Today's Speakers

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TBELs for Non-POTWs-2

Technology- and Water Quality-based Effluent Limitations

CWA Section 101(a) Goal or Policy:	▪ Zero Discharge of Pollutants	▪ Fishable and Swimmable Waters ▪ No Toxics in Toxic Amounts
Standards:	▪ Technology	▪ Water Quality
NPDES Regulations:	▪ 40 CFR 122.44(a), (e) ▪ 40 CFR 125.3	▪ 40 CFR 122.44(d)

Develop TBELs (derived from technology standards) for all applicable pollutants of concern. Develop WQBELs where TBELs are not adequate to meet water quality standards in the receiving water.

TBELs for Non-POTWs-3

Technology-Based Requirements

- **Technology-based requirements:**
  - establish performance-based level of pollutant controls
    - conventional pollutants
    - nonconventional pollutants
    - toxic (priority) pollutants
  - provide equity among dischargers within categories

TBELs for Non-POTWs-4

POTW and Non-POTW

- **POTWs** are treatment works *owned by a state or municipality*
  - include devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature
  - Definition at 40 CFR 403.3(q)
- **Non-POTWs** include all other facilities and are often called "non-municipals" or "industrials"

TBELs for Non-POTWs-5

Technology-based Effluent Limitations

- National technology-based standards
  - secondary treatment standards for POTWs
  - *effluent guidelines for certain categories of non-POTWs (industrial discharges)*
- In the absence of national standards
  - *technology-based requirements developed on a case-by-case basis*
- Technology-based requirements implemented in NPDES permits through technology-based effluent limitations (TBELs)

TBELs for Non-POTWs-6

Requirements for Technology-based Effluent Limitations

- **40 CFR 125.3(a)**
  - Technology-based treatment requirements under Section 301(b) of the Act represent the minimum level of control that must be imposed in a permit…
  - For dischargers other than POTWs technology-based limitations are based on BPT, BCT, and BAT, or NSPS (for new sources) [40 CFR 125.3(a)(2)]

TBELs for Non-POTWs-7

Effluent Limitations Guidelines and Standards (Effluent Guidelines)

- **Definition**
  - national standards developed by EPA
  - prescribe allowable discharges of pollutants from industrial point source categories corresponding to various levels of treatment or control
- **Scope**
  - established for most primary and some secondary industries

TBELs for Non-POTWs-8

EPA's Development of Effluent Guidelines

- Developed for a specific industrial category (and possibly subcategories) after an in-depth assessment of available:
  - pollution control technologies
  - pollution prevention practices
- For each technology, EPA considers
  - pollutant loadings and removals
  - industry-wide compliance costs
  - non-water quality effects
- EPA selects a ***model technology*** as the basis for each required level of control

TBELs for Non-POTWs-9

Performance Standards Summary

Technology-Based Control Level	Type of Discharger	Conventional	Non-conventional	Toxic	Compliance Deadline
Best Practicable Control Technology Currently Available (BPT) ←	Direct—Existing	X	X	X	July 1, 1977
Best Conventional Pollutant Control Technology (BCT) ←	Direct—Existing	X			March 31, 1989
Best Available Control Technology Economically Achievable (BAT) ←	Direct—Existing		X	X	March 31, 1989
New Source Performance Standards (NSPS) ←	Direct—New	X	X	X	Commencement of discharge
Pretreatment Standards for Existing Sources (PSES) ←	Indirect—Existing	X	X	X	Date specified in regulation
Pretreatment Standards for New Sources (PSNS) ←	Indirect—New	X	X	X	Commencement of discharge

TBELs for Non-POTWs-10

Type of Discharger: Key Definitions

- ***New Source (direct)*** **(40 CFR 122.2) – Any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the <u>construction</u> of which commenced:**
  - **after promulgation of applicable New Source Performance Standards in the effluent guidelines, or**
  - **after proposal of applicable New Source Performance Standards in effluent guidelines, but only if the standards are promulgated within 120 days of proposal**

TBELs for Non-POTWs-11

Additional New Source Determination Criteria (40 CFR 122.29(b))

- **Constructed at a site at which no other source is located; or**
- **Totally replaces the process causing the discharge from an existing source; or**
- **Processes are substantially independent of an existing source at the same site; and**
- **A New Source Performance Standard is independently applicable to the discharge**
- **EPA Permit Review Guidance (May 10, 2007)**
  http://www.epa.gov/npdes/pubs/memo_complianceschedules_may07.pdf

