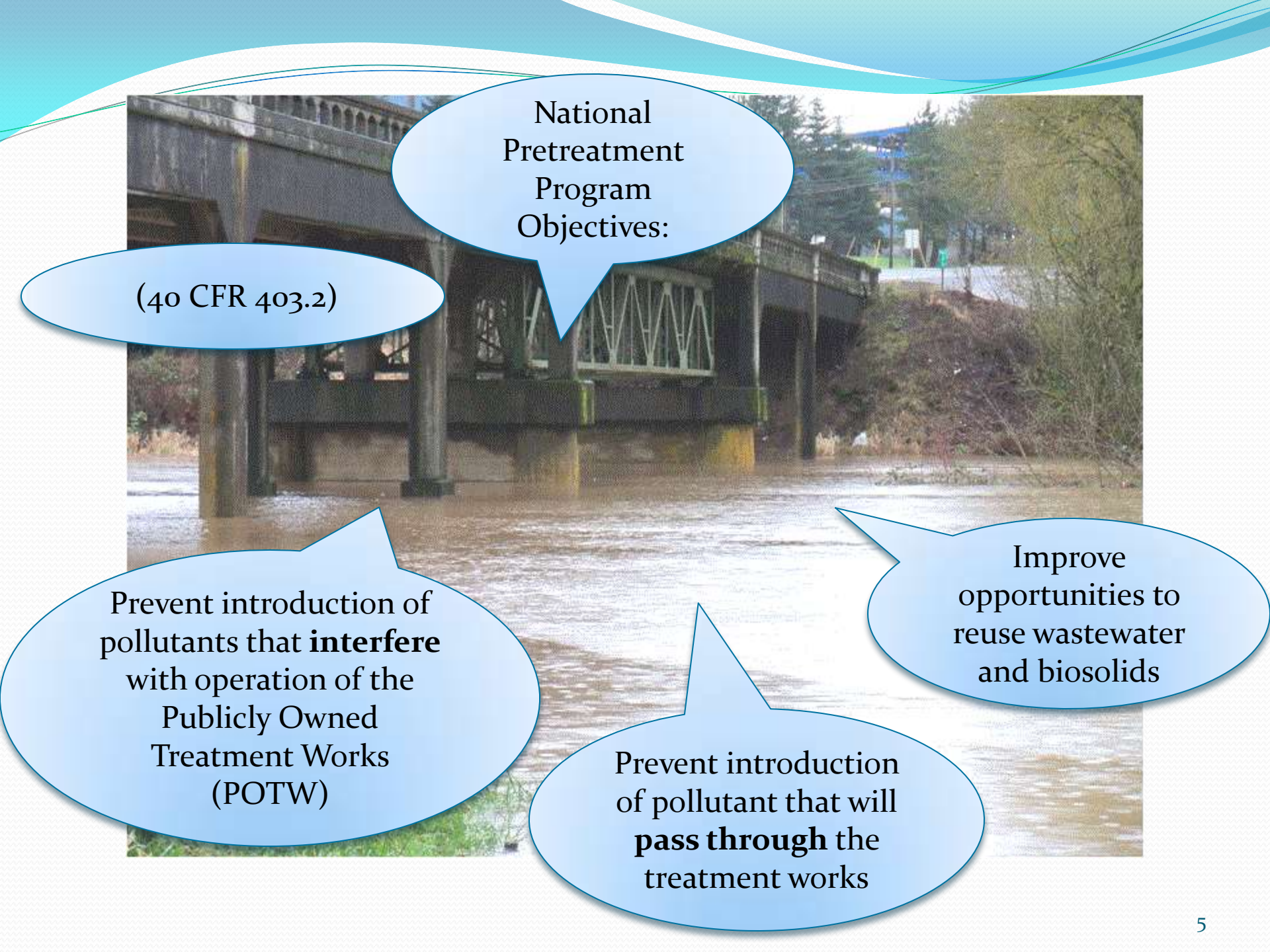


**NPDES
(Permit) Direct
Discharge**

**Pretreatment
Program:
Indirect
Discharge**

**CWA Sections 307, 402,
318 & 405**

40 CFR 403



National
Pretreatment
Program
Objectives:

(40 CFR 403.2)

Prevent introduction of
pollutants that **interfere**
with operation of the
Publicly Owned
Treatment Works
(POTW)

Prevent introduction
of pollutant that will
pass through the
treatment works

Improve
opportunities to
reuse wastewater
and biosolids



Interference and Pass Through

A discharge
that...

Including an
increase in the
magnitude or
duration of a
violation.

Alone or in
conjunction
with another
discharge...

From other
sources...

Causes a...
violation ... of
the POTW's
NPDES permit...

CWA Section
101-607

?

33 USC 1251 et
seq.

?

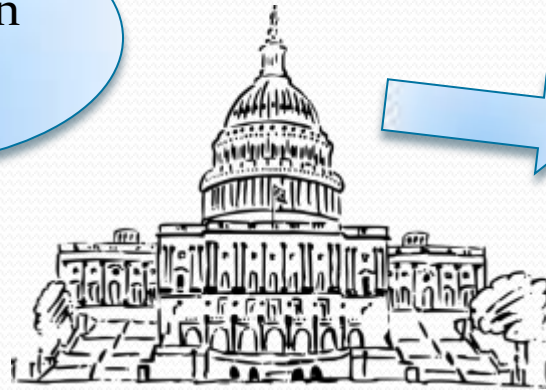
The Clean Water Act

40 CFR
subchapters D, N and O
(parts 100-140, 401-471
and 501-503)

?

?

CWA Section
101-607



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33 USC 1251 et
seq.

The Clean Water Act

40 CFR
subchapters D, N and O
(parts 100-140, 401-471
and 501-503)

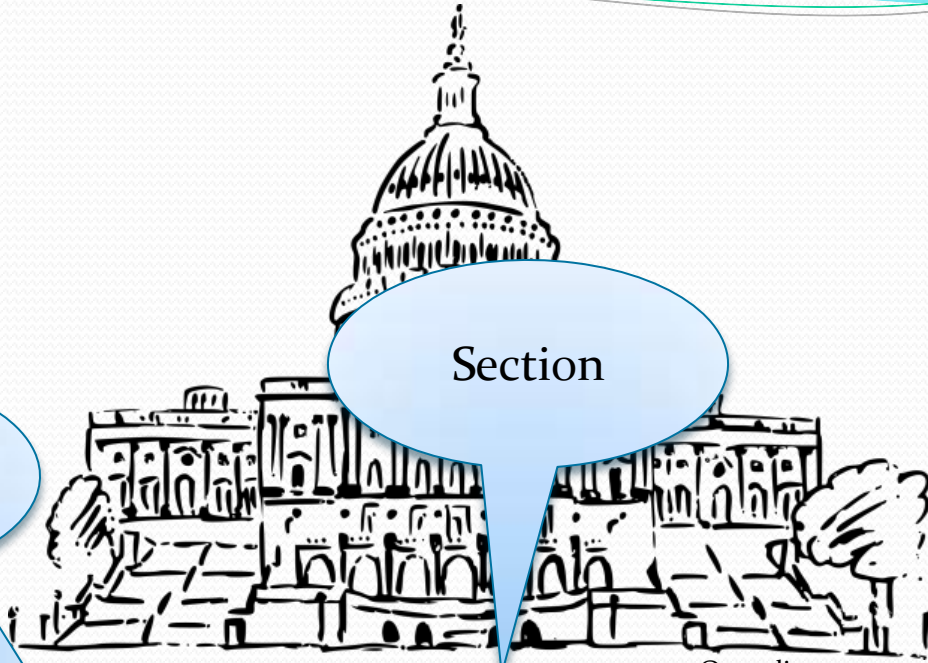


Commons.wikimedia.org

EPA



Publicdomainpictures.net



Section

Title 40

Paragraph
a

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40 CFR §403.5(a)

Code of Federal
Regulation

403.5

General pretreatment regulations don't provide POTW's legal authority...

