

# Development of Local Limits

[40 CFR §§ 403.5(c) & (d)]



**TETRA TECH, INC.**

**At sewer  
connection!**



**Local  
Limits**

**vs.**

***Process  
wastewater  
only!***



**Categorical  
Standards**

	<b>Categorical Stds.</b>	<b>Local Limits</b>
<b>Developed</b> :	By EPA	By POTW
<b>Objective:</b>	Uniform National Control of certain IUs	POTW/Receiving Water Protection
<b>Regulates:</b>	Industries specified in Clean Water Act	All non-domestic dischargers
<b>Pollutants</b> :	Priority Pollutants (toxic & non-conventional only)	Any Pollutant
<b>Basis:</b>	Technology Based	Technically based on site-specific factors
<b>Apply:</b>	At the End of regulated process(es)	Depends on development method

# Local Limits Address Site Specific Concerns:

- **Correct existing problems**
- **Prevent potential problems**
- **Protect POTW Operation  
(Inhibition)**
- **Protect the receiving waters**
- **Improve/Protect sludge disposal  
options**
- **Protect POTW personnel (POTW  
includes collection system)**

# Types of Local Limits

- ***Chemical specific***
- Additional specific prohibitions
- Collection system
- Industrial user management practices plans
- Case-by-case discharge limits

Collect Data & Characterize Existing Loadings



## Local Limits Process

- Determine Pollutants of Concern
- Collect and Analyze POC Data
- Calculate AHL for all POCs
- Select Most Stringent AHL as MAHL
- Determine MAIL
- Allocate MAIL to Industrial Users

Allocate Allowable Industrial Loading



Develop MAHLS

Determine Maximum Allowable Industrial Loadings



# Pollutants of Concern [POC]

- Any pollutant which might be reasonably discharged and capable of causing:
  - pass through
  - interference
  - sludge contamination
  - POTW worker health/safety risks

# National Pollutants of Concern

- EPA Identified 15 pollutants often found in POTW effluent and sludge
  - Assume all 15 to be POCs unless Approval Authority agrees otherwise
- EPA recommends POTW screening for these 15 using data from:
  - POTW influent, effluent and sludge
  - Industrial User discharges

→ Collect Data & Characterize Existing Loadings →

## Local Limits

## Development Data

- Background Information
- Develop Sampling Plan
- Collect and Analyze Samples
- Data Review and Evaluation

Allocate Allowable Industrial Loading

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# Characterize Existing Loadings

- Industrial Users/commercial sources
- Hauled Waste
- Domestic Loading
- Treatment Plant Data

# POTW Sampling Locations

- **POTW Influent\***
  - Before mixing with any recycle streams
- **POTW Effluent\***
- **Aerobic/Anaerobic Digester\***
  - "Acclimation" values
- **Biosolids to Disposal\***
  - 40 CFR Part 503 Annual Report Data
- **Activated Sludge**
  - "Acclimation" values

# Calculate %Removal Rate

If a POTW has an influent BOD of 234 mg/l and an effluent BOD of 4.2 mg/l, what is the %removal rate (efficiency)?

$$\frac{234 \text{ mg/l} - 4.2 \text{ mg/l}}{234 \text{ mg/l}} * 100 = 98.2\%$$

# Calculation of POTW Removal Efficiencies for all POCs

- **Average Daily Removal Efficiency [ADRE]**
  - Paired Influent & Effluent samples lagged by the hydraulic residence time.
- **Mean Removal Efficiency [MRE]**
  - Average influent and effluent values separately, to calculate removal efficiency.
- **Decile Method**
  - Statistical (Statistical) method

# Other Sampling Locations:

- **Domestic/Uncontrollable Site(s)**
  - May Need Several Locations Due to:
    - Variability, different H<sub>2</sub>O sources
- **SIUs**
  - May Have Historical Data on some/all POCs
- **Hauled Waste**
  - Depends on Type(s) Accepted at POTW

Collect Data & Characterize Existing Loadings

## Develop Maximum Allowable Headworks [MAHL] Loading

- Select most stringent AHL as MAHL:
  - Effluent Quality (NPDES Permit Limits)
  - Water Quality Standards [Pass-thru]
  - Interference (Inhibition)
  - Sludge Contamination (40CFR 503)
  - Air Quality Standards
  - Other (eg worker safety)

