Wastewater sampling for WBE surveillance

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Established in 1958
1971 invented the automatic wastewater sampler
Now world leader in samplers

Today’s Agenda
Wastewater Sampling journey for WBE surveillance
Sampling Objective
• Detect Prevalence
• Find Trend
Sampling Method: Manual Grab and Automatic

WITH DIPPER

PROS:
• Simple Tool

CONS:
• Can Be Unhygienic
• Time Consuming
• Variation in sample collection
• Represents singular moment in time

WITH AUTOMATIC SAMPLER

PROS:
• Consistent
• Hygienic
• Quick

CONS:
• Cost
Sampling Method: Composite and Sequential

**COMPOSITE**
Single Bottle
A series of samples over a period of time (typically one day)
Will be collected in one bottle
Samples at user defined intervals
Sample in the bottle represents the “composite” of samples collected throughout the sampling period
Most common COVID sampling method today

**SEQUENTIAL**
Multiple Bottles
A single sample or multiple samples are placed into a given bottle
Samples are collected at user defined intervals
Bottles are switched based upon a user defined time interval
Each bottle represents the state of the source for the given time interval for that bottle
### WBE SAMPLING LOCATION

**TREATMENT PLANT INFLUENT / CATCHMENT AREA**

**Purpose:** Catchment wide / city wide community spread

### SAMPLING

- Composite or sequential sampling with automatic sampler
- Time paced and/or flow paced

### TYPE OF SAMPLER

- Permanent refrigerated

### FREQUENCY

- Time: Every 15 min for 24 hours
- Flow: Catchment area specific
### WBE Sampling Location

**Wastewater Sewer Network**  
Purpose: Local Area Community Spread

### Sampling
- Composite sampling with automatic sampler  
- Time paced volume dependent

### Type of Sampler
- Portable with ice

### Frequency
- Time: Once per hour for 24 hours,  
- Volume: site dependent
WBE-19 SAMPLING LOCATION

BUILDINGS (Dorms, Hospitals Nursing Homes, Industries)
Purpose: Location specific spread

**SAMPLING**
- Grab sampling with automatic sampler

**TYPE OF SAMPLER**
- Single location:
  - Portable with ice
- Multiple locations:
  - Portable refrigerated to maintain temperature 4°C
  - Sequential sampling will help efficiently manage multiple locations in a short period

**FREQUENCY**
- Twice a week per location for viral concentration
- Multiple Grabs for infection prevalence
**WBE Sampling Lesson Learned**

- **Lesson Learned**
  - Samples collected by automatic samplers were consistent and source representative
  - Sampler type and sampling method changes based on sampling location
  - Sampling close to the source – at building outlet or in sewer network, helped in implementing local measures and control the virus spread
  - Composite sampling was adequate. In some cases, sequential was helpful
  - Flow paced sampling found better for varying flow condition
  - Samples should be refrigerated during transport or cooled with ice or cold packs if refrigeration is not available. Samples should be stored at 4 Deg C
• Future needs:
  • Location based sampling standards and guidelines
  • Realtime sensor to detect presence of virus and trigger sampler to collect samples for further analysis and quantification
  • Remote communication from field to get an alert for a quick and proactive action
  • Quick implementation of results in public health initiatives
Questions?

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