They set minimum legal requirements.



CoolClips.com

Federal:
General Pretreatment Regulations

Set Minimum Requirements

State:
State Laws

Confer Minimum Legal Authority

Local:
SUO or similar

The National
Pretreatment
Program



Protects POTW's from
types and amounts of
pollutants they were
not designed to treat

Water Reclamation Facility 2010

Toxic Pollutants...
CWA section 307(a); 40CFR 401.15



Pipe-Coal Ash

Code of Federal Regulations

Title 40 - Protection of Environment Part 423, Appendix A —126 Priority Pollutants

Priority Pollutants:
40 CFR 423 Appendix A

Acenaphthene Acrolein Acrylonitrile Benzene Benzidine Carbon tetrachloride 1,2,4-trichlorobenzene Hexachlorobenzene 1,2-dichloroethane 1,1,1-trichloroethane 1,1,2-trichloroethane 1,1,2,2-tetrachloroethane Chloroethane Bis(2-chloroethyl) ether 2-chloroethyl vinyl ether (mixed) 2-chloronaphthalene 2,4,6-trichlorophenol Parachlorometa cresol Chloroform (trichloromethane) 2-chlorophenol 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene 3,3-dichlorobenzidine 1,1-dichloroethylene 1,2-trans-dichloroethylene 2,4-dichlorophenol 1,2-dichloropropane 1,2-dichloropropylene (1,3-dichloropropene) 2,4-dimethylphenol 2,4-dinitrotoluene 2,6-dinitrotoluene 1,2-diphenylhydrazine Ethylbenzene Fluoranthene 4-chlorophenyl phenyl ether 4-bromophenyl phenyl ether Bis(2-chloroisopropyl) ether Bis(2-bromoisopropyl) ether Dimethyl ether (methoxy) methane Methylene chloride (dichloromethane) Methyl chloride (dichloromethane) Methyl bromide (bromochloromethane) Dibromomethane Dichlorobromomethane Chlorodibromomethane Hexachlorobutadiene Hexachlorocyclopentadiene Naphthalene Nitrobenzene 2-nitrophenol 4-nitrophenol 2,4-dinitrophenol 4,6-dinitro-o-cresol N-nitrosodiphenylamine N-nitrosodi-n-propylamin Pentachlorobenzene Phenol Bis(2-ethylhexyl) phthalate Di-n-butyl Phthalate Di-n-octyl phthalate Diethyl Phthalate 1,2-benzanthracene (benzo(a)anthracene) Benzo(a)pyrene (3,4-benzo-pyrene) 3,4-Benzofluoranthene (benzo(b)fluoranthene) 11,12-benzofluoranthene (benzo(b)fluoranthene) Chrysene Acenaphthylene Anthracene (technical mixture and metabolites) Fluorene Phenanthrene 1,2,5,6-dibenzanthracene (dibenzo(h)anthracene) Indeno(1,2,3-cd)pyrene Pyrene Tetrachloroethylene Toluene Trichloroethylene Vinyl chloride (chloroethene) 4,4-DDT 4,4-DDE (p,p-DDX) 4,4-DDD (p,p-TDE) Alpha-chloro naphthalene Heptachlor epoxide (technical mixture and metabolites) Endrin Endrin aldehyde Heptachlor Heptachlor epoxide (BHC-hexachlorocyclohexane) Gamma-BHC (lindane) Delta-BHC (PCB-polychlorinated biphenyls) PCB-1242 (Arochlor 1242) PCB-1254 (Arochlor 1254) PCB-1221 (Arochlor 1221) PCB-1232 (Arochlor 1232) PCB-1248 (Arochlor 1248) PCB-1260 (Arochlor 1260) PCB-1016 (Arochlor 1016) Antimony Arsenic Asbestos Beryllium Cadmium Chromium Copper Cyanide, Total Lead Mercury Nickel Selenium Silver Thallium Silver Zinc 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

126 Priority
Pollutants

4,249
waterbodies
with unsafe
levels of toxic
organics



The National
Pretreatment Program:

“A
government
program that
works.”

Yamhill River

General Pretreatment Regulations

The design of the bacteria, plus additional fact that some pollutants are designed to achieve substantial removal of pollutants other than the four pollutants listed in the definition in the proposed regulation (BOD, suspended solids, pH, and fecal coliform bacteria). Where the joint treatment works was designed to and does achieve substantial removal of a pollutant, it is not appropriate to require the industrial user to achieve best practicable control technology currently available, since this would lead to an uneconomical duplication of treatment facilities. While the term "substantial removal" is not subject to precise definition, it generally contemplates removals in the order of 80 percent or greater. Minor incidental removals in the order of 10 to 20 percent are not considered "substantial".

There was a diversity of comments on the length of the time for compliance and its relation to the promulgation of the definition of best practicable control technology currently available. The Act requires that pretreatment must specify a time for compliance not to exceed three years from the date of promulgation. The Agency has concluded that a period not greater than three years from the date of promulgation is appropriate for compliance for § 128.131. For Section 128.133 the same period is also considered an appropriate time for compliance. However, the standard set forth in § 128.133 will not be complete until promulgation of the separate provision, as required by Section 128.132, setting forth the application to pretreatment of the effluent limitations guideline for a given industrial category.

Accordingly, § 128.140 provides that the period of compliance with § 128.133 will not commence for any particular category of user until promulgation of that separate provision. Section 128.140 has been further modified to establish an interim requirement for commencement of construction, and a requirement for compliance reports. It was concluded that without such requirements, timely compliance with the pretreatment standard might be unenforceable as a practical matter.

Some commenters questioned the need for these pretreatment standards or the relationship between these standards and local pretreatment programs. It is important to note the clear requirements in the Act that there be both national pretreatment standards, Federally enforceable, and EPA's pretreatment guidelines to assist States and municipalities in developing local pretreatment programs. The Agency recognizes that in some cases, these pretreatment standards may not be sufficient to protect the operation of a publicly owned treatment works or to enable the treatment works to comply with the terms of its NPDES permit. This may be the case, for example, when the terms of the permit for the publicly owned treatment works are dictated by water quality standards or toxic standards. In such cases, the State or municipality may have to impose more stringent

standards. The Act, however, it is essential that such local pretreatment requirements be established for each system where necessary to ensure compliance with the NPDES permit.

Pretreatment guidelines will be published pursuant to section 304(f) of the Act, to assist the States and municipalities in establishing their own pretreatment requirements.

Effective date. This regulation will become effective December 10, 1973.

John Q. Gattuso,
Acting Administrator.

NOVEMBER 1, 1973.

NOTE.—The EPA pamphlet, Pretreatment of Discharges to Publicly Owned Treatment Works, is filed as part of the original document.

Sec.	Purpose.
128.100	Applicability.
128.104	State or local law.
128.106	Prohibited wastes.
128.121	Compatible pollutant.
128.122	Incompatible pollutant.
128.123	Major contributing industry.
128.124	Prohibited wastes.
128.125	Pretreatment for compatible pollutants.
128.126	Pretreatment for incompatible pollutants.
128.140	Time for compliance.

ADMINISTRATIVE: Sec. 307(b), Pub. L. 92-500; 86 Stat. 807, 128 U.S.C. 1317.

§ 128.100 Purpose.

The provisions of this part implement section 307(b) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) hereinafter referred to as "the Act".

§ 128.101 Applicability.

