Development of Local Limits

[40 CFR §§ 403.5(c) & (d)]
At sewer connection!

Process wastewater only!

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

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

Collect Data & Characterize Existing Loadings
Allocate Allowable Industrial Loading
Determine Maximum Allowable Industrial Loadings
Develop MAHLS
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)?

\[
\frac{234 \text{ mg/l} - 4.2 \text{ mg/l}}{234 \text{ mg/l}} \times 100 = 98.2\%
\]
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 $H_2O$ sources

- **SIUs**
  - May Have Historical Data on some/all POCs

- **Hauled Waste**
  - Depends on Type(s) Accepted at POTW
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 MAIL

MAHL Minus

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

3. Subtract uncontrollable HEADWORKS MASS LOADING
   - 6.5 lbs Copper

4. Subtract a GROWTH FACTOR
   - 10% = 1.65 lbs Copper

5. Allocate the remainder of the MAXIMUM ALLOWABLE INDUSTRIAL LOADING (MAIL) to Industrial Users.
   - 16.5 lbs Copper
   - 14.85 lbs Copper
   - 8.35 lbs Copper
   - 6.70 lbs Copper

OK

POTW
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

Collect Data & Characterize Existing Loadings

Allocate Allowable Industrial Loading

Determine Maximum Allowable Industrial Loadings

Develop MAHLS
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

TOTAL FLOW = 10,000,000 liters

1 MILLION

2 MILLION

1 MILLION

1 MILLION

3 MILLION

2 MILLION
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.
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?
Updating Local Limits

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

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

Collect Data & Characterize Existing Loadings

Allocate Allowable Industrial Loading

Determine Maximum Allowable Industrial Loadings

Develop MAHLS
The most stringent limit applies.