

# Wastewater sampling for WBE surveillance

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# OUR HISTORY



## 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



01

## WITH DIPPER

### ☑️ CONS:

- Can Be Unhygienic
- Time Consuming
- Variation in sample collection
- Represents singular moment in time



02

## WITH AUTOMATIC SAMPLER

### ☑️ PROS:

- Consistent
- Hygienic
- Quick

### CONS:

- Cost

# Sampling Method: Composite and Sequential



01

## 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



02

## 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 4C
  - Sequential sampling will help efficiently managed 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



# WBE Sampling future need



- 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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