The standards set forth in § 128.131 apply to all non-domestic users of publicly owned treatment works. The standard set forth in § 128.133 applies only to major contributing industries.

§ 128.110 State or local law.

Nothing in this part shall affect any pretreatment requirement established by any State or local law not in conflict with any standard established pursuant to this Part. In particular cases, a State or municipality, in order to meet the effluent limitations in a NPDES permit for a publicly owned treatment works may find it necessary to impose pretreatment requirements stricter than those contained herein.

§ 128.120 Definitions.
Definitions of terms used in this part are as follows:

§ 128.121 Compatible pollutant.

For purposes of establishing Federal requirements for pretreatment, the term "compatible pollutant" means biochemical oxygen demand, suspended solids,

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total organic carbon, ammonia, plus additional pollutants identified in the permit. If the publicly owned treatment works was designed to treat such pollutants, and in fact does remove such pollutants to a substantial degree, examples of such additional pollutants may include:

- Chlorine gas or chlorine dioxide.
- Total organic carbon.
- Phosphorus and phosphorus compounds.
- Nitrogen and nitrogen compounds.
- Pesticides and groups of animal or vegetable origin except as prohibited under § 128.101(b).

§ 128.122 Incompatible pollutant.

The term "incompatible pollutant" means any pollutant which is not a compatible pollutant as defined in § 128.121.

§ 128.123 Joint treatment works.

Publicly owned treatment works for both non-industrial and industrial wastewater.

§ 128.124 Major contributing industry.

A major contributing industry is an industrial user of the publicly owned treatment works that: (a) Has a flow of 50,000 gallons or more per average work day; (b) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (c) has in its waste, a toxic pollutant in toxic amounts as defined in standards issued under section 307(a) of the Act; or (d) is found by the permit issuance authority, in connection with the issuance of an NPDES permit to the publicly owned treatment works receiving the waste, to have significant impact, either singly or in combination with other contributing industries, on that treatment works or upon the quality of effluent from that treatment works.

§ 128.125 Pretreatment.

Treatment of wastewaters from sources before introduction into the joint treatment works.

§ 128.130 Pretreatment standards.

The following sections set forth pretreatment standards for pollutants introduced into publicly owned treatment works.

§ 128.131 Prohibited wastes.

No waste introduced into a publicly owned treatment works shall interfere with the operation or performance of the works. Specifically, the following wastes shall not be introduced into the publicly owned treatment works:

(a) Wastes which create a fire or explosion hazard in the publicly owned treatment works.

(b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is designed to accommodate such wastes.

(c) Solid or viscous wastes in amounts which would cause obstruction to the flow in sewers, or other interference with the proper operation of the publicly owned treatment works.

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(d) Wastes at a flow rate and/or pollutant discharge rate which is excessive over relatively short time periods so that there is a treatment process upset, and subsequent loss of treatment efficiency.

§ 128.132 Pretreatment for compatible pollutants.

Except as required by § 128.131, pretreatment for removal of compatible pollutants is not required by these regulations. However, States and municipalities may require such pretreatment pursuant to section 307(b)(4) of the Act.

§ 128.133 Pretreatment for incompatible pollutants.

In addition to the prohibitions set forth in § 128.131, the pretreatment standard for incompatible pollutants introduced into a publicly owned treatment works by a major contributing industry not subject to section 307(c) of the Act shall be, for sources within the corresponding industrial or commercial category, that established by a promulgated effluent limitations guideline defining best practicable control technology currently available pursuant to sections 301(b) and 304(b) of the Act. Provided, That, if the publicly owned treatment works which receives the pollutant is committed, in its NPDES permit, to re-

RULES AND REGULATIONS

move a specified percentage of any incompatible pollutant, the pretreatment standard applicable to users of such treatment works shall be correspondingly reduced for that pollutant; and provided further that when the effluent limitations guideline for each industry category is promulgated, a separate provision will be proposed concerning the application of such guideline to pretreatment.

§ 128.140 Time for compliance.

(a) Any owner or operator of any source to which the pretreatment standards required by this Part are applicable, shall be in compliance with such standards within the shortest reasonable time but not later than three years from the date of their promulgation; except that for § 128.133, the three year compliance period for any user shall commence with the date of promulgation of a provision, as required by § 128.133, setting forth the application to pretreatment of the effluent limitations guidelines for the applicable industrial category.

(b) In order to ensure such compliance, each such owner or operator shall commence construction of any required pretreatment facilities within 18 months from the date of final promulgation of the provision required by § 128.133, set-

ting forth the application to pretreatment of the effluent limitations guidelines. By the time construction is required to be commenced, each such owner or operator shall furnish to the Regional Administrator (or to any State agency with an approved NPDES permit program) a report, on a form to be prescribed by the Administrator, which shall set forth the effluent limits to be achieved by such pretreatment facilities and a schedule for the achievement of compliance with such limits by the required date. A copy of such report shall be furnished to the municipality or agency operating the publicly owned treatment works into which such pollutants are discharged. Thereafter, each such owner or operator shall furnish the Regional Administrator or his designee with such additional information or reports (including information relating to compliance with effluent limits and schedules for completion of pretreatment facilities) as he may request.

(c) Nothing contained herein shall prevent any municipality or other agency from requiring more stringent pretreatment standards or a more stringent compliance schedule, than as set forth in this part.

[FR Doc. 73-25578 Filed 11-7-73; 8:45 am]

The General Pretreatment Regulations

40 CFR 403.8(a)

Pretreatment program required for POTWs with:

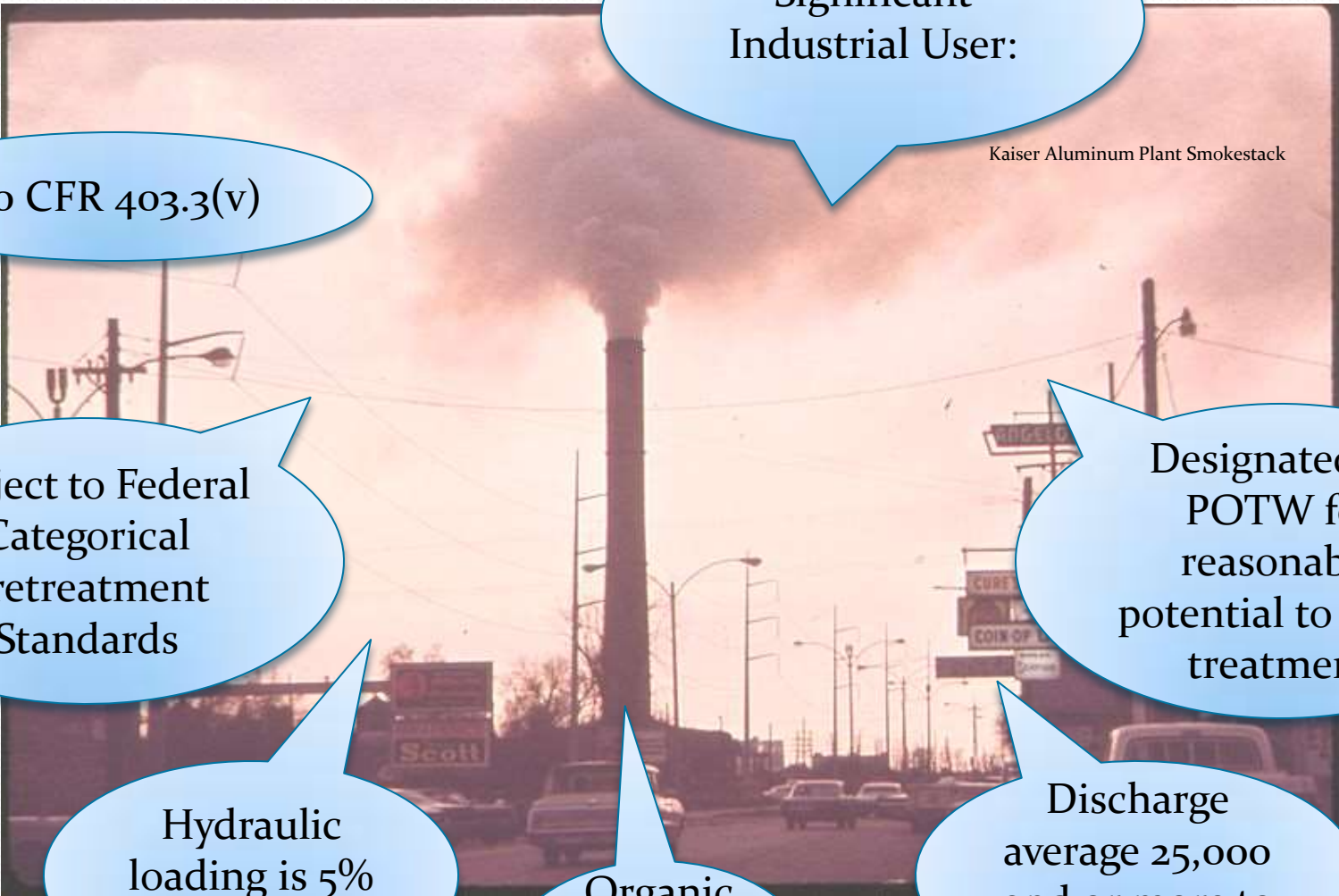
Design flow greater than 5 MGD

Smaller POTWs in defined circumstances

SIU

Water Reclamation Facility 2010





Significant
Industrial User:

Kaiser Aluminum Plant Smokestack

40 CFR 403.3(v)

Subject to Federal
Categorical
Pretreatment
Standards

Designated by
POTW for
reasonable
potential to affect
treatment

Hydraulic
loading is 5%
or more

Organic
loading is
5% or
more

Discharge
average 25,000
gpd or more to
POTW

Roles and Responsibilities

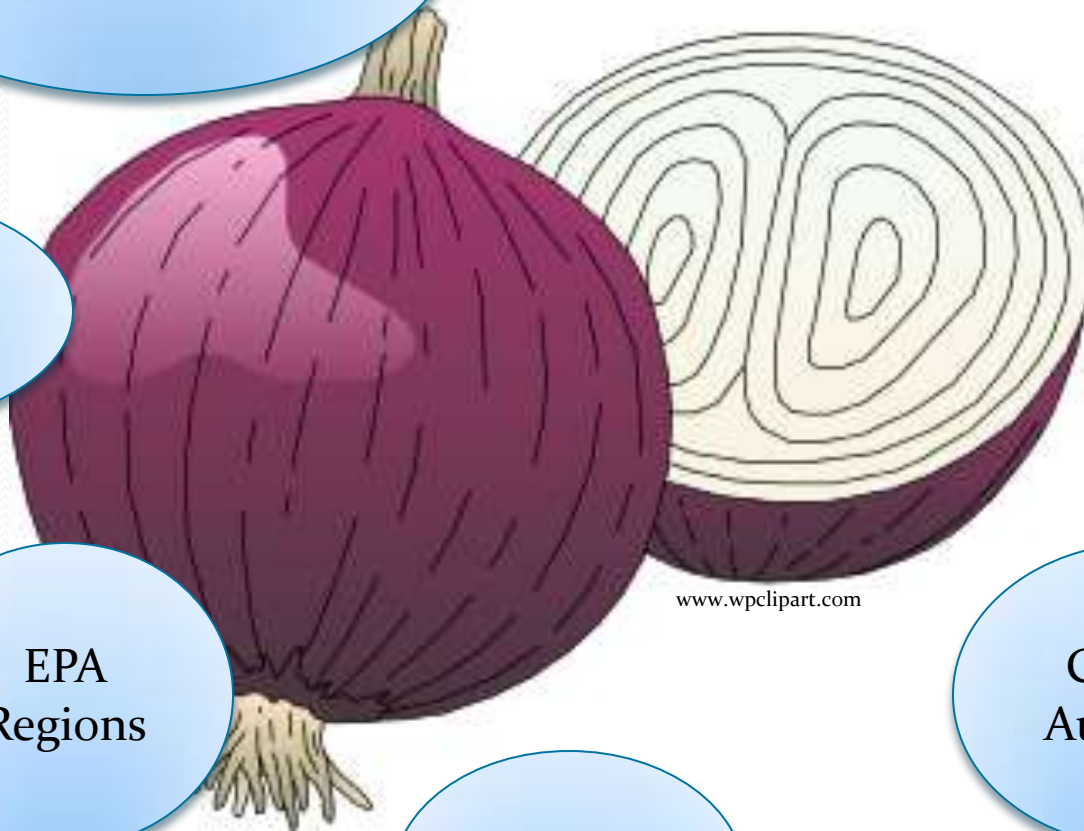
EPA headquarters

EPA Regions

Approval Authority

Control Authority

IU



www.wpclipart.com

Pretreatment Standards

Three types of National Pretreatment Requirements:

Prohibited Discharge Standards

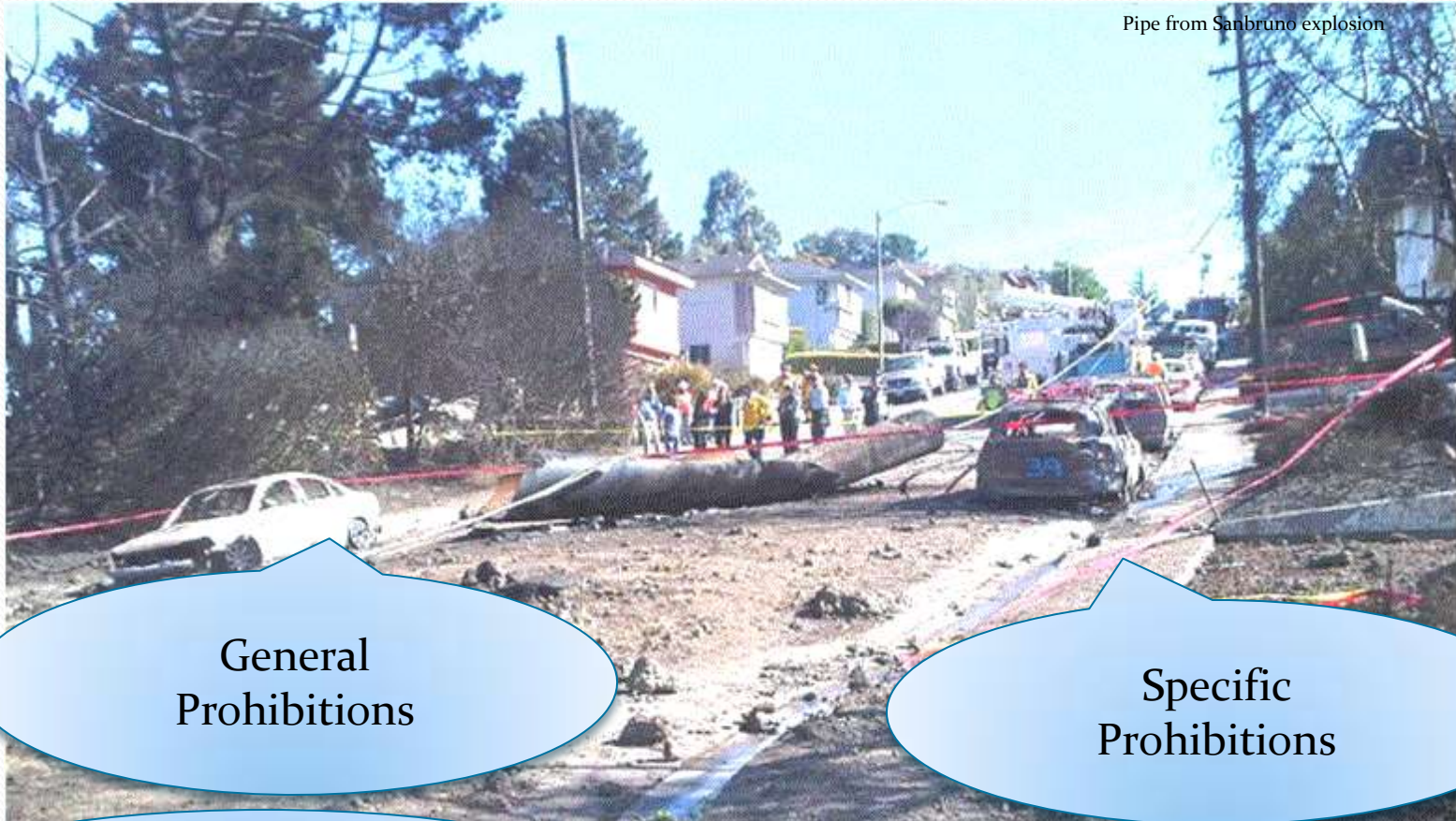
Effluent Guidelines and Categorical Pretreatment Standards