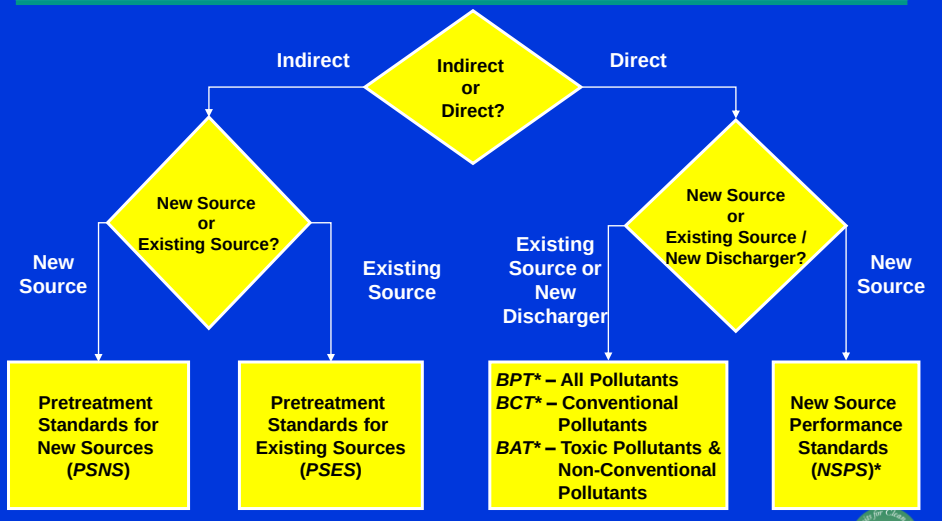
TBELs for Non-POTWs-12

Type of Discharger: Key Definitions

- ***New Discharger (direct)*** **(122.2) – Any building, structure, facility, or installation from which there is or may be a discharge of pollutants that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, which is not a new source, and which never received a finally effective NPDES permit**
- ***Existing Source (direct)*** **(122.29(a)(3)) – Any building, structure, facility, or installation from which there is or may be a discharge of pollutants which is not a new source or a new discharger**

TBELs for Non-POTWs-13

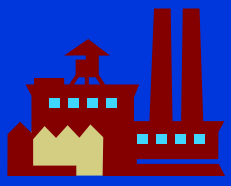
Determining Required Performance Standards



Compliance Deadlines: BPT—7/1/1977; BCT—3/31/1989; BAT—3/31/1989; NSPS—discharge commencement

TBELs for Non-POTWs-14

Implementing Effluent Guidelines



- **Effluent guidelines:**
  - are implemented and enforced through NPDES permits
  - serve as the basis for technology-based effluent limitations

TBELs for Non-POTWs-15

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-16

Step 1: Determine Category and Subcategory

- **Determine the proper category and subcategory:**
  - application and supplemental information
  - existing permit
  - applicability section in regulation
  - SIC Code(s) (e.g., Copper Forming = SIC Code 3351)
  - preamble to regulation
  - development documents
  - effluent guidelines program contacts: www.epa.gov/waterscience/guide/contacts.html

TBELs for Non-POTWs-17

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-18

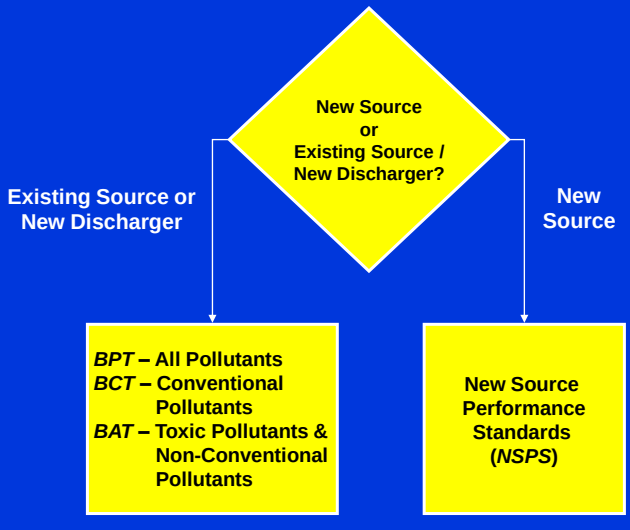
Step 2: Calculate Numeric Limitations

Calculating numeric limitations:

- Determine applicable level(s) of control
- Determine appropriate measures of production and flow (if necessary)
- Calculate numeric limitations for all regulated processes and pollutants

TBELs for Non-POTWs-19

Step 2: Calculate Numeric Limitations



TBELs for Non-POTWs-20

Step 2: Calculate Numeric Limitations

- **When calculating numeric limitations from effluent guidelines:**
  - **include all regulated pollutants**
  - **do not include parameters considered by but not regulated by the effluent guideline**
  - **include both maximum daily and average monthly effluent limitations**
  - **express as mass limitations unless the guideline allows or requires concentration limitations**

TBELs for Non-POTWs-21

Effluent Limitation Calculation Example: Limits Based on Production

- **Canned and Preserved Fruits and Vegetables Processing: 40 CFR Part 407**
- **Subpart A: Apple Juice Subcategory**
- **Given:**
  - **existing source**
- **Example Problem: Calculate BPT average monthly limitations for BOD_5, TSS, and pH**

TBELs for Non-POTWs-22

§ 407.12 **Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.**

Except as provided in §§125.30 through 125.32, any existing point source subject to this subpart shall achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT):

Effluent characteristic	Effluent limitations: Maximum for any 1 day	Effluent limitations: Average of daily values for 30 consecutive days shall not exceed—
	Metric units (kilograms per 1,000 kg of raw material)	
BOD5	0.60	0.30
TSS	0.80	.40
pH	(1)	(1)
	English units (pounds per 1,000 lb of raw material)	
BOD5	0.60	0.30
TSS	0.80	.40
pH	(1)	(1)

(1) Within the range 6.0 to 9.0.

Example: Calculate the BPT average monthly limitations

BPT average monthly standards

Standards are in lbs per 1,000 lbs of raw material; therefore…

we need to know *the amount of raw material used* in order to calculate effluent limits

(except for the pH limits).

Production or Flow Measure

- **Determining appropriate measures of production and flow [40 CFR 122.45(b)(2)]**
  - use reasonable measure of actual production (or other measure of operation—e.g., flow)
  - account for planned changes

TBELs for Non-POTWs-24

§ 407.12 **Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.**

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	Metric units (kilograms per 1,000 kg of raw material)	
BOD5	0.60	0.30
TSS	0.80	.40
pH	(1)	(1)
	English units (pounds per 1,000 lb of raw material)	
BOD5	0.60	0.30
TSS	0.80	.40
pH	(1)	(1)

[1] Within the range 6.0 to 9.0.

Production units for example facility:

200,000 pounds of raw material per day

200,000 lbs x each value from the table / 1000 lbs

Effluent Limitation Calculation Example (continued)

Average Monthly Limitations

BOD_5

200,000 lbs raw material/day X (0.30 lbs/1,000 lbs raw material)

= *60 lbs/day*

TSS

200,000 lbs raw material/day X (0.40 lbs/1,000 lbs raw material)

= *80 lbs/day*

pH

Within the range of 6.0 to 9.0 standard units

TBELs for Non-POTWs-26

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-27

Step 3: Incorporate Narrative Requirements

- **Incorporate all narrative requirements from the effluent guidelines such as:**
  - **best management practices**
  - **treatment practices**
  - **monitoring, reporting, and compliance requirements**

TBELs for Non-POTWs-28

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-29

Step 4: Account for Multiple Sets of Requirements

- **A single facility could include:**
  - multiple processes within the same category or subcategory
  - production or services in more than one category or subcategory
  - both new and existing sources
  - wastewater streams not containing the regulated pollutant
  - unregulated wastewater streams

TBELs for Non-POTWs-30

Step 4: Account for Multiple Sets of Requirements

- **For a facility with multiple sets of requirements:**
  - address all applicable effluent guidelines
  - recognize that some guidelines supersede others
  - account for common treatment systems
  - use internal outfalls where appropriate

TBELs for Non-POTWs-31

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-32

Step 5: Apply Additional Regulatory Considerations

- **Tiered (or alternative) limitations**
  - account for anticipated variability of production/flow (e.g., seasonal)
  - significant variation is ≥ 20%
  - requires careful examination of production/flow data
  - requires special reporting requirements
    - notification of changed production/flow
    - reporting of production/flow data

TBELs for Non-POTWs-33

Steps to Implementing Effluent Guidelines

Step 1: Determine Proper Category and Subcategory

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Step 2: Calculate Numeric Limitations

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Step 3: Incorporate Narrative Requirements

