Agenda

9:00 am – 10:05 am: Workshop
- Welcome & Workshop Logistics
- Finance and Budget
- MCES Pretreatment Program Overview and Updates
- MCES Wastewater Monitoring of SARS-CoV-2
- Chloride Update
- 2021 Local Limits Study
- Online and Electronic Reporting
- Communications/IWPP Website

10:05 am – 10:20 am: Michelle Gage: MnTAP Services and Resources for Industry

10:20 am – 10:30 am: Time for Feedback and Q&A (and throughout workshop)
Workshop Logistics

This workshop will be recorded and posted on our website.

You can communicate with hosts, presenters and panelists using the Chat and/or Q&A Windows.

You can raise and lower your hand to speak. Our host will then unmute you and call on you to speak.
Finance

Ned Smith, Director, Pretreatment & Finance

ned.smith@metc.state.mn.us
2021 Sources – $321M

- Municipal Wastewater Charges 75%
- Sewer Availability Charge (SAC) 18%
- Industrial Waste Charges 5%
- Other 1%

*Other includes State Appropriations (grants), Investment Earnings, and Other Misc. Revenue

- Fee for service
- No state funds to run Metropolitan Disposal System
- MCES expenses only (no other Met Council expenses)
Strength Charges & Permit Fees

- Fees for treatment costs for industrial wastewater with more pollutants than residential wastewater
- Charged in $ per pound of excess strength
  - Chemical Oxygen Demand (COD) over 500 mg/L
  - Total Suspended Solids (TSS) over 250 mg/L
- Based discharge volume and excess COD and TSS
- Permit fees are billed annually

<table>
<thead>
<tr>
<th>Charge Type</th>
<th>2021 Rate</th>
<th>Prelim 2022</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Suspended Solids (TSS) Rate</td>
<td>$0.2600</td>
<td>$0.2720</td>
<td>4.6%</td>
</tr>
<tr>
<td>Chemical Oxygen Demand (COD) Rate</td>
<td>$0.1300</td>
<td>$0.1360</td>
<td>4.6%</td>
</tr>
<tr>
<td>Permit Fee (Standards &amp; Generals)</td>
<td>$475-$10,550</td>
<td>$475-$10,925</td>
<td>3.6%</td>
</tr>
</tbody>
</table>
Service Availability Charge

- “Connection fee” pays for capacity in the system
- Metropolitan Council charges SAC directly to local governments for initial connections to the system, if a business grows, or the property use changes
- One SAC unit is equivalent to 274 gallons of discharge per day
- SAC collected helps to pay debt for expansion and rehabilitation of wastewater infrastructure

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<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Availability Charge (SAC) Rate</td>
<td>$2,485</td>
<td>$2,485</td>
<td>0%</td>
</tr>
</tbody>
</table>
Industrial Capacity Charge (ICC)

- Alternative fee charged directly to permitted industrial users for any volume that exceeds the permitted industrial user’s ICC threshold at each reporting period
- **Can pay ICC in lieu of increasing your SAC baseline**
- Rate charged per 1,000 gallons of discharge over the SAC baseline
- Does not increase the facility's SAC baseline
- Designed to help businesses with volume fluctuations

<table>
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<th>Prelim 2022</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Capacity Charge (ICC) Rate</td>
<td>$2.18</td>
<td>$2.21</td>
<td>1.4%</td>
</tr>
</tbody>
</table>
Any Questions or Feedback?

Please use the Q/A Panel

Raise your hand and we will unmute you
Pretreatment Program Overview & Updates

Bob Nordquist, *Industrial Waste Manager*

*bob.nordquist@metc.state.mn.us*
Industrial Waste & Pollution Prevention

• We serve the Twin Cities Region of ~3 million people
• We serve 110 communities connected to our system
• We administer 915 active industrial discharge permits
  – 518 Standard Discharge Permits
  – 90 Special Discharge Permits
  – 94 Liquid Waste Hauler Permits
  – 213 General Discharge Permits
  – 874 Dental Clinics
MCES Performance Awards

Platinum Awards Given for 2019 Compliance

- **8 years**: 10 Metro
- **12 years**: 13 Empire
- **14 years**: 8 Blue Lake, 1 Eagles Point
- **28 years**: 1 St Croix Valley (Calumet, Chicago, IL)
- **29 years**: 1 Hastings (Ocean County, NJ)

- 30 years – Ames, IA
- 31 years – Hanover, NJ

Gold Awards Received for 2019

- Seneca – 3-years
- Rogers – 1-year
- East Bethel – 1-year
Clean Water Regulation

• Clean Water Act / 40 CFR Part 403
  – Categorical Standards
  – General Pretreatment Regulations
• EPA Region 5
  – Delegated to Minnesota PCA
  – Approval of Local Pretreatment Programs
• MCES Approved Pretreatment Program
  – Waste Discharge Rules
  – Local Limits
Effects of COVID-19 on MCES

• Prevent the spread of COVID-19
• Reduce the risk of disruption of essential services
• Alternate sampling and inspection methods
• Liberal due date extension policy
• Minimal financial impacts in 2020
  – All city, SAC, and industrial revenues met expectations
  – Slight increase in leave expense since vacation use dropped
• Please notify us if your employee tests positive and has had contact with our staff
MCES Wastewater Monitoring of SARS-CoV-2

Steve Balogh, PhD, Principal Research Scientist
Steve.Balogh@metc.state.mn.us

IWPP Customer Workshop: April 2021
# MCES Wastewater Monitoring

## Why wastewater?

- RNA signal in wastewater should lead the clinical case signal; maybe by up to 6 days.
- Wastewater might provide an earlier indication of trends in disease prevalence in the service area.