Local Limits



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Prohibited Discharge Standards



Pipe from Sanbruno explosion

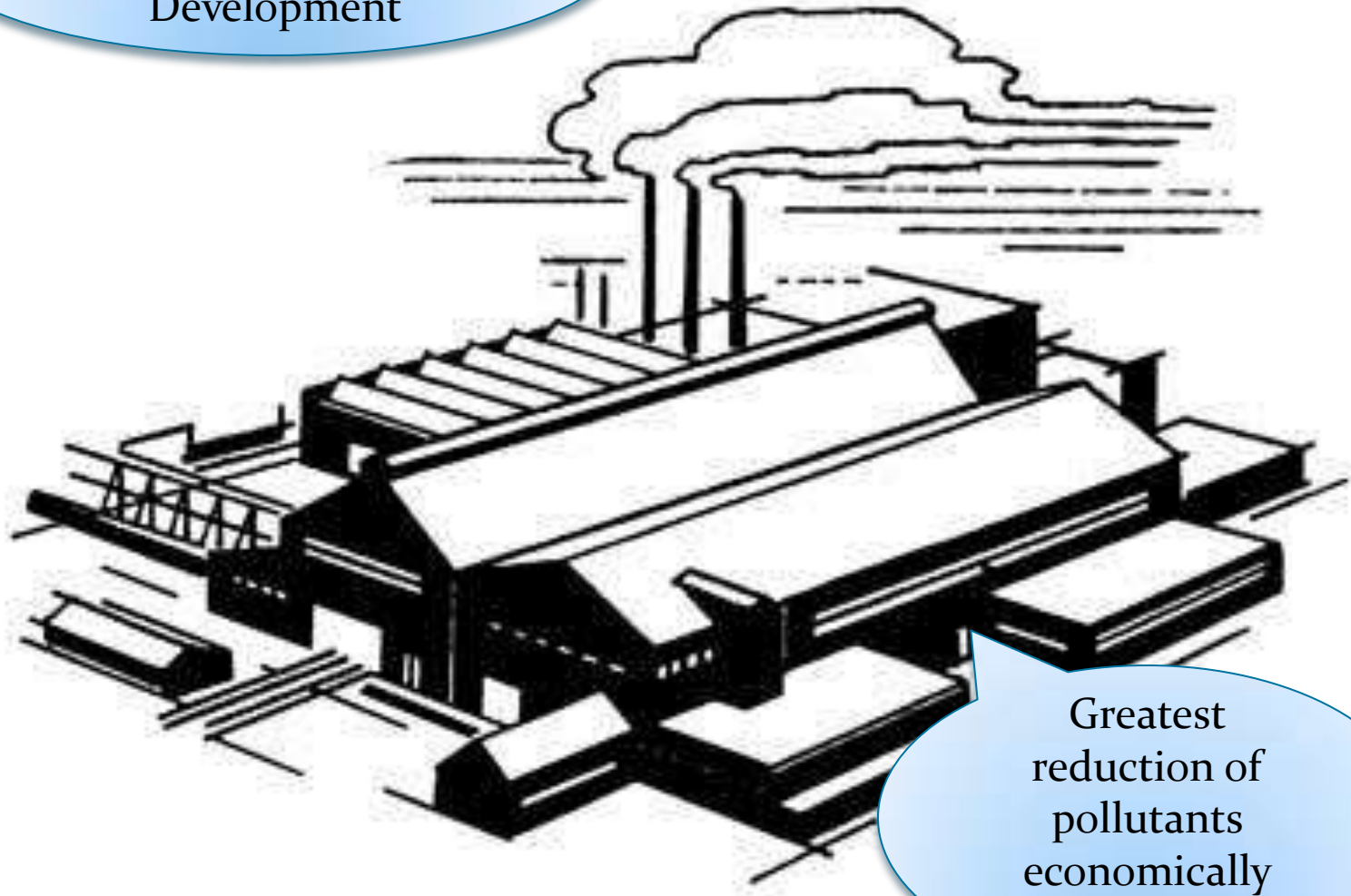
General Prohibitions

40 CFR 403.5(a)

Specific Prohibitions

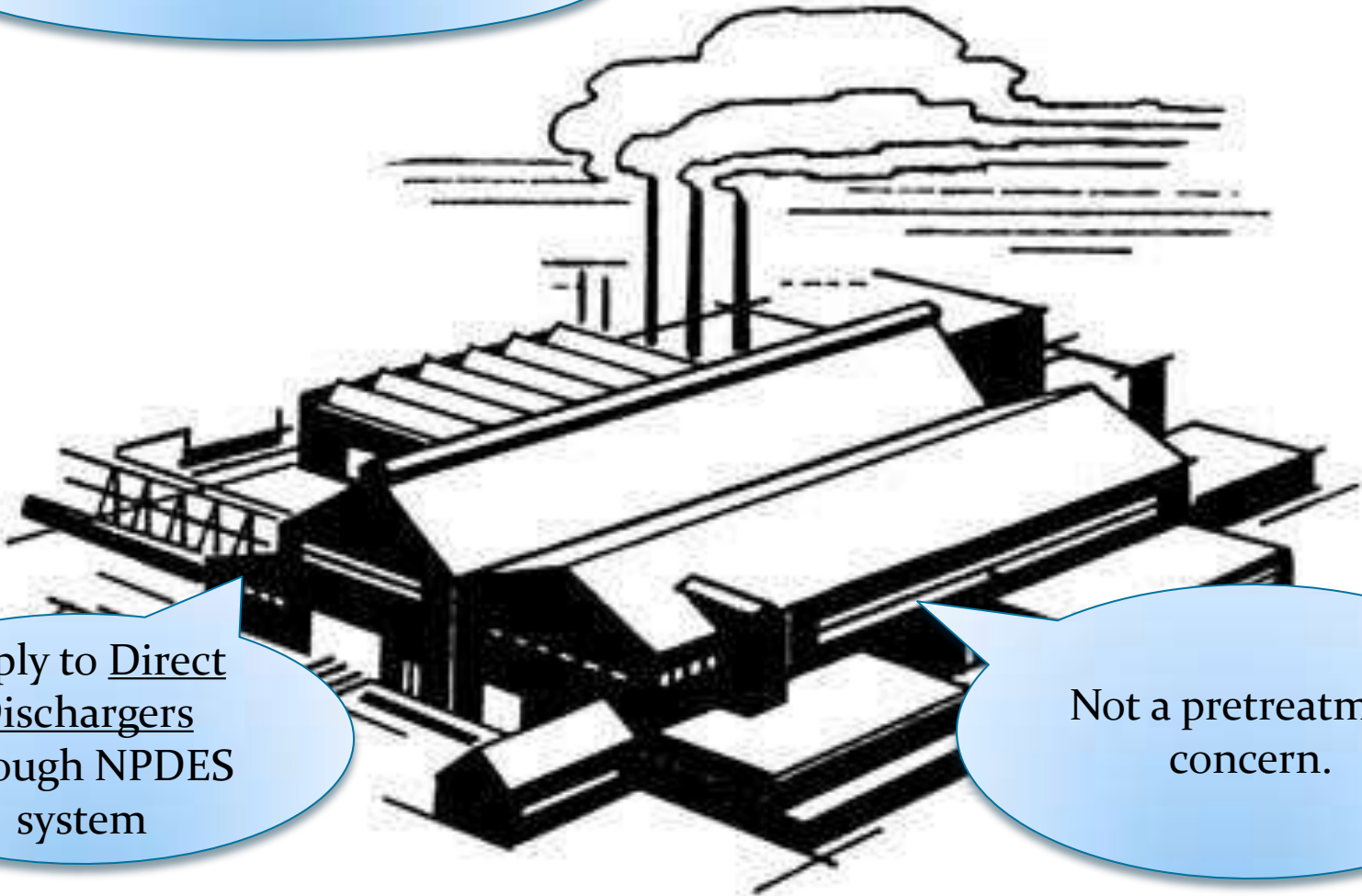
40 CFR 403.5(b)

