

# 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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