Determine Maximum Allowable Industrial Loadings

Allocate Allowable Industrial Loading



Develop MAHLs



Collect Data & Characterize Existing Loadings

## Determine MAIL

MAHL *Minus*

- Safety Factor
- Uncontrolled Sources
- Hauled Waste
- Growth Factor

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# THE HEADWORKS ANALYSIS

1. Calculate the **MAXIMUM ALLOWABLE HEADWORKS LOADING (MAHL)** for each pollutant.



2. Subtract a **SAFETY FACTOR** for variation and slug loads.

10% = 1.65 lbs Copper

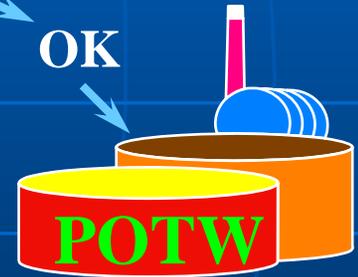
16.5 lbs Copper

3. Subtract uncontrollable **HEADWORKS MASS LOADING**

6.5 lbs Copper

14.85 lbs Copper

OK



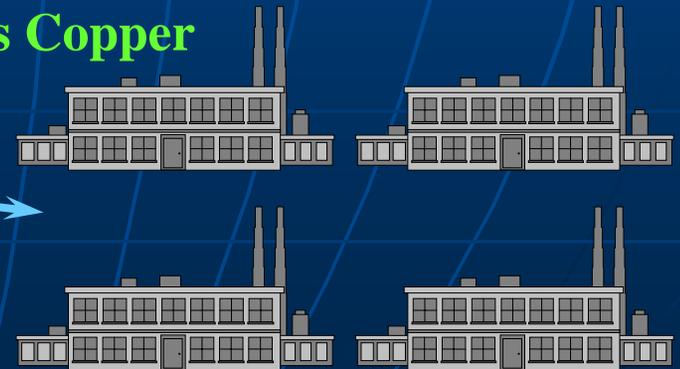
4. Subtract a **GROWTH FACTOR**

10% = 1.65 lbs Copper

8.35 lbs Copper

6.70 lbs Copper

5. Allocate the remainder of the **MAXIMUM ALLOWABLE INDUSTRIAL LOADING (MAIL)** to Industrial Users.



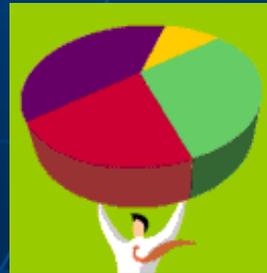
Collect Data & Characterize Existing Loadings

## Allocate MAIL to IUs

1. Uniform Concentration
  - Option 1. One limit for all POTWs
  - Option 2. Separate limits for each POTW
2. Industrial User Contributory Flow
3. WYNIWYG
4. Mass Proportional Limits
5. Selected Industrial Reduction

Allocate Allowable Industrial Loading

Develop MAHLS



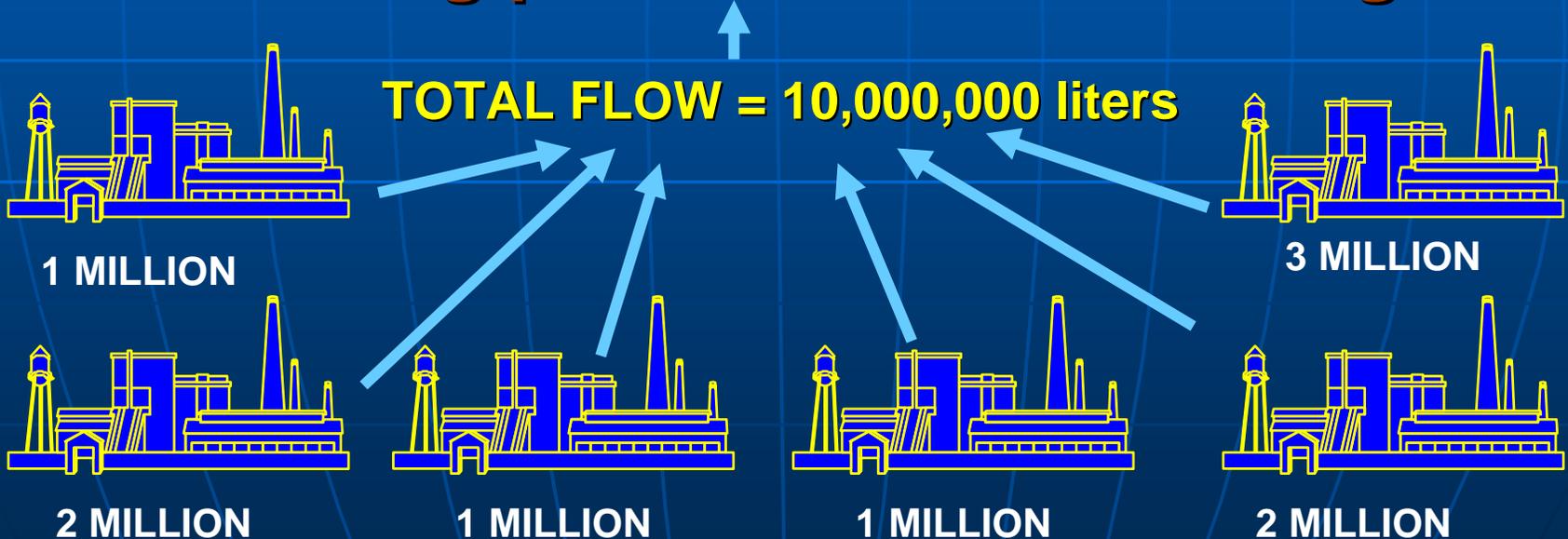
Determine Maximum Allowable Industrial Loadings