Effluent Guidelines & Categorical Standards Development



Greatest
reduction of
pollutants
economically
achievable

Effluent Guidelines



Apply to Direct Dischargers through NPDES system

Not a pretreatment concern.

Categorical Pretreatment Standards

40 CFR Parts 405-471

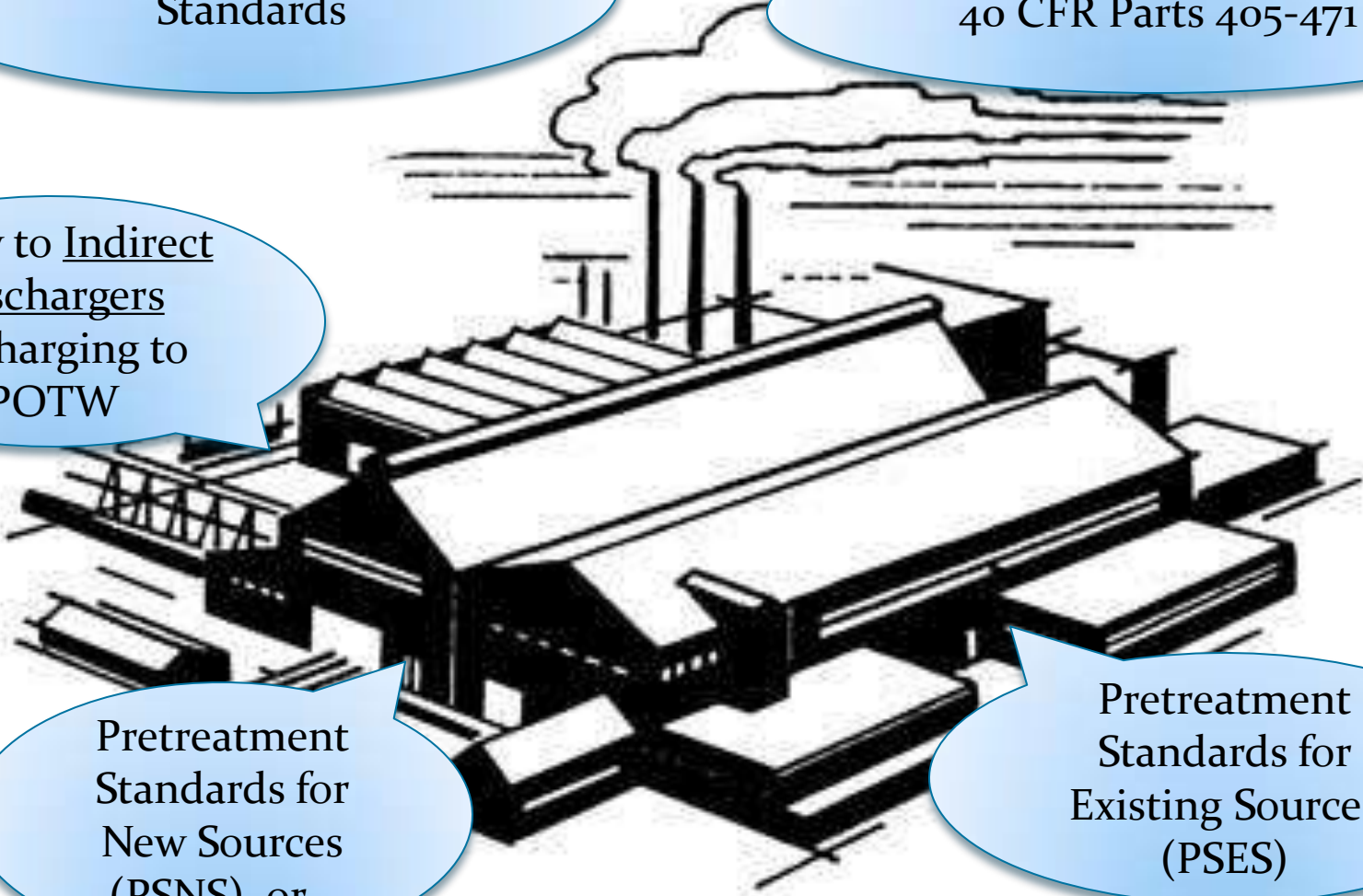
Apply to Indirect Dischargers discharging to POTW

Pretreatment Standards for New Sources (PSNS), or...

Pretreatment Standards for Existing Sources (PSES)