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Step 4: Account for Multiple Sets of Requirements

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Step 5: Apply Additional Regulatory Considerations

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Step 6: Document Decisions

TBELs for Non-POTWs-34

Step 6: Document Decisions

- **Document in the fact sheet or statement of basis:**
  - Statutory and regulatory citations
  - How you determined which effluent guidelines apply
  - How you determined the facility's production, flow, or other measures used to apply the effluent guidelines
  - How you calculated effluent limitations (mass or concentration or both)

TBELs for Non-POTWs-35

Requirements for Technology-based Effluent Limitations

- **40 CFR 125.3(a)**
  - Technology-based treatment requirements under Section 301(b) of the Act represent the minimum level of control that must be imposed in a permit…
  - For dischargers other than POTWs technology-based limitations are based on BPT, BCT, and BAT, or NSPS (for new sources) [125.3(a)(2)]

TBELs for Non-POTWs-36

Case-by-Case Technology-based Effluent Limitations

- 40 CFR 125.3(c)(2)
- Technology-based treatment requirements may be imposed:

  …on a **case-by-case** basis under section 402(a)(1)(B) of the Act, **to the extent that EPA-promulgated effluent limitations are inapplicable**…

TBELs for Non-POTWs-37

Authority for Case-by-Case Limitations

- "…promulgated effluent limitations are inapplicable…" when
  - EPA ***has not developed effluent guidelines*** that apply to the discharge (i.e., to the industry or to the type of facility) we are permitting
  - there is an applicable effluent guideline, but ***pollutants or processes are present that were not considered*** when the effluent guideline was developed

TBELs for Non-POTWs-38

How are Case-by-Case Limits Developed?

Case-by-case technology-based limits are developed using ***Best Professional Judgment (BPJ)***.

TBELs for Non-POTWs-39

Using BPJ to Develop Case-by-Case Limits

- The permit writer applies the criteria used to develop technology-based standards as required in 40 CFR 125.3(d)
  - similar to the EPA's analysis for developing national effluent guidelines ***but***
  - performed by the permit writer for a single facility to establish BPT, BCT, and BAT

TBELs for Non-POTWs-40

BPJ Considerations – 40 CFR 125.3(d)

- Establish appropriate level of performance on a case-by-case basis considering:
  - *the appropriate technology* for the class or category of point sources
  - *any unique factors* related to the facility

TBELs for Non-POTWs-41

Selecting an Appropriate Technology

- Technical Criteria (BPT, BCT, BAT)
  - age of equipment and facilities involved
  - process(es) employed
  - engineering aspects of the application of various types of control techniques
  - process changes
  - non-water quality environmental impact including energy requirements
- Economic Criteria
  - candidate technologies evaluated based on economic criteria
  - criteria vary by standard (e.g., cost/benefit, economic achievability)

TBELs for Non-POTWs-42

BPJ Tools and Resources

- Permits and fact sheets with BPJ rationale for similar facilities
- Available from the EPA NPDES homepage and searchable via:
  - SIC code
  - geographic information
  - pollutant
  - etc.
  - http://www.epa.gov/enviro/index.html (Envirofacts)
  - http://cfpub.epa.gov/npdes/permitissuance/genpermits.cfm (View Individual and General Permits)

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BPJ Tools and Resources (continued)

- Treatability Manual
- Effluent guideline data/information
  - development documents
  - proposed regulations
  - industry studies
- Economic guidance (BCT two-part cost test and BAT economic achievability guidance)
- http://www.epa.gov/waterscience/guide/index.html

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BPJ Tools and Resources (continued)

- **Other sources of information**
  - Discharge Monitoring Reports
  - Industry teams/national experts
  - *Technical Support Document for Water Quality-Based Toxics Control*
    - provides statistical approach for setting MDL and AML at an appropriate performance level based on expected long-term average performance

TBELs for Non-POTWs-45

BPJ Defensibility and Documentation

- **Defensibility depends on reasonableness**
- **Reasonableness is demonstrated by documentation:**
  1. Include statutory and regulatory citations
  2. Establish that case-by-case limits are appropriate—why effluent guidelines don't apply
  3. Identify pollutant(s) for BPJ analysis and the performance level required by the CWA (i.e., BPT and BAT or BCT)
  4. List each of the applicable criteria from 40 CFR 125.3(d) and provide an explanation of how each was considered in the BPJ analysis

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Feedback and Other Presentations

Questions or comments?

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