# 1. Uniform Concentration Allocation

**MAIL = 5,000,000 mg COPPER)**

ALLOCATE ONE LIMIT BASED ON FLOW FROM ALL SIUs

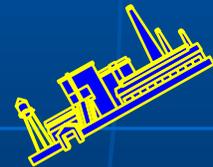
**= 5M mg per 10M liters = 0.50 mg/l**



# Allocation Approaches

## 2. Industrial User Contributory Flow

- ◆ Calculate total flow from SIUs that have a pollutant in their discharges at greater than background levels
- ◆ Divide MAIL by this flow
- ◆ New concentration based limit applies ONLY to selected SIUs



# Allocation Approaches

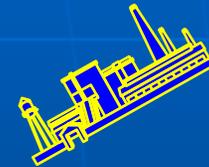
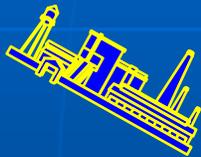
## 3. What You Need is What You Get

### WYNIWYG

- ◆ **IU Limits Set on Case-by-Case Basis**
- ◆ **Limits Can Be Based on:**
  - ◆ IU current loading
  - ◆ IU Ability to Pretreat Pollutants
  - ◆ Any other Factor POTW determines
- ◆ **Limits: Concentration or Mass based**

# Allocation Approaches

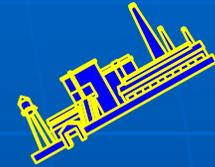
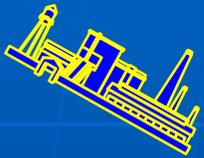
## 4. Mass Proportional Limits



- ◆ For each pollutant, allocate the MAIL as a different mass or concentration limit depending on each industrial user's present mass discharge

# Allocation Approaches

## 5. Selected Industrial Reduction



- ◆ **Current headworks loading exceeds the MAIL for a particular pollutant**
- ◆ **POTW requires selected SIUs to reduce their discharge of that pollutant on a case-by-case basis**

All Allocation Methods have  
advantages and  
disadvantages

Example: Uniform  
Concentration Method

# Option 1 Advantages

- **No economic advantages to any industry**
- **Easy to calculate and apply**
- **Allows for industrial growth in certain areas of the municipality**
- **Wastewater can be switched from one POTW to another**
- **Sewer Use Ordinance contains limits that apply to ALL users**

# Option 1 Disadvantages

- Limits may be overly stringent for some industries
- Inflexible, no consideration given for actual POC discharges
- Overprotection of the POTW
- Penalizes water conservation
- Can create unnecessary noncompliance

# Common Sense Assessment

- Are the limits technologically achievable?
- Can compliance with the limits be determined?
- Do the limits make sense based on actual POTW conditions and compliance experience?



Collect Data & Characterize Existing Loadings



# Updating Local Limits

- NPDES application
- Process changes
- Non-compliance
- Environmental criteria changes
- SIU changes
- Additional monitoring data

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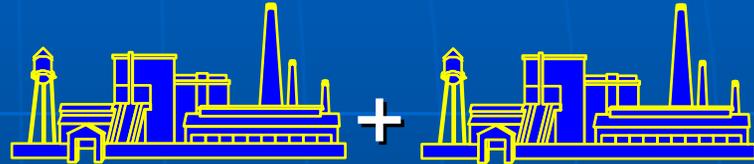


# NPDES Permit renewal/revisions

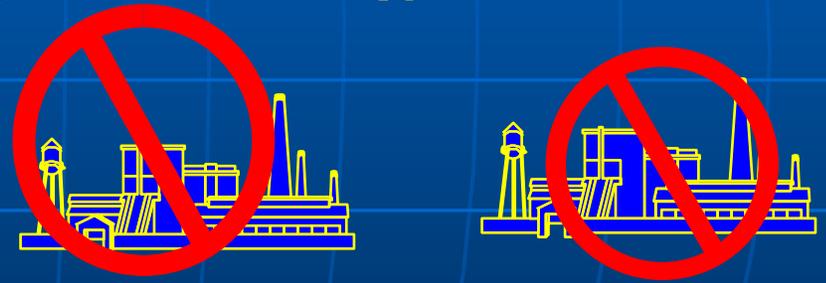
- ◆ 40 CFR 122.44(j)(2)(ii) requires NPDES permit to contain a condition to provide a written technical evaluation of the need to revise local limits following permit re-issuance
- ◆ Annual or detailed re-evaluation of local limits can meet this requirement

# SIU Changes

- ◆ New SIUs significantly change loadings



- ◆ SIUs closed down



- ◆ SIUs changed processes significantly



Collect Data & Characterize Existing Loadings



## Applying Local Limits

- Adopt local limits into POTW Legal Authority [SUO]
- Include in individual IU Control Mechanism [SIU Permit]
- Combination of both

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**The most  
stringent  
limit  
applies.**