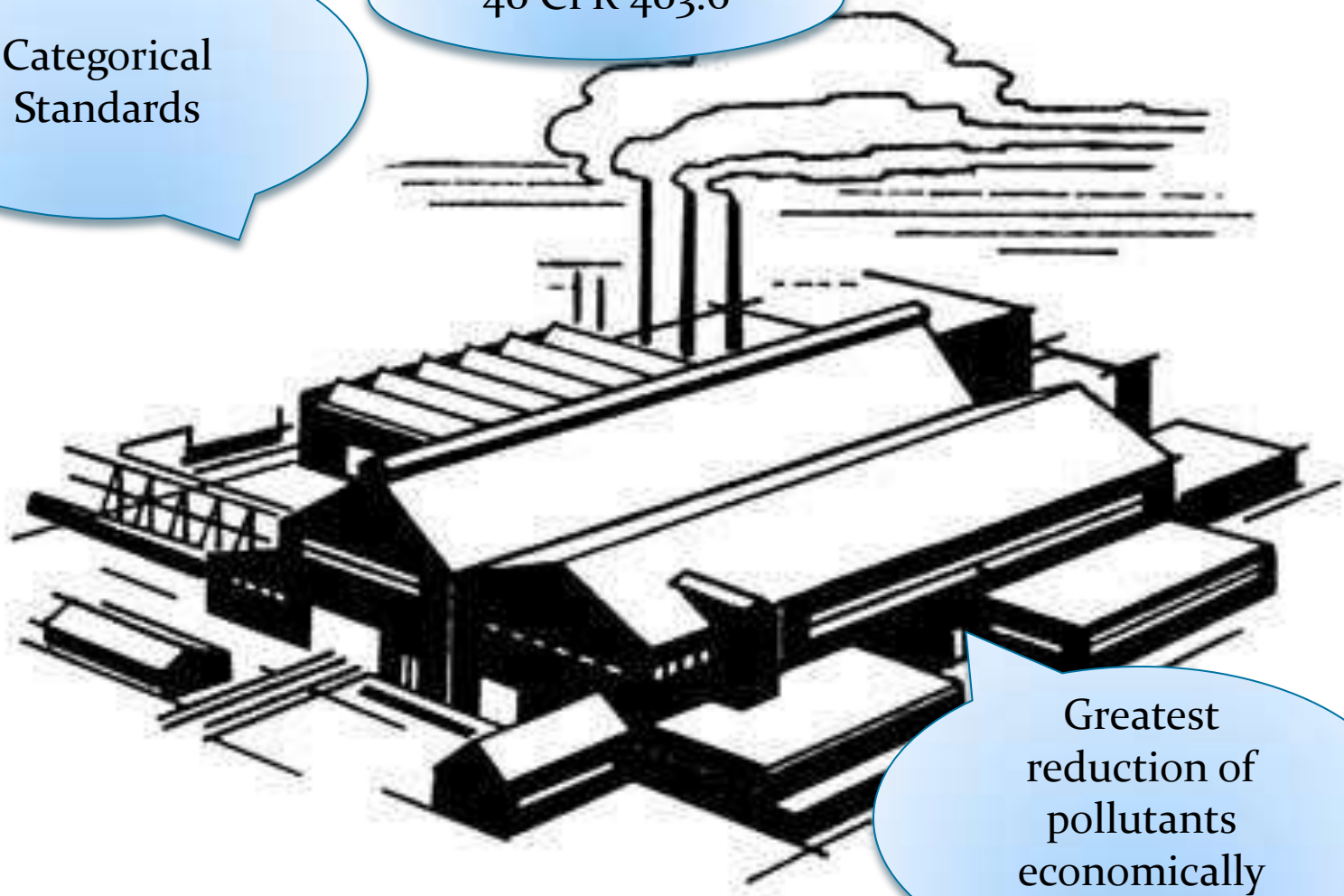
40 CFR 403.3(m)

<http://clipart-library.com/clipart/376899.htm>



Categorical
Standards

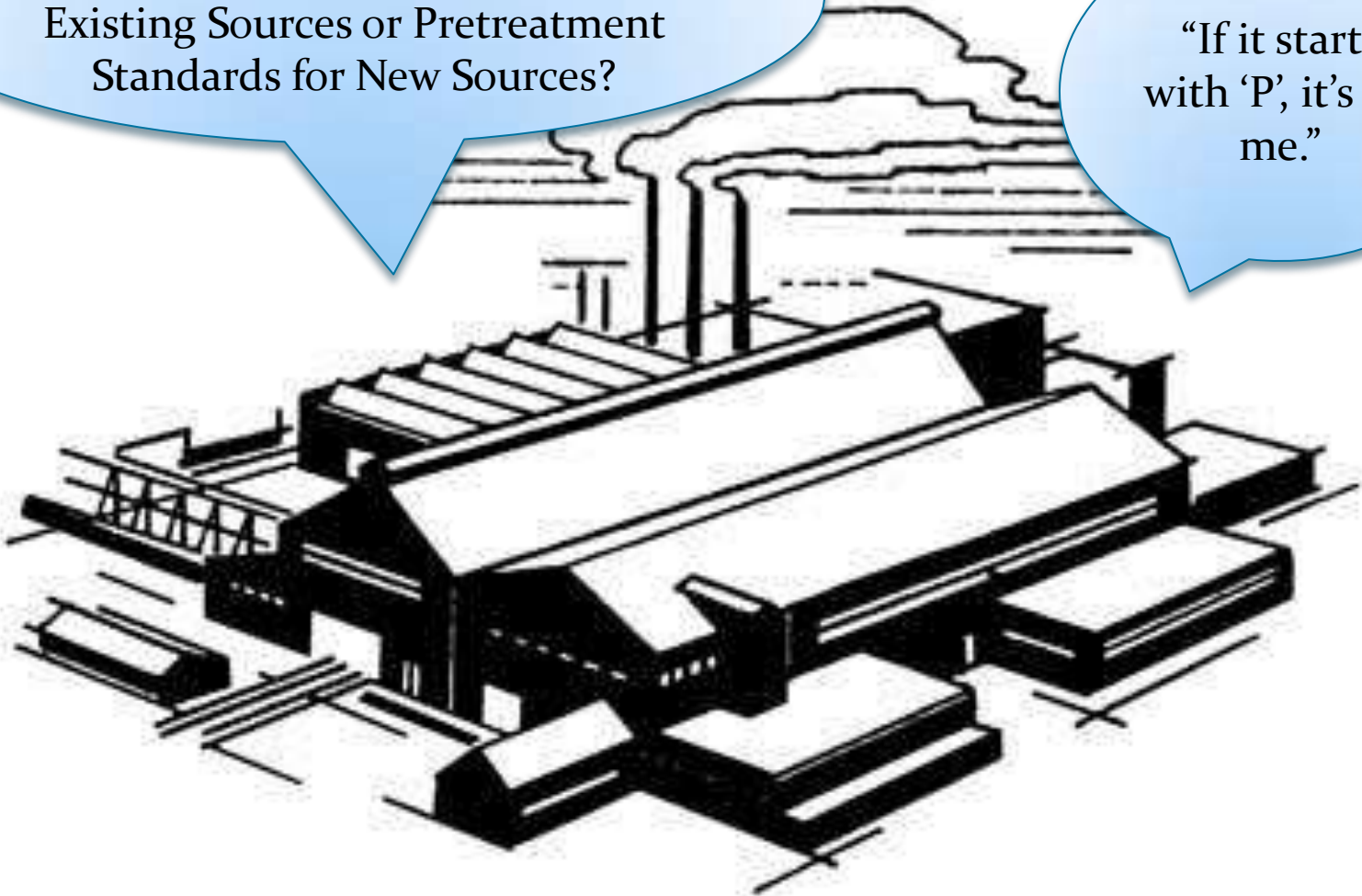
40 CFR 403.6



Greatest
reduction of
pollutants
economically
achievable

Effluent Guidelines,
Pretreatment Standards for
Existing Sources or Pretreatment
Standards for New Sources?

“If it starts
with ‘P’, it’s for
me.”



