

IDEXX

# Implementing New ACIL Guidance for Wastewater Surveillance for SARS-CoV-2



## Agenda

- Brief introduction to wastewater surveillance
- $\circ$   $\,$  The importance of quality  $\,$
- Introduction to the ACIL
- Introduction to the ACIL Wastewater Surveillance Checklist
- **Q&A**



# Wastewater surveillance for SARS-CoV-2 is a valuable tool for public health decision makers



## **Limitations of Clinical Testing**

- Dependent on healthcare-seeking behavior and test availability
- At-home tests not captured in public data
- Less likely to capture asymptomatic infections
- Time-lag associated with scheduling clinical test

### **Benefits of Wastewater Surveillance**

- • Independent sample
- • Pooled sample
- Captures asymptomatic and symptomatic infections
- Provides an early warning of increases in cases



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## Wastewater surveillance for SARS-CoV-2 is being used around the world



Sources: UC Merced



# Wastewater surveillance is being used to make public health decisions

### WHO Guidance – Use Cases

- Target COVID-19 responses and interventions
  - E.g., to inform decisions on hospital capacity
- Detect outbreaks in areas thought to be COVID-19-free
- Augment risk communications
- Better target public health surveillance
- Inform restrictions
- Identify novel variants
- Identify known variants



## Quality is a critical component of all environmental testing



### In general, good quality practices ensure:

- Public health decisions are being made on accurate test results
- Environmental testing informs:
  - Boil notices
  - Treatment decisions
  - Compliance/non-compliance actions

### Poor or absent quality practices can lead to:

- Legal remedies
- Erosion of public confidence
- Adverse health outcomes

Regulated environmental testing generally requires accreditation





## Concerns around quality in wastewater data have surfaced

#### Wastewater SARS-CoV-2 N1/N2 Gene Copies 200000 Copies/Litre 180000 160000 140000 SARS-CoV-2 N1/N2 Gene 120000 100000 80000 60000 40000 20000 0 Sample A Sample B Sample C Sample D Sample E HHD replicate 1 Partner replicate 1 HHD replicate 2 Partner replicate 2

#### Houston Health Department (HHD) Example

Sources: Houston Health Department



## Good QA/QC procedures are critical for effective wastewater surveillance

Any data used for public health decision making should be developed with QA/QC best practices

#### **Perceived Attitudes**

"This data is always used in conjunction with other data; it's 'backed-up'"

"This type of testing is a proof-of-concept"

"We want to take advantage of existing testing capacity"

#### **Realities**



The data is most valuable when it provides new information

Concept was proven in early 2020, quality is critical as soon as data is used for public health

Several accredited labs developed the capability to provide testing early in the pandemic



The American Council of Independent Laboratories (ACIL) represents independent commercial laboratories



## Vision

 Realizing a healthy safe environment for society through the application of unbiased, scientific testing

### Mission

 Providing the independent testing community with advocacy, education, and alliances to enable members to better address environmental and product risks to the public



In 2021 and 2022, the ACIL led the creation of a Wastewater Surveillance QA/QC checklist

## ACIL







# The checklist is based on ISO 17025 and emerging best practices in wastewater surveillance



### **Major QA/QC Checklist Sections**

- Sample checks
- Standard curve
- $\circ$  Concentration
  - Electro Negative Membranes
  - Polyethylene Glycol Precipitation
  - Skim Milk Flocculation
- $\circ$  Extraction
- RT-qPCR and dPCR
- o Report Criteria
- o Safety
- General Technician Training



## **Example: Matrix Recovery Control**



Wastewater sample with unknown amount of SARS-CoV-2 Spike a known amount of similar virus into sample Run complete procedure

Measure recovery & compare to input



## **Example: Fecal Normalization**

#### **Correlations Coefficients Between Cases and** SARS-CoV-2 Concentration



- Laboratories will  $\bigcirc$ often normalize results using a fecal indicator
- Estimate (rho) Studies have  $\bigcirc$ called this approach into question

0.75

0.50

0.25

Normalization is  $\bigcirc$ not included in the QA/QC checklist

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## Closing thoughts: how can we ensure quality testing data is used for making public health decisions?

- Quality is critical when producing data used for public health decision making
- How can we ensure quality as new testing methods ramp up to address urgent public health concerns?
- The ACIL QA/QC Checklist is a living document
  - The ACIL welcomes any feedback or contributions
- Is there a need for updates to accreditation programs to include wastewater surveillance methods?



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Questions?



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