## Table: Wastewater surveillance vs Clinical testing

<table>
<thead>
<tr>
<th>Days After Infection</th>
<th>Wastewater Surveillance detects SARS-CoV-2</th>
<th>Clinical Testing detects SARS-CoV-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>ONLY &gt;215</td>
<td>Detects virus 6 days before clinical testing</td>
</tr>
<tr>
<td>1</td>
<td>32% of individuals infected with SARS-CoV-2 seek medical attention</td>
<td>1 infected individual in 10,000 when combined</td>
</tr>
<tr>
<td>2</td>
<td></td>
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<td>10</td>
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</tbody>
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## Diagram:

- MCES R&D extracts RNA
- U of M Genomics Center measures viral RNA
- Influent sampler

**UW WATERLAB**
MCES Wastewater Monitoring

MCES Timeline:
April 2020
- Began weekly monitoring at Metro
  - Biobot/MIT project

May-July 2020
- Explored options for working with University partners

August-September 2020
- Built a new lab in MCES R&D

October 2020
- Developed analytical method

November 2020-present
- Daily sampling at Metro
MCES Wastewater Monitoring

RNA extraction method: **III-P/ZV:**
- Use Zymo III-P column to process large WW volume (3.0 mL)
- Then process III-P eluate with Zymo Viral kit to concentrate the RNA by 10X

3.0 mL WW
1.5 mL DNA/RNA Shield (2X)
12 mL 100% EtOH

III-P

Zymo Quick-RNA Viral Kit

200 uL elution volume

20 uL elution volume

Concentration factor = 3000 uL WW/20 uL = 150
MCES Wastewater Monitoring

Droplet Digital RT-PCR

- Based on water-emulsion droplet technology, Droplet Digital RT-PCR disperses the RNA sample into 20,000 droplets.

- Reverse transcription of the RNA into DNA and PCR amplification of the DNA template subsequently occurs in each individual droplet.

- Counting the positive droplets gives precise, absolute target quantification.
MCES Wastewater Monitoring

Inactivated SARS-CoV-2 virus spike recovery (%)

average = 80%

average = 89%
MCES Wastewater Monitoring

Metro-Area COVID-19 Clinical Cases/100,000 people

- RNA concentration is the average of N1 and N2 gene concentrations
- RNA concentration trend lines and clinical case data are 7-day moving averages
- Data through the end of October is from Biobot
- Data since November is from MCES/R&D

Metro Plant SARS-CoV-2 RNA concentration (copies/L)

- 2.0E+06
- 1.5E+06
- 1.0E+06
- 5.0E+05
- 0.0E+00
MCES Wastewater Monitoring

Metro Area COVID-19 Clinical Cases/100,000 people

- RNA load is based on the average of N1 and N2 gene concentrations
- RNA load trend lines and clinical case data are 7-day moving averages
- Data through the end of October is from Biobot
- Data since November is from MCES/R&D

Metro Plant SARS-CoV-2 RNA Daily Influent Load (copies/day)

- 1.2E+15
- 1.0E+15
- 8.0E+14
- 6.0E+14
- 4.0E+14
- 2.0E+14
- 0.0E+00
MCES Wastewater Monitoring

Metro Plant influent SARS-CoV-2 daily load vs daily new cases in the sewered service area; weekly mean values, 11/5/2020 - 4/7/2021

\[
y = 4.2 \times 10^{11}x + 3.8 \times 10^{11} \\
R^2 = 0.94
\]
MCES Wastewater Monitoring

- We can accurately measure SARS-CoV-2 RNA concentrations in wastewater entering MCES treatment plants.
- RNA concentrations and loads track with new clinical COVID-19 case counts over time.
- The data may be useful to public health authorities, especially when case numbers are low.
- New variants of the virus can be detected in wastewater, providing early warning of their presence.
Any Questions or Feedback?

Please use the Q/A Panel

Raise your hand and we will unmute you
MCES Industrial Waste Program: Chloride

Dave Brown, Principal Engineer
dave.brown@metc.state.mn.us

Brian Davis, Senior Engineer
brian.davis@metc.state.mn.us
MCES Concerns about Chloride

- Regulatory Compliance
- Urban Lake & Stream Water Quality Challenges
- Wastewater Reuse
# MPCA’s Chloride Standard: Greatest Impact in Greater Minnesota WWTPs

## MPCA's Chloride Standard

<table>
<thead>
<tr>
<th>Type</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic</td>
<td>230 mg/L</td>
</tr>
<tr>
<td>Acute</td>
<td>860 mg/L</td>
</tr>
<tr>
<td>Final Acute Value</td>
<td>1720 mg/l</td>
</tr>
</tbody>
</table>

RP = Reasonable potential to exceed chloride water quality standard. Greatly influenced by receiving water flow/volume

Source: MPCA
MCES WWTP Discharges Well Below Trigger for Exceeding Chloride Standard - *

* - Rogers WWTP permit: Required to develop and implement a Chloride Reduction Plan.
Cost of Chloride Reduction at WWTPs: $$$$
Chloride Sources in MCES WWTP Discharges

- Residential softening (48%)
- Industrial discharges (30%)
- Commercial softening (12%)

Info Source: *Internal Chloride Team Final Report*. Metropolitan Council, January 2019. Table 5.1
Understanding Industrial Chloride Sources

• Chloride sampling: gather and analyze data about chloride sources
• Site visit checklist: gather information about industrial softening
Moving Forward

• **No chloride permit limit at MCES WWTPs**
  – However, Rogers plant permit requires a chloride reduction plan
• **No chloride permit limits anticipated in foreseeable future**
  – Depends on WQS not being lowered, which is possible
• **MCES committed to working with partners**
  – Internal chloride team: chartered to work on solutions
  – Collaborate: reach out to stakeholders to gather information and develop solutions
  – Draw on past experiences solving costly, complex water quality challenges
Two Approaches

Attempt to treat chloride at MCES WWTPs:
- Cost and technologically infeasible for MCES’ large WWTPs
- Results in a concentrated brine waste with no feasible disposal option

OR

MCES and region’s communities, watersheds, and industries work together to reduce chloride at the source.
Any Questions or Feedback?

Please use the Q/A Panel

Raise your hand and we will unmute you
2021 Local Limits Study

Andrew Wiatros, Principal Engineer
andrew.wiatros@metc.state.mn.us
Local Limits Evaluation Process

- WWTP Sludge Data
  - Limiting Criteria
  - Maximum Allowable Headworks Loadings

- WWTP Liquid Process Data
  - Removal Rates
  - Flow and Process Info
  - Industrial Allocation and Local Limits

- Industrial Data
  - Existing Loadings
Limiting Criteria

- Emissions from incineration
- NPDES and SDS Permit Limits
- Worker Health and Safety
- Reuse and Water Quality Standards
- Land Application
- Process Inhibitors
Maximum Allowable Headworks Loading Distribution

- Industrial
- Domestic
- Safety Factor
- Hauled
- Commercial
Online Reporting & Communications

Tina Nelson, Assistant Manager, Data Management & Revenue
martina.nelson@metc.state.mn.us
Industrial Online Reporting System (IORS)

- The MCES IORS launched June 30, 2016
- Online reporting became mandatory as of 2/1/2019
- Use to submit self-monitoring reports and permit renewal applications

We welcome feedback on the IORS. Email us at: MCESIndustrialOnlineReporting@metc.state.mn.us
IORS Training & Support

• Training by requests over phone or Microsoft Teams

• Training materials available on the IORS Homepage

• IORS Support Team is available to help you!
  – Monday – Friday from 8 AM to 4 PM
  – MCESIndustrialOnlineReporting@metc.state.mn.us
Communication - IWPP Website
https://metrocouncil.org/IndustrialWaste/

INDUSTRIAL WASTE

Industrial waste is any solid, liquid, or gaseous substance disposed of in a public sewer in the metropolitan area resulting from a business activity.

The Industrial Waste & Pollution Prevention (IWPP) Section of the Metropolitan Council Environmental Services Division regulates and monitors industrial discharges to the sewer system to ensure compliance with local and federal regulations. The IWPP Section also responds to sewer-related spills and community sewer problems. These functions protect NCES and community collection/treatment facilities, process efficiency, and operating personnel and the environment.

IWPP Section staff issue Industrial Discharge Permits to industrial users of the Metropolitan Disposal System (public sanitary sewers). Currently, approximately 900 permits are in effect. Permittees are required to conduct self-monitoring and submit reports to the IWPP Section on a routine basis. These reports are one means of determining compliance with the NCES Waste Discharge Rules.

Compliance determinations are also made through monitoring by the IWPP Section. The U.S. Environmental Protection Agency (EPA) requires NCES to inspect and monitor significant industrial users at least once per year. NCES' laboratory performs approximately 22,000 analyses per year for industrial monitoring conducted by the IWPP Section at about 400 industrial facilities.

Rates & fees
Other Communication

• **Open Channel News**

• **GovDelivery**
  – **METC@public.govdelivery.com**
  – Report Due Dates
  – Workshops and Trainings
  – Disposal Site Notifications
  – NOT SPAM!!
  – We send important information via the GovDelivery email. Please add to your contacts so you do not miss out!
Any Questions or Feedback?

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