Local Limits

40 CFR 403.5(c)

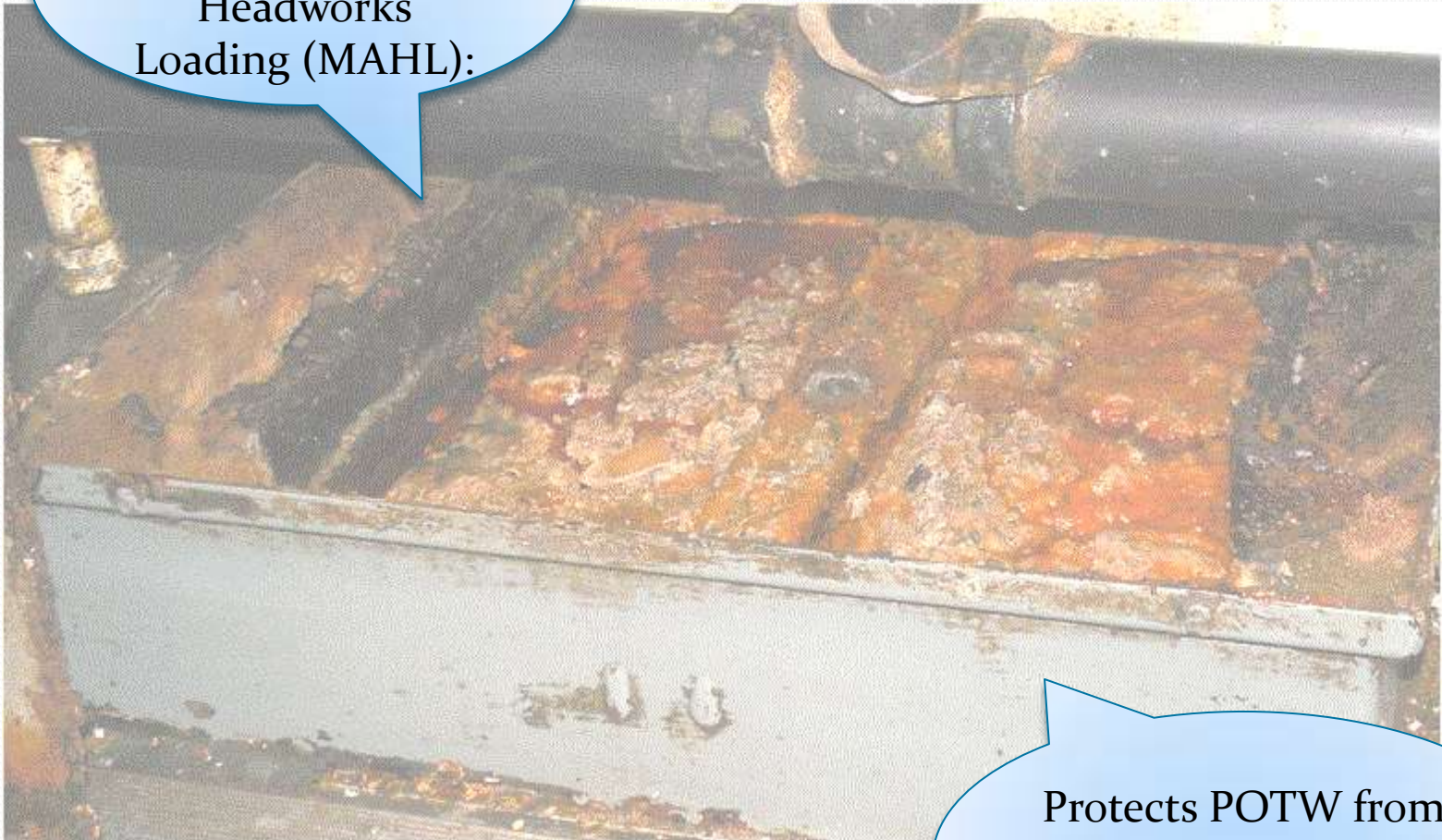
40 CFR 403.8(f)(4)
and...

40 CFR 122.21(j)(4)



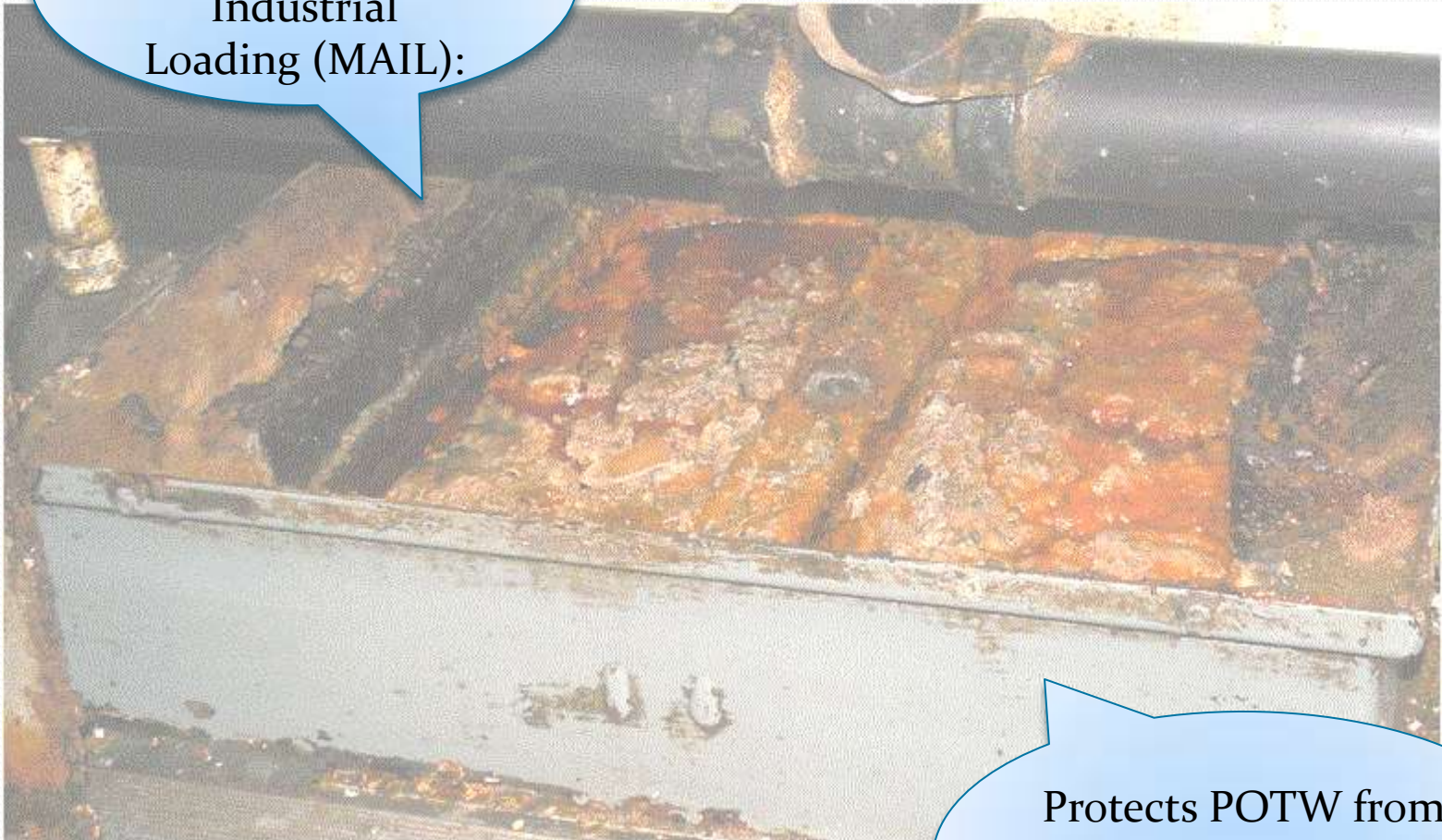
Specifically address
existing or potential
problems at the local
level

Maximum
Allowable
Headworks
Loading (MAHL):



Protects POTW from
pass through and
interference

Maximum
Allowable
Industrial
Loading (MAIL):



Protects POTW from
pass through and
interference

MAIL needed if:

Average toxic
pollutant loading to
headworks is
greater than 60%
MAHL

Maximum daily toxic
pollutant loading to
headworks is greater
than 80% MAHL

BOD₅, TSS or ammonia
monthly average loading to
influent reaches 80% design
capacity any time in prior 12
months

Other local limits
approaches
besides allocation



Give the POTW
flexibility in
addressing specific
local concerns

Summary



Any questions?

A question for you:

what do you wish someone had told you
when you first started in pretreatment?

Contact:

Matt Young: matt.young@mcminnvilleoregon.gov

City of McMinnville, Wastewater Services: 503-434-7313

Works Cited:

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