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

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

CONS:

WITH AUTOMATIC SAMPLER

- Consistent
- Hygienic
- Quick

PROS:

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
<table>
<thead>
<tr>
<th>WBE SAMPLING LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TREATMENT PLANT INFLUENT / CATCHMENT AREA</td>
</tr>
<tr>
<td>Purpose: Catchment wide /city wide community spread</td>
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</tbody>
</table>

